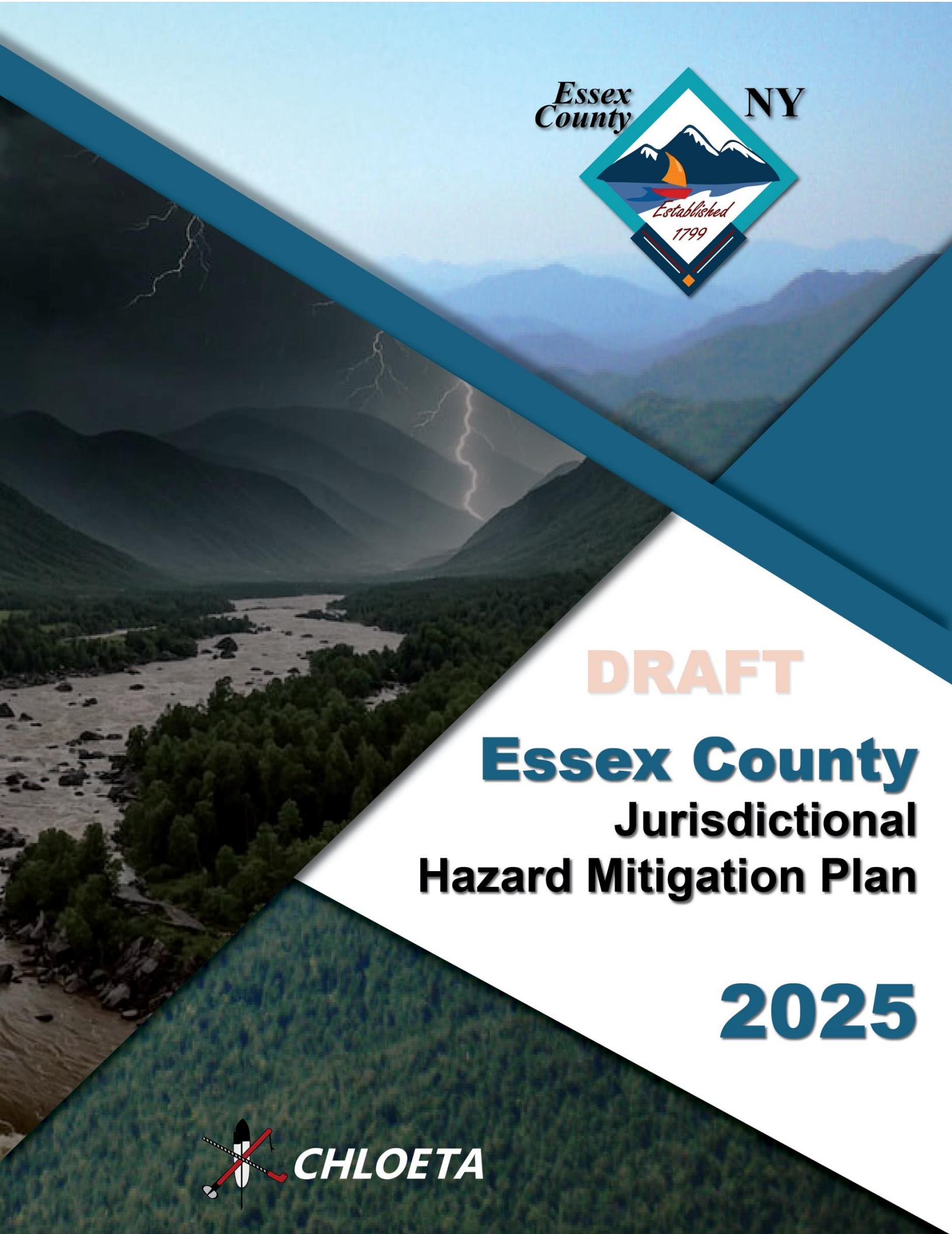


DRAFT

Essex County Jurisdictional Hazard Mitigation Plan

2025

CHLOETA

Executive Summary

The 2025 Essex County Hazard Mitigation Plan (HMP) is a comprehensive strategy designed to address and mitigate long-term risks posed by various hazards specific to the county. By focusing on the unique needs and circumstances within the area, this plan seeks to enhance the safety and resilience of Essex County residents, properties, and resources, ensuring a more secure future.

This plan underscores Essex County's commitment to reducing risks from hazards and serves as a strategic framework for decision-makers to allocate resources in order to effectively prioritize mitigation activities. This HMP was developed with input from local stakeholders including residents, businesses, and government officials to ensure proposed mitigation actions align with community priorities and capabilities.

This plan complies with the requirements of the Disaster Mitigation Act of 2000 and adheres to federal, state, and local regulatory guidelines, ensuring eligibility for federal disaster assistance programs. These include the FEMA Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation Program (PDM), and Flood Mitigation Assistance Program (FMA). By maintaining this compliance, Essex County can access crucial funding to implement its mitigation strategies.

Hazard mitigation strives to reduce or eliminate long-term risks to people and property from predictable disasters, many of which can be mitigated or even prevented. The 2025 Essex County HMP outlines specific mitigation strategies tailored to the risks facing the county. These strategies address identified vulnerabilities to improve the community's ability to withstand natural and man-made hazards. The plan must be adopted by the county's governing body, reviewed by New York State emergency management officials, and approved by FEMA before implementation.

The advantages of having a FEMA-approved HMP are significant. Communities with such plans are better equipped to receive federal and state funding for mitigation projects, enabling faster recovery and more effective post-disaster decision-making. The plan also facilitates long-term savings by reducing human, environmental, and economic costs associated with disasters. The 2025 HMP further reflects the increasing national attention on hazard mitigation, highlighting its cost-effectiveness in safeguarding lives and property.

The 2025 Essex County Hazard Mitigation Plan is a proactive and forward-looking effort to build a safer, more resilient community. By addressing local hazards, complying with regulatory standards, and engaging stakeholders, this plan positions Essex County to better mitigate potential disaster impacts in an effort to protect its residents, businesses, and infrastructure.

DRAFT

Table of Contents

Introduction 1
Background & Scope 1
Purpose 1
Authority 2
Planning Participants 3
Plan Organization 4
Plan Adoption 4

Plan Development 5
Plan Process 7
Resources and Information Collection 7
Plan Updates 8
Engagement 9
Public Engagement 10
Stakeholder Participation 11
Jurisdiction Participation 14
Planning Team 17
Meetings & Documentation 17
Chronological Development 18

County Profile 20
County Facts 20
Historical Overview 21
Population & Demographics 24
Economy & Employment 25
Climate 25
Impact of Climate Change 25
Geography 36
Topography and Elevation 36
Major Water Bodies and Watersheds 37
Drainage Systems 38
Geology and Soils 39
Transportation and Accessibility 39
Environmental and Ecological Features 40
Hazard Implications 40
Infrastructure & Land Use 40
Land Use 41
Growth and Development Trends 45
Economic Characteristics and Employment 46
Community Lifelines 46
Vulnerable Populations 47
Community Resilience 48

Risk Assessment & Methodology 50
Update Process 51
Risk Assessment Process 52
Comprehensive Hazard Ranking by the Planning Team 53

DRAFT

Hazard Ranking 61

Hazard Data Profiles 64
Hazard: Floods (Riverine, Flash, Ice Jam) 64
Hazard: Severe Thunderstorms (High Winds, Hailstorms, Tornado) 84
Hazard: Severe Winter Storms (Heavy Snow, Blizzards, Ice) 100
Hazard: Extreme Temperatures (Extreme Cold & Heat Waves) 113
Hazard: Wildfires 124
Hazard: Utility Failures (Power & Communication Systems) 135
Hazard: Hurricanes & Tropical Storms 159
Hazard: Landslides & Mudslides (Soil Erosion & Slope Failures) 171
Hazard: Hazardous Materials Incidents (Transportation Accidents & Industrial Spills) 181
Hazard: Pandemics & Infectious Disease (Future Pandemics & Influenza Outbreaks) 191
Hazard: Dam Failures (Structural Integrity Issues) 200
Hazard: Earthquakes 214
Hazard: Avalanche 228
Hazard: Ground Subsidence 236

Assets at Risk 244
Critical Facility Inventory 244
Estimating Potential Loss 253

Capability Assessment 255
County Capability Assessment 255
Planning and Regulatory Capabilities 263
Technical and Staff Capabilities 264
Financial Capabilities 264
Education and Outreach Capabilities 265
Partnerships and Inter–Jurisdictional Coordination 265
Infrastructure Resilience 266
Gaps and Needs 266
Local Capability Assessment 266
Assessment Analysis 266

Mitigation Strategy 268
Mission Statement 268
Goals & Objectives 268
Mitigation Strategy Planning Approach 271
Mitigation Strategy Update and Development 271
Mitigation Strategy and Prioritization Process 273
Overview of Historical Mitigation Efforts 276
Mitigation Action Plans 277

Plan Maintenance 310
HMP Maintenance Schedule Components 310
Critical Infrastructure Identification 310
Regular Inspections and Testing 310
Risk–Based Prioritization 311
Types of Maintenance Activities 311
Importance of the HMP Maintenance Schedule 312

DRAFT

Monitoring Progress of Mitigation Activities 313
Maintenance Evaluation & Enhancement 314
Evaluation Framework 315
Annual Maintenance Review 315
Post–Disaster Plan Updates 315
Enhancing the Plan 315
Integration with Other Plans 316
Continuous Improvement 316
Incorporation into Existing Planning Mechanisms 316
Continued Public Involvement 317

Annexes: Towns & Villages 319
Annex A: Town of Chesterfield 320
Profile 320
Planning Process 321
Capability Assessment 322
Critical Facilities 323
National Flood Insurance Plan (NFIP) Summary 324
Hazard Identification & Ranking 324
Hazard Event History 325
Hazard Analysis 325
Hazard Mapping 326
Potential Loss 329
Mitigation Strategy 329
Annex B: Town of Crown Point 332
Profile 332
Planning Process 334
Capability Assessment 334
Critical Facilities 335
National Flood Insurance Plan (NFIP) Summary 336
Hazard Identification & Ranking 337
Hazard Event History 337
Hazard Analysis 338
Hazard Mapping 340
Potential Loss 343
Mitigation Strategy 343
Annex C: Town of Elizabethtown 346
Profile 346
Planning Process 348
Capability Assessment 348
Critical Facilities 350
National Flood Insurance Plan (NFIP) Summary 351
Hazard Identification & Ranking 351
Hazard Event History 352
Hazard Analysis 353
Hazard Mapping 354
Potential Loss 357
Mitigation Strategy 357

DRAFT

Annex D: Town of Essex 362
Profile 362
Planning Process 364
Capability Assessment 364
Critical Facilities 366
National Flood Insurance Plan (NFIP) Summary 367
Hazard Identification & Ranking 367
Hazard Event History 368
Hazard Analysis 369
Hazard Mapping 369
Potential Loss 373
Mitigation Strategy 373
Annex E: Town of Jay 376
Profile 376
Planning Process 378
Capability Assessment 378
Critical Facilities 380
National Flood Insurance Plan (NFIP) Summary 382
Hazard Identification & Ranking 382
Hazard Event History 383
Hazard Analysis 383
Hazard Mapping 385
Potential Loss 387
Mitigation Strategy 388
Annex F: Town of Keene 395
Profile 395
Planning Process 398
Capability Assessment 398
Critical Facilities 400
National Flood Insurance Plan (NFIP) Summary 401
Hazard Identification & Ranking 402
Hazard Event History 402
Hazard Analysis 403
Hazard Mapping 405
Potential Loss 407
Mitigation Strategy 408
Annex G: Town of Lewis 418
Profile 418
Planning Process 420
Capability Assessment 420
Critical Facilities 421
National Flood Insurance Plan (NFIP) Summary 422
Hazard Identification & Ranking 423
Hazard Event History 423
Hazard Analysis 424
Hazard Mapping 425
Potential Loss 429

DRAFT

Mitigation Strategy 429
Annex H: Town of Minerva 433
Profile 433
Planning Process 435
Capability Assessment 435
Critical Facilities 437
National Flood Insurance Plan (NFIP) Summary 438
Hazard Identification & Ranking 438
Hazard Event History 439
Hazard Analysis 440
Hazard Mapping 440
Potential Loss 444
Mitigation Strategy 444
Annex I: Town of Moriah 447
Profile 447
Planning Process 449
Capability Assessment 449
Critical Facilities 451
National Flood Insurance Plan (NFIP) Summary 452
Hazard Identification & Ranking 452
Hazard Event History 453
Hazard Analysis 454
Hazard Mapping 455
Potential Loss 459
Mitigation Strategy 459
Annex J: Town of Newcomb 468
Profile 468
Planning Process 470
Capability Assessment 470
Critical Facilities 471
National Flood Insurance Plan (NFIP) Summary 472
Hazard Identification & Ranking 472
Hazard Event History 473
Hazard Analysis 474
Hazard Mapping 476
Potential Loss 479
Mitigation Strategy 479
Annex K: Town of North Elba 482
Profile 482
Planning Process 484
Capability Assessment 484
Critical Facilities 486
National Flood Insurance Plan (NFIP) Summary 487
Hazard Identification & Ranking 487
Hazard Event History 488
Hazard Analysis 488
Hazard Mapping 489

DRAFT

Potential Loss 492
Mitigation Strategy 492
Annex L: Town of North Hudson 496
Profile 496
Planning Process 498
Capability Assessment 498
Critical Facilities 499
National Flood Insurance Plan (NFIP) Summary 500
Hazard Identification & Ranking 500
Hazard Event History 501
Hazard Analysis 501
Hazard Mapping 503
Potential Loss 506
Mitigation Strategy 506
Annex M: Town of St. Armand 508
Profile 508
Planning Process 509
Capability Assessment 510
Critical Facilities 511
National Flood Insurance Plan (NFIP) Summary 511
Hazard Identification & Ranking 512
Hazard Analysis 513
Hazard Mapping 513
Potential Loss 517
Mitigation Strategy 517
Annex N: Town of Schroon 521
Profile 521
Planning Process 523
Capability Assessment 523
Critical Facilities 524
National Flood Insurance Plan (NFIP) Summary 525
Hazard Identification & Ranking 526
Hazard Event History 526
Hazard Analysis 527
Hazard Mapping 529
Potential Loss 532
Mitigation Strategy 532
Annex O: Town of Ticonderoga 535
Profile 535
Planning Process 538
Capability Assessment 538
Critical Facilities 539
National Flood Insurance Plan (NFIP) Summary 541
Hazard Identification & Ranking 541
Hazard Event History 542
Hazard Analysis 543
Hazard Mapping 544

DRAFT

Potential Loss 547
Mitigation Strategy 547
Annex P: Town of Westport....551
Profile 551
Planning Process 553
Capability Assessment 553
Critical Facilities 555
National Flood Insurance Plan (NFIP) Summary 556
Hazard Identification & Ranking 556
Hazard Event History 557
Hazard Analysis 558
Hazard Mapping 559
Potential Loss 562
Mitigation Strategy 562
Annex Q: Town of Willsboro....566
Profile 566
Planning Process 568
Capability Assessment 568
Critical Facilities 569
National Flood Insurance Plan (NFIP) Summary 570
Hazard Identification & Ranking 571
Hazard Event History 571
Hazard Analysis 572
Hazard Mapping 574
Potential Loss 577
Mitigation Strategy 577
Annex R: Town of Wilmington 580
Profile 580
Planning Process 582
Capability Assessment 582
Critical Facilities 583
National Flood Insurance Plan (NFIP) Summary 585
Hazard Identification & Ranking 585
Hazard Event History 585
Hazard Analysis 586
Hazard Mapping 588
Potential Loss 591
Mitigation Strategy 591

Appendices 594
Appendix A: Glossary 595
Appendix B: Acronyms....597
Appendix C: Community Involvement Documentation – TO BE UPDATED INCLUSIVE OF STAKEHOLDER MEETING AS WELL AS PUBLIC AND STAKEHOLDER REVIEW FEEDBACK. 598
Overview of Community Engagement Efforts 598
Public Meeting Records 598
Advertisements & Outreach Materials 598

DRAFT

Community Surveys 599
Photographic Documentation 604
Follow–Up & Feedback Documentation (THIS SECTION TO BE PUBLISHED) 605
Appendix D: Mitigation Action Worksheets 606
Appendix E: Potential Funding Sources 607
Federal Hazard Mitigation Funding Opportunities 609
State Hazard Mitigation Funding Opportunities 613
Appendix F: Adoption Letters 616

References **617**

List of Tables

Table 1. Participating Jurisdictions: 2025 Essex County Hazard Mitigation Plan (HMP) 3
Table 2. DMA & CRS Process for JHMP Development 5
Table 3. Stakeholder Participation 12
Table 4. Jurisdiction Participation 15
Table 5. Town Meetings 15
Table 6. Primary Meetings 17
Table 7. DMA and CRS Process for HMP Development 19
Table 8. Essex County Facts 20
Table 9. Municipality Population 24
Table 10. Essex County Economic Statistics 25
Table 11. Flooding Climate Change Impact 26
Table 12. Severe Storms (Thunderstorm, High Winds, Hailstorms) Climate Change Impact . 27
Table 13. Severe Winter Storms Climate Change Impact 28
Table 14. Extreme Temperatures (Extreme Cold & Heat Waves) Climate Change Impact 28
Table 15. Wildfires (Forest Fires in Adirondack Region) Climate Change Impact 29
Table 16. Utility Failures (Power & Communication Systems) Climate Change Impact 30
Table 17. Transportation Accidents (Roadway & Rail) Climate Change Impact 31
Table 18. Hurricanes & Tropical Storms Climate Change Impact 32
Table 19. Landslides & Mudslides (Soil Erosion &..... 32
Slope Failures) Climate Change Impact 32
Table 20. Hazardous Material Incidents (Transportation Accidents & 33
Industrial Spills) Climate Change Impact 33
Table 21. Pandemics & Infectious Disease Climate Change Impact 34
Table 22. Dam Failures (Structural Integrity Issues) Climate Change Impact 34
Table 23. Avalanches Climate Change Impact 35
Table 24. Distribution of Value by Property Use 41
Table 25. Essex County Agriculture Census 43
Table 26. Major Employers 46
Table 27. Hazards Addressed in the 2019 Essex County Hazard Mitigation Plan 52
Table 28. CEPA Hazard Score Ranking 52
Table 29. CPRI Scoring 57
Table 30. Essex County Disaster Declarations 1974–2024 57
Table 31. 2025 Essex County Hazard Ranking 61
Table 32. Essex County Types of Flooding 64

DRAFT

Table 33. Types of Flooding Public Service Announcement 65
Table 34. Summary of Land Area in Flood Hazard Area 70
Table 35. Summary of Improved Values in Flood Hazard Areas 71
Table 36. Essex County Declared Disasters (1996-2024) 73
Table 37. Essex County Flood Events (2018-2024) 74
Table 38. Essex County Flood Insurance Claims 75
Table 39. Essex County Repetitive Loss Properties 76
Table 40. Historic Record of Flood Damages 1960-2023 76
Table 41. Critical Infrastructure in the .02% Flood Zone 78
Table 42. Hail Diameter Description 84
Table 43. Enhanced Fujita Scale (EF–Scale) Categories with 88
Associated Wind Speeds and Description of Damages 88
Table 44. Events in Essex County 1996-2022 90
Table 45. Expected Annual Loss for Severe Thunderstorm Components 96
Table 46. Northeast Snowfall Impact Scale 103
Table 47. NCEI Data on Essex County Winter Events, 2018-2024 104
Table 48. Hazard Mitigation Plan Potential Loss from Snow Events 105
Table 49. Essex County Winter Weather Risk Levels 108
Table 50. Hazard Mitigation Plan Potential Loss from Snow Events 108
Table 51. Civil Emergency Severe Heat/Cold Messaging 115
Table 52. Historical Heat and Cold Wave Events 116
Table 53. Future Probability of Extreme Heat and Cold Events in Essex County 117
Table 54. Essex County Heat and Cold Wave Risk Levels 120
Table 55. Heat and Cold Waves 121
Table 56. Essex County Wildfires 125
Table 57. Essex County Future Probability of Wildfire Events 127
Table 58. Essex County Wildfire Risk Levels 130
Table 59. Essex County Wildfire Risk and Impact 130
Table 60. Essex County Historical Utility Failures 136
Table 61. Essex County Vulnerability Assessment of Utility Failures 138
Table 62. Essex County National Risk Index for Utility Failures 139
Table 63. Essex County Expected Annual Loss (EAL) from Utility Failures 140
Table 64. Essex County Roadway Accidents, 2019–2025 147
Table 65. Essex County Rail Incidents, 2019–2025 148
Table 66. Essex County Ferry and Waterway Incidents, 2019–2025 148
Table 67. Expected Frequency and Impact of Transportation Accidents 152
Table 68. Essex County Estimated Annual Loss (EAL) for Transportation Accidents 153
Table 69. Saffir–Simpson Scale Categories 160
Table 70. Essex County Historical Occurrences of Hurricanes & Tropical Storms 161
Table 71. Essex County Hurricane Events that Received a Presidential Disaster Declaration 161
Table 72. Essex County Annual Probability of Tropical Storm & Hurricane 164
Strength Wind Speeds 164
Table 73. Essex County Vulnerability Assessment for Hurricanes & Tropical Storms 165
Table 74. Essex County Annual Expected Loss (EAL) for Hurricanes & Tropical Storms 167
Table 75. Essex County Historical Landslides 174
Table 76. 2014 Essex County Landslide Probabilities 175

DRAFT

Table 77. Essex County Landslide Vulnerability Assessment 176
Table 78. Essex County Landslide Risk Assessment (NRI Data) 177
Table 79. Essex County Annual Expected Loss (EAL) for Landslides 178
Table 80. Essex County Hazardous Materials Vulnerability Incident Assessment 185
Table 81. Risk Level Summary (NRI Data) 187
Table 82. Essex County Hazardous Materials Incidents Annual Expected Loss (EAL) 187
Table 83. Essex County Historical Infectious Disease Outbreaks 192
Table 84. Essex County Declared Disasters for Pandemics & Infectious Diseases 193
Table 85. Essex County Pandemic & Infectious Disease Vulnerability Assessment 194
Table 86. Expected Frequency and Impact of Infectious Disease Outbreaks 196
Table 87. Essex County Pandemic & Infectious Disease Annual Expected Loss (EAL) 197
Table 88. Essex County Public and Private Dams 202
Table 89. Essex County Annual Expected Loss (EAL) for Dam Failures 210
Table 90. New York State Declared Earthquake Disasters, 1950-2012 216
Table 91. New York State Earthquake History, 1983-2024 216
Table 92. Enhanced Fujita Scale (EF-Scale) Categories with 218
Associated Wind Speeds and Description of Damages 218
Table 93. Modified Mercalli Intensity Scale with Associated Impacts 219
Table 94. Essex County Potential Loss to Earthquakes; Hazus–MH 2.1 223
Table 95. Essex County Earthquake Risk Assessment (NRI Data) 224
Table 96. Essex County Earthquake Expected Annual Loss (EAL) 225
Table 97. Avalanche Vulnerability Assessment 231
Table 98. Essex County Avalanche Risk Assessment (NRI Data) 232
Table 99. Essex County Avalanche Expected Annual Loss (EAL) 232
Table 100. Essex County Current Mining Operations 239
Table 101. Essex County Subsidence Vulnerability Assessment 241
Table 102. Essex County Critical Facilities and Systems 244
Table 103. Essex County Critical Facilities and Systems 253
Table 104. Modoc County Mitigation Plan Goals and Objectives 269
Table 105. HMP Mitigation Prioritization Process 274
Table 106. Qualitative Cost and Benefit Ratings 275
Table 107. Mitigation Project Actions 278
Table 108. Schedule for Critical Infrastructure in HMP 311
Table 109. HMP Maintenance Schedule 313

List of Figures

Figure 1. Relationship Between Hazards 51
Figure 2. Statewide Map of NOAA's Severe Weather Database Hail Events 1955-2017 87
Figure 3. Snowfall Extent 2022 102
Figure 4. Snowfall Extent 2017 102
Figure 5. Projected Changes to Annual Average Temperatures New York 118
Figure 6. Marcy Dam after Tropical Storm Irene 207
Figure 7. New York Historical Earthquakes 1914-2023 217
Figure 8. Peak Acceleration (%g) with 2% Probability of Exceedance in 50 years 218
Figure 9. Land Subsidence in the United States 237
Figure 10. Expansive Soils Map 238

DRAFT

Figure 11. Critical Facilities: Town of Chesterfield 267
Figure 12. Wildfire Fuel Analysis: Town of Chesterfield 327
Figure 13. Critical Facilities: Town of Crown Point 278
Figure 14. Wildfire Fuel Analysis: Town of Crown Point 341
Figure 15. Critical Facilities: Town of Elizabethtown 354
Figure 16. Wildfire Fuel Analysis: Town of Elizabethtown 355
Figure 17. Critical Facilities: Town of Essex 370
Figure 18. Wildfire Fuel Analysis: Town of Essex 371
Figure 19. Floodplains: Town of Essex 372
Figure 20. Floodplains: Town of Jay 385
Figure 21. Critical Facilities: Town of Jay 386
Figure 22. Wildfire Fuel Analysis: Town of Jay 387
Figure 23. Critical Facilities: Town of Keene 332
Figure 24. Wildfire Fuel Analysis: Town of Keene 406
Figure 25. Floodplains: Town of Keene 407
Figure 26. Critical Facilities: Town of Lewis 426
Figure 27. Wildfire Fuel Analysis: Town of Lewis 427
Figure 28. Critical Facilities: Town of Minerva 441
Figure 29. Wildfire Fuel Analysis: Town of Minerva 442
Figure 30. Critical Facilities: Town of Moriah 456
Figure 31. Wildfire Fuel Analysis: Town of Minerva 457
Figure 32. Critical Facilities: Town of Newcomb 476
Figure 33. Wildfire Fuel Analysis: Town of Newcomb 477
Figure 34. Critical Facilities: Town of North Elba 489

Figure 35. Wildfire Fuel Analysis: Town of North Elba 490
Figure 36. Critical Facilities: Town of North Hudson 503
Figure 37. Wildfire Fuel Analysis: Town of North Hudson 504
Figure 38. Critical Facilities: Town of St. Armand 514
Figure 39. Wildfire Fuel Analysis: Town of St. Armand 515
Figure 40. Critical Facilities: Town of Schroon 529
Figure 41. Wildfire Fuel Analysis: Town of Schroon 530
Figure 42. Critical Facilities: Town of Ticonderoga 544
Figure 43. Wildfire Fuel Analysis: Town of Ticonderoga 545
Figure 44. Critical Facilities: Town of Westport 559
Figure 45. Wildfire Fuel Analysis: Town of Westport 560
Figure 46. Critical Facilities: Town of Willsboro 574
Figure 47. Wildfire Fuel Analysis: Town of Willsboro 575
Figure 48. Critical Facilities: Town of Wilmington 588
Figure 49. Wildfire Fuel Analysis: Town of Wilmington 589
Figure 50. Advertisement: Public Hazard Mitigation Survey 484
Figure 51. Public Survey Posting: Essex County Public Bulletin Board 605

DRAFT

Introduction

Background & Scope

Natural disasters claim the lives of hundreds of people each year in the United States while injuring thousands more. Taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters nationwide. These funds only partially reflect the true cost of disasters, with additional expenses incurred by insurance companies and nongovernmental organizations that are often not reimbursed with tax dollars. Many natural disasters are predictable and much of the damage caused by these events can be reduced or even eliminated.

Hazard mitigation is defined by FEMA as "any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event." A hazard event refers to the occurrence of a specific natural or man-made hazard that poses a threat to people, property, the environment, or the economy. It involves the realization of potential risks associated with the hazard, resulting in varying degrees of impact or damage. The results of a three-year, congressionally mandated independent study to assess future savings from mitigation activities provide evidence that mitigation activities are highly cost-effective. On average, each dollar spent on mitigation saves society an average of $6 in avoided future losses, in addition to saving lives and preventing injuries.

Hazard mitigation planning is the process through which hazards are identified, likely impacts determined, mitigation goals set, and appropriate mitigation strategies determined, prioritized, and implemented. This plan documents Essex County's hazard mitigation planning process, identifying relevant hazards and vulnerabilities and outlining strategies the county will use to decrease vulnerabilities and increase resiliency and sustainability throughout the community.

This Hazard Mitigation Plan (HMP) was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 (Public Law 106-390) and the implementing regulations set forth by the Interim Final Rule published in the Federal Register on February 26, 2002 (44 CFR §201.6) and finalized on October 31, 2007. Hereafter, these requirements and regulations will be collectively referred to as the Disaster Mitigation Act (DMA) or DMA 2000. While the act emphasized the need for mitigation plans and more coordinated mitigation planning and implementation efforts, regulations established requirements for local hazard mitigation plans a local jurisdiction must meet to be eligible for certain federal disaster assistance and hazard mitigation funding under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288). This planning effort also follows FEMA's most recent planning guidance.

Purpose

The purpose of this Hazard Mitigation Plan (HMP) is to reduce or eliminate the long-term risk to life and property from hazards. The plan strives to identify and assess risks and implement strategies to protect people and property from future hazard events. It addresses a variety of hazards including natural, technological, and man-made incidents that could potentially impact Essex County, New York. In addition to enhancing community resilience, this HMP ensures the county is eligible for certain federal disaster assistance programs including the FEMA Hazard Mitigation Grant Program (HMGP), Building Resilient Infrastructure and Communities (BRIC), and the Flood Mitigation Assistance Program (FMA). By aligning with federal requirements and leveraging

DRAFT

available resources, Essex County strives to create a safer, more prepared, and resilient community capable of withstanding and recovering from future hazard events.

This HMP identifies resources, information, and strategies for reducing risk from natural hazards. Elements and strategies in the plan were selected because they meet program requirements and best meet the needs of Essex County and its citizens. This plan will help guide and coordinate mitigation activities throughout the county. It was developed to:

- meet or exceed the requirements of the DMA.
- enable Essex County to use federal grant funding to reduce risk through mitigation.
- meet the needs of Essex County as well as state and federal requirements.
- create a risk assessment that focuses on hazards of concern specific to Essex County.
- create a single planning document that integrates all planning efforts within Essex County, supporting local partnerships and future updates.
- meet the planning requirements of FEMA's Community Rating System (CRS), allowing Essex County to participate in the CRS program and enhance its CRS classifications.
- coordinate existing plans and programs so that high priority initiatives and projects to mitigate possible disaster impacts are funded and implemented.

All Essex County residents and businesses are the ultimate beneficiaries of this plan. It reduces risk for those who live in, work in, and visit the county. It provides a viable planning framework for all foreseeable natural hazards that may impact Essex County. Participation in plan development by key county stakeholders helped ensure outcomes that will be mutually beneficial. Resources and background information in the plan are applicable countywide, and the plan's goals and recommendations can lay the groundwork for development and implementation of local mitigation activities and partnerships.

Authority

This Multi–Jurisdictional Multi–Hazard Mitigation Plan has been adopted by Essex County, New York, and all participating jurisdictions in accordance with the authority granted to local communities by the State of New York. This plan aligns with state and federal regulations governing local hazard mitigation plans, incorporating updates based on the latest standards. This plan will be reviewed annually and undergo a comprehensive update every five years in order to maintain eligibility for hazard mitigation grants.

FEMA plays a pivotal role in hazard mitigation planning nationwide. Under the authority of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, FEMA provides financial and technical assistance to states, territories, tribes, and local governments for the development and maintenance of hazard mitigation plans. FEMA's 2023 State and Local Mitigation Planning Policy Guide emphasizes:

- climate resilience.
- equitable hazard mitigation.
- integration of mitigation strategies across broader planning efforts.

DRAFT

This updated policy ensures that mitigation plans address evolving risks and vulnerabilities. FEMA reviews and approves plans that meet these standards, enabling jurisdictions to qualify for federal funding and better prepare for and mitigate future disasters. The Disaster Mitigation Act of 2000 (DMA 2000) underscores the importance of proactive planning and mandates that local governments maintain FEMA–approved plans to remain eligible for federal mitigation funding. Approved plans allow jurisdictions like Essex County to access essential grants like:

- Building Resilient Infrastructure and Communities (BRIC).
- Hazard Mitigation Grant Program (HMGP).
- Flood Mitigation Assistance (FMA).
- Pre–Disaster Mitigation (PDM).
- High–Hazard Potential Dam (HHPD) grants.

FEMA requires hazard mitigation plans to be updated every five years. Essex County's current plan update reflects these requirements, enhancing risk and vulnerability assessments and focusing on actionable mitigation strategies that incorporate climate resilience, equity, and sustainability.

The New York State Division of Homeland Security and Emergency Services (NYS DHSES) provides supplemental hazard mitigation planning standards to augment FEMA's requirements. The Essex County's plan update adheres to 2022 NYS Hazard Mitigation planning standards while integrating FEMA's most recent guidance.

Planning Participants

The 2025 Hazard Mitigation Plan (HMP) update for Essex County includes participation from Essex County and all 18 towns within its jurisdiction. Participants include Essex County and the towns of Chesterfield, Crown Point, Elizabethtown, Essex, Jay, Keene, Lewis, Minerva, Moriah, Newcomb, North Elba, North Hudson, St. Armand, Schroon, Ticonderoga, Westport, Willsboro, and Wilmington.

Table 1. Participating Jurisdictions: 2025 Essex County Hazard Mitigation Plan (HMP)

Participating Jurisdictions			
Essex County	Jay	Newcomb	Ticonderoga
Chesterfield	Keene	North Elba	Westport
Crown Point	Lewis	North Hudson	Willsboro
Elizabethtown	Minerva	St. Armand	Wilmington
Essex	Moriah	Schroon	

The updated HMP includes detailed information about hazards that historically occurred within the county with a focus on events since 2018. The plan incorporates repair costs and damage estimates associated with these hazard events as available in addition to an updated critical facilities review and associated risk assessment and vulnerability information. A variety of

DRAFT

additional resources were used to gather data on historic and recent hazard events within the county, vulnerabilities related to future events, and the potential costs and damages that could result. This comprehensive approach ensures the plan reflects current risks and supports effective mitigation strategies.

Plan Organization

The 2025 Essex County Multi–Jurisdictional Multi–Hazard Mitigation Plan (hereafter referred to as the "Essex County HMP," "HMP," or "the plan") is organized into 10 sections satisfying mitigation requirements outlined in 44 CFR Part 201.6. Eighteen annexes providing Jurisdictional (Town–specific) plans and required supporting documentation. This plan is presented in the following format:

- Introduction
- Planning Development
- County Profile
- Risk Assessment
- Hazard Data and Profiles
- Mitigation Strategy
- Capabilities Assessment
- Mitigation Strategy
- Plan Maintenance
- Jurisdictional Annexes
- Supporting Document Appendices

Plan Adoption

44 CFR Section 201.6(c)(5) requires documentation that hazard mitigation plans were formally adopted by the governing body of the jurisdiction requesting federal approval of the plan. This plan will be submitted for a pre–adoption review to the New York State Division of Emergency Management and FEMA prior to adoption. Once pre–adoption approval is provided, all Planning Partners will formally adopt the plan. All partners understand that DMA compliance and its benefits cannot be achieved until the plan is adopted. FEMA Region X granted final approval of the Essex County, 2025 Hazard Mitigation Plan and its eligible Planning Partners. Copies of the FEMA approval letter can be found in Appendix I.

DRAFT

Plan Development

The HMP planning process involved collaboration with local government departments, neighboring jurisdictions, the New York State Division of Homeland Security and Emergency Services, and FEMA. Public involvement was a critical component, gathered through public meetings, surveys, and community workshops to ensure community feedback played an essential role in shaping the plan. The Planning Team included representatives from county government, emergency services, public health, education, local businesses, and community organizations.

To develop the 2025 Essex County Hazard Mitigation Plan, the county followed a process with the primary objectives of:

- securing funding,
- identifying and obtaining a planning consultant (Chloeta),
- forming a core planning work group within the county to lead the effort,
- establishing a planning partnership between stakeholders in the planning area,
- defining the planning area,
- coordinating with other agencies to gain information and stakeholder involvement,
- reviewing existing programs, plans and studies in place, and
- engaging the public.

This plan was developed pursuant to the requirements of the Disaster Mitigation Act of 2000 (Public Law 106–390) and implementing regulations set forth by the Interim Final Rule published in the Federal Register on February 26, 2002 (44 CFR §201.6) and finalized on October 31, 2007. Essex County followed a planning process prescribed by FEMA as detailed in the table below:

Table 2. DMA & CRS Process for JHMP Development

Step	DMA Process	CRS Process	Description
1	201.6(c)(1) & 201.6(b)(1)	Organize the Planning Effort	Organize Resources. Assemble a diverse Planning Team, secure funding, define the scope, and identify roles and jurisdictions. NYS: Include jurisdictional annexes for each area.
2	201.6(b)(2) & 201.6(c)(1)	Involve the Public	Public Engagement. Ensure community participation through public meetings, surveys, and workshops. NYS: Post the draft plan online for a minimum of 30 days for public review.
3	201.6(c)(1)	Coordinate w/ other Departments & Agencies	Inter–Agency Coordination. Engage relevant departments to align plans with existing strategies.

Step	DMA Process	CRS Process	Description
			FEMA: emphasizes leveraging community lifelines for resilience. NYS: include inter–jurisdictional coordination.
4	201.6(c)(2)(i)	Identify the Hazards	Risk Assessment. Identify hazards using historical data, maps, and climate models. NYS: Annexes must include hazard–specific profiles, event histories, and NFIP summaries.
5	201.6(c)(2)(ii)	Assess Risks	Risk and Vulnerability Analysis. Assess risks to people, property, and critical facilities. NYS: Critical facilities must be protected to a 0.02% flood event (500–year flood) or previous worst-case flood.
6	201.6(c)(3)(i)	Set Goals	Mitigation Strategy Development. Set goals and objectives for reducing hazard risks and vulnerabilities. FEMA: emphasizes integrating climate adaptation strategies into goals.
7	201.6(c)(3)(ii) & 201.6(c)(3)(iii)	Draft an Action Plan	Develop and Prioritize Actions. Identify mitigation actions, assess feasibility, and prioritize based on effectiveness. NYS: requires two proposed actions/jurisdiction, with one addressing SFHA flooding.
8	201.6(c)(3)(iii)	Draft an Action Plan	Implementation Roadmap. Outline mitigation actions, responsible parties, timelines, and funding sources. FEMA: encourages alignment with other community resilience activities.
9	201.6(c)(5)	Adopt the Plan	Plan Adoption. Formally adopt the mitigation plan with governing body approval. NYS: requires documentation of adoption resolutions by at least 50% of jurisdictions, including the county.
10	201.6(c)(4)	Implement, Evaluate, & Revise the Plan	Maintenance and Updates. Regularly evaluate, monitor, and revise the plan based on changing conditions and new data. FEMA: requires updates every 5 years. NYS: include lessons learned from recent disasters.

DRAFT

Key DMA Updates

- Step 1: (Organize the Planning Effort): DMA references expanded to include 201.6(b)(1) for resource organization.
- Step 2: (Involve the Public): DMA 201.6(b)(2) now includes provisions for equitable public outreach.
- Step 3: (Coordinate with Agencies): reinforced by 201.6(c)(1) to emphasize coordination with lifelines and interagency roles.
- Step 7: (Develop Mitigation Actions): added emphasis on 201.6(c)(3)(ii) for action development and 201.6(c)(3)(iii) for prioritization.

Essex County is subject to various hazards, making access to FEMA grant programs vital. The information in this HMP will guide and coordinate mitigation activities and decisions for future local land use policy. Proactive mitigation planning will help reduce the cost of disaster response and recovery for communities and their residents by protecting critical community facilities, reducing liability exposure, and minimizing overall community impacts and disruptions. The HMP strives to create a safer, more resilient county by systematically identifying hazards, assessing vulnerabilities, and developing strategies to reduce risks and enhance community preparedness.

Plan Process

This section of the HMP identifies the planning process, including individuals and agencies who contributed to crafting this document, steps taken to complete each phase, and how public participation was integrated throughout. Essex County Department of Emergency Services staff coordinated all aspects of the Hazard Mitigation Plan update process. The Essex County Hazard Mitigation Advisory Committee (MAC) was reestablished to assist in updating the plan. MAC members, comprising key staff from Essex County agencies, played an instrumental role in the process with Chloeta also participating as part of the MAC.

During plan development, information was gathered from participating jurisdictions, state, federal, and local agencies, as well as from community members, business owners, and other stakeholders. Members of the Planning Team and MAC staff regularly interacted with Town staff while fulfilling their respective county agency duties. This ongoing collaboration allowed for historical and situational awareness that improved coordination with towns, leading to many successful outcomes.

Plan content reflects the results of a robust planning process, shaped by input from various jurisdictions and stakeholders. The majority of the staff involved are long–term local residents whose deep awareness and sense of community in a rural county fostered interdependent cooperation and coordination, ultimately enhancing the quality and effectiveness of the plan.

Resources and Information Collection

44 CFR states hazard mitigation planning must include review and incorporation, if appropriate, of existing plans, studies, reports and technical information (Section 201.6.b(3)). Chapter 3 of this plan provides a review of laws and ordinances in effect within the planning area that can affect hazard mitigation initiatives.

Efforts to identify plans that were utilized in each section to provide a source of the data has been completed. Mitigation actions were developed to further integrate these planning mechanisms into the hazard mitigation planning process. Continued effective planning and implementation of a variety of grants by the county and its 18 jurisdictions will enable address and mitigation of identified hazards. These programs will continue to produce results that mitigate hazards to the county and all jurisdictions.

The development of the 2025 Essex County Hazard Mitigation Plan (HMP) update was consistent with the guidance provided in the State Mitigation Planning Policy Guide, Local Mitigation Planning Policy Guide, and the New York State Hazard Mitigation Planning Standards. In addition to these references and Essex County's existing Hazard Mitigation Plan (2019), the following county and regional documents were reviewed for consideration during the HMP update:

- Essex County Emergency Management Plan (2022)
- Lake Champlain Implementation Plan (2002)
- Lake Champlain Watershed Program (2024)
- Department of Environment Conservation Watersheds
- Au Sable River Watershed Management Plan (Year, if applicable)
- Essex County Farmland Protection and Food System Plan (2022)
- Essex County Soil and Water Conservation District, New York State Agricultural Environmental Management Strategic Plan (2021-2025)
- Essex County Coordinated Transportation Plan

There are other numerous existing regulatory and planning mechanisms in place at the state, county, and municipal government levels supporting hazard mitigation planning efforts. These tools include the New York All–Hazard Mitigation Plan, local floodplain management ordinances, local Emergency Operation Plans, local zoning ordinances, as well as and local subdivision and land development ordinances. These mechanisms were discussed at municipal meetings and are described in each town mitigation section.

Plan Updates

The **2025 Essex County Hazard Mitigation Plan (HMP) update** incorporated new and revised mitigation projects provided by municipalities. These updates were reviewed during meetings to ensure alignment with FEMA's criteria for actionable, measurable, and achievable mitigation strategies. Project information and jurisdictional data were validated and finalized after the collection of updated forms (included in the appendices).

Capability Section

This section provides detailed information on County agencies and the programs and projects implemented to reduce the effects of hazards. Several County agencies successfully implemented projects that significantly improved water and sewage services, advanced education and awareness efforts, and enhanced water quality. These efforts reflect the county's ongoing commitment to continually improve hazard mitigation strategies.

Mitigation Strategy Section

DRAFT

This section has also been updated to better serve the county and its jurisdictions. Each of the 18 jurisdictions can now easily identify projects specific to their needs. This new format simplifies annual reporting and will streamline the process for updating the plan during the next 5-year review cycle. The updated mitigation strategy table includes:

- the status of 2019 projects.
- new projects developed during this 2025 plan update.
- completed projects specific to each jurisdiction.

Risk Assessment Section

This section has been updated to include new hazards that were fully profiled for the 2025 plan update. The 2014 New York State Hazard Mitigation Plan was used as a reference to identify potential hazards. In addition to natural hazards, one non-natural hazard—rail incidents—was profiled based on input from county and local officials. Rail incidents were identified as a potential risk due to the shipment of goods through the eastern part of the county.

The 2025 plan integrates data from local, state, and federal sources in the risk assessment section. All data sources are cited in the text, maps, or appendices, with a complete list provided in the References section following the Appendices.

Draft Plan

The draft plan was delivered to the Essex County Department of Emergency Services on March 15, 2025. A press release notified residents that a copy of the draft plan was available for review at the Essex County Department of Emergency Services building or on the Essex County website. The press release was published twice in two local newspapers to meet FEMA's public notification requirements. The draft plan was made available from 15 March to 15 April 2025. Public comments were incorporated as appropriate.

Neighboring counties were provided with a draft of the "FEMA-Approved Pending Adoption" version of the plan. This final version will be circulated prior to its formal adoption by each jurisdiction, ensuring neighboring stakeholders are informed.

Plan Maintenance

Maintenance of the plan during the 5-year approval period has been a challenge in the past. While previous plans indicated that annual meetings would occur, these meetings were held inconsistently. Essex County has faced ongoing recovery challenges related to flooding, weather and other events, limiting the capacity for regular updates. Moving forward, the Essex County Office of Emergency Services will hold annual meetings to ensure compliance with FEMA requirements for plan maintenance and annual progress reporting.

This 2025 HMP update integrates relevant information and data that became available since the 2019 plan's approval and adoption. It reflects updated hazard profiles, mitigation projects, and lessons learned to better prepare Essex County and its jurisdictions for future challenges.

Engagement

An initial meeting was conducted with Essex County Leadership to facilitate a meet-and-greet with Chloeta—the selected vendor—to discuss the hazard mitigation plan development process.

Expectations, roles, and responsibilities for plan development were established, and a schedule for subsequent meetings was outlined during this meeting,

The next meeting, held on August 12, 2024, included Chloeta and Essex County Leadership, who reviewed and approved the draft goals, objectives, and surveys designed to ensure public engagement and gather stakeholder input. These surveys were tailored to meet FEMA's requirements for meaningful participation and feedback from diverse community members and stakeholders.

Bi–monthly follow–up meetings were held throughout the HMP development process to allow for discussion, input, progress updates, and review of supporting HMP materials. Comprehensive meeting notes are documented in Appendix C per FEMA's record–keeping requirements.

On 26 August 2024, a meeting was conducted with the Multi–Agency Coordination (MAC) Group, including jurisdictional representatives, stakeholders, and members of the public. This meeting introduced the hazard mitigation planning process and presented the preliminary results of the Hazard Ranking and Vulnerability Assessment. These results were derived from jurisdictional and stakeholder input collected during the early phases of the project.

A subsequent hazard mitigation planning meeting with representatives from all jurisdictions was held on November 4, 2024. Participants reviewed the status of the HMP, confirmed jurisdictional participation, updated data, and validated hazard assessments to meet FEMA's requirement for maintaining accurate and current risk information during this meeting.

The final meeting in this series occurred on February 5, 2025, during which MAC members, jurisdictional representatives, and other stakeholders reviewed ongoing mitigation actions. They worked collaboratively to develop and prioritize mitigation strategy updates for the county and its jurisdictions. This meeting emphasized compliance with FEMA guidelines for integrating mitigation actions into broader community planning efforts and ensuring that actions were actionable, measurable, and achievable.

All participants were provided email invitations to the meetings held on August 26, 2024; November 4, 2024, and February 5, 2025, to ensure full compliance with FEMA's public and stakeholder engagement requirements. Agendas, presentation materials, and sign–in sheets from all meetings are included in Appendix C to demonstrate adherence to FEMA documentation standards.

Standardized forms and surveys were distributed and collected throughout the planning process to document mitigation actions, identify vulnerabilities, and ensure compliance with FEMA's requirement for stakeholder engagement to gather input from municipalities and stakeholders, Table 5 lists town meetings held during the plan update process, with meeting sign–in sheets available in Appendix C. The appendix also includes completed forms, surveys, and other documentation to demonstrate active participation and adherence to FEMA and NY DHSES requirements.

Public Engagement

Essex County successfully implemented a comprehensive public engagement strategy to ensure broad participation and input during the mitigation planning process. This approach met all FEMA and New York State requirements, fostering transparency, inclusivity, and robust community involvement.

DRAFT

A tailored outreach strategy was developed to reach diverse county stakeholders. The strategy emphasized equitable engagement, ensuring all communities (including underserved populations) had participation opportunities. Key elements included leveraging both virtual and in-person platforms to maximize outreach and solicit meaningful feedback. The following represents the approach to public engagement strategy:

- Questionnaire/Survey. A detailed questionnaire in survey format was distributed to residents, business owners, and community leaders to gather insights about hazard risks, vulnerabilities, and priorities for mitigation actions. The questionnaire covered topics like past hazard experiences, perceived risks, and preferred strategies for reducing impacts. It was designed to be accessible virtually and in hardcopy format to accommodate all community members. This survey was placed in multiple locations for public access and input. Survey results were carefully analyzed to identify common concerns and priority areas. Results revealed significant interest in addressing flood risks, particularly in Special Flood Hazard Areas (SFHAs), and improving preparedness for severe weather events. Findings were summarized and presented to the Planning Team to inform the development of mitigation strategies.
- Website. A dedicated webpage on the Essex County website was created to serve as a central hub for information related to the mitigation planning process. This webpage provided updates, access to planning documents, and opportunities for public comment. The draft mitigation plan was made available online for 30 days to comply with New York State requirements for public review.
- Social Media. Social media platforms were actively utilized to disseminate information and engage the community. Posts highlighted key milestones, upcoming public meetings, and the importance of public participation. Social media also served as a channel for collecting informal feedback and answering questions from residents in real time.
- Public Meetings. A series of public meetings were held throughout the county to gather input directly from community members. These meetings provided a forum for discussing hazard risks, proposed mitigation actions, and community concerns. Efforts were made to host meetings at accessible locations and times to ensure maximum participation. Additional outreach was conducted to target underserved areas that might face barriers to participation.
- Press Releases. Press releases were distributed to local media outlets to announce major milestones in the planning process, including the launch of the questionnaire, the release of the draft plan, and upcoming public meetings. These press releases emphasized the importance of community involvement in developing a plan that reflects local needs and priorities.

By implementing this multi-faceted approach, Essex County achieved comprehensive public engagement, met FEMA and New York State requirements, and laid a solid foundation for its hazard mitigation plan. These efforts not only increased community awareness of hazard risks but also strengthened the county's capacity to reduce vulnerabilities and build resilience.

Stakeholder Participation

Title 44 of the Code of Federal Regulations (44 CFR) requires that planning process involvement opportunities be provided to neighboring communities, local and regional agencies, involved in hazard mitigation, agencies with authority to regulate development, businesses, academia, and other private and nonprofit interests (Section 201.6.b.2).

The table below identifies the various agencies and stakeholders that participated in the planning process. Their involvement included contributing hazard input information, responding to invitations to serve on the Planning Team, reviewing data and risk assessment results, and providing feedback on the draft and pre-adopted plan. Stakeholders were given multiple opportunities to provide input, review, and/or comment on the plan at every stage of its development.

Table 3. Stakeholder Participation

Stakeholder	Primary Contact	Position
Josh Favro	Essex County OES	Josh.favro@essexcountyny.gov
Matt Watts	Essex County OES	Matthew.watts@essex-countyny.gov
Wendy Sayward	Essex County OES	Wendy.sayward@essex-countyny.gov
Clayton Barber	Chesterfield	supervisor@townofChester-fieldny.gov
Charles Harrington	Crown Point	supervisor@townofCrown Pointny.gov
Cathleen Reusser	Elizabeth	supervisor@townofElizabethny.gov
Ken Hughes	Essex	supervisor@townofEssexny.gov
Matthew Stanley	Jay	supervisor@townofJayny.gov
Joe Pete Wilson	Keene	supervisor@townofKeeneny.gov
James W. Monty	Lewis	supervisor@townofLewisny.gov
Stephen R. McNally	Minerva	supervisor@townofMinervany.gov
Matthew Brassard	Moriah	supervisor@townofMoriahny.gov
Robin Deloria	Newcomb	supervisor@townofNew-combny.gov
Derek Doty	North Elba	supervisor@townofNorthEl-bany.gov
Chris Clark	North Hudson	supervisor@townofNorthHud-sonny.gov
Davina Thurston	St. Armand	supervisor@townof-StArmandny.gov
Margaret C. Wood	Schroon	supervisor@townofSchroonny.gov
Mark A. Wright	Ticonderoga	supervisor@townofTiconder-ogany.gov
Michael K. Tyler	Westport	supervisor@townofWestportny.gov
Shaun Gillilland	Willsboro	supervisor@townofwillsborony.gov
Joe Pete Wilson	Town of Keene	Supervisor1@townofkeeneny.gov

DRAFT

Stakeholder	Primary Contact	Position
Jim Dougan	Essex County DPW	James.dougan@essexcountyny.gov
Seth Celotti	Essex County	Seth.celotti@essexcountyny.gov
Cathleen Reessed	Supervisor	townhall@elizabethtownny.gov
Jennifer Waid	Town of Westport	supervisorclerk@westportny.net
Kate Simmer	Town of Westport	townclerk@westportny.net
Todd Hodgsen	Essex County	Todd.hodgsen@essexcountyny.gov
Joseph Norton	Essex County	Joseph.norton@essexcountyny.gov
Alice Halloran	Essex SWCD	ahalloran@essexcountyswcd.org
Anna Reynolds	Essex County	Anna.reynolds@essexcountyny.gov
Noah Weber	Essex SWCD	nweber@ essexcountyswcd.org
Karen Severance	Town of Westport	highwaydpw@westportny.net
Nate Shexmaix	Town of Westport	highwaydpw@westportny.net
Troy Trambley	NYSEG	Troy.trambley@nysegrid.com
Korie McCawliffe	ECHD	Korie.McCawliffe@essex-countyny.gov
Madeline Clark	American Red Cross	Madeline.clark2@redcross.org
Marque Moffett	AuSable Freshwater Center	marque@ausablecenter.org
Gary Henry	AuSable Freshwater Center	gary@ausablecenter.org

Engagement opportunities were made available through:

- the Hazard Mitigation Plan website (XXXX), which provided access to updates, data, and the draft plan.
- public outreach efforts, including town meetings, press releases, and public forums.
- email correspondence, which facilitated direct communication with stakeholders and agencies.

It should be noted that while this table highlights key participants, it is not an exhaustive list of all stakeholders and public contributors involved in the planning effort. The Essex County Department of Emergency Services ensured robust participation to meet FEMA's requirements and reflect a wide range of community interests.

The process began with an Initial Planning Meeting to introduce the HMP process and identify key stakeholders. This was followed by a hazard survey where community members, jurisdictions, and stakeholders participated in identifying local hazards. Once surveys were assessed a Hazard Mitigation Meeting was conducted to assess hazard impacts. Mitigation strategy development involved collaborative sessions to establish goals, objectives, and actions. Stakeholder and public participation was encouraged through community meetings, surveys, and public comment periods throughout the planning process. Information was disseminated via county and

town websites, local newspapers, and social media platforms to reach a broad audience. Special efforts were made to include vulnerable populations in the planning process.

Towns were encouraged to engage local residents, businesses, and other community members in discussions about the plan update. To increase accessibility, the draft plan was made available on the County Department of Emergency Services website in February 2025. Notices were published in two newspapers, shared on County and Town websites, and posted on social media to notify the public of the plan's availability and invite comments. Stakeholders and residents were encouraged to submit feedback through direct contact with county Emergency Services staff or the contractor.

The five tools listed below were distributed at meetings to solicit information, data, and comments from both public and key stakeholders. Responses to these worksheets and surveys are included in Appendix XX, Meetings and Other Participation Documentation. These tools include:

- Identified Hazards & Risk Worksheet. These worksheets capitalize on local knowledge to evaluate the change in the frequency of occurrence, magnitude of impact, and/or geographic extent of profiled hazards, enabling municipalities to evaluate hazards not previously profiled in the 2019 Essex County Hazard Mitigation Plan.
- Town Hazard Mitigation Worksheets. These worksheets collect information on local planning, regulatory, administrative, technical, fiscal, and political and resiliency capabilities that can be included in the Hazard Mitigation Plan.
- 2019 Project Review. Stakeholders were requested to evaluate the status of projects submitted in the previous plan, indicating if there had been progress, if a project had been discontinued or completed, and whether each project should be carried over into the 2025 Plan.
- New Mitigation Project Table. This table enables stakeholders and the public to propose new mitigation actions for the hazard mitigation plan and includes information about each action like lead agency/department, implementation schedule, priority, estimated costs, and potential funding source(s).

Stakeholder participation and comments were encouraged throughout the planning process, most notably through contact with Essex County Emergency Services staff or with the contractor.

Jurisdiction Participation

All interested jurisdictions were required to express their willingness to participate in the process and thereafter remain active participants throughout all stages of plan development to be included in the Essex County HMP. Active participation for each jurisdiction was gauged based on meeting attendance, information collection and research, plan review and comment, mitigation action submission, public review assistance, and final resolution to adopt the HMP. It was not necessary that a jurisdiction meet all listed criteria (e.g., meeting attendance) to be considered a participating member. Nevertheless, each jurisdiction was expected to participate and provide relevant information, such as by initiating follow–up email correspondence after missed meetings to catch up. The Essex County Division of Emergency Management and its consultant made a concerted effort to follow up with jurisdictions that needed more representation at project meetings.

DRAFT

Overall, it was determined that 19 of 19 jurisdictions within Essex County (including the Essex County Government itself) met the participation requirements and are, therefore, included and considered in this document. Participating jurisdictions and their representatives are listed in the table below. All participating jurisdictions have agreed to pass a resolution to adopt the HMP after NYS DHSES and FEMA review and approval. These resolutions will be added to Appendix B, as they are adopted. For now, a sample resolution is provided.

Table 4. Jurisdiction Participation

Jurisdiction	Primary Contact	Position
Chesterfield	Clayton Barber	Town Supervisor
Crown Point	Charles Harrington	Town Supervisor
Elizabeth	Cathleen Reusser	Town Supervisor
Essex	Ken Hughes	Town Supervisor
Jay	Matthew Stanley	Town Supervisor
Keene	Joe Pete Wilson	Town Supervisor
Lewis	James W. Monty	Town Supervisor
Minerva	Stephen R. McNally	Town Supervisor
Moriah	Matthew Brassard	Town Supervisor
Newcomb	Robin Deloria	Town Supervisor
North Elba	Derek Doty	Town Supervisor
North Hudson	Chris Clark	Town Supervisor
St. Armand	Davina Thurston	Town Supervisor
Schroon	Margaret C. Wood	Town Supervisor
Ticonderoga	Mark A. Wright	Town Supervisor
Westport	Michael K. Tyler	Town Supervisor
Willsboro	Shaun Gillilland	Town Supervisor
Wilmington	Favor Smith	Town Supervisor

Towns met with the contractor to supply information specific to their towns and villages. Forms were reviewed, and discussion on all aspects of the town and of hazards that occur. Supervisors were able to understand the planning process and what was expected from them in reference to providing information for the plan update.

The table below indicates when these meeting occurred, and the attendees of each meeting are noted in the individual town section of the plan.

Table 5. Town Meetings

Town	Dates	Attendee
Chesterfield	11/21/2024 1/14/2025	Town Supervisor
Crown Point	11/4/2024 1/14/2025	Town Supervisor
Elizabethtown	11/7/2024 1/14/2025	Town Supervisor
Essex	10/8/02024 11/20/2024 1/14/2025	Town Supervisor
Jay	11/6/2024 1/14/2025	Town Supervisor
Keene	10/4/2024 12/5/2024 1/14/2025	Town Supervisor
Lewis	10/14/2024 1/14/2025	Town Supervisor
Minerva	1/14/2025	Town Supervisor
Moriah	11/6/2024 1/14/2025	Town Supervisor
Newcomb	12/4/2024 12/6/2024 1/14/2025	Town Supervisor
North Elba	11/7/2024 1/14/2025	Town Supervisor
North Hudson	11/11/2024 11/21/2024 1/14/2025	Town Supervisor
Saint Armand	11/13/2024 1/14/2025	Town Supervisor
Schroon	10/25/2024 21/13/2024 1/14/2025	Town Supervisor
Ticonderoga	9/27/2024 10/3/2024 10/3/2024 1/14/2025	Town Supervisor
Westport	1/14/2025	Town Supervisor
Willsboro	1/14/2025	Town Supervisor
Wilmington	11/21/2024	Town Supervisor

DRAFT

Town	Dates	Attendee
	1/14/2025	

Planning Team

The Hazard Mitigation Advisory Committee (MAC) consisted of a well–diversified Planning Team which included county agency staff, county officials, emergency coordinators, and non–governmental organizations. These individuals were invited to participate in the hazard mitigation plan update process. The Mitigation Advisory Committee worked throughout the process to attend meetings, provide information, and provide guidance to the contractor. The following County Staff comprised the Mitigation Advisory Committee which served as the JHMPC. The following MAC members provided guidance and data used to update this plan:

- Joshua Favro, Essex County Deputy Director/911 Coordinator
- Matthew Watts, Essex County Director/Fire Coordinator
- Wendy Sayward, Essex County Administrative Officer
- Shaun Gililland, Chairman, Board of Supervisors

Meetings & Documentation

The following primary meetings were held during the planning process. Outside of primary meetings, bi–weekly meetings were held to review plan updates, provide an opportunity for collaboration on next steps, review supporting documents and identify any concerns or issues throughout the plan development. All notes, invitations, agendas, and sign–in sheets for these meetings are included in the Appendix X–Meeting and Other Participation Documentation.

The table below indicates the meeting that occurred as the plan was updated and jurisdictional participation in the 2025 plan update.

Table 6. Primary Meetings

Date	Meeting	Participants
7/31/2024	Initial County Meeting	• Chloeta • Essex County Representatives
8/12/2024	County Collaboration Meeting • Overview of hazard mitigation planning process • Review of current hazard mitigation plan (changes) • Identification of key hazards & risks • Setting priorities & next steps	• Chloeta • Essex County Representatives • Willsboro Town Supervisor • Town of Lewis

Date	Meeting	Participants
8/26/2024	External Stakeholder HMP Meeting to review HMP Process & review Hazards for Updates	• Essex County Representatives • Town of Jay • Town of Keene • Town of Moriah • Town of North Elba • Town of Schroon • Town of St. Armand • Town of Westport
9/19/2024		Chloeta, Essex County Representatives
10/17/24		Chloeta, Essex County Representatives
10/31/24		Chloeta, Essex County Representatives
11/14/24		Chloeta, Essex County Representatives
11/15/24	LEPC	Chloeta, Essex County Representatives, LEPC, Town Supervisors
12/5/24		Chloeta, Essex County Representatives
12/12/24		Chloeta, Essex County Representatives
1/2/25		Chloeta, Essex County Representatives
1/14/25		Chloeta, Essex County Representatives
1/16/25		Chloeta, Essex County Representatives
1/30/25		Chloeta, Essex County Representatives
2/5/25		
2/13/25		Chloeta, Essex County Representatives
2/27/25		Chloeta, Essex County Representatives
3/13/25		• Chloeta • Essex County Representatives
3/27/25		• Chloeta • Essex County Representatives

Chronological Development

The Chronological Development section provides a detailed timeline of key events, milestones, and activities conducted as part of the planning process for the 2025 Essex County Hazard Mitigation Plan (HMP). This timeline aligns with the requirements of the Disaster Mitigation Act (DMA) of 2000 and the Community Rating System (CRS) to ensure compliance with FEMA and NY DHSES guidelines. The table below highlights the dates, events, descriptions, and agencies or organizations involved in the development of the HMP. By documenting these steps, this section demonstrates the organized, collaborative, and transparent process undertaken to assess risks, engage stakeholders, and develop a comprehensive plan to enhance resilience in Essex County.

DRAFT

Table 7. DMA and CRS Process for HMP Development

Date	Event	Description	Agency/Organization
8/31/24		Kick-off meeting	
		Risk ranking completion	
10/16/24		Annex template completion	
2/5/25		Draft plan review	
3/5/25		Final plan review	
		Adoption month	

County Profile

The 2025 Essex County Hazard Mitigation Plan (HMP) provides a comprehensive overview of the county's geographic, demographic, economic, and environmental characteristics. This section outlines key information like county location, climate, population trends, and land use patterns, offering context for understanding its unique vulnerabilities to hazards. It includes details on critical infrastructure, community lifelines, and key industries that are essential to the county's functionality and resilience. By establishing a baseline understanding of Essex County's physical and social landscape, the profile section serves as a foundation for identifying risks, assessing vulnerabilities, and developing targeted mitigation strategies.

County Facts

Table 8. Essex County Facts

Facts	Metrics
County Seat	Elizabethtown
Number of Towns	18
Number of Incorporated Villages	2 (Lake Placid & a portion of Saranac Lake)
Number of Hamlets	25, designated by the Adirondack Park Agency
Population	36,775 (2023)
Land Area	1,916 sq. miles/1,225,920 acres
Land Classified Village & Hamlet (APA)	18,859 acres
Land Classified Industrial Use (APA)	6,074 acres
Largest Lake Bordering County	Lake Champlain (eastern boundary)
Largest Lake within County	Schroon Lake (borders Warren County to the south), Lake George
Highest Elevation	Mount Marcy (5,344 ft)
Largest Rivers	Boquet, Au Sable, Hudson, Saranac & Schroon
Interstate Highway	I–87 (north/south)/57.23 miles
State Roads	3, 9, 8, 9N, 22, 28N, 73, 74, 86, 185, 373, 431, 910, 912, 913 & 915
State Road Mileage	329.4 miles
County Road Mileage	369.65 miles
Town Road Mileage	572 miles
Railways	Canadian Pacific Railway (north/south along eastern border), New York & Ogdensburg Railway (between Lake Placid & Saranac Lake)

DRAFT

Facts	Metrics
Ferry Terminals to Vermont	Essex to Charlotte and Ticonderoga to Shoreham (seasonal)
Interstate Bridges	Beer's Bridge, Au Sable Chasm Bridge, Notam Bridge, Kingsland Avenue Bridge, Bridge St. Bridge, Frazier Bridge, Lake Champlain Bridge, Stone Arch Bridge, Newark Bay Bridge, Jackson St. Bridge, Old State Road Bridge, Dock Bridge, Swing Bridge, Clay St. Bridge, William A. Stickel Memorial Bridge
Airports (municipal)	Lake Placid Airport, Ticonderoga, Westport, Schroon Lake, Essex (private)
Miles of Shoreline on Lake Champlain	587 miles
Elevation at Lake Champlain	98'
Mountains over 4000 ft	• Mount Marcy. 5,335 ft (prom: 4,918 ft) • Whiteface Mountain. 4,859 ft (prom: 3,117 ft) • Giant Mountain. 4,626 ft (prom: 2,976 ft) • Dix Mountain. 4,849 ft (prom: 2,828 ft) • Santanoni Peak. 4,606 ft (prom: 2,415 ft) • Algonquin Peak. 5,105 ft (prom: 2,096 ft)
Number of Dams	• Kingdom Dam: located in the Elizabethtown • Horseshoe Pond Dam: located in Schroon • Lake George Outlet Dam: located in Ticonderoga • Lower Au Sable Lake Dam: significant dam • Moss Pond Dam #1: significant dam
Number of Bridges	Essex County maintains 138 bridges, 5 of which are shared with Clinton County.
Prisons/Jails	Adirondack Correctional Facility
Electric Providers	NYSEG, National Grid, Lake Placid Municipal Electric
Hospitals/Medical Centers	Elizabethtown Community Hospital (Elizabethtown and Ticonderoga Campuses); Westport Health Center; Moriah Health Center; Schroon Lake; Health Center; Lake Placid Health Center; Adirondack Medical Center, Ticonderoga Health Center, Smith House Health Center, Wilmington Health Center, Crown Point Health Center
School Districts	19
Law Enforcement	Essex County Sheriff, Ticonderoga Police Department, Moriah Police Department and NY State Police

Historical Overview

Essex County has a rich history that is closely tied to the broader history of the United States, particularly the development of the Adirondack region and the nation's industrial growth in the 19th and 20th centuries. Pre–colonial and Early Colonial Period before European settlers arrived, the area now known as Essex County was inhabited by the Algonquin and Iroquois Native American tribes. The region's abundant natural resources, including forests, rivers, and lakes, made it an important area for hunting, fishing, and trade among indigenous peoples. In the 17th and 18th centuries, French explorers and missionaries were among the first Europeans to explore the area, followed by British settlers after the French and Indian War. The region's strategic importance was underscored during the American Revolution, particularly with the capture of Fort Ticonderoga by the Green Mountain Boys under Ethan Allen in 1775. The fort, located in what is now Ticonderoga, played a critical role in the early stages of the war.

Formation. Essex County was officially established in 1799, carved out of Clinton County as the population in the region grew. The county was named after Essex, England, reflecting the common practice of the time of naming new American towns and counties after places in England. The first settlers were primarily of British descent, moving into the area after the American Revolution, seeking new opportunities in the fertile lands of the Champlain Valley.

19th Century Development. The 19th century saw significant development in Essex County, largely driven by the iron mining industry. The discovery of iron ore in the Adirondack Mountains led to the establishment of several mining communities like Port Henry and Witherbee, and the construction of iron furnaces. Moriah became a center of iron production, with its products playing a crucial role in the industrialization of the United States. In addition to mining, logging became another important industry in Essex County during this period. The vast forests of the Adirondacks provided timber that was used for building and for fueling the iron furnaces. County rivers and lakes were also crucial for transporting logs and other goods. The Adirondack Park and Conservation Movement The late 19th century marked the beginning of the conservation movement in the United States, with the Adirondack region at its heart. In 1885, New York State established the Adirondack Forest Preserve, a move that laid the groundwork for the creation of the Adirondack Park in 1892. This park, which includes much of Essex County, was one of the first protected areas of its kind in the United States and remains one of the largest parks in the lower 48 states. The establishment of the park helped to transition the local economy from one based on resource extraction to one focused on tourism and recreation. The natural beauty of the region attracted visitors from across the country, including prominent figures like President Theodore Roosevelt, who was vacationing in the Adirondacks when he learned of President McKinley's death and his own ascension to the presidency in 1901.

20th Century to Present. The 20th century brought significant changes to Essex County, particularly with the decline of the iron mining industry in the mid–20th century. As the mines closed, many communities faced economic challenges, leading to a shift towards tourism as a primary economic driver. The 1932 and 1980 Winter Olympics in Lake Placid, a village in Essex County, were pivotal events that boosted the county's profile as a premier destination for winter sports and outdoor recreation. Throughout the 20th century, and continuing into the 21st century, Essex County has balanced its natural heritage with economic development. The presence of the Adirondack Park ensures large portions of the county remain preserved for future generations while tourism, education, and small–scale manufacturing provide economic opportunities for residents.

DRAFT

Today. Essex County is known for its scenic beauty, historical significance, and as a gateway to the Adirondack Mountains. It continues to attract visitors for its outdoor activities, historic sites, and the charm of its small towns. The County has experienced dynamic growth driven by its natural resources, geographic location, and evolving industries. Its development can be broken into key phases, each characterized by shifts in economic focus, technological advancements, and environmental stewardship.

Early Essex County development was largely based on natural resources. Agriculture and forestry were among the first industries to support the growing population. It was the iron mining industry that became the cornerstone of county economic expansion in the 19th century. The discovery of rich iron ore deposits in the Adirondack Mountains led to the establishment of mining towns like Mineville, Witherbee, and Moriah. Iron production from Essex County contributed significantly to the industrialization of the United States, and iron from the county was a crucial material during the Civil War.

As the mining industry declined in the late 19th and early 20th centuries, Essex County shifted its focus towards tourism, capitalizing on its natural landscapes and the rising popularity of outdoor recreation. The creation of the Adirondack Park in 1892, which encompasses much of the county, marked a turning point. Park protections ensured that large portions of the county would remain preserved, fostering an environment suitable for tourism growth. Lake Placid—one of the county's most notable towns—gained international fame by hosting the Winter Olympics twice (1932, 1980). These events not only positioned Essex County as a global destination for winter sports but also laid the foundation for a tourism–based economy. Outdoor activities like hiking, skiing, fishing, and camping became central to the county's appeal, drawing visitors year–round.

In recent decades, Essex County has sought to balance economic development with environmental sustainability. Tourism remains a central pillar of the county economy, but there has also been growth in sectors like small–scale agriculture, local crafts, and conservation–based industries. County communities have embraced local food movements and craft industries, providing economic opportunities while maintaining regional cultural heritage.

Conservation efforts, supported by the longstanding presence of the Adirondack Park, continue to shape development decisions. County leaders have prioritized sustainable land use and preservation of natural resources, ensuring future development projects align with environmental conservation goals.

The County has also seen growth in infrastructure and community development in response to tourism and recreation demands. Transportation networks, utilities, and public services investments are essential in supporting both the local population and the influx of visitors. Lake Placid, in particular, has benefited from infrastructure upgrades to support its role as a major tourism hub.

Essex County has focused on fostering a strong sense of community through the development of educational institutions, healthcare services, and public amenities. This balance of community development and tourism enables the county to maintain a high quality of life for residents while catering to visitors from around the globe.

Essex County's development reflects a region that has successfully transitioned from a resource–based economy to one centered on tourism, recreation, and environmental stewardship. As the gateway to the Adirondacks, the county continues to thrive by preserving its natural beauty while

promoting sustainable economic growth. The blend of community, conservation, and tourism ensures that Essex County remains a unique and valuable part of New York State.

Population & Demographics

Essex County continues to experience demographic shifts, particularly with an aging population. The median age in the county has increased to 49.2 years, reflecting an aging population. The population is predominantly White (92.25 percent), with smaller percentages of other racial groups, including Black or African American (3.19 percent) and Asian (0.22 percent). The county experienced a slight decrease in population from 39,370 in 2010 to an estimated 36,775 in 2023. Some municipalities like the Towns of Jay and Schroon saw population stability or modest growth, while others like the Towns of Moriah and North Elba experienced declines.

Table 9. Municipality Population

Municipality	Population (2000)	Population (2010)	Population (2020)	Estimated Population (2023)
Chesterfield	2,409	2,445	2,476	2,473
Crown Point	2,119	2.024	2,042	2,042
Elizabethtown	1,326	1,163	1,203	1,209
Essex	727	671	621	618
Jay	2,306	2,506	2,486	2,486
Keene	1,068	1,105	1,144	1,138
Lewis	1,186	1,382	1,293	1,296
Minerva	789	809	773	769
Moriah	4,879	4,798	4,716	4,716
Newcomb	486	436	418	418
North Elba	8,661	8,957	7,480	7,478
North Hudson	268	240	250	250
Schroon	1,759	1,654	1,880	1,878
St. Armand	1,321	1,548	1,446	1,440
Ticonderoga	5,167	5,042	4,789	4,793
Westport	1,346	1,312	1,320	1,324
Willsboro	1,903	2,025	1,905	1,906
Wilmington	1,131	1,253	1,139	1,141

Essex County has about 15,750 households, with an average household size of 2.2 persons. Approximately 28.3 percent of these households are composed of individuals, and 12.6 percent have someone living alone who is 65 years of age or older. The family structure in the county reflects traditional patterns, with 52.2 percent of households being married couples living together.

DRAFT

Economy & Employment

The economy in Essex County remains stable with a strong emphasis on healthcare, education, and tourism. The median household income in the county was $68,090 in 2022, an increase from previous years. The per capita income stands at $39,049. Despite the growth in income, about 10.4 percent of the population lives in poverty, a slightly lower figure than the state average, but still significant. Housing remains affordable compared to averages across the state, but poverty levels indicate ongoing economic challenges for certain segments of the population.

Table 10. Essex County Economic Statistics

Statistic	Number
Income	
Median Household Income	$68,090
Mean Per Capita Income	$39,049
Poverty Rate	
All Families	10.4%
All People	10.4%

Climate

Located in the Adirondack Mountains, the county experiences a humid continental climate with four distinct seasons. Winters are cold and snowy, with average lows in January ranging from 10°F to 15°F. The county receives an average of 82 inches of annual snowfall, far surpassing the U.S. average of 28 inches. Snowfall is especially heavy in higher elevations like the Adirondack High Peaks, where totals can exceed 100 inches, with lake–effect snow from nearby Lake Champlain intensifying conditions in eastern areas of the county. Summers are mild to warm, with average highs in July and August reaching the mid–70s to low 80s°F. Mountainous terrain leads to temperature variations, with cooler conditions common at higher altitudes. Spring is typically cool and wet, featuring gradual warming in April and May, while autumn brings crisp, cool weather and vibrant fall foliage that attracts many visitors. Essex County averages 40 inches of rain annually, similar to the U.S. average, receiving some form of precipitation approximately 142 days per year including rain, snow, sleet, and hail. The region also enjoys 160 sunny days per year, slightly below the U.S. average of 205 sunny days. County proximity to Lake Champlain and its varied topography significantly influences local weather patterns creating diverse microclimates across the area. These factors contribute to the county's lush forests and make it a picturesque location year–round with occasional unpredictable transitions between seasons, like early snowfalls or late warm spells.

Impact of Climate Change

The following Climate Impact Tables, informed by recent assessments and climate change projections outlined in the 2023 New York State Hazard Mitigation Plan, identify the primary hazards of concern for the 2025 Essex County Hazard Mitigation Plan (HMP). This matrix is a vital

resource for understanding climate-related risks posing the greatest threats to Essex County's communities, infrastructure, and natural environment.

By highlighting hazards most likely to be intensified by climate change—like severe storms, flooding, and extreme temperatures—the matrix enables local decisionmakers to prioritize mitigation actions aligning with state-level resilience goals. This approach ensures Essex County can effectively address both current and future challenges associated evolving climate conditions.

In addition to serving as a strategic planning tool, the matrix provides a foundation for assessing vulnerabilities, guiding resource allocation, and informing the development of targeted strategies to reduce risks to residents, critical infrastructure, and essential services. By integrating insights from the New York State Hazard Mitigation Plan (2023) into local planning efforts, Essex County strengthens its ability to safeguard people and assets from severe weather impacts and climate-related events.

Table 11. Flooding Climate Change Impact

Flooding (Riverine, Flash, Ice Jam)	
Geographic Specificity	Local/regional
Climate Effects	Yes. Increased precipitation intensity, snowmelt, and ice jam risks due to climate change.
Location	Flood-prone areas along rivers like the Au Sable and Boquet Rivers, and regions prone to ice jams, including waterways in the Adirondack High Peaks. Riverine and low-lying areas, including regions near the Au Sable and Boquet Rivers, and areas prone to ice jams along the Adirondack waterways.
Intensity	Projected to increase due to higher precipitation rates, melting snowpack, and climate-driven storm intensities.
Frequency	Flooding events are expected to occur more frequently, with heavier rainfall events projected to increase by up to 15% by mid-century.
Duration	Highly variable. Localized flash flooding can last hours, while riverine flooding may persist for days.
Overview: Climate change significantly affects precipitation patterns in Essex County, leading to increased flooding risks. Warmer air can retain more moisture, resulting in more frequent and intense extreme precipitation events. Since 1958, the Northeast has experienced a 60% increase in the heaviest precipitation events, which contribute to flooding. Annual precipitation in New York has also risen by an average of 0.46 inches/decade from 1901-2020, with even higher rates in recent decades. The frequency and intensity of extreme precipitation events like those involving more than 2" of rain in a day, are projected to continue increasing due to climate change. Climatic changes will likely lead to more frequent riverine and flash floods, particularly in spring when heavy rain coincides with snowmelt. Localized factors like mountainous terrain and ice	

DRAFT

Flooding (Riverine, Flash, Ice Jam)
jams, exacerbate flood risks. These trends underscore the need for enhanced flood mitigation strategies like improved stormwater systems and adaptive infrastructure.

Table 12. Severe Storms (Thunderstorm, High Winds, Hailstorms) Climate Change Impact

Severe Storms (Thunderstorms, High Winds, Hailstorms)	
Geographic Specificity	Regional
Climate Effects	Yes. Expected changes in storm intensity due to increased atmospheric energy and moisture.
Location	Countywide, areas with extensive tree coverage and aboveground utilities are particularly vulnerable.
Intensity	Severe thunderstorms and wind gusts may intensify, with hail events featuring larger hailstones.
Frequency	Storm frequency may not increase significantly, but intensity is likely to rise.
Duration	Short lived, often lasting hours.
Overview: Severe storms, including thunderstorms with high winds and hail, are common in Essex County. The complex relationship between climate change and severe storms, including thunderstorms, high winds, hailstorms, and tornadoes, is still being studied. Tornadoes, for example, are challenging to project due to their short–term, localized nature and limited historical data. Recent studies suggest that supercells—the thunderstorms that often produce tornadoes—may become more frequent and intense under changing climate conditions. These supercells may also become more likely to occur in late winter and early spring and could lead to an increase in tornado frequency and intensity, potentially affecting the county more often. For hailstorms, climate models indicate that while the overall frequency of hail events may decrease in the Northeast, the size and intensity of hailstones are likely to increase. This could result in more damage from less frequent hailstorms. Similarly, wind patterns in the Northeast are projected to weaken over time due to climate change. Despite this, observations over the past decade have shown a strengthening of wind speeds, reversing a long–standing trend of weakening winds, though the connection to climate change is uncertain. Lightning, another component of severe storms, may increase as global temperatures rise. Some models project a 12% increase in lightning strikes for every degree of global temperature increase, though impacts may vary regionally. In Essex County, severe storms with high winds, hail, and occasional tornadoes pose risks to infrastructure, utilities, and public safety, emphasizing the importance of preparedness and climate–adaptive infrastructure to mitigate potential damages. Notable events like the 2013 storms (DR–4129), caused over $57 million in damages statewide. These storms disrupt utilities and transportation, highlighting the need for reinforced infrastructure and early warning systems.	

Table 13. Severe Winter Storms Climate Change Impact

Severe Winter Storms (Heavy Snow, Blizzards, Ice)	
Geographic Specificity	Local/regional
Climate Effects	Yes. Increased precipitation in the form of heavy snow in higher elevations, though total snowfall may decrease over time.
Location	Higher elevations, including the Adirondack High Peaks.
Intensity	Heavy snowstorms and blizzards will remain intense. Snowfall accumulation may increase during individual events.
Frequency	Frequency may decrease slightly but variability and intensity are likely to grow.
Duration	Multi-day events.

Overview: Climate change impacts on winter storms in the county are complex, varying by storm type. While higher average temperatures may lead to fewer snow events and a shorter snow season overall, extreme snowstorms (including lake-effect snowstorms) may increase in frequency in the near term. This is because a warmer atmosphere can hold more moisture, leading to heavier snowfall when temperatures are cold enough. This trend may reverse later in the century as warming continues to rise, potentially reducing the occurrence of extreme snowstorms altogether.

Studies suggest that while snowstorms will become less common due to atmospheric warming, the snow they produce may be heavier during cold conditions. Many areas in the Northeast experienced record-breaking snowstorm events in recent years These trends were linked to climate change, but the impact of climate change on snowstorm duration remains unclear.

There is limited evidence to suggest that climate change has significantly altered the frequency or intensity of ice storms in New York State. Although some studies indicate modest increases in ice storm frequency, these remain within the range of historical variability. Essex County's cold winters and variable precipitation patterns make it susceptible to severe winter storms including heavy snow, blizzards, and ice events. These storms can disrupt transportation, utilities, and emergency services, underscoring the need for robust preparedness plans and infrastructure resilience.

Severe winter storms significantly impact Essex County, causing transportation disruptions, power outages, and emergency service demands. Events like the March 2017 storm (DR-4322) cost over $22 million in assistance statewide. Preparedness efforts must focus on maintaining utility resilience and ensuring emergency accessibility.

Table 14. Extreme Temperatures (Extreme Cold & Heat Waves) Climate Change Impact

Extreme Temperatures (Extreme Cold & Heat Waves)	
Geographic Specificity	Regional

DRAFT

Extreme Temperatures (Extreme Cold & Heat Waves)	
Climate Effects	Yes. Extreme heat days will become more frequent, while extreme cold days will decrease.
Location	Countywide, with greater impacts in vulnerable populations and older housing stock.
Intensity	Heat waves may become more intense. Extreme cold events will be less frequent but still hazardous.
Frequency	Heat wave frequency is projected to increase, while extreme cold is expected to decrease.
Duration	Variable. Heat waves can last days, while cold snaps are shorter.
Overview: The Northeast, including Essex County, is warming faster than many other U.S. regions, leading to significant changes in extreme temperature patterns. Extreme cold events have become milder and less frequent due to rising average temperatures. This trend is evident across much of North America, where severe cold events are now less severe than in past decades. Between 1900 and 2017, New York City experienced a clear decline in "cold days." These are defined as days when temperatures fall below the 10th percentile of historical minimums. While notable cold events still occur, these are attributed to natural variability rather than long–term trends. Climate change impacts on the duration of individual extreme cold events remain uncertain. In contrast, extreme heat events are expected to increase significantly in frequency, severity, and duration across all regions of New York State. By 2050, projections indicate the county may experience between 11 and 30 additional days/year above 90°F, compared to the 1981-2010 baseline. Extreme heat events—defined as periods of three or more consecutive days above 90°F—are projected to increase from a baseline of 0-2 events/year to 1-4 events annually by the 2050s. These changes pose significant challenges to public health, infrastructure, and agriculture. Vulnerable populations like the elderly and those with preexisting health conditions, are particularly at risk during extreme heat events. Proactive measures, including enhanced cooling infrastructure, early warning systems, and public education, will be critical to mitigating the impacts of extreme temperatures.	

Table 15. Wildfires (Forest Fires in Adirondack Region) Climate Change Impact

Wildfires (Forest Fires in Adirondack Region)	
Geographic Specificity	Localized
Climate Effects	Yes. Increased wildfire risk due to prolonged dry periods and higher temperatures.
Location	Forested areas within the Adirondack Park.

Wildfires (Forest Fires in Adirondack Region)	
Intensity	Wildfires may become more severe under drier, warmer conditions.
Frequency	Small–scale fires occur regularly. Large–scale fires are rare but may increase.
Duration	Variable. Days to weeks, depending on conditions.

Overview: Climate change is a significant driver of wildfire activity, particularly in regions experiencing warmer temperatures and drought conditions like the western U.S. In these areas, roughly half of the increase in burned area between 1984 and 2015 has been attributed to anthropogenic climate change. Wildfire season has lengthened due to rising temperatures, though fire suppression efforts still influence wildfire duration.

In Essex County and other areas in New York State, wildfires remain a low–frequency hazard. While climate change is projected to increase wildfire occurrence in the state, the baseline level is so low that this increase is not expected to make wildfires a major hazard of concern. Information on how climate change may affect the intensity and duration of wildfires in New York is currently limited.

Essex County's extensive forested areas within the Adirondack Park create localized wildfire risks, particularly during periods of dry conditions or drought. The county's humid climate and relatively low temperatures help to limit the frequency and scale of wildfires compared to other regions. Preparedness efforts, including public education on fire safety, fire management practices, and monitoring during High-risk periods, are essential to mitigating wildfire impacts in the county.

Table 16. Utility Failures (Power & Communication Systems) Climate Change Impact

Utility Failures (Power & Communication Systems)	
Geographic Specificity	Regional
Climate Effects	Indirectly. Increased risk from weather–related damage to infrastructure.
Location	Countywide, with rural areas facing longer recovery times.
Intensity	Prolonged outages during severe weather events.
Frequency	Increasing due to more frequent severe storms.
Duration	Hours to days, depending on event severity.

Overview: Utility failures, including power outages and disruptions to communication systems, are a growing concern in Essex County, particularly as climate change exacerbates the frequency and severity of extreme weather events. Severe storms, heavy snowfall, and high winds commonly damage aboveground utility infrastructure, leading to widespread outages. For

DRAFT

Utility Failures (Power & Communication Systems)
instance, the severe storms and power outages in 2019 (FEMA–4472–DR–NY) caused disruptions lasting from hours to several days in parts of New York, including the Adirondack region. Rising temperatures and increasing storm intensities present additional challenges. Heat waves, which are projected to occur more frequently in Essex County by mid century, can strain the electrical grid and cause localized failures during periods of high demand. Heavy snow and ice accumulation in winter storms often damage power lines, particularly in remote and forested areas. Communication networks are similarly vulnerable, with service disruptions during emergencies complicating response and recovery efforts. The increasing reliance on internet–based systems and mobile networks heightens the need for resilient infrastructure to ensure reliable connectivity during disasters.

Table 17. Transportation Accidents (Roadway & Rail) Climate Change Impact

Transportation Accidents (Roadway & Rail)	
Geographic Specificity	Localized
Climate Effects	Indirectly. Increased risk from severe weather and icy conditions.
Location	Key roadways and rail routes, particularly during winter months.
Intensity	Severe accidents can disrupt transportation networks.
Frequency	Higher during winter months and severe weather.
Duration	Typically resolved within hours but can extend to days.
Overview: Transportation accidents, involving both roadways and rail systems, remain a notable hazard in Essex County, often exacerbated by severe weather conditions. Winter storms, with heavy snow and icy roads, significantly increase the risk of vehicle collisions while high winds and flooding from severe storms can disrupt roadways and rail operations. For example, recent winter storms in the region caused road closures and dangerous driving conditions, straining local emergency response resources and efforts. The mountainous terrain and rural nature of Essex County further complicates transportation safety. Narrow, winding roads are particularly susceptible to accidents during poor weather. Debris from flooding or landslides can obstruct roads, causing delays and increasing the risk of secondary accidents. Rail systems, though less frequent in Essex County, pose risks of derailments or spills, especially when hazardous materials are involved. Climate change may further influence transportation risks by increasing the frequency of extreme precipitation events, leading to more frequent flooding and hazardous road conditions.	

Transportation Accidents (Roadway & Rail)
Prolonged heat waves can also stress road surfaces, leading to cracking and increased maintenance needs.

Table 18. Hurricanes & Tropical Storms Climate Change Impact

Hurricanes & Tropical Storms	
Geographic Specificity	Regional
Climate Effects	Yes. Heavier rainfall and stronger winds due to warming oceans.
Location	Areas near rivers and low–lying regions.
Intensity	Potentially increasing rainfall and wind impacts.
Frequency	Infrequent but impactful.
Duration	Hours to days.
Overview: Climate change is expected to intensify the effects of hurricanes and tropical storms, leading to heavier rainfall, more severe storm surges, and stronger winds. Although overall storm frequency may decrease, the proportion of stronger hurricanes (Category 4 & 5) is projected to increase, though with mixed certainty. Warming conditions may cause more tropical storms to form closer to the East Coast, potentially increasing landfall frequency, although this remains an area of ongoing study. Hurricanes and tropical storms are also becoming slower in forward movement, prolonging their impacts in affected areas. Rising sea surface temperatures are causing hurricanes to decay more slowly after landfall, allowing them to maintain destructive winds and rainfall further inland. This has significant implications for areas like Essex County, which are already vulnerable to inland flooding and storm impacts. Recent events include Tropical Storm Debby & Beryl (2024), and Tropical Storm Isaias (2020), which caused power outages and widespread tree damage across New York, including the Adirondack region. Hurricane Irene (2011) brought catastrophic flooding to Essex County, damaging infrastructure and displacing residents. These storms underscore the increasing risks posed by both hurricanes and tropical storms in the county.	

Table 19. Landslides & Mudslides (Soil Erosion & Slope Failures) Climate Change Impact

Landslides & Mudslides (Soil Erosion & Slope Failures)	
Geographic Specificity	Localized
Climate Effects	Yes. Increased risk due to heavy precipitation and rapid snowmelt.

DRAFT

Landslides & Mudslides (Soil Erosion & Slope Failures)	
Location	Steep slopes and erosion–prone areas in the Adirondacks.
Intensity	Localized but severe impacts on infrastructure and safety.
Frequency	Likely to increase with extreme precipitation.
Duration	Short–term with long–term recovery needs.
Overview: While no direct link between climate change and historic landslide events in New York State has been established, future climate–related trends are expected to influence landslide risks. Key drivers of landslides like soil saturation from heavy rainfall, rapid snowmelt, and slope instability, are increasingly impacted by climate change. In Essex County, the combination of mountainous terrain and heavy precipitation makes certain areas particularly susceptible to slope failures. Extreme precipitation events, which have increased in frequency and intensity across the Northeast, play a significant role in triggering landslides. Similarly, unseasonably warm days that cause rapid snowmelt can oversaturate the ground, destabilizing slopes and increasing the likelihood of landslides or mudslides. Climate projections indicate these trends will continue, leading to a shift in the equilibrium between landscape stability and climate that has existed in New York since the last Ice Age. Predicting the location of landslide events remains challenging, but modern tools like detailed geological mapping using LiDAR technology offer valuable insights. This mapping, when applied on a local scale, can help identify areas particularly vulnerable to future landslide hazards.	

Table 20. Hazardous Material Incidents (Transportation Accidents & Industrial Spills) Climate Change Impact

Hazardous Material Incidents (Transportation Accidents & Industrial Spills)	
Geographic Specificity	Localized
Climate Effects	No direct impact.
Location	Transportation corridors and industrial areas.
Intensity	High. Impact events with potential environmental and public health risks.
Frequency	Low but with severe consequences.
Duration	Typically resolved within days with long–term cleanup.
Overview: Hazardous material incidents, including transportation accidents and industrial spills, pose a low frequency but high impact risk in Essex County. These incidents can result from truck or rail accidents carrying chemicals, as well as spills at industrial sites. Climate change may exacerbate these risks by increasing the frequency of extreme weather events like	

Hazardous Material Incidents (Transportation Accidents & Industrial Spills)
flooding and high winds, which can lead to accidents or structural failures that release hazardous materials. Flooding presents a particularly significant risk by potentially exposing storage facilities or transport routes to water damage, corrosion, or structural compromise. Prolonged heat waves could also increase the likelihood of hazardous material degradation or combustion. Road and rail infrastructure that is stressed by repeated freeze–thaw cycles or extreme heat may become more vulnerable to accidents involving hazardous material transport.

Table 21. Pandemics & Infectious Disease Climate Change Impact

Pandemics & Infectious Disease	
Geographic Specificity	Localized
Climate Effects	Yes. Increased precipitation and flooding heighten risks.
Location	Downstream Essex County dams.
Intensity	High impact events with potential for catastrophic flooding.
Frequency	Rare, potentially increasing with aging infrastructure.
Duration	Long–term. Short–term with long–term recovery.
Overview: Climate change has the potential to influence the spread and impact of pandemics and infectious diseases. Rising temperatures and changing precipitation patterns in the county can alter ecosystems, expand the range of disease vectors like mosquitoes and ticks, and increase the prevalence of vector–borne illnesses like Lyme disease and West Nile virus. Warmer winters may fail to curb insect populations, allowing these vectors to thrive and spread diseases over a broader geographic area and for longer periods of time. Extreme weather events (like floods) can lead to waterborne diseases by contaminating water supplies while prolonged heat waves increase the risk of foodborne illnesses through spoilage and bacterial growth. Climate change may also contribute to respiratory illnesses due to higher levels of pollen and mold, exacerbated by longer growing seasons and increased indoor dampness following severe weather events.	

Table 22. Dam Failures (Structural Integrity Issues) Climate Change Impact

Dam Failures (Structural Integrity Issues)	
Geographic Specificity	Localized
Climate Effects	Yes. Increased precipitation and flooding heighten risks.

DRAFT

Dam Failures (Structural Integrity Issues)	
Location	Downstream Essex County dams.
Intensity	High impact events with potential for catastrophic flooding.
Frequency	Rare, potentially increasing with aging infrastructure.
Duration	Short–term with long–term recovery.

Overview: Though rare in Essex County, dam failures present a significant hazard for downstream communities. Failures can occur for a number of reasons including structural deficiencies, inadequate maintenance, or extreme weather events. Climate change poses additional risks by increasing the frequency and intensity of heavy rainfall events, leading to overtopping or structural strain. The county's mountainous terrain and proximity to water bodies heighten the potential impact of dam–related flooding.

Extreme precipitation events associated with climate change may overwhelm dam capacities, increasing the likelihood of failure. Prolonged heat waves can weaken structural materials over time, further compromising dam integrity. Sudden failures could cause flash flooding, leading to significant infrastructure damage, property loss, and risks to human safety.

Table 23. Avalanches Climate Change Impact

Avalanches	
Geographic Specificity	Localized
Climate Effects	Yes. Changing snowpack conditions may alter avalanche risks.
Location	Backcountry areas in the Adirondacks.
Intensity	Rare but severe in isolated cases.
Frequency	Infrequent.
Duration	Instantaneous with long–term impacts on affected individuals.

Overview: Avalanches, though rare in the county, are a potential hazard due to mountainous terrain and significant local snowfall. These events typically occur in backcountry areas during winter, posing risks to recreational users like skiers, snowboarders, and hikers. Avalanches are primarily triggered by factors like steep slopes, snowpack instability, and rapid temperature changes.

Climate change may influence avalanche risks by altering snowfall patterns and increasing extreme precipitation events, causing more frequent freeze–thaw cycles. While overall snowfall may decrease due to rising average temperatures, heavier snowfalls during individual storms are projected, creating conditions favorable for avalanches. Warming trends can lead to wetter, heavier snowpacks that are more prone to sliding under stress. Rapid warming after snowstorms can further destabilize snow layers, increasing the likelihood of avalanches.

Geography

Essex County is one of the state's largest counties by area, covering approximately 1,916 square miles. It is situated in the Adirondack Mountains, encompassing a diverse landscape of mountains, forests, rivers, and lakes defining the county's natural beauty, contributing to its unique environmental and hazard profile. The county borders Clinton County to the north, Franklin County to the northwest, Hamilton County to the west, Warren County to the south, and Washington County to the southeast. To the east, Essex County shares a natural boundary with the state of Vermont across Lake Champlain.

Topography and Elevation

Essex County is characterized by rugged, mountainous terrain, with elevations ranging from 95 feet above sea level along Lake Champlain to over 5,300 feet at the summit of Mount Marcy—the highest point in New York State. The Adirondack High Peaks region, containing 46 peaks over 4,000 feet, is located within Essex County, are a major local attraction for hikers and tourists. These same characteristics also make for a challenging environment for development and emergency response. High elevation areas experience cooler temperatures, increased precipitation, and higher likelihood of snowfall, contributing to the county's unique climate and hazards, especially during the winter months.

DRAFT

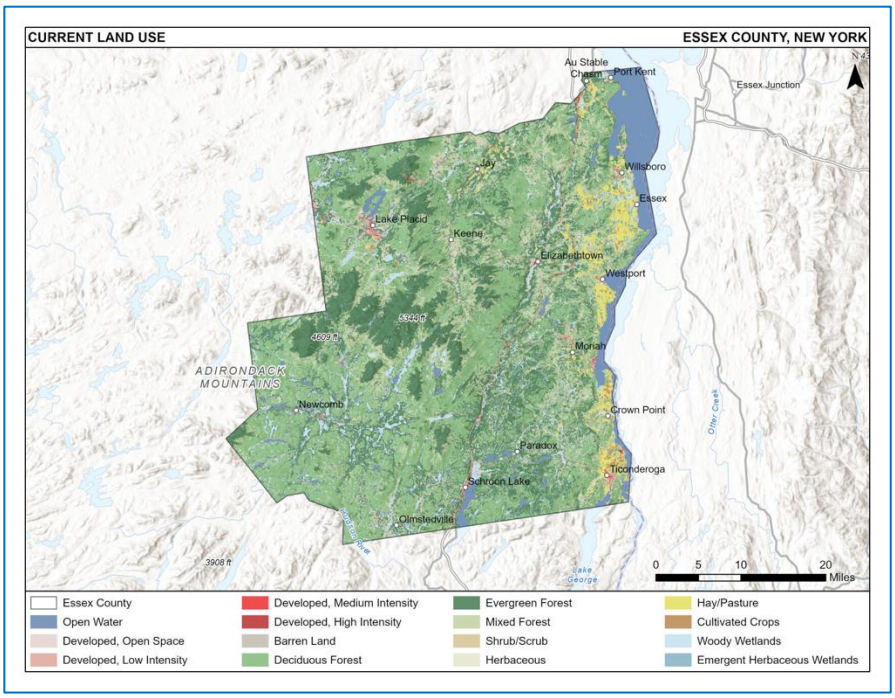


Figure 1. Topography and Elevation Map Essex County

Major Water Bodies and Watersheds

Water resources are abundant in the county with numerous rivers, lakes, and streams spread throughout the landscape. The county's eastern border is defined by Lake Champlain, a major freshwater lake stretching approximately 125 miles and covering over 500 square miles. Lake Champlain is a crucial resource for both Essex County and the broader region, providing water for consumption, recreation, and tourism. It also poses a flooding risk, especially during spring snowmelt and heavy rain events.

The county is drained by several rivers, including the Au Sable, Boquet, and Saranac Rivers which originate in the Adirondacks and flow eastward toward Lake Champlain. These rivers create extensive watersheds covering large portions of the county and are susceptible to flooding during heavy rainfall, rapid snowmelt, and ice jams. Small lakes and ponds are common, especially in mountainous areas, enhancing the scenic landscape while also necessitating careful monitoring to maintain water quality and environmental health.

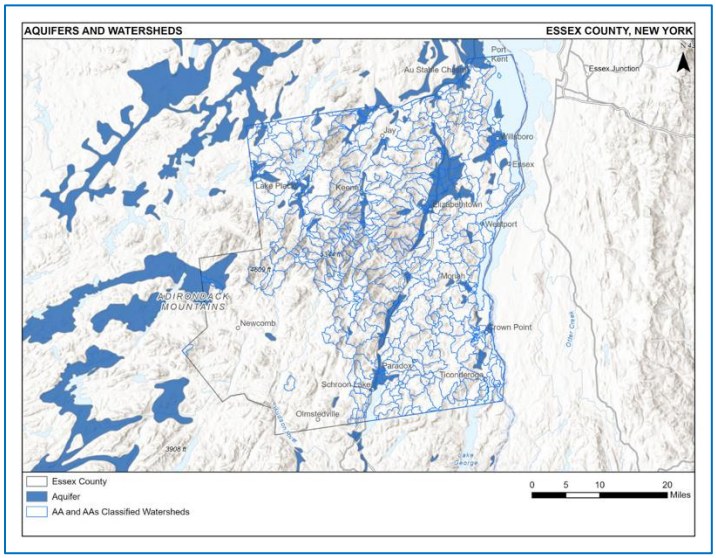


Figure 2. Essex County Water Bodies

Drainage Systems

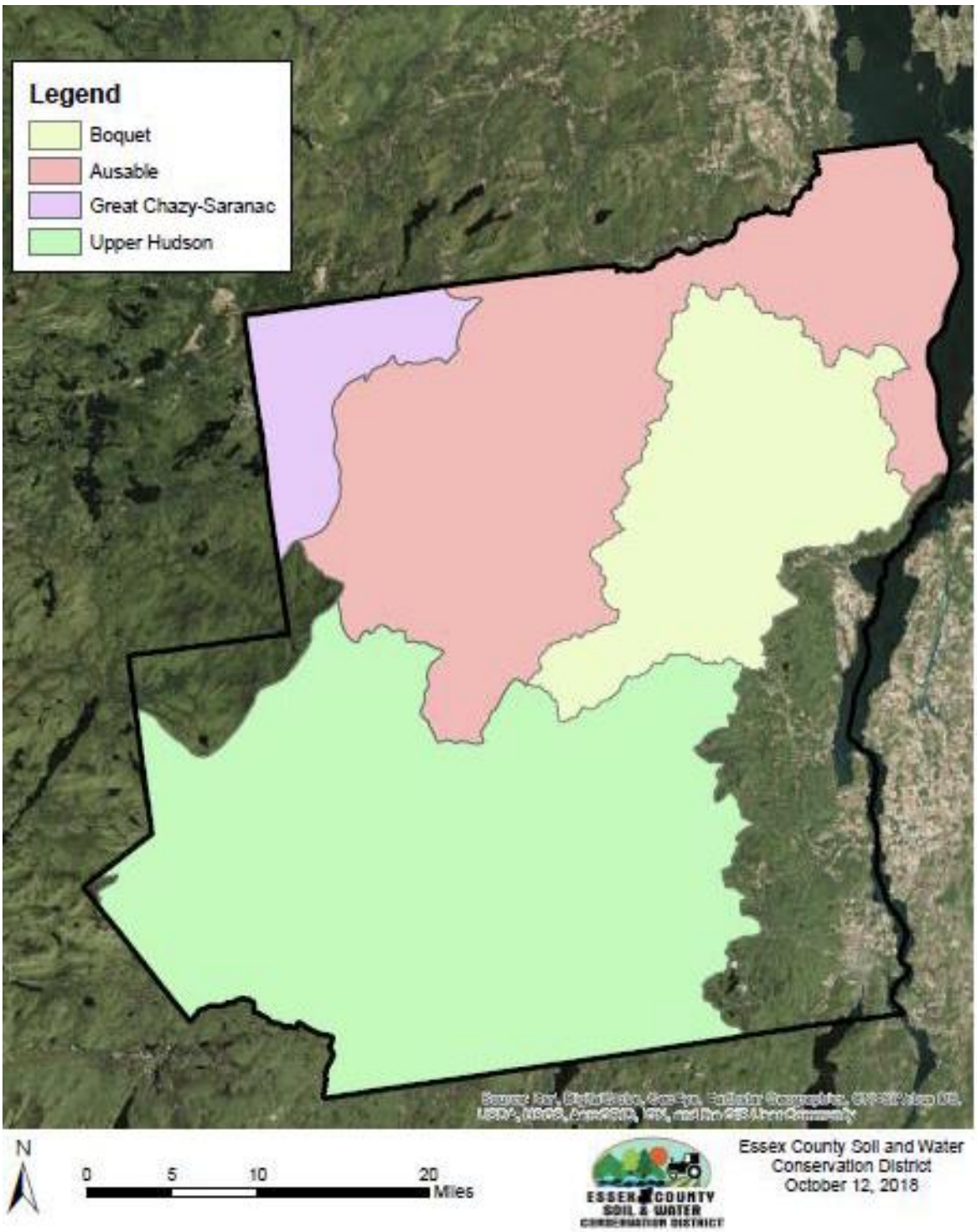


Figure 3. Essex County Drainage

Essex County drainage systems are separated into two major systems as demonstrated in Figure 4.: The Lake Champlain–St. Lawrence River system and the Hudson River system. Drainage from the northern half and southeastern edge of the county flows northward and eastward into the Lake Champlain–St. Lawrence River system. The Au Sable and Boquet Rivers originate in the

Adirondack High Peaks Region, flow northeast toward Lake Champlain, and drain most of the northern half of the county. The Au Sable River enters the lake just north of Keeseville and the Boquet River enters the lake at Willsboro. The drainage from most of the southern half of the county flows southward into the Hudson River system. The Upper Hudson watershed drains about 42 percent of the county south into the main Hudson River.

The principal sub–basins originate in the southern High Peaks Region and in the low mountains south of the High Peaks Region, flow generally southward, draining most of the southern half of the county. A very small portion of the county lies in the Lake George basin. The Saranac River, which originates in the central Adirondack Upland near Saranac Lake, drains a small area (about five percent) of the county in the very northwest corner. A very small portion of the county (about three percent) lies within the Raquette River watershed which drains northwest into the St. Lawrence River. The principal sub–basin of the Raquette River watershed that lies in Essex County is the Cold River basin. The Cold River originates in the southern High Peaks Region and flows generally westward into the Raquette River north of Long Lake.

Geology and Soils

Essex County geology is largely defined by its position within the Adirondack Mountains (part of the Canadian Shield). This ancient geological formation consists primarily of metamorphic rocks including granite and gneiss—some of the oldest rocks in North America. Rugged and rocky terrain contributes to landslide susceptibility in steep areas, particularly following heavy rainfall or seismic activity.

Soils vary greatly, depending on the location and elevation. Mountainous areas generally have thin, rocky soils with poor drainage while lowland areas (particularly near Lake Champlain) feature fertile alluvial soils favoring agriculture. Soil composition influences land use with mountainous and forested areas remaining largely undeveloped while lower elevations support agriculture and residential development. Poor drainage in some regions can contribute to localized flooding and erosion.

Transportation and Accessibility

The geography and rural nature of Essex County create unique transportation challenges. The county is connected by several key highways including Interstate 87 (the Adirondack Northway), which runs north–south along the western edge of the county, and NY Routes 9N, 73, and 22, which connect various communities. Many roads traverse mountainous areas, making these roads vulnerable to winter weather closures, landslides, and washouts. The county also operates ferry services across Lake Champlain to Vermont, which are vital for transportation and commerce but can be disrupted by severe weather events.

The county maintains a network of 356.26 miles of roads across 18 towns in its jurisdiction. Roads vary in classification including residential streets, rural routes, collector roads, and high–volume arterial roads. Due to the diversity of the road network and limited funding, the Highway Division implemented strategic maintenance and construction techniques designed to achieve the best results within budgetary constraints.

Essex County has fostered a collaborative partnership with town highway departments, setting it apart from many neighboring counties. Under municipal contracts, town highway departments handle a significant portion of county road system routine maintenance. Towns routinely accomplish a range of projects from hauling materials to patching and ditching work. This

cooperative arrangement with the county has proven highly effective in sustaining road infrastructure integrity.

County road construction projects, both major or minor, are typically executed through a combination of efforts by town, county, and contracted resources. The county frequently collaborates with towns on local road projects with towns often completing projects using equipment rented from Essex County. This showcases the interconnectedness and resource sharing within the region.

In terms of bridges, Essex County has made substantial progress in addressing its bridge infrastructure over the past decade. The county currently maintains 138 bridges, five of which are shared with Clinton County. Due to ongoing maintenance efforts, it is now uncommon for the state inspection crew to issue a "Red Flag" closure notice for a county bridge, signifying significant improvements in safety and reliability.

For snow and ice control, the county directly monitors 52 miles of road network while towns maintain the remainder of the county roads. The only exception is Elizabethtown, which does not participate in this arrangement. This decentralized approach to snow and ice management underscores county reliance on collaboration with towns to effectively manage the extensive road network.

Environmental and Ecological Features

Essex County is home to a diverse range of ecosystems, from alpine tundra on the High Peaks to mixed hardwood and coniferous forests at lower elevations. The county supports a variety of wildlife including moose, black bear, and numerous bird species. Protected areas, including the High Peaks Wilderness and Lake Champlain, are essential for preserving biodiversity—serving as natural barriers against hazards like erosion and flooding. These ecosystems are also vulnerable to climate change impacts like shifts in temperature and precipitation patterns, which may alter habitat ranges and increase the frequency of invasive species infestations.

Hazard Implications

County geography contributes to several key hazards. The combination of steep terrain, high precipitation, and seasonal snowfall increases the risk of severe winter weather, landslides, and flooding. Mountainous regions in the county and proximity to Lake Champlain make it particularly susceptible to rapid snowmelt and flash flooding in the spring while the rural and isolated nature of many communities complicates emergency response during hazard events. Dense forests and mountainous terrain increase county wildfire risks during dry periods, particularly in the summer and fall.

Geography provides both challenges and resilience opportunities. While rugged terrain and protected natural areas buffer some hazards, they also make accessibility and response difficult, particularly in winter or during natural disasters. This plan considers these geographic features in planning and prioritizing mitigation efforts to protect county communities, infrastructure, and natural resources.

Infrastructure & Land Use

Essex County covers a total land area of 1,916 square miles with an average population density of 20.8 people per square mile. The county is entirely within the Adirondack Park—encompassing

DRAFT

1,794 square miles of land and 122 square miles of water. Approximately 50,226 acres are used for farmland, 174,989 acres are classified as wild forest, and 326,945 acres are designated as wilderness property. There are an estimated 25,262 housing units with a median construction year of 1955, and about 38.6 percent were built in 1939 or earlier. The county had approximately 25,262 housing units as of 2022, with an average density of about 14 units per square mile. Of these, 15,750 units are occupied households. The median value of owner–occupied housing units was $189,500, below the state average but consistent with the area's rural character. The county has experienced a drastic increase in home purchases being turned into short term rentals.

Table 24. Distribution of Value by Property Use

Property Use	2023 Value ($)	% of Current Role
Residential	160,000,000	62%
Commercial	52,000,000	20%
Industrial	18,000,000	7%
Agricultural	12,000,000	5%
Public/Institutional	14,000,000	5%
Other	4,000,000	1%

Land Use

County land use is dominated by forested, undeveloped lands with over half of the county area protected as part of the Adirondack Park. Governed by strict environmental regulations, the Adirondack Park limits development, preserving the natural landscape that serves as a buffer against some natural hazards like erosion and landslides. Outside the park, land use includes small towns, agricultural lands, and recreational areas with major population centers in Lake Placid, Ticonderoga, Elizabethtown, and Keene. Development is primarily concentrated in valleys and lower elevations where conditions are more favorable, although these areas may be more susceptible to flooding and infrastructure challenges.

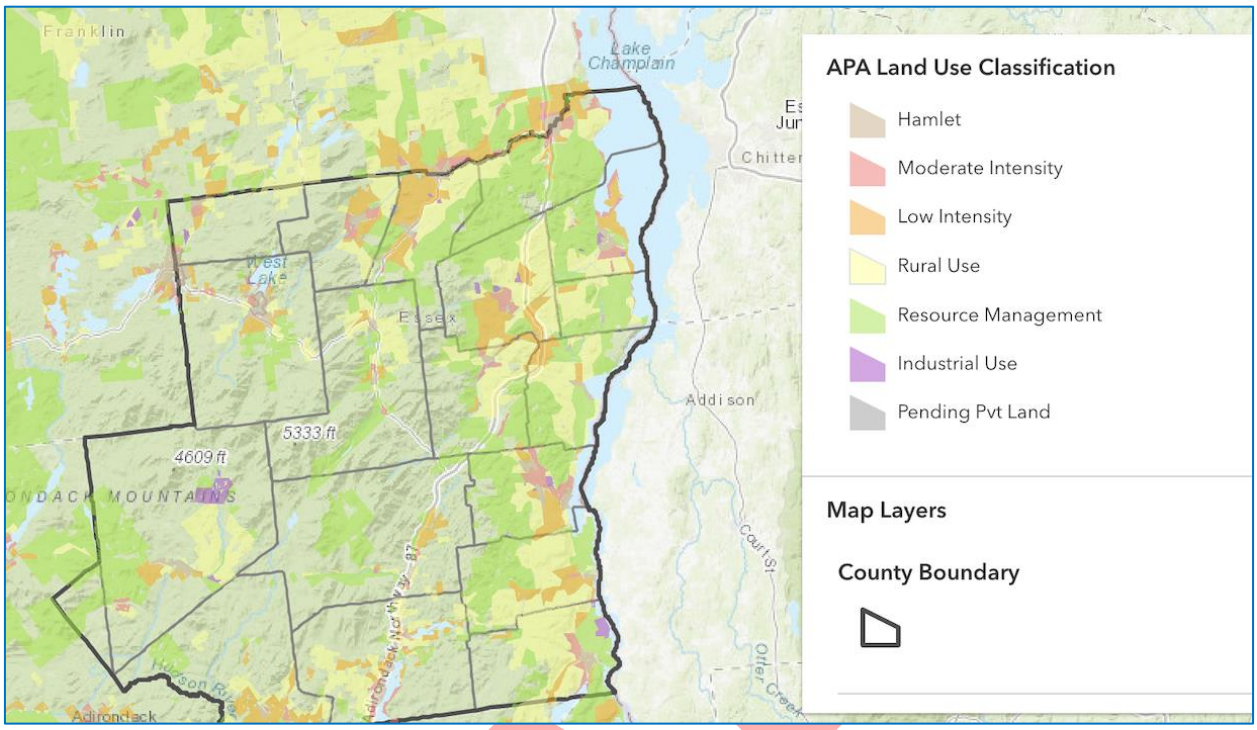


Figure 4. Essex Land Use

Forestry

Forestry has long played a significant role in the economic and environmental landscape of Essex County, New York. The county is part of the Adirondack Park, one of the largest publicly protected areas in the United States, where vast tracts of forestland dominate the landscape. Early 19th century settlers relied on forestry as a primary economic driver with logging being a major industry. Essex County timber was essential for construction, shipbuilding, and fuel during the 1800s. Extensive logging operations targeted abundant softwoods of the time, particularly spruce and pine, which were floated down rivers like the Au Sable to mills and markets.

Concerns about deforestation and environmental degradation as industrial logging grew, led to the establishment of the Adirondack Park in 1892. The park, encompassing a large portion of Essex County, introduced protections to preserve forested lands and water resources, marking a shift toward sustainable forestry practices. Today, the Adirondack Forest Preserve, which includes much of Essex County, is constitutionally protected as “forever wild” under New York State law. This status limits logging activities, ensuring large portions of county forests remain undisturbed.

Forestry still contributes to the local economy, but it is now focused more on sustainable practices including selective harvesting and timber management, balancing economic use with conservation. Many private forest owners within the county participate in certified sustainable forestry programs promoting responsible wood harvesting while maintaining biodiversity and protecting ecosystems. The county also benefits from a growing ecotourism industry centered around its forests with activities like hiking, camping, and wildlife observation attracting visitors year–round.

DRAFT

This balance of conservation and managed use reflects broader trends in Essex County's approach to natural resources—using forestry as a tool for both economic development and environmental stewardship.

Mining

Mining was a major industry in the county during the 19th and early 20th centuries, particularly focused on iron ore extraction. Towns like Mineville and Witherbee thrived due to rich Adirondack Mountains iron deposits. Iron produced here played a key role in American industrialization, supporting railroads, construction, and the Civil War effort. Mining in the region declined by the mid–20th century, as ore supplies diminished and cheaper sources were found elsewhere. While large–scale mining no longer exists, its legacy remains a significant part of Essex County history, with many old mining sites preserved as historical landmarks. Thanks to conservation efforts within the Adirondack Park, this shift away from mining enables the natural landscape to recover.

Agriculture

County agriculture has historically been an important part of the local economy, though it is not as dominant as industries like mining or tourism. The agricultural sector primarily consists of small–scale farming operations, often family–owned, with a focus on dairy farming, maple syrup production, and organic farming. The region's cool climate and fertile soil, especially in the Champlain Valley, support the production of crops like corn, hay, and apples, and livestock. A resurgence of interest in sustainable and organic farming has occurred in the county in recent years. Farmers' markets, local food cooperatives, and farm–to–table restaurants are increasingly popular, reflecting a growing consumer demand for locally sourced and organic products. The county participates in New York State's agricultural programs in support of small farmers, in an effort to promote environmentally sustainable practices.

Essex County's proximity to major tourism areas like Lake Placid and the Adirondack Park, provides a market for locally produced goods, helping to sustain agricultural businesses. Many farms in the area offer agritourism, enabling visitors the opportunity to experience farm life and to purchase fresh, locally grown products, further integrating agriculture with the county's economy. Agriculture remains a valuable, but smaller, sector with a focus on sustainability, local produce, and connections with regional tourism.

Table 25. Essex County Agriculture Census

Essex County Agriculture Census			
	2012	2022	Change
Number of Farms	261	244	-17
Land in Farms	54,837	48,510	-6,327
Average Farm Size	210	199	-11
Market Value of Products Sold	$11,709,000	$11,768,000	$59,000
Crop Sales	$5,573,000	$9, 577,000	$4,004,000
Livestock Sales	$6,136,000	$2,191,000	-3,945,000

Essex County Agriculture Census			
Average/Farm	$44,863	$48,229	$3,366
Farmlands In Use			
Woodland	24,017 acres	22,730 acres	1,287 acres
Cropland	20,015 acres	18,317 acres	1,698 acres
Pastureland	6,306 acres	4,637 acres	1,669 acres
Other	4,496 acres	2,826 acres	1,670 acres
Total	54,834 acres	48,510 acres	6,324 acres

Tourism

Tourism is a cornerstone of the economy in Essex County, largely due to its location in the heart of the Adirondack Park. The county's natural beauty, including the Adirondack High Peaks, Lake Champlain, and numerous rivers and lakes, attracts visitors year–round for outdoor activities like hiking, camping, skiing, fishing, and boating. Lake Placid, one of the most famous towns in the county, is renowned for hosting the Winter Olympics in both 1932 and 1980, remaining a popular destination for sports enthusiasts from around the world.

In addition to outdoor recreation, Essex County offers cultural and historical attractions. Sites like the John Brown Farm State Historic Site, dedicated to the famous abolitionist, and the Adirondack History Museum in Elizabethtown draw visitors interested in the area's rich history. Events like the Lake Placid Ironman Triathlon and the Adirondack Film Festival also bring in tourists.

Agritourism is another growing sector, with visitors exploring local farms, participating in activities like maple sugaring, apple picking, and visiting farmers' markets. Seasonal tourism peaks in the fall when the county's vibrant foliage attracts leaf–peepers, and in the winter when the area becomes a hub for skiing and snow sports. Tourism is a major driver of economic activity in Essex County, supported by its natural landscapes, outdoor recreation opportunities, and historical significance.

Transportation

The county transportation system has developed significantly over the years, evolving from rudimentary roadways and waterways to a modern network of highways, railways, and ferries. Historically, the county relied on natural waterways like Lake Champlain and the Au Sable River for transportation and trade. These waterways were essential for moving goods, particularly during the 19th century when industries like mining and timber were thriving. Ferries were a primary mode of transport across Lake Champlain, facilitating trade and connecting Essex County with Vermont.

The mid–19th century introduction of railroads further expanded the regional transportation network. The Delaware and Hudson Railway played a crucial role in moving iron ore, timber, and other goods from Essex County to larger markets. The Canadian Pacific Railway, running along the county's eastern edge, remains a significant freight line today although passenger services have diminished over time. Amtrak Adirondack offers limited passenger rail options connecting the county to New York City and Montreal, enhancing tourism access.

DRAFT

Road infrastructure development accelerated in the 20th century with the construction of Interstate 87 (the Adirondack Northway) running north–south through the county. This highway remains the primary traffic artery, connecting the county to the greater New York metropolitan area and Canada. State Routes like 9N, 73, 86, and 22, crisscross the county facilitating access to major towns and tourist destinations.

Lake Champlain ferry services continue to be an important part of the transportation system, with routes connecting Essex County to Charlotte, Vermont, and Port Kent to Burlington, Vermont (seasonal). These ferries are critical for commuters, tourists, and trade.

In recent years, Essex County focused on improving transportation infrastructure to support its growing tourism industry. Road maintenance, bridge repairs, and the development of bike paths and walking trails were priorities, especially around popular destinations like Lake Placid. Transportation modernization efforts also focused on sustainability, including discussions around expanding electric vehicle charging stations and improving public transportation options for both residents and visitors. The county has evolved from a reliance on natural waterways to a modern system that balances highways, rail, and ferries—all supporting the county economy and tourism industries.

Growth and Development Trends

Essex County is renowned for its picturesque landscapes like the Adirondack Mountains and Lake Champlain, in addition to its rich historical heritage. Understanding growth and development trends involves examining county demographic changes, economic patterns, infrastructure improvements, and environmental conservation efforts. This section highlights the region's key growth factors and challenges while offering insights into its future trajectory.

Economically, the county is heavily reliant on tourism, serving as a cornerstone in the local economy. Famous for hosting the Winter Olympics in 1932 and 1980, attractions like Lake Placid and the Adirondack Park draw millions of visitors annually. Several sanctioned events are held throughout the winter at the Olympic venues. Outdoor recreational activities like hiking, skiing, and camping are significant contributors to the county economy. Agriculture also plays a crucial role, with dairy farming, maple syrup production, and apple orchards being key outputs. Forestry remains important, particularly in the Adirondack region. The county is witnessing growth in emerging industries like green energy, cultural economy initiatives, and telecommuting, which has gained popularity as remote workers seek the balance of rural living with urban connectivity.

Infrastructure development prioritizes upgrading aging roads and enhancing public services. With state and county highways serving as critical transportation routes, continuous maintenance is essential. Limited public transit presents challenges, particularly for lower–income and elderly residents. Housing remains a pressing concern as demand for affordable options continues to rise. The growth of short–term rental platforms like Airbnb has further strained the housing market, especially in areas heavily reliant on tourism. Initiatives to expand broadband access in rural communities, attempting to bridge the longstanding digital divide while attracting remote workers.

Environmental conservation and sustainability are pivotal, as much of the county lies within the Adirondack Park. Balancing tourism and conservation remains a priority, with local and state agencies collaborating to preserve regional natural resources. Climate change impacts pose challenges like extreme weather, flooding, and winter tourism. In response, the county has

invested in green infrastructure, renewable energy projects, and sustainable practices. Farmers are adopting regenerative techniques, organic farming, and community–supported agriculture (CSA) programs to promote long–term agricultural sustainability.

Essex County faces several challenges including population decline, an aging workforce, limited economic diversification, and aging infrastructure. Opportunities exist to counter these challenges. The county can leverage its natural beauty and lifestyle appeal to attract remote workers and younger residents. Investments in renewable energy and ecotourism present opportunities to build a more resilient economy, while cultural heritage initiatives can diversify revenue streams. Addressing housing shortages and expanding broadband access will be critical components in achieving these goals.

Economic Characteristics and Employment

The county economy is largely driven by healthcare, education, and tourism. The most common employment sectors include healthcare & social assistance, educational services, and retail trade. The county had approximately 17,100 employed individuals in 2021, with a modest growth rate in employment.

Table 26. Major Employers

Industry	Estimated Employment	%
Healthcare & Social Assistance	3,410	19.7
Educational Services	2,830	16.3
Retail Trade	2,500	14.5
Accommodation &Food Services	2,120	12.3
Public Administration	1,980	11.4
Construction	1,520	8.8
Manufacturing	1,070	6.2
Other Services (except Administration)	1,020	5.9
Professional, Scientific, and Technical Services	840	4.8

Community Lifelines

FEMA's Community Lifelines is a framework that identifies and organizes critical services that are essential to the health, safety, and economic stability of communities before, during, and after a disaster. These lifelines include the following categories:

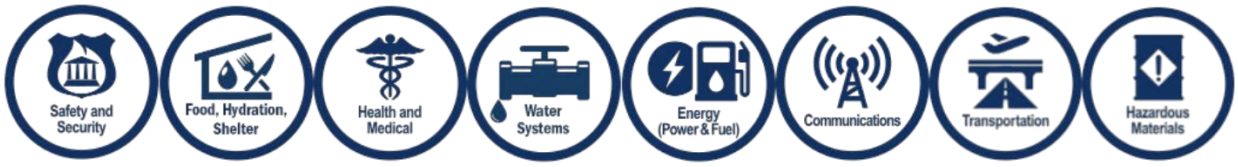


Figure 5. FEMA Community Lifelines

DRAFT

This framework helps communities prioritize the restoration of services vital to resilience and recovery efforts. Disruptions to any lifeline can trigger cascading impacts across other sectors, worsening the effects of a disaster and extending recovery timelines. By focusing on lifelines, FEMA provides a structured approach for communities to protect critical services, mitigate risks, and improve their ability to withstand and recover from emergencies effectively.

As part of the Essex County HMP update, a critical aspect will be evaluating how each Community Lifeline may be affected by the hazards outlined in the plan. For hazards like severe winter storms, flooding, or earthquakes, the analysis will identify which lifelines face the highest risk of disruption and examine the potential consequences for the community. This evaluation will guide Essex County in prioritizing mitigation strategies and preparedness efforts, focusing on protecting the most at–risk lifelines to enhance resilience and minimize the impact of future hazard events.

Vulnerable Populations

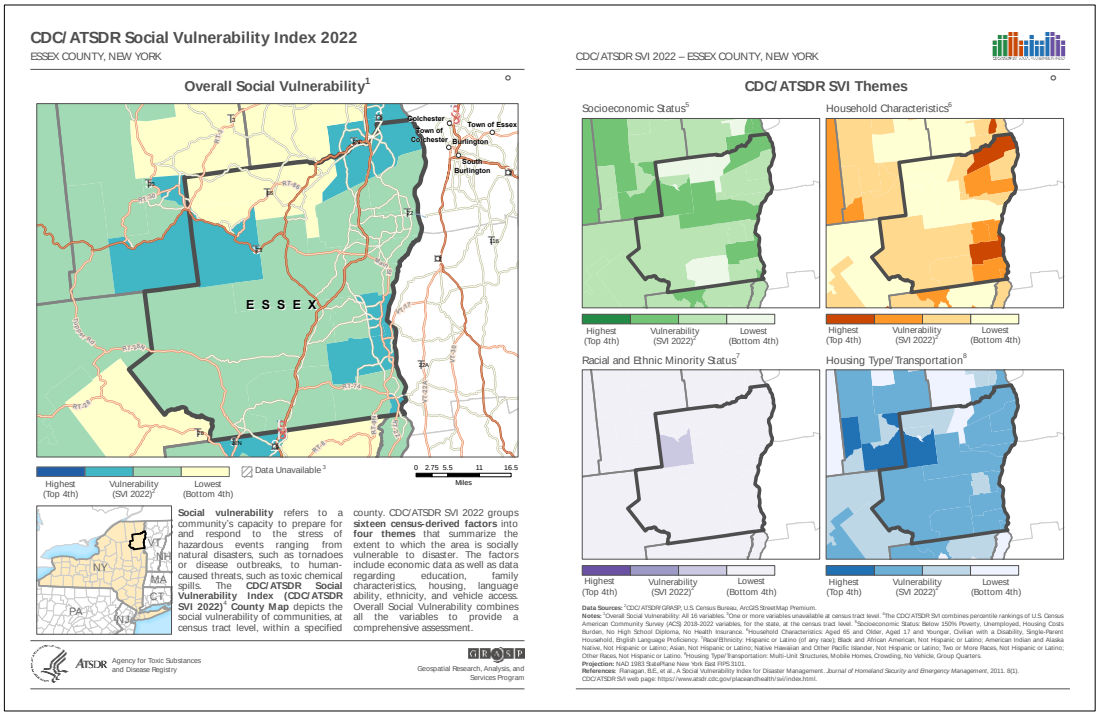


Figure 6. Essex County Social Vulnerabilities Population Map

The CDC/ATSDR Social Vulnerability Index (SVI) for 2022 highlights key county areas of vulnerability, which can impact the community's capacity to prepare for, respond to, and recover from hazardous events like severe thunderstorms, floods, and other disasters. The SVI measures vulnerability at the census tract level using four themes: socioeconomic status, household composition, racial and ethnic minority status, and housing type/transportation. These factors provide insight into the populations most at risk during emergencies.

Parts of the county, particularly areas in the southern and eastern regions where poverty rates, unemployment levels, and lower educational attainment are more prevalent, rank among the highest in social vulnerability. These areas face greater challenges in disaster preparedness and recovery due to socioeconomic and infrastructural factors. Conversely, the northern and

western regions generally exhibit lower levels of vulnerability, suggesting greater capacity to handle hazardous events. These factors can limit access to resources, making it more difficult for residents in these areas to prepare for or recover from disasters, particularly those involving infrastructure or financial loss.

Southeastern portions of the county also have elevated vulnerabilities related to household composition. This includes higher proportions of elderly residents, children, and single-parent households—all of whom may require additional assistance during emergencies. Elderly individuals and households with young children are particularly at risk of experiencing adverse outcomes during events like power outages caused by severe storms.

Essex County's overall racial and ethnic diversity is Relatively Low compared to other regions, with limited areas showing higher concentrations of racial and ethnic minority populations. While the county has seen a modest increase in diversity over recent decades—like growth in the Hispanic population and those identifying with multiple races—it remains less diverse compared to state and national averages. Localized tracts with minority populations may face language barriers or limited access to culturally appropriate emergency services.

Housing and transportation vulnerabilities are significant, particularly in areas with high proportions of mobile homes, multi-family units, or housing in poor condition. Reliance on private vehicle transportation creates challenges for residents who do not own vehicles, especially in rural areas where public transit options are limited. These factors can hinder evacuation efforts, impeding access to emergency shelters during hazardous events.

The Social Vulnerability Index (SVI) highlights critical areas of concern for Essex County emergency preparedness and disaster response efforts. Areas with higher vulnerability scores may require targeted outreach, increased access to resources, and specialized services to ensure equitable disaster response. Emergency planning should prioritize populations in the most vulnerable tracts, particularly in the southern and southeastern parts of the county, to reduce risk and improve resilience.

Community Resilience

Essex County demonstrates a Relatively High community resilience score (74.9), reflecting the county's ability to prepare, respond, and recover from natural hazards. This places the county among the top 25% in the U.S. for resilience, significantly offsetting the impact of potential disasters. The National Risk Index rates 58 % of other counties in New York higher in community resilience. Community Resilience is measured at the county level using the Baseline Resilience Indicators for Communities (HVRI BRIC) published by the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI).

DRAFT

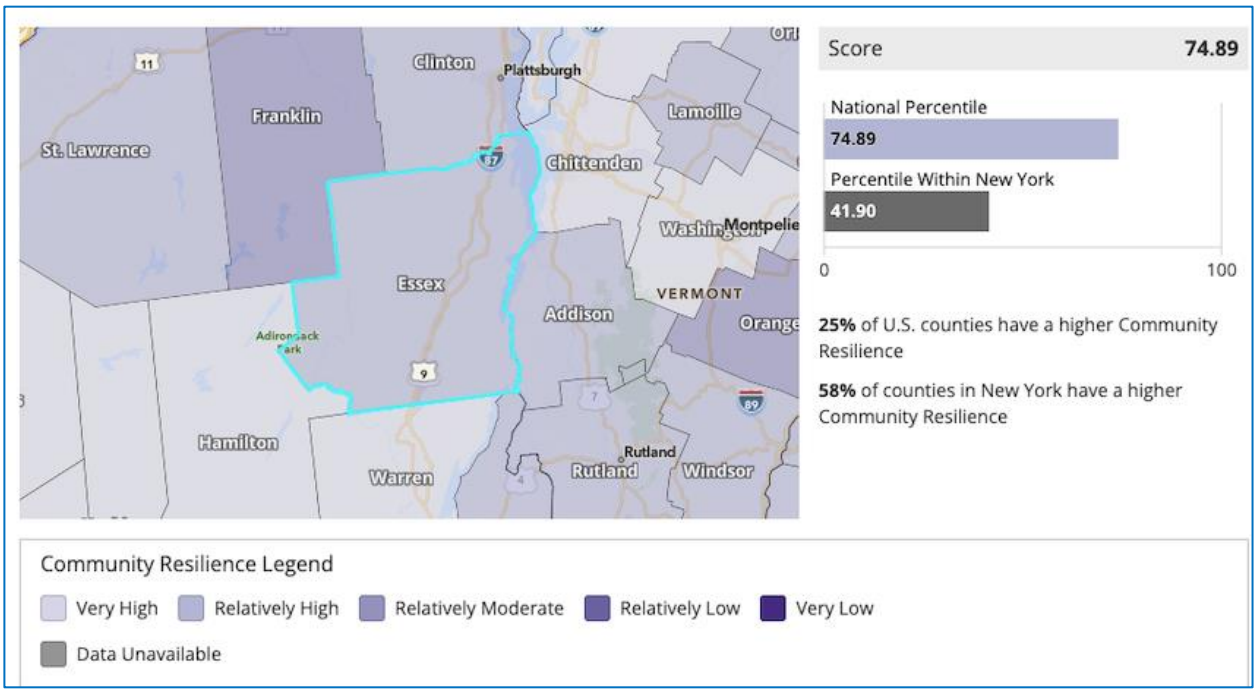


Figure 7. National Risk Index Community Resilience Map

Risk Assessment & Methodology

The Risk Assessment Section serves as the cornerstone of the 2025 Essex County Hazard Mitigation Plan. It establishes a robust, data–driven foundation for identifying, evaluating, and prioritizing regional hazards. This section provides a factual and scientific basis for justifying activities proposed in the county mitigation strategy. By linking hazard rankings directly to the county action plan, this assessment ensures alignment with targeted efforts aligned with state–level resilience goals. Evaluating the risks posed by natural hazards is essential for understanding their potential impacts on lives, property, and the local economy. Essex County's risk assessment uses both qualitative and quantitative analysis (based on the best available data) to identify county vulnerabilities. This process deepens the understanding of how natural disasters affect the community, laying the foundation for mitigation strategy development and prioritization outlined in the Mitigation Strategy section. The goal is to minimize damage and loss by enhancing preparedness, improving response capabilities, and directing resources to areas of greatest risk.

5–Step Process

This plan builds upon prior efforts, incorporating an updated risk assessment framework. It follows the methodology detailed in the 2023 Federal Emergency Management Agency (FEMA) Local Mitigation Planning Handbook, providing a systematic, 5–step process:

1. Hazard Identification: recognizes the hazards present in the county.
2. Hazard Description: details potential impacts, locations, frequency, and intensity of each hazard.
3. Identifying Community Assets: evaluates assets most at risk, accounting for recent development changes.
4. Impact Analysis: examines how hazards may affect community assets.
5. Vulnerability Summarization: combines all findings into a cohesive overview, guiding strategies to enhance resilience.

Each phase builds upon the previous, ensuring a comprehensive and systematic approach to risk assessment.

Essex County Risk Assessment Components

1. Hazard Identification. The assessment identifies and prioritizes natural hazards posing the greatest risks to Essex County jurisdictions, including an updated analysis of vulnerabilities and hazard rankings.
2. Hazard Profiles. Profiles for each hazard include data on geographical areas affected, historical occurrences, severity, and the probability of future events.
3. Community Assets. This section evaluates at–risk resources, including population centers, infrastructure, essential services, and cultural and natural assets. The local economy and community activities vital to residents are also considered.
4. Impact Analysis. The analysis highlights vulnerabilities of identified assets and evaluates potential consequences of each hazard. These findings inform targeted mitigation and preparedness strategies.

DRAFT

5. Vulnerability Summarization. This section synthesizes key information from hazard profiles, emphasizing vulnerabilities, recent developments, and potential impacts to guide the prioritization of mitigation efforts and resource allocation.

The figure below represents the relationship between hazards and community assets to define risk. Hazards are characterized by location, extent or magnitude, impact, previous occurrences, and future probability, outlining the potential threats the community may face. Community assets, on the other hand, encompass the critical elements that could be affected by these hazards, including people, structures, systems, valued activities, and natural, historic, and cultural resources.

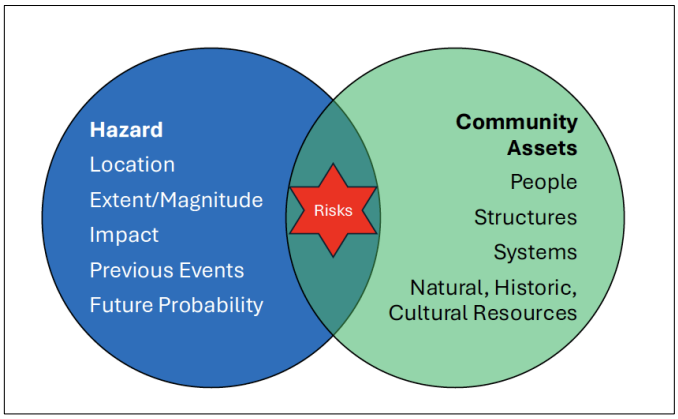


Figure 8. Relationship Between Hazards & Community Assets

Risk is represented by the intersection of these two elements, where the potential threats overlap with the vulnerable community assets. This intersection highlights areas most in need of mitigation efforts. By understanding this relationship, decisionmakers can more effectively prioritize strategies to minimize hazard impacts on critical resources, enhancing community resilience.

Update Process

This plan integrates data from multiple sources including:

- the National Centers for Environmental Information (NCEI).
- FEMA disaster declarations.
- New York State Climate change projections.
- the FEMA National Risk Index.
- FEMA's Essex County Flood Insurance Study.
- stakeholder surveys.
- the Essex County CEMP
- the 2019 New York State Hazard Mitigation Plan

The use of these resources helps to ensure an inclusive and accurate understanding of risks. New hazards like utility failures and pandemics, highlight emerging threats, providing a broader perspective on Essex County vulnerabilities.

Hazards affecting the county are identified and defined in terms of location, extent, magnitude of impacts, historical occurrences, and the probability of future events. In the 2025 Essex County Hazard Mitigation Plan, seven hazards are ranked as High risk, six as Medium risk, and three as Low risk. While the rankings provide guidance, it is important to note that low–ranked hazards could still result in significant disasters, warranting due consideration and planning for potential loss estimates.

This update expands the scope of the 2019 Essex County Hazard Mitigation Plan by including additional hazards and an enhanced understanding of risks and emerging threats. The 2025 update introduces non–natural hazards like utility failures, transportation accidents, hazardous material incidents, pandemics, and infectious diseases, moving beyond the prior focus of natural hazards. These additions align with the comprehensive hazard review conducted in the 2025 New York State Hazard Mitigation Plan.

Table 27. Hazards Addressed in the 2019 Essex County Hazard Mitigation Plan

2019 Hazards List		
Avalanches	Extreme Temperatures	Landslides
Climate Change	Floods	Land Subsidence
Dam Failures	Hurricanes	Rail Events
Drought	Hail Events	Severe Winter Storms
Earthquakes	Ice Storms	Wildfires
		Wind Events

Risk Assessment Process

Essex County conducted a comprehensive hazard evaluation as part of the 2025 Essex County Hazard Mitigation Plan (HMP). This process incorporated multiple methodologies including the incorporation of the most recent Essex County Comprehensive Emergency Preparedness Assessment (CEPA). These efforts provided a detailed analysis of hazards based on scope, frequency, onset, impact, and duration.

Collaborative Efforts. Hazards were analyzed by the Essex County Emergency Planning Committee. The CEPA program involved:

- Identification of hazards impacting Essex County.
- Analysis of geographic areas and populations at risk.

The CEPA process included stakeholder input, facilitated discussions, and mapping tools to identify gaps in capabilities. The most recent CEPA update was completed in March 2020. The hazards identified in the process were utilized as a baseline for the Planning Team's hazard identification.

Table 28. CEPA Hazard Score Ranking

Hazard	Likelihood	Consequence	Relative Risk Score
Ice Storms (1/2" ice or more)	High	Very High	20
Flooding	High	High	16
Major Transportation Accident	High	High	16
Cyber attack	High	High	16
Severe Winter Snowstorms	High	Medium	12

DRAFT

Hazard	Likelihood	Consequence	Relative Risk Score
Earthquakes	Medium	High	12
Pandemic	Medium	High	12
Severe Wind/Tornado	High	Medium	12
Wildfire	High	Medium	12
Biological Agent Release	Medium	High	12
Active Shooter	Medium	High	12
HazMat Release	Medium	High	12
HazMat Release: In-transit	Medium	High	12
Sustained Power Outage (>3 days)	Medium	High	12
Improvised Nuclear Device	Low	Very High	10
Landslides	Medium	Medium	9
Major Fires (non-wildfires)	Medium	Medium	9
Hurricanes/Tropical Storm	Low	High	8
Improvised Explosive Device (IED)/ Vehicle-Borne IED	Low	High	8
Radiological Dispersal Device (RDD)	Low	High	8
Food Contamination	Low	High	8
Critical Infrastructure Failure	Low	High	8
Vehicle Ramming Attack	Low	High	8
Extreme Temperatures	Medium	Low	6
Radiological Release (Fixed-Site)	Low	Medium	6
Drought	Low	Low	4
Animal Disease/Foreign Animal Disease	Low	Low	4
UAS Incident (intentional/unintentional)	Low	Low	4

Comprehensive Hazard Ranking by the Planning Team

The Essex County Planning Team built upon the CEPA process by integrating data from multiple sources including FEMA disaster declarations, National Centers for Environmental Information (NCEI) data, stakeholder input, and public surveys. This effort produced a comprehensive hazard ranking, taking care to consider historical impacts and potential future risks. As applicable, the Planning Team further utilized FEMA's Hazus (a standardized, GIS-based, risk assessment tool used to estimate potential losses from natural disasters) for loss estimation, reviewed historical trends, and analyzed climate projections. Geographic Information Systems (GIS) mapping was employed to more accurately visualize hazard zones and potential impacts. These tools provided data-driven insights into vulnerabilities across the county.

Once profiles were identified and completed, the following steps were used by each planning partner to define the risk of each hazard:

- Determine exposure to each hazard— An inventory of structures, facilities, and systems was mapped. Exposure was determined by overlaying hazard maps with an inventory of structures, facilities, and systems to determine which of them would be exposed to each hazard.
- Assess the hazard impact areas describing the geographic extent a hazard can impact a jurisdiction uniquely defined on a hazard–by–hazard basis. Where spatial differences exist, hazard mapping allowed for hazard analysis by geographic location. Some hazards have varying levels of risk–based on location. Other hazards cover larger geographic areas and affect the area uniformly. A system must be established addressing all elements (people, property, economy, continuity of government) to consistently rate each hazard, and in a manner which addresses the functionality of each Planning Partner involved (e.g., municipality, fire district, public utility district, etc.).
- Assess the vulnerability of exposed facilities. The vulnerability of exposed structures and infrastructure was determined by interpreting the probability of occurrence of each event and assessing structures, facilities, and systems that are exposed to each hazard. Tools such as GIS and Hazus (discussed below) were used in this assessment. Vulnerabilities are described in terms of impact to critical facilities, structures, population, economic values, and functionality of government which can be affected by the hazard event as identified in the tables below.
- Where specific quantitative assessments could not be completed, vulnerability was measured in general, qualitative term, summarizing the potential impact based on past occurrences spatial extent, and subjective damage and casualty potential. Those items were categorized utilizing the criteria established in the CPRI index.
- The final step in the process was to determine the cumulative results of vulnerability based on the risk assessment and Calculated Priority Risk Index (discussed below) scoring, assigning a final qualitative assessment based on the following classifications:
    - Extremely Low—The occurrence and potential cost of damage to life and property is very minimal to nonexistent.
    - Low—Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.
    - Medium—Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster. Occurrences are frequent, with more documented historic events.
    - High—Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category have occurred in the past and have a high probability of reoccurring.
    - Extremely High—Very widespread with catastrophic impact. Hazards in this category may have occurred in the past and have a high probability for reoccurring.

Calculated Priority Risk Index Scoring Criteria

For the 2025 update, the Planning Team utilized a Calculated Priority Risk Index (CPRI) score for each hazard of concern, addressing impact at the county level and at the Planning Partner level.

DRAFT

While the base plan defines the process followed, each jurisdictional annex provides only the outputs rather than re-describing the entire process. The CPRI applies established criteria to assess risk factors. The use of the CPRI allows such application, based on established criteria of application to determine the risk factor. For identification purposes, the five criteria on which the CPRI is based are probability, magnitude, geographic extent and location, warning time/speed of onset, and duration of the event.

Probability

The probability of a hazard event occurring in the future was assessed based on hazard frequency over a 100-year period (where available). Hazard frequency was based on the number of times the hazard event occurred divided by the period of record. If the hazard lacked a definitive historical record, the probability was assessed qualitatively based on regional history and other contributing factors. Probability of occurrence was assigned a 40 percent weighting factor, and was broken down as follows:

Rating Likelihood Frequency of Occurrence:

2. Unlikely: less than 1 percent probability in the next 100 years.
3. Possible: between 1 percent and 10 percent probability in the next year, or at least one chance I the next 100 years.
4. Likely: between 10 percent and 100 percent probability in next year, or at least one chance in the next 10 years.
5. Highly Likely: greater than 1 event per year (frequency greater than 1).

Magnitude

The magnitude of potential hazard events was evaluated for each hazard. Magnitude is a measure of the strength of a hazard event and is usually determined using technical measures specific to the hazard. Magnitude was calculated for each hazard where property damage data was available and was assigned a 25 percent weighting factor. Magnitude calculation was determined using the following: Property Damage / Number of Incidents) / $ of Building Stock Exposure = Magnitude. In some cases, the Hazus model provided specific people/dollar impact data. For other hazards, a GIS exposure analysis was conducted. Magnitude was broken down as follows:

Rating Magnitude Percentage of People and Property Affected:

1. Negligible: less than 5 percent; very minor impact to people, property, economy, and continuity of government at 90 percent.
2. Limited: 6 percent to 24 percent; injuries or illnesses minor in nature, with only slight property damage and minimal loss associated with economic impact; continuity of government only slightly impacted, with 80 percent functionality.
3. Critical: 25 percent to 49 percent; injuries result in some permanent disability; 25-49 percent of population impacted; moderate property damage; moderate impact to economy, with loss of revenue and facility impact; government at 50 percent operational capacity with service disruption more than one week, but less than a month.
4. Catastrophic: more than 50 percent; injuries and illness resulting in permanent disability and death to more than 50 percent of the population; severe property damage greater than 50 percent; economy significantly impacted as a result of loss of buildings, content, inventory;

government significantly impacted; limited services provided, with disruption anticipated to last beyond one month.

Extent & Location

The measure of the percentage of the people and property within the planning area impacted by the event, and the extent (degree) to which they are impacted. Extent and location were assigned a weighting factor of 20 percent, and broken down as follows:

Rating Magnitude Percentage of People and Property Affected:

1. Negligible: less than 10 percent; few if any injuries or illness. Minor quality of life lost with little or no property damage. Brief interruption of essential facilities and services for less than four hours.
2. Limited: 10-24 percent; minor injuries and illness. Minor, short term property damage that does not threaten structural stability. Shutdown of essential facilities and services for 4 to 24 hours.
3. Critical: 25-49 percent; serious injury and illness. Major or long-term property damage, that threatens structural stability. Shutdown of essential facilities and services for 24 to 72 hours.
4. Catastrophic: more than 50 percent; multiple deaths, property destroyed or damaged beyond repair, complete shutdown of essential facilities and services for 3 days or more.

Warning Time/Speed of Onset

The rate at which a hazard occurs, or the time provided in advance of a situation occurring (e.g., notice of a cold front approaching or a potential hurricane, etc.) provides the time necessary to prepare for such an event. Sudden-impact hazards with no advanced warning are of greater concern. Warning Time/Speed of onset was assigned a 10 percent weighting factor, and broken down as follows:

Rating Probable Amount of Warning Time:

1. More than 24 hours warning time.
2. 12-24 hours warning time.
3. 5-12 hours warning time.
4. Minimal or no warning time.

Duration

The time span associated with an event was also considered, the concept being the longer an event occurs, the greater the threat or potential for injuries and damages. Duration was assigned a weighting factor of 5 percent, and was broken down as follows:

Rating Duration of Event

1. 6-24 hours
2. More than 24 hours
3. Less than 1 week
4. More than 1 week

DRAFT

This summarizes the analysis conducted by way of completion of the Calculated Priority Risk Index (CPRI) for hazard ranking. These ratings were then incorporated into an Excel Workbook, to calculate the CPRI Score:

Table 29. CPRI Scoring

Hazard	Probability	Magnitude	WT	Duration	Score

The Planning Team also took the following into consideration:

- Municipal Vulnerability Assessments. Each municipality conducted its own hazard rankings, which may differ from the countywide rankings due to localized priorities and recent events. For example, towns affected by recent floods may rank this hazard higher than others that may not have experienced the same conditions. Vulnerability analyses evaluated the hazard impacts on structures, critical facilities, and populations, identifying specific risks to buildings, infrastructure, and residents.
- Flood Vulnerability Assessment. Municipalities assessed flood vulnerability in detail, identifying the total value of structures within flood–prone areas and reviewing the number of flood insurance policies per jurisdiction. This analysis provided a clear understanding of flood risks for each municipality, enabling countywide comparisons.
- Disaster Declarations. Essex County has been significantly impacted by both man-made and natural hazards, particularly the COVID–19 Pandemic and hurricanes/severe storms causing extensive damage to infrastructure, homes, and the local economy.

Table 30. Essex County Disaster Declarations 1974–2024

Number	Type	Incident Dates	Declaration Date	Cost
4825- DR-NY	Tropical Storm Debby	8/10/2024	9/24/2024	
4814-DR-NY		7/10-11/2024		
4723- DR-NY		7/9-10/2023	7/22/2023	

Number	Type	Incident Dates	Declaration Date	Cost
DR–4615–NY/ EM–3572	Remnants of Hurricane Ida	9/1-3/2001	9/2-5/2021	Not specified
EM–3565–NY	Hurricane Henri	8/21-24/2021	8/22/2021	Not specified
DR–4567–NY	Tropical Storm Isaias	8/3/2020	10/2/2020	Not specified
FEMA–4480–DR–NY EM–3434–NY EM–3504 (Saint Regis Mohawk Tribe)/ EM–3557(Oneida Indian Nation)	COVID-19 Pandemic	Starting 1/2020	5/11/2023	Not specified
FEMA–4472–DR–NY	Severe Storms, Straight-line Winds, Flooding	10/31-11/1/2019	12/19/2019	Estimated $33 million*
DR4322	Severe Winter Storm, Snowstorm	3/14-15/2017	7/12/2017	Public $22,468,462
DR4129	Severe Storms, Flooding	6/28-7/4/2013	7/12/2013	Public $57,139,375
DR4085/EM3351	Hurricane Sandy	10/27-11/8/2012	10/30/2012	
DR4020	Hurricane Irene	8/26-9/5/2011	8/3/2011	Individual $102,888,713 Public $551,424,149
DR1993	Severe Storms, Flooding, Tornados, Straight–Line Winds	4/26-5/8/2011	6/10/2011	Public $34,404,603.07
DR1692	Severe Storms, Inland & Coastal Flooding	4/14-18/2007	4/24/2007	Individual $12,307,474.22 Public $85,489,609.26
EM 3262	Hurricane Katrina Evacuation	8/29-October 2005	9/30/2005	Not specified
EM 3186	Power Outage	8/14-16/2003	9/23/2003	Not specified
DR 1415	Earthquake	4/2002	5/16/2002	Not specified

DRAFT

Number	Type	Incident Dates	Declaration Date	Cost
DR 1391	Fires and Explosions–World Trade Center	9/11/2001	9/11/2001	Public $4,732,560,097
EM 3155	West Nile Virus	5/22-11/1/2000	10/11/2000	Public $4,668,512
DR 1355	Storms, Flooding	5/3-8/12/2000	7/21/2000	Public $31,020,492
DR 1296	Hurricane Floyd	9/15-18/1999	9/19/1999	Public $41,182,922
DR 1233	Flooding	6/25-7/10/1998	7/7/1998	Not specified
DR 1196	Ice Storm	1/5-17/1998	1/10/1998	Not specified
DR 1148	Storms, Flooding	11/8-15/1996	1/9/1996	Not specified
DR 1095	Flooding	1/19-30/1996	1/24/1996	Not specified
EM 3004	Barge Canal Flood-ing	11/2/1974		Not specified

Some specifically impactful Disaster Declarations are discussed below:

- 2020 COVID–19 Pandemic (FEMA–4480–DR–NY). Public health emergencies like the COVID–19 Pandemic have also had profound health, economic, and social impacts, disrupting daily life and straining healthcare resources.
- 2011 Hurricane Irene (DR–4020). The most impactful event in recent memory was Hurricane Irene in 2011, resulting in more than $654 million in combined individual and public assistance costs. The hurricane caused widespread flooding, destroyed homes, and caused road closures and long–term economic challenges for residents.
- 2011 Severe Storms and Inland and Coastal Flooding (DR–1993). The county also faced severe storms, flooding, tornadoes, and straight–line winds in 2011, resulting in over $34 million in public assistance costs, highlighting the destructive potential of severe weather.
- 2007 Severe Storms and Inland and Coastal Flooding (DR–1692). Severe storms and inland and coastal flooding in 2007 caused over $97 million in assistance costs, damaging homes, roads, and essential services.
- 2001 Fires & Explosions/911 Terrorism Attack (DR–1391). Essex County was indirectly affected by terrorism–related hazards, most notably the September 11, 2001, terrorism attacks. These attacks had a statewide economic and social impact, resulting in over $4.7 billion in public assistance costs.

Hazus & GIS Applications

Earthquake & Flood Modeling Overview

In 1997, FEMA developed the standardized Hazards U.S., or Hazus, model to estimate losses caused by earthquakes and identify areas that face the highest risk and potential for loss. Hazus was later expanded into a multi-hazard methodology, Hazus-MH, with new models for

estimating potential losses from hurricanes and floods. Hazus is a GIS-based software program used to support risk assessments, mitigation planning, and emergency planning and response. It provides a wide range of inventory data, such as demographics, building stock, critical facility, transportation and utility lifeline, and multiple models to estimate potential losses from natural disasters. The program maps and displays hazard data and the results of damage and economic loss estimates for buildings and infrastructure. Its advantages include:

- providing a consistent methodology for assessing risk across geographic and political entities.
- providing ways to save data so that it can readily be updated as population, inventory, and other factors change and as mitigation-planning efforts evolve.
- facilitation of the review of mitigation plans because it helps to ensure that FEMA methodologies are incorporated.
- supporting grant applications by calculating benefits using FEMA definitions and terminology.
- producing hazard data and loss estimates that can be used in communication with local stakeholders.
- administration by the local government, managing and updating a hazard mitigation plan throughout its implementation.

Levels of Detail for Evaluation

Hazus provides default data for inventory, vulnerability and hazards. This default data can be supplemented with local data to provide a more refined analysis. The model can carry out three levels of analysis, depending on the format and level of detail of information about the planning area:

- Level 1. All of the information needed to produce an estimate of losses is included in the software's default data. This data is derived from national databases and describes in general terms the characteristic parameters of the planning area.
- Level 2. More accurate estimates of losses require more detailed information about the planning area. To produce Level 2 estimates of losses, detailed information is required about local geology, hydrology, hydraulics and building inventory, as well as data about utilities and critical facilities. This information is needed in a GIS format. To calculate losses due to flooding, HAZUS uses the following inputs about the built environment: structure location, occupancy type, square footage, first floor height above grade, as well as replacement and content values.
- Level 3. This level of analysis generates the most accurate estimate of losses. It requires detailed engineering and geotechnical information to customize it for the planning area.

Building Inventory

Flood Hazard Zones

For the Flood hazard zones, the most current flood hazard data layer was downloaded from the FEMA map service center which was dated to be current as of XXXX. The 100 year and 500-year flood zones were determined based on the attributes of the Special Flood Hazard polygon layer contained in the data downloaded from FEMA. County parcels were determined to be inside and or outside the 100- and 500-year flood zones using spatial query methods within ArcGIS Desktop. A critical facilities analysis was also conducted (inside and outside of HAZUS) and was based

DRAFT

on general exposure rather than estimated losses for some hazards of concern. Risk to structures is identified based on the structure location and the corresponding exposure to hazard location, where geographically established.

Critical Facilities

A list of critical facilities developed by the county and towns and its planning partners included geospatial data for fire, police, schools, medical facilities, etc. On completion of the analysis, each planning partner was provided the critical facilities list, on which impact from each hazard is identified for each critical facility. That data was then utilized by each planning partner to determine dollar impact. The critical facilities list as a whole is considered privileged in nature from public disclosure; however, each planning partner was left to make the determination as to how they wished to identify specific structures based on their policies in place. In addition, specific critical facility structure impact data is further identified within the various Critical Facilities tables contained in each hazard profile, identified by critical facility type, e.g., power, water, wastewater, etc. Building impact was further identified in Loss Matrix Tables, which provide the breakdown to each of the jurisdictional planning partners for use in completing their risk assessment. That data further identifies the number of structures impacted and the population impacted (where possible) based on the specific hazard of concern. As appropriate, that data is also identified within the various public outreach documents developed for the public outreach efforts. It should be noted that with all data, the critical facilities list is continually in an update process and should not be considered to be all-encompassing.

Hazard Ranking

Participants ultimately rated natural, technological and man–made hazards based on probability (likelihood) and severity of impact (consequences). The resulting comprehensive hazards (in the table below) selected by the county were profiled.

Table 31. 2025 Essex County Hazard Ranking

Hazard Ranking	Event
High	Floods (Riverine, Flash, & Ice Jam)
High	Severe Winter Weather (Heavy Snow, Blizzards, & Ice Storms)
High	Severe Thunderstorms with High Winds, Straight–line Winds & Tornado
High	Extreme Temperatures (Cold & Heat Waves)
Medium	Drought
Medium	Hurricanes & Tropical Storms
Medium	Earthquakes
Medium	Landslides & Mudslides (Soil Erosion and Slope Failures)
Medium	Wildfires

Hazard Ranking	Event
Medium	Transportation Accidents (Roadway and Rail)
Medium	Utility Failures (Power & Communication Systems)
Medium	Hazardous Material Incidents (Transportation Accidents and Industrial Spills)
Medium	Pandemics and Infectious Disease (Future Pandemics and Influenza Outbreaks)
Low	Dam Failures (Structural Integrity Issues)
Low	Avalanches
Low	Sinkholes (Ground Subsidence)

Some hazards like severe winter weather and flood events, occur annually and have significant financial impacts on jurisdictions and residents. Less frequent hazards like earthquakes may not happen often, but when they do occur, they can have substantial financial repercussions. While dam failures are not expected to occur regularly, their potential impact could be significant, affecting wide areas of the county. Although climate change was not ranked as a separate hazard, its effects—like increasing the frequency and severity of extreme weather events—are addressed throughout the plan due to their influence on other profiled hazards.

This plan emphasizes that hazard rankings are not predictive, but they do represent a tool to guide mitigation efforts. A low–ranked hazard could still result in significant impacts, underscoring the importance of a comprehensive and adaptive approach to hazard mitigation planning. By integrating insights from CEPA, historical data, and localized assessments, Essex County has established a robust framework to understand both immediate and long–term risks allowing for the development of comprehensive mitigation efforts. These efforts ensure the county, and its municipalities are well prepared to prioritize mitigation actions, protect vulnerable populations, and build resilience against future disasters.

Limitations

Various data sets were utilized in developing the risk assessment incorporated into this planning effort. In attempting to utilize the various sources, discrepancies may exist. The models and information presented in this document does not replace or supersede any official document or product generated to meet the requirements of any state, federal, or local program, which may be much more detailed and encompassing beyond the scope of this project. This document is intended for planning purposes only. This document and its contents have been prepared and are intended solely for the County of Modoc and its planning partners' information and use with respect to hazard mitigation planning, incorporating other relevant data into other planning mechanisms as appropriate. While this process utilized best available science and scientific data, the Planning Team, consultant, nor any of the planning partners conducted any scientific analysis within this document, and none should be construed. The process reproduced existing data only in different ways to meet the guidelines and requirements of 44 CFR 201.6. All data layers utilized are identified within the various sections of this document should reviewers wish greater clarification and information. Loss estimates, exposure assessments, and hazard-specific vulnerability evaluations rely on the best available data and methodologies. Uncertainties are inherent in

DRAFT

any loss estimation methodology and arise in part from incomplete scientific knowledge concerning natural hazards and their effects on the built environment. Uncertainties also result from:

- approximations and simplifications necessary to conduct a study.
- incomplete or outdated inventory, demographic or economic parameter data.
- the unique nature, geographic extent and severity of each hazard.
- mitigation measures already employed; and
- the amount of advance notice residents have available to prepare for a specific hazard event.

These factors can affect loss estimates by a factor of two or more. Therefore, potential exposure and loss estimates are approximate and are for planning purposes only, not life safety measures. The results do not predict precise results and should be used only to understand relative risk. Over the long term, as is customary with all such planning efforts, Modoc County and its planning partners will continue to collect additional data to assist in better estimating potential losses associated with other hazards as science increases the validity of data. Some assumptions were made by the planning partnership in an effort to capture as much data as necessary to supplant any significant data gaps. One example of this is the valuation for structures within the assessed data. For structures for which data was not provided, the missing information was determined using averages of similar types of structures, determining square footage and applying a multiplier. This process is identified in the Hazus User's Guide.

Some hazards, such as earthquakes, are pre-loaded with scientifically determined scenarios which are used during the modeling process. This does not allow for manipulation of the data as with other hazards, such as flood. In the case of earthquake, greater reliance existed on the use of the Hazus default data, which is known to be less accurate, most often causing higher loss values. Therefore, while loss estimates are provided, they should be viewed with this flaw in mind. A much more in-depth scientific analysis is necessary to rely on this type of data with a high degree of accuracy. Readers should view this document as a baseline or starting point, and information should be further studied and analyzed by scientists and other subject matter experts in specific hazard fields.

Hazard Data Profiles

This section provides detailed profiles of the hazards identified earlier that require further analysis in Essex County's overall risk assessment. A range of resources were reviewed and analyzed to identify hazards posing the greatest threat to Essex County. These resources included existing reports and plans, insights from community experts, data from online sources, and feedback provided by the public during community meetings and surveys. This comprehensive analysis served to identify the most prevalent, potentially damaging hazards for inclusion in the 2025 Essex County Hazard Mitigation Plan (HMP).

Each hazard profile includes a hazard description, causes and impacts, the location and extent of affected areas, historical occurrences, and the probability of future events. These profiles also examine the influence of climate change like increased precipitation and temperature extremes, that may intensify the effects of certain hazards. The profiles assess impacts on populations with particular attention dedicated to vulnerable groups like the elderly, children, and those with limited access to resources or mobility. The level of detail for each hazard is based on the availability of historical data, prior cost and damage estimates, and input from members of the Planning Committee and jurisdiction representatives. These profiles incorporate specific information regarding historical hazard occurrences and their effects on individual jurisdictions, providing a thorough understanding of the risks facing the county. By integrating these insights, the hazard profiles support the development of effective mitigation strategies to protect county residents, infrastructure, and environment.

Hazard: Floods (Riverine, Flash, Ice Jam)

Flooding occurs when water accumulates in normally dry areas due to heavy rainfall, storm surges, or rapid snowmelt—factors that can be worsened by infrastructure failures like dam or levee breaches. It is a prominent natural hazard in the United States, resulting in substantial economic losses and often severe impacts on life and property. Flooding is characterized by factors like intensity and duration, types (e.g., flash, riverine, coastal, and urban), frequency, spatial extent, flow velocity, water depth, and contamination. Flash floods from sudden rainfall or dam failures develop rapidly while riverine and coastal floods are slower and often affect larger areas. Flood recurrence intervals measure frequency, indicating how often certain flood levels are expected. High flow velocity and water depth increase structural damage risks, while contaminants and debris in floodwaters add public health hazards.

Flooding usually occurs in one of four variations: riverine flooding, coastal flooding, shallow flooding, and alluvial fan flooding (more common in mountainous western states). Three types of floods usually occur in Essex County:

Table 32. Essex County Types of Flooding

Flooding Type	Explanation
Riverine Flooding	This type of flooding typically occurs when prolonged or significant rainfall affects a river basin. Extended periods of precipitation in these areas cause rivers to overflow, leading to widespread flooding downstream.

DRAFT

Flooding Type	Explanation
Flash Flooding	Flash floods are usually triggered by intense, localized rainfall in a short duration. This flooding is common in areas with steep terrain like mountainous regions, and in urban environments where impermeable surfaces prevent water absorption, causing rapid accumulation and flow.
Ice Jam Flooding	This occurs when a combination of warm temperatures and heavy rainfall causes rapid snowmelt, leading to river ice breaking into pieces. These ice fragments can become lodged in narrow sections of the river or around structures like bridges and dams, obstructing water flow and increasing the flood risk upstream.

The following are terms that describe these flood events and are used in public service announcements issued to the public:

Table 33. Types of Flooding Public Service Announcement

Announcement Types	Explanation
Flood Watch	Flooding is possible. Residents should listen to local radio or television weather stations.
Flash Flood Watch	Flash flooding is possible. Residents should be prepared to move to higher ground, continue to listen to local radio or television weather stations.
Flash Flood Warning	A flash flood is occurring. Residents should seek higher ground on foot immediately.

These warnings are issued to inform the general public of expected flood severity and are also used to motivate residents of frequently flooded areas to act to preserve their property and/or their lives.

Location and Extent

Essex County faces flooding risks from riverine flooding, flash floods, and ice jam floods. These vulnerabilities are heightened by the county's mountainous terrain and the concentration of municipalities along streams and river valleys. Historically, many watercourses in the county, like those in other parts of New York, were developed to support mills, transport goods, and dispose of waste. As a result, some of the most flood–prone areas have seen extensive development along these waterways over the past century. Flooding is a significant natural hazard due to the area's unique geography, hydrology, and climate. Each flood type occurs under specific conditions having distinct impacts on the local population, infrastructure, and environment.



Figure 9. High Water on the Boquet River in the Elizabethtown/New Russia Area (Photo Credit: Caitlin Kelly)

Riverine flooding is the most widespread, typically occurring when prolonged or heavy rainfall saturates a river basin, causing rivers to overflow. Rivers like the Au Sable and Boquet are particularly susceptible to this type of flooding, especially during the spring when snowmelt combines with seasonal rains, increasing water volumes. The science behind riverine flooding lies in the accumulation of runoff that exceeds the soil's absorption capacity. As water collects in river channels, it eventually overflows into surrounding floodplains, inundating homes, roads, and farmland. The county's mountainous terrain exacerbates this issue, as water rapidly flows downhill, amplifying downstream impacts.

Flash flooding, on the other hand, occurs more suddenly and is triggered by intense, localized rainfall over a short period. This type of flooding is especially common in areas with steep terrain like the Adirondacks, where rapid runoff channels water into streams and low–lying areas. Urbanized regions with impermeable surfaces like roads and buildings further contribute to flash flooding by preventing water absorption. Flash floods are most common during severe thunderstorms in the summer or when remnants of tropical storms bring heavy rain. They can also occur during spring snowmelt when already saturated soils exacerbate the problem. The steep slopes of Essex County increase the velocity of water flow during such events, making flash flooding not only fast but also highly destructive.

Ice jam flooding is another critical issue in Essex County, occurring during late winter and early spring. This type of flooding happens when warming temperatures and rainfall cause river ice to break into chunks. These ice fragments often lodge in narrow sections of rivers or against manmade structures like bridges and dams, creating temporary blockages. As water builds up behind the ice jam, upstream flooding occurs, potentially causing significant damage. When the jam eventually breaks, it releases a surge of water and debris downstream, which can exacerbate flooding. The science behind ice jam flooding involves temperature fluctuations that weaken ice, combined with increased water flow from snowmelt and precipitation. Rivers with significant seasonal ice cover, like those in Essex County, are particularly vulnerable.

DRAFT

Several factors contribute to flooding in the county. Mountainous terrain and narrow river valleys create natural funnels for water, increasing flood risks during heavy rains or rapid snowmelt. The county's proximity to Lake Champlain also exposes shoreline towns to coastal flooding, driven by storm surges, wave action, and seiche events (oscillating lake levels). Essex County experiences heavy precipitation during spring and summer as well as late–season tropical storms or hurricanes that bring intense rainfall. Human activities like development along floodplains and infrastructure bottlenecks created by undersized bridges and culverts, further exacerbate flooding risks.



Figure 10. Blocks of Ice can Create Jams & Dams Stretching more than a Mile on the Au Sable River (Photo Credit: Brian Mann)

Floodplains are low–lying areas near rivers, streams, and creeks that are frequently exposed to rising waters. Flooding severity in a floodplain is often described by the frequency or recurrence

interval of major floods. Detailed flood recurrence data is provided in a later section of this plan along with maps of High-risk flood zones in various towns.

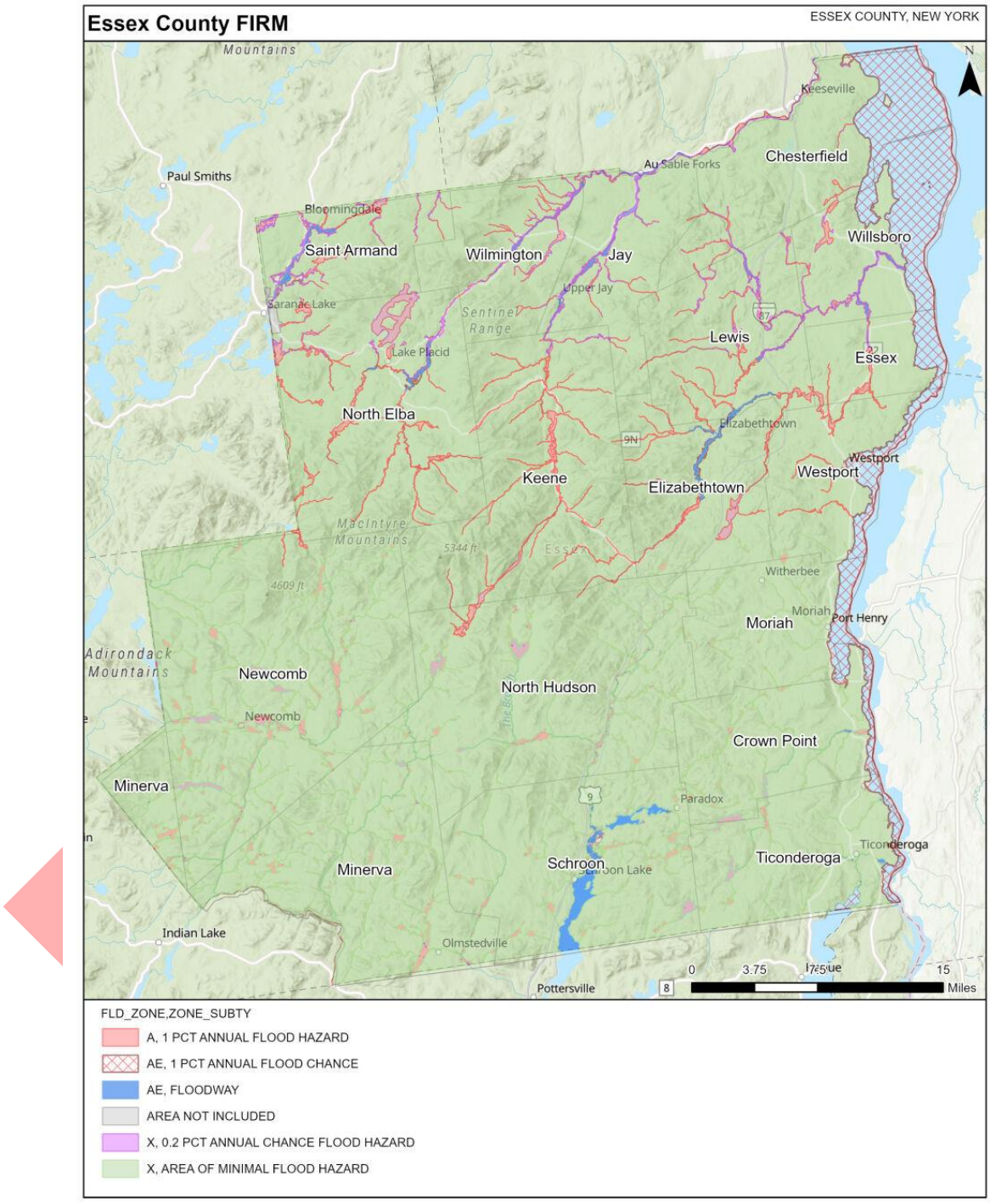


Figure 11. Essex County FIRM

The flooding extent associated with a 1% annual probability of occurrence (also known as a "100–year flood" or "base flood") serves as a regulatory boundary for various federal, state, and local agencies. This boundary, often referred to as the "special flood hazard area," is a critical tool for assessing vulnerability and risk in flood–prone areas.

FEMA's Flood Insurance Rate Map (FIRM) data was utilized to identify flood hazard areas in Essex County. According to FIRM data, Moderate to High flood risk zones exist in many municipalities across the county, particularly those located near major rivers and streams, like the Au Sable and Boquet Rivers. These areas are highly vulnerable to flooding caused by heavy rainfall, rapid snow-melt, or ice jams. The FEMA FIRM for Essex County provides detailed flood zone designations, critical for the identification of at–risk areas and the formation of mitigation strategies. While maps are currently in draft format for this hazard mitigation plan update, they illustrate the mapped flood risks using FEMA zone designations. The most recent FIRM data for Essex County reflects improved data quality, providing valuable resources for understanding and managing flood risks. This mapping will guide local municipalities in planning and regulatory actions to protect vulnerable populations, infrastructure, and property from future flood events.

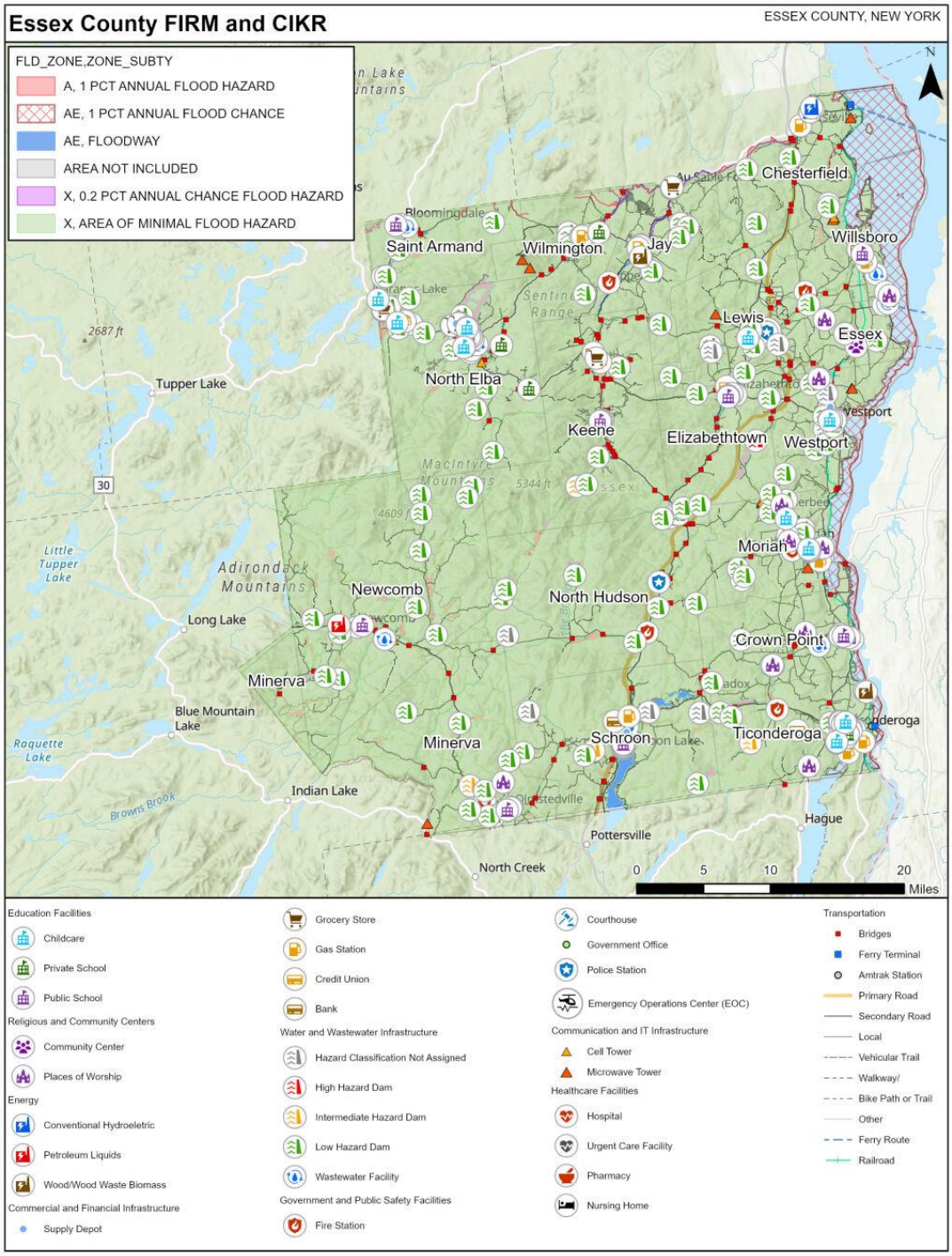


Figure 12. Essex County Critical Infrastructure FIRM

Table 34. Summary of Land Area in Flood Hazard Area

Municipality/ Town	Town Land Area (Acres)	High Flood Risk (Acres) A, AE, AH, AO	Moderate Flood Risk (Acres) X500	Moderate Flood Risk (Acres) X	Land in High Flood Risk % A, AE, AH, AO	Moderate Flood Risk % X500
Chesterfield	65712	1186.00	199.00	1.80	0.30	65712
Crown Point	52476	3955.00	112.00	7.54	0.21	52476
Elizabethtown	52805	3683.00	203.00	6.97	0.38	52805
Essex	23948	1417.00	42.00	5.92	0.18	23948
Jay	43803	2271.00	207.00	5.18	0.47	43803
Keene	100046	5585.00	171.00	5.58	0.17	100046
Lewis	54712	3867.00	140.00	7.07	0.26	54712
Minerva	102511	14990.00	2599.00	14.62	2.54	102511
Moriah	45768	3229.00	67.00	7.06	0.15	45768
Newcomb	148565	14573.00	1219.00	9.81	0.82	148565
North Elba	100094	8525.00	1079.00	8.52	1.08	100094
North Hudson	119327	16993.00	335.00	14.24	0.28	119327
Schroon	90705	12629.00	447.00	13.92	0.49	90705
St. Armand	36658	4963.00	180.00	13.54	0.49	36658
Ticonderoga	56195	4120.00	99.00	7.33	0.18	56195
Westport	43001	2622.00	53.00	6.10	0.12	43001
Willsboro	48263	2900.00	104.00	6.01	0.22	48263
Wilmington	41926	1423.00	82.00	3.39	0.20	41926

Table 35. Summary of Improved Values in Flood Hazard Areas

Municipality/ Town	Total Improved Value	Improved Value in High Flood Risk Area Zones A, AE, AH, AO		Improved Value in Moderate Flood Risk Area Zones X500		Improved Value in Low Flood Risk Area Zones X	
		$	%	$	%	$	%
Chesterfield	296996119	20540969	7	18599269	6	296996119	20540969
Crown Point	158466074	30466081	19	29491081	19	158466074	30466081
Elizabeth-town	212060234	67791700	32	47886700	23	212060234	67791700
Essex	199714781	20149536	10	22181136	11	199714781	20149536
Jay	452936190	84022128	19	72253828	16	452936190	84022128
Keene	413030292	172500641	42	121578041	29	413030292	172500641

Municipality/ Town	Total Improved Value	Improved Value in High Flood Risk Area Zones A, AE, AH, AO		Improved Value in Moderate Flood Risk Area Zones X500		Improved Value in Low Flood Risk Area Zones X	
		$	%	$	%	$	%
Lewis	188157613	79451700	42	63998200	34	188157613	79451700
Minerva	161789700	58006000	36	67217700	42	161789700	58006000
Moriah	292204090	29210790	10	22898501	8	292204090	29210790
Newcomb	176984852	107115267	61	81382953	46	176984852	107115267
North Elba	3759422694	1247343932	33	627689652	17	3759422694	1247343932
North Hudson	51514100	25254600	49	19776500	38	51514100	25254600
Schroon	950780500	505852800	53	280969800	30	950780500	505852800
St. Armand	185380082	48083882	26	38551392	21	185380082	48083882
Ticonderoga	781100737	330165737	42	111269101	14	781100737	330165737
Westport	326334250	36160549	11	42546849	13	326334250	36160549
Willsboro	494049948	51795183	10	71058083	14	494049948	51795183
Wilmington	357946775	121834410	34	90938600	25	357946775	121834410

Previous Occurrences

Essex County has experienced numerous significant flood events over the years, with mountainous terrain and concentration of development along river valleys making it particularly susceptible. Notable events include Tropical Storm Irene in 2011, which caused catastrophic flooding, with water levels exceeding 100–year floodplain estimates in some locations, resulting in washed–out roads, destroyed bridges, and inundated homes and businesses. Seasonal snowmelt combined with heavy rainfall has historically led to spring floods along major rivers like the Au Sable and Boquet Rivers. During winter and early spring, ice jams have caused localized flooding in low–lying areas along county rivers and streams.

These historical events highlight the county's vulnerability to both seasonal and extreme flood events, underscoring the critical need for ongoing risk management efforts. Several flood events in the county warranted Presidential Disaster Declarations, with Tropical Storm Irene standing out as one of the most devastating floods to impact the region in recent years. According to Mitigate NY, Essex County has experienced several Presidential Disaster Declarations related to flooding. These declarations document the causes of the disasters, the damages recorded (when available), and the types of post–disaster assistance the county became eligible for following each event.

FEMA's Public Assistance (PA) Program offers financial support for activities like debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster–damaged public infrastructure and eligible Private Non–Profit (PNP) facilities. This program is designed to ensure critical services and infrastructure are quickly restored after a disaster. The Individual Assistance (IA) Program provides direct financial aid to individuals and families whose

DRAFT

property has been damaged or destroyed and whose losses are not covered by insurance. This program focuses on addressing critical expenses that cannot be met through other means, rather than restoring property to its pre–disaster condition. Together, these assistance programs are vital in helping Essex County recover from flood events while implementing measures to reduce future risks.

The table below provides a comprehensive summary of these disaster declarations, including details about the disasters, the associated mitigation costs, and the types of assistance provided.

Table 36. Essex County Declared Disasters (1996-2024)

Disaster	Estimated Damages	Individual Assistance	Public Assistance	Total
January 1996 Flood #1095	$1,421,754	$246,946	$877,967 Federal $141,017 NYS	$2,687,684
November 1996 Flood #1148	$1,120,979	$489,961	$1,980,753 Federal $320,039 NYS	$3,911,732
June 1998 Flood #1233	–	$285,124	$1,147,365 Federal $185,615 NYS	$1,618,104
Spring 2000 Floods #1335	–	–	$25,935 Federal $4,156 NYS	$30,091
April 2011 DR 1993	–	–	$34,404,603	$34,404,603
August 2011 DR4020 (Irene)	–	$102,888,713	$551,424,149	$654,312,862
June 2013 DR 4129	–	–	$57,139,375	$57,139,375
October 2019 DR 4472 (Halloween Storms)	$6,100,000	Not Specified	Not Specified	Not Specified
July 2023 DR 4723 (Severe Storms & Flooding)	TBD	TBD	TBD	TBD

The following flood events are a partial list of events that have impacted Essex County. The National Center of Environmental Information was the source of data for the events.

Table 37. Essex County Flood Events (2018-2024)

Date	Affected Area(s)	Description	Property Damage Reported	Source
7/2023	Countywide	Flash flooding from heavy rain caused damage to roads and some homes.	Significant damage to infrastructure.	Local news reports, County emergency updates
5/2022	Keene Valley, Jay	Spring river flooding due to prolonged rainfall and snowmelt.	Moderate, damages to bridges and roads.	Essex County Flood Mitigation Report
8/2021	Moriah, Ticonderoga	Tropical Storm Henri caused significant flooding in low-lying areas.	Severe, many homes and businesses impacted.	FEMA Disaster Declaration, local news
10/2019	Lake Placid area	Heavy rains caused minor flooding along Au Sable River.	Minimal property damage reported.	NOAA Weather Archives
6/2018	Elizabethtown	Flash floods from summer storms disrupted transportation.	Limited road damage reported.	Local government emergency response notes

Future Potential Events

The probability of a flood occurring at a given location is expressed as the likelihood (in percentage terms) of a flood with a specific magnitude occurring in any given year. A "100-year flood," often referred to as the "base flood," has a 1% annual chance of occurring. While the terminology might suggest such a flood happens only once every 100 years, this is not accurate. A 100-year flood can occur multiple times within a single year or may not occur for many years. Properties within FEMA-designated A-Zones are located in the 100-year floodplain, representing areas subject to higher flood risks. A-Zones provide base flood elevations (BFEs) to support detailed risk analysis, while V-Zones, designated for coastal areas, are not applicable in inland Essex County.

Floodplains are characterized by specific water surface elevations that differ by location, even within a single community, due to local topography and hydrological factors. In Essex County, riverine flooding is a prominent hazard, with significant infrastructure at risk. Critical assets like wastewater treatment plants and emergency medical services (EMS) facilities are mapped within the 100-year floodplain, emphasizing the need for targeted mitigation measures. Jay stands out, hosting the county's only critical asset within the floodplain—a school and EMS station valued at $1.3 million. Updated FEMA Flood Insurance Rate Maps (FIRMs), effective December 2024, will provide more precise data for managing these risks and informing floodplain management efforts.

The most vulnerable towns in Essex County can be assessed by analyzing historic flood claim data. Areas with the highest number of flood insurance policies are typically the most vulnerable. Flood Insurance Rate Maps (FIRMs) have established the probability of future flood occurrences. The "1% chance flood," often referred to in the past as the "100-year flood," is a flood event with a statistical probability of 1% of occurring each year. The previous terminology was misleading, as it suggested that such a flood would occur only once every 100 years. Similarly, the "500-year

DRAFT

floodplain" is more accurately described as the "0.2% chance flood," reflecting a statistical probability of 0.2% of occurring annually.

Floods have a High probability of occurring in Essex County. Flooding probability levels are categorized as:

- Low probability: less than once every 50 years
- Medium probability: once every 8-50 years
- High probability: once every 1-7 years

The table below indicates the number of flood insurance policies for each town and village in Essex County. Claims paid on these policies indicate where most of the flooding damage occurred. The number of policies will change in 2025 as a result of the 2024/2025 FIRM update. Information for this report was compiled from the 2019 Region II Discovery Report Au Sable River Watershed Study:

Table 38. Essex County Flood Insurance Claims

Town or Village	# Policies 2011	# Policies 2018	# Policies 2024	Total Amount of Claims
Chesterfield	11	9	8	$230,558
Crown Point	17	14	14	$7,014
Elizabethtown	13	14	14	$273,106
Essex	3	4	4	$17,651
Jay	38	31	29	$3,130,983
Keene	27	33	33	$922,335
Lewis	2	1	1	$81,086
Moriah	5	2	2	0
Minerva	2	4	4	$6,418
Newcomb	7	11	11	$210,146
North Elba	7	9	16	$205,800
North Hudson	1	3	3	$36,802
St. Armand	3	17	20	$10,248
Schroon	41	29	29	$269,020
Ticonderoga	17	4	4	$41,614
Westport	7	17	17	$169,545
Willsboro	19	19	19	$104,697
Wilmington	7	3	9	$17,137
Total	221	245	248	$5,759,703

FEMA defines a Repetitive Loss (RL) property as an insurable building that has received two or more National Flood Insurance Program (NFIP) claim payments of over $1,000 within any rolling 10–year period since 1978. A Severe Repetitive Loss (SRL) property is defined as one that has either experienced four or more separate claims exceeding $5,000 each, or at least two flood insurance claims where the combined payments for the building surpass the property's current value.

Table 39. Essex County Repetitive Loss Properties

Jurisdiction	# Repetitive Loss Properties up to 2011	# Repetitive Loss Properties up 2012-2019	Historical # Repetitive Loss Properties Totals
Chesterfield	1	1	8
Elizabethtown	3	3	23
Jay	8	15	165
Keene	2	3	5
Lewis	-	-	3
Newcomb	2	3	12
North Elba	0	1	12
Schroon	0	2	2
Westport	1	1	2
Willsboro	1	2	3
Wilmington	-	-	3
Essex County Total	18	31	238

Historical Repetitive Lost Property totals are derived from the 2019 Region II Discovery Report Au Sable River Watershed Study. Please see individual town appendices for town specific information later in this document.

The potential loss to Essex County was documented in the 2024 New York State Plan and it included in the table below.

Table 40. Historic Record of Flood Damages 1960-2023

County	Future Probability %	# Events	Fatalities	Injuries	Property Damage	Expected Annual Loss
Essex	100	121	0	7	$82,008,498	$6,288,338

Climate Change Impacts

DRAFT

Climate change intensifies flooding in the county through increased precipitation, accelerated snowmelt, rising lake levels, and extreme weather events. Climate models project the county will experience more frequent and intense precipitation events due to the warming atmosphere holding more moisture. Higher volumes of rainfall overwhelm river systems, leading to more frequent riverine flooding while saturated soils from prolonged storms increase the likelihood of flash floods. Rising temperatures accelerate snowmelt, causing rivers to swell earlier in the spring.

Rapid snowmelt increases riverine flood risks, and erratic freeze–thaw cycles lead to an increase in ice jam formation and associated upstream flooding. Global warming contributes to rising water levels in Lake Champlain due to increased precipitation and changes in watershed dynamics. Shoreline flooding becomes more frequent and severe, particularly during storm surges, and coastal infrastructure and properties face heightened risks of inundation. Climate change also leads to more frequent and severe storms, including hurricanes and tropical storms, which result in storm–related flooding, damaging infrastructure and displacing residents.

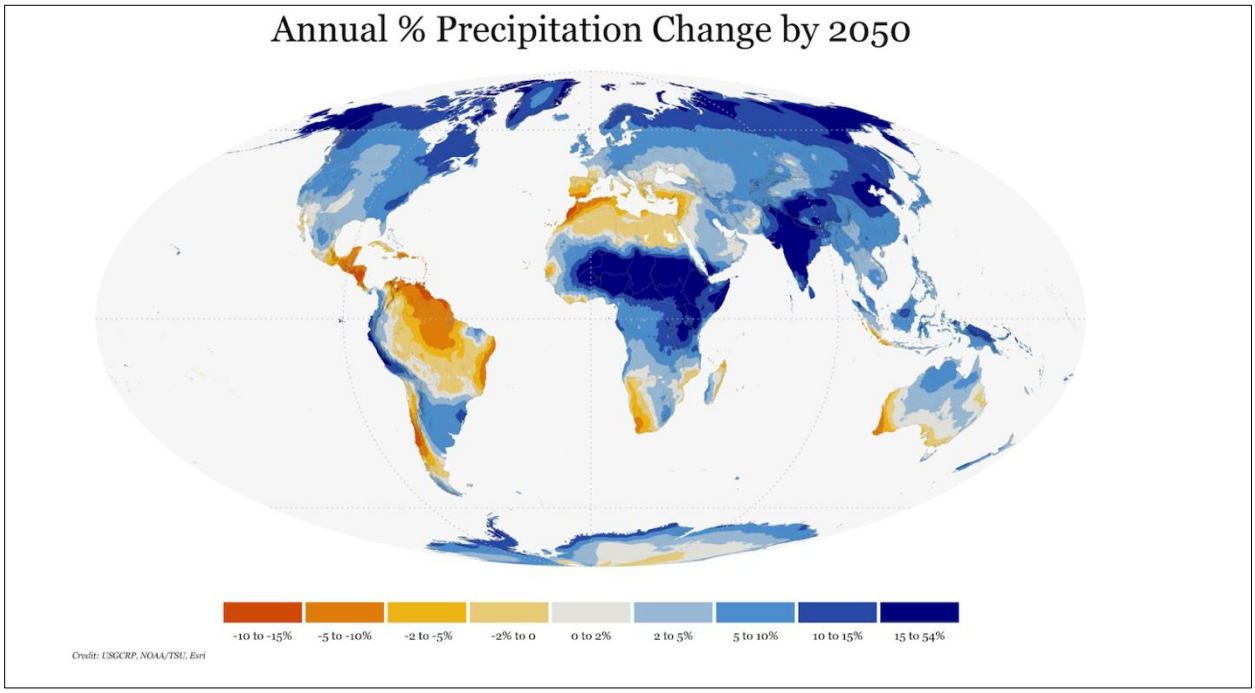


Figure 13. Annual Precipitation Change Map

Climate change–induced flooding projected impacts on Essex County are significant. Infrastructure vulnerability is heightened as roads, bridges, and culverts face increased risks of damage from more frequent flood events. Power and communication systems may experience disruptions during severe flooding. The economic consequences are substantial, with agriculture suffering from crop damage, soil erosion, and delayed planting seasons. Tourism disruptions at iconic locations like Lake Placid and hiking trails could reduce visitor numbers, and increased flooding drives higher premiums for property insurance and NFIP policies. Environmentally, flooding disrupts ecosystems and wildlife habitats, while water quality declines due to increased sedimentation, pollutant runoff, and damage to natural filtration systems. Socially, communities in flood–prone areas face higher displacement risks, health risks from contaminated floodwaters increase, and vulnerable populations experience greater challenges in recovery and adaptation.

Vulnerability Assessment

The consequences of flooding in Essex County are far reaching, affecting individuals, communities, businesses, and ecosystems in profound ways. These impacts can be categorized into several key areas:

- Loss of Human Life and Injuries. Flooding poses direct threats to human life, particularly in fast–moving or severe events like flash floods. Individuals caught in rising waters may face drowning risks, while swift currents can sweep away vehicles and structures. Injuries are also common, ranging from minor cuts and bruises to severe trauma caused by debris and collapsing infrastructure. Vulnerable populations, including children, the elderly, and those with disabilities, face heightened risks during evacuation and rescue operations.
- Displacement of Communities. One of the most disruptive consequences of flooding is the displacement of residents from their homes. Prolonged flooding events, particularly those impacting densely populated areas or low–income communities, can result in mass evacuations. Displaced individuals often require temporary shelter, food, and medical assistance, placing additional strain on local resources. Long–term displacement can also lead to social fragmentation, as families and communities are separated.
- Damage to Infrastructure. Floodwaters can cause significant damage to public and private infrastructure, including roads, bridges, buildings, and utilities. Washed–out roadways and collapsed bridges disrupt transportation networks, isolating communities and delaying emergency response efforts. Utilities like power lines, water treatment plants, and sewage systems are also at risk of failure, resulting in widespread outages and public health concerns. Repairing and rebuilding infrastructure requires substantial financial investments and extended recovery periods. The following table demonstrates those critical facilities currently in the 500-year or (.2%) chance of flooding in any single year:

Table 41. Critical Infrastructure in the .02% Flood Zone

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Elizabethtown Fire Station	Yes	Yes	Yes (electric above BFE)	Yes
Elizabethtown Water Chlorination Plant	Yes	No	No	No
Fire Station Whallonsburg	Yes	Yes	No (needs to be relocated)	Yes
Jay Volunteer Fire Station	Yes	No	Floodplain being updated	Yes
Jay Emergency Operations Center (Town Hall)	Yes	Yes	Heating & electric above BFE	Yes

DRAFT

Medical Clinic	Yes	Yes	No (elevate structure or move to other location)	Yes
Elementary School	Yes	No	Yes	Elementary School
Water Plant	Yes	Yes	Yes (lowest floor above BFE)	Yes
Sewer Lagoon	Yes	Yes	Yes (construct berm around facility)	Yes
Sewer Pump Station	Yes	Yes	No (construct berm around facility)	Yes
Keene Fire Station	Yes	Yes	No (needs to be relocated)	Yes
Keene Clinic	Yes	Yes	No (flood proofing needed)	Unknown
Keene Central School	Yes	Yes	No (needs to be moved or flood–proofed)	Yes
Verizon Station	Yes	Yes	No	Yes
New Comb Sewer Plant	Yes	No	No (needs berm around facility)	Yes
St Armand Wastewater Plant	Yes	No	No (needs berm around plant)	Yes
Ticonderoga Fire Station	Yes	No	No (new facility needed due to condition of current station)	Yes
Ticonderoga Wastewater Plant	Yes	Yes	No (berm needed around facility)	Yes
Ticonderoga Utility/Power Stations	Yes	Yes	No (investigate	Most Likely

			mitigation options)	(confirmation needed)
Westport Wastewater Plant	Yes	Yes	No (needs 500–year flood inundation level determination)	Yes
Willsboro Water Plant	Yes	Yes	No (berm needed)	Unknown
Willsboro Sewer Plant	Yes	Yes	No (berm needed)	Unknown
Wilmington Fire Station	Yes	Yes	No (need to relocate)	Yes

- Economic Losses. The economic consequences of flooding are substantial and multifaceted. Businesses in flood–prone areas experience downtime, inventory losses, and structural damage, leading to reduced revenues and job losses. Agriculture, a critical sector in Essex County, suffers from soil erosion, crop destruction, and reduced yields. Tourism, another key economic driver, is negatively impacted by damage to natural attractions, parks, and recreational facilities. Recovery costs for governments and property owners strain budgets and increase reliance on disaster relief funding.
- Environmental Degradation. Flooding disrupts ecosystems and accelerates environmental degradation. Wetlands and forests, which provide natural flood mitigation services, are often damaged or destroyed, reducing their ability to absorb future floodwaters. Contaminated floodwaters introduce pollutants, including chemicals, heavy metals, and pathogens, into rivers, lakes, and groundwater systems, threatening water quality and aquatic life. Flooding also facilitates the spread of invasive species, further destabilizing ecosystems and displacing native species.
- Long–term Social Impacts. The social consequences of flooding extend beyond immediate displacement and recovery efforts. Repeated flooding events contribute to long–term psychological distress, including anxiety, depression, and post–traumatic stress disorder (PTSD) among affected populations. Social inequalities are also exacerbated, as low–income and marginalized communities often face greater challenges in accessing recovery resources and rebuilding their lives. The loss of community cohesion and cultural heritage due to repeated flooding also has lasting social impacts.
- Strain on Emergency Services. Flooding events place significant strain on emergency services, including law enforcement, fire departments, and medical personnel. These services are often stretched thin during widespread or prolonged disasters, delaying response times and reducing the effectiveness of rescue and recovery operations. Ensuring that emergency services are adequately equipped and staffed to handle flooding events is critical to minimizing the consequences of such disasters.

National Risk Index

DRAFT

The National Risk Index (NRI) evaluates Essex County's risk from natural hazards, including riverine flooding. The county has a “Relatively Low” overall Risk Index score of 50.8, with riverine flooding identified as a “Relatively Moderate” risk with a score of 90.1. This ranking is based on expected annual losses, social vulnerability, and community resilience.

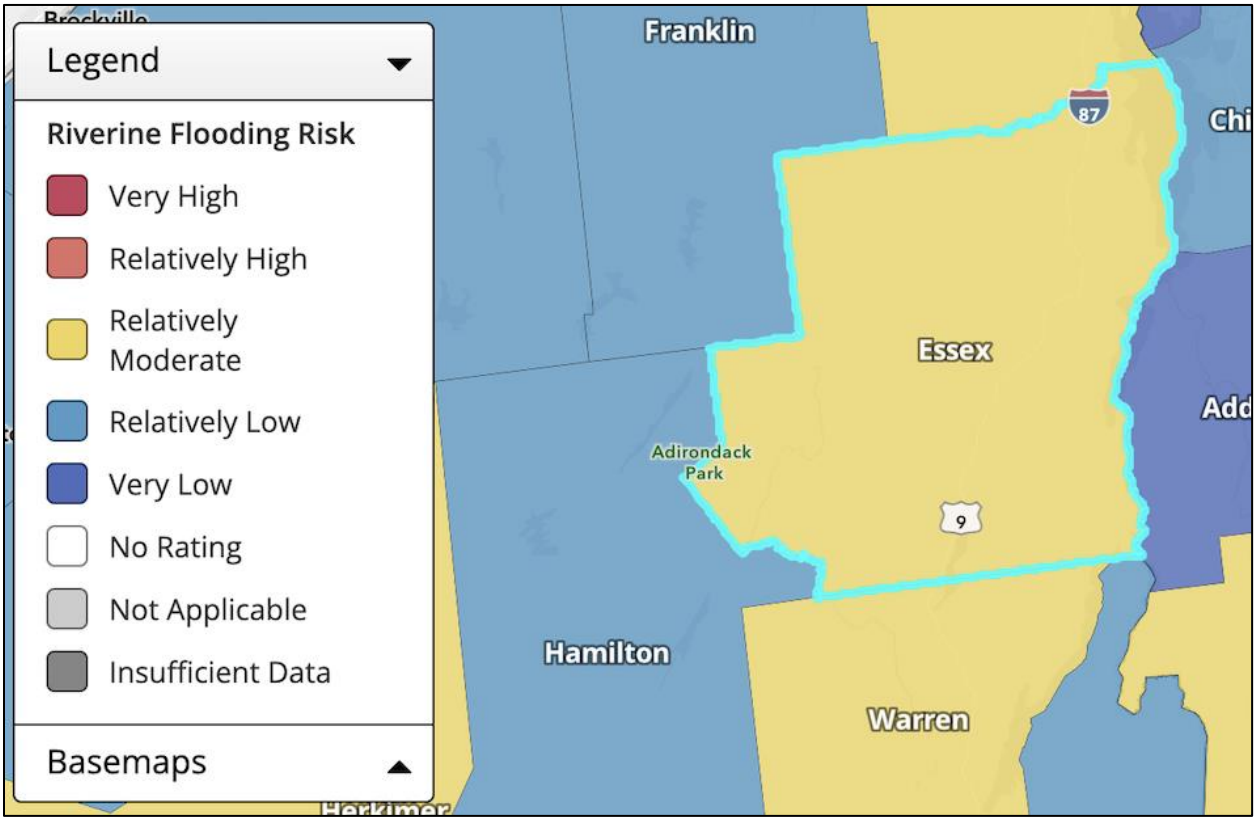


Figure 14. Essex County Riverine Flooding (NRI Map)

Expected Annual Loss (EAL)

Essex County Expected Annual Loss estimates due to flooding:

- Riverine flooding contributes $4,043,445 to annual expected losses, making it the most impactful hazard in the region.
- The county's overall expected annual loss is $6,288,338, relatively low compared to national benchmarks.

Development Trends

Development within floodplains increases flood risks by reducing natural flood absorption and adding impervious surfaces. Adherence to FEMA’s National Flood Insurance Program (NFIP) mitigates risks by enforcing regulations in Special Flood Hazard Areas (SFHAs). Efforts to regulate development and improve floodplain management are crucial for risk reduction.

Community Lifelines

Flooding can severely impact all critical community lifelines, disrupting safety, security, and essential services. Public safety infrastructure, including law enforcement and emergency services, may be compromised, leading to delayed response times and increased risks to the population. Food supply chains and water systems are also at risk, with potential contamination of drinking

water sources and the disruption of access to food and shelter for displaced individuals. Healthcare facilities like hospitals and clinics, can experience interruptions in operations, limiting access to medical care and essential medications. Energy infrastructure, including power and fuel supplies, is often affected, causing outages that hinder residential, commercial, and emergency activities. Communication networks, like cell towers and internet services, may also be damaged, creating challenges in coordinating emergency responses and sharing critical information. Transportation infrastructure, including roads, bridges, and railways, frequently sustains damage during floods, complicating evacuation efforts and disrupting supply chains. Lastly, floodwaters can spread hazardous materials like chemicals, oils, and sewage, resulting in environmental contamination and significant public health risks. These widespread effects underscore the importance of robust flood mitigation strategies to protect and sustain vital community lifelines.

Results

The comprehensive analysis of flooding reveals a complex interplay of environmental, social, and economic factors that amplify the impacts of flood events. Several overarching conclusions emerge from this assessment:

- Increasing Frequency and Severity of Flood Events. Climate change is driving an increase in the frequency and severity of flooding across Essex County. Rising precipitation levels, accelerated snowmelt, and more intense storms are contributing to higher water levels in rivers, lakes, and coastal areas. These changes are expected to worsen over time, placing greater stress on local communities and infrastructure.
- Critical Infrastructure Vulnerability. Roads, bridges, utilities, and critical facilities are particularly vulnerable to flooding. Damage to this infrastructure disrupts emergency response efforts, isolates communities, and prolongs recovery times. Ensuring the resilience of these systems is essential to mitigating the impacts of future flood events.
- Disproportionate Impacts on Vulnerable Populations. Flooding disproportionately affects vulnerable populations including low–income families, the elderly, and those with limited mobility. These groups face greater challenges in preparing for, responding to, and recovering from flooding events, exacerbating existing social inequalities.
- Significant Economic Consequences. Flooding results in substantial economic losses, including damage to homes, businesses, and agricultural lands. Prolonged disruptions to tourism and local commerce further strain the regional economy, while rising insurance premiums and recovery costs create additional financial burdens for residents and governments.
- Environmental Degradation and Ecosystem Disruption. Flooding causes extensive environmental damage, including erosion, habitat destruction, and the contamination of water bodies. These impacts threaten biodiversity and reduce the natural resilience of ecosystems, further increasing the risk of future flooding.
- Need for Comprehensive Mitigation and Adaptation Strategies. Addressing the challenges posed by flooding requires a multifaceted approach that integrates infrastructure improvements, land use planning, environmental conservation, and community engagement. Proactive investments in resilience and preparedness will reduce the long-term costs and impacts of flooding.

DRAFT

- Importance of Regional and Policy Coordination. Collaboration among local, state, and federal agencies is critical to effectively managing flood risks. Coordinated efforts to secure funding, implement mitigation projects, and enforce climate–resilient policies will enhance the overall capacity of Essex County to adapt to changing flood conditions.
- Long–term Benefits of Natural Solutions. Restoring wetlands, forests, and floodplains offers cost–effective and sustainable solutions to managing flood risks. These natural defenses provide critical ecosystem services like water filtration and carbon sequestration, while also reducing the intensity and duration of flood events.

By synthesizing these findings, it is evident that flooding poses a significant and multifaceted threat to Essex County. The county can enhance its resilience to flooding with targeted actions and collaborative efforts, creating a safer, more sustainable future for its residents and ecosystems.

Hazard: Severe Thunderstorms (High Winds, Hailstorms, Tornado)

A severe thunderstorm is a storm capable of producing one or more of the following: hail with a diameter of 1" or larger, winds reaching speeds of 58 mph or greater, or a tornado.

- Windstorms. Wind is the natural movement of air or other gases within Earth's atmosphere, primarily caused by differences in air pressure. Pressure differences result from uneven heating of the Earth's surface by the sun. Air moves from areas of high pressure to areas of low pressure, creating wind. Wind speed and direction can vary depending on geographic location, altitude, and weather conditions, and it plays a significant role in shaping weather patterns, transporting heat and moisture, and driving storm systems. It can range from light breezes to powerful gusts, like those found in hurricanes, tornadoes, and other severe weather events. Wind, in general, is caused by the interaction of different temperatures of air masses. Thunderstorms, for example, are caused by the interaction of a cold front colliding with a warm front, with the cold air sinking under the warm mass of air. This explains the winds and cooling of temperatures commonly seen immediately prior to a thunderstorm.
- Tornado. A tornado is a violent windstorm characterized by a twisting, funnel–shaped cloud extending to the ground. Tornadoes are most often generated by thunderstorm activity (but sometimes result from hurricanes or tropical storms) when cool, dry air intersects and overrides a layer of warm, moist air forcing the warm air to rise rapidly. The damage caused by a tornado is a result of high wind velocities and wind–blown debris. According to the National Weather Service, tornado wind speeds can range between 30-300 mph. Tornadoes are more likely to occur during the spring and early summer months of March through June, most likely forming in late afternoon and early evening. Most tornadoes are a few dozen yards wide and touchdown briefly, but even small, short–lived tornadoes can inflict tremendous damage.
- Hail. Hail is a significant hazard characterized by the formation of irregular pellets or balls of ice with a diameter greater than 5mm, which fall from cumulonimbus clouds. Hailstones form when supercooled water droplets freeze onto ice particles, often near the backside of a storm. These particles are carried through the storm by strong updrafts and prevailing winds, allowing them to grow larger before falling to the ground as downdrafts take over. Hail formation occurs through two primary processes: wet growth and dry growth. In wet growth, hailstones develop in areas where temperatures are below freezing but not extremely cold. Supercooled water droplets collide with the ice particle, spreading across its surface and freezing gradually, producing clear layers of ice as air bubbles escape. In dry growth, the ice forms in much colder conditions, where water droplets freeze instantly upon contact, trapping air bubbles and resulting in cloudy ice. Hailstone sizes vary significantly, with large hailstones sometimes melting and refreezing together, creating irregular shapes. The size is often reported using comparisons to everyday objects for clarity. Hail poses a substantial risk due to its potential to cause widespread property damage, agricultural losses, and even injuries. A hail index is used to assess the likelihood of hail formation based on storm structure. Understanding hail size (described in the table below) and formation processes is essential for hazard profiling, as these factors influence the severity of impacts on communities and infrastructure.

Table 42. Hail Diameter Description

DRAFT

Description	Diameter (inches)
Pea	0.25
Marble or Mothball	0.50
Penny or Dime	0.75
Nickel	0.88
Quarter	1.00
Half Dollar	1.25
Walnut or Ping Pong Ball	1.50
Golf Ball	1.75
Hen's Egg	2.00
Tennis Ball	2.50
Baseball	2.75
Teacup	3.00
Grapefruit	4.00
Softball	4.50

Location and Extent

Severe thunderstorm risk categories are essential for assessing and communicating the potential impact and intensity of severe weather events. The Storm Prediction Center (SPC) classifies these risks on a scale ranging from "Marginal" to "High," indicating the likelihood of damaging winds, large hail, and tornadoes. These categories play a critical role in guiding local preparedness and response efforts, as the region's infrastructure, rural communities, and tourism–driven economy are particularly vulnerable to the impacts of severe weather.

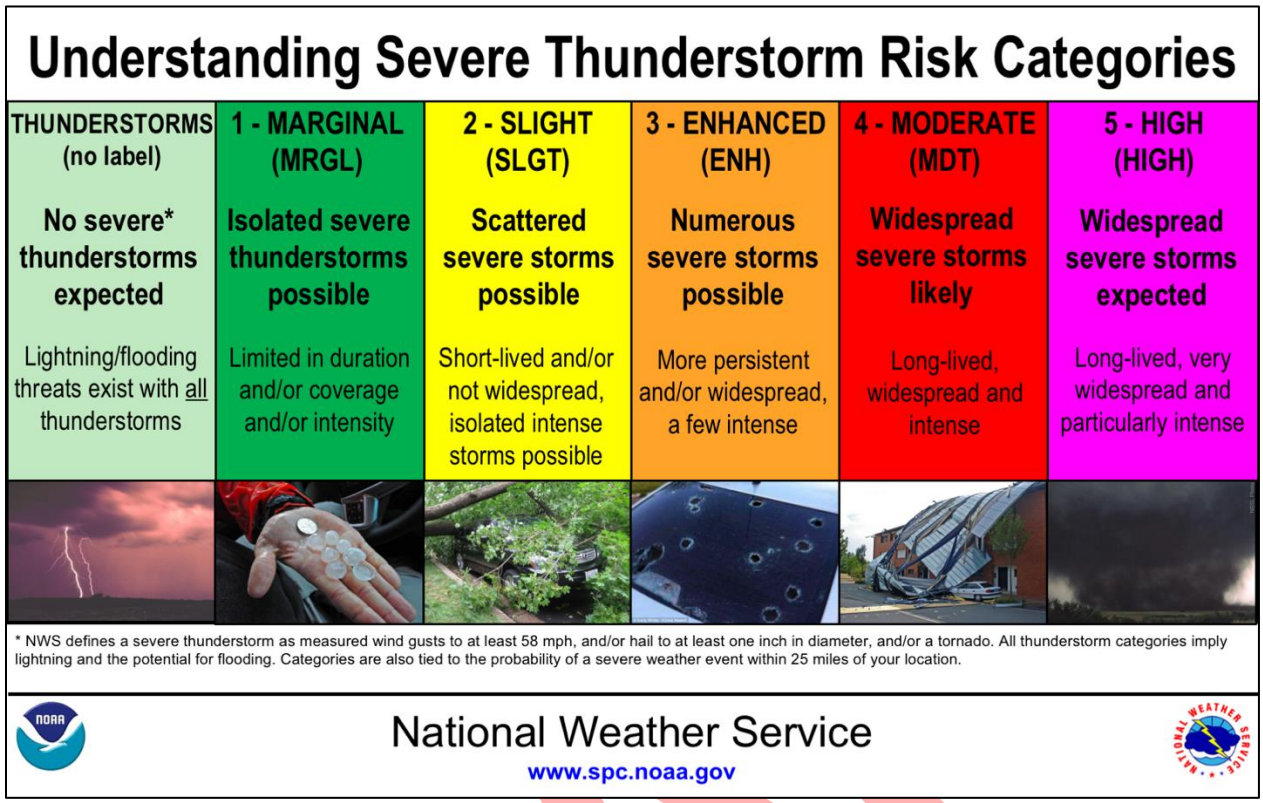


Figure 15. Thunderstorm Risk Categories

A "Marginal" or "Slight" risk may indicate the potential for isolated severe storms, prompting localized preparedness measures while an "Enhanced" or "Moderate" risk highlights an increased chance of more widespread and significant impacts including downed trees, power outages, property damage, and transportation disruptions. Although infrequent in Essex County, a “High” risk signals an extraordinary threat, requiring immediate, coordinated action to protect life and property. Given the regional combination of mountainous terrain and population centers, severe weather events can lead to flash flooding, road closures, and extended recovery periods. Understanding and acting on these risk categories is crucial for minimizing the impacts of severe thunderstorms on Essex County residents and infrastructure.

The National Weather Service has determined wind zones for the United States. The following map indicated that Essex County is located in the Zone 2 which can experience winds up to 160 mph.

DRAFT

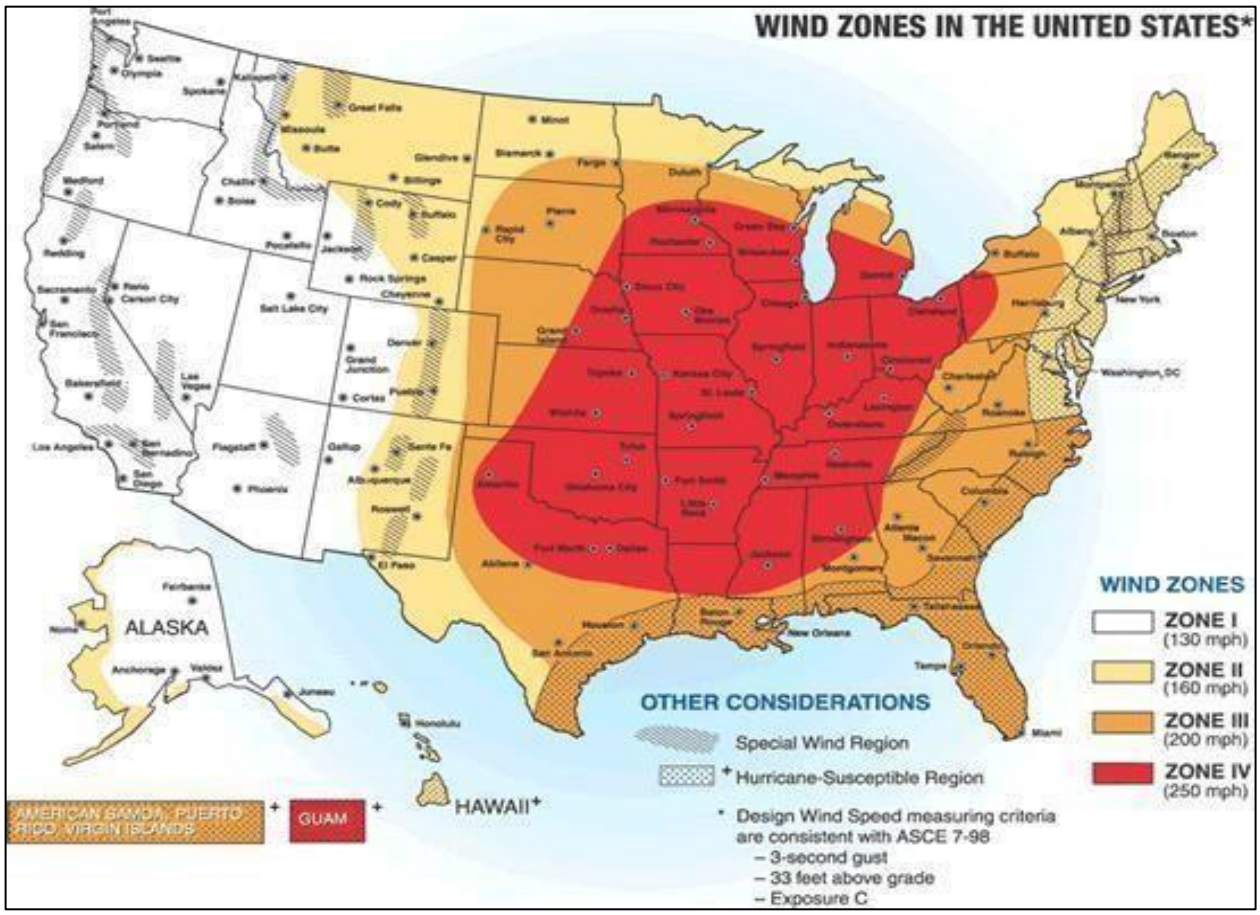


Figure 17. Wind Zones

Hailstorm events can occur anywhere in the state independent of, or during, a tornado, thunder, or lightning storm event. The entire county has the potential to be impacted by a hail event. Hailstorm occurrences are typically localized in scale, and while past occurrences have resulted in loss of life, the severity is not considered likely to cause a life safety threat to large populations. There is no cost–effective method to mitigate future property and crop damage caused by hailstorms. Impacts to structures and automobiles can be severe, but agricultural crop damage can be the largest impact from a hail event.

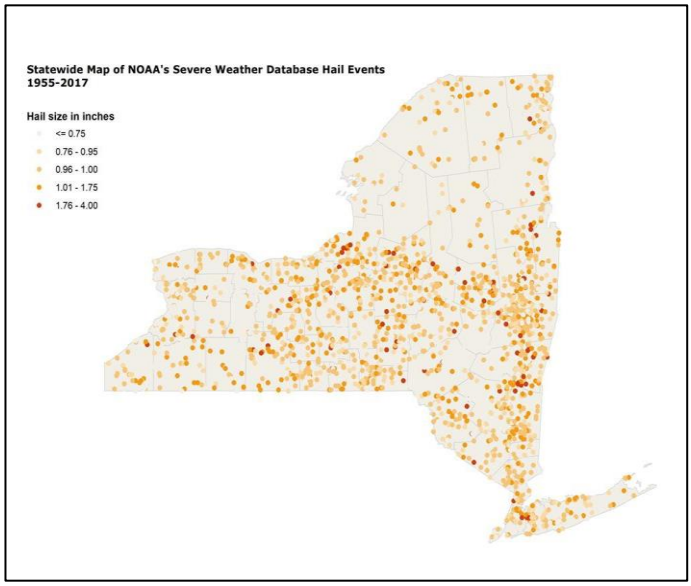


Figure 16. Statewide Map of Severe Weather Database Hail Events 1955-2017 (NOAA)

Tornadoes can occur throughout the county, though tornadic events are usually localized. Severe thunderstorms may result in conditions favorable to the formation of numerous or long–lived tornadoes. Tornadoes can occur at any time during the day or night but

are most frequent during late afternoon into early evening—the warmest hours of the day—and most likely to occur during the spring and early summer months of March through June. Damages and deaths can be especially significant when tornadoes strike populated, developed areas. The destruction caused by tornadoes ranges from light to extreme, depending on the intensity, size, and duration of the storm. Tornadoes typically cause the greatest damage to structures of light construction like mobile homes. The Enhanced Fujita Scale, also known as the "EF–Scale," measures tornado strength and associated damages. The EF–Scale is an update to the earlier Fujita Scale, also known as the "F–Scale" published in 1971. It classifies United States tornadoes into six intensity categories (shown in the table below) based on the estimated maximum winds occurring within the wind vortex. Since its implementation by the National Weather Service in 2007, the EF–Scale has become the definitive metric for estimating wind speeds within tornadoes based upon damage to buildings and structures. F–Scale categories with corresponding EF–Scale wind speeds are provided in the table below since the magnitude of previous tornado occurrences is based on the F–Scale.

Table 43. Enhanced Fujita Scale (EF–Scale) Categories with Associated Wind Speeds and Description of Damages

EF–Scale Number	Wind Speed (MPH)	F–Scale Number	Type of Damage Possible
EF0	65-85	F0–F1	Minor damage: Peels surface off some roofs; some damage to gutters or siding; broken tree branches; shallow–rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e., those that remain in open fields) are always rated EF0.
EF1	86-110	F1	Moderate damage: Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	F1–F2	Considerable damage: Roofs torn off well–constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light–object missiles generated; cars lifted off ground.
EF3	136-165	F2–F3	Severe damage: Entire stories of well–constructed houses destroyed; severe damage to large buildings like shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	166-200	F3	Devastating damage: Well–constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF5	>200	F3–F6	Extreme damage: Strong frame houses leveled off foundations and swept away; automobile–sized missiles fly through the air in excess of 100 m (300 ft); steel reinforced concrete structure badly damaged; high–rise buildings have significant structural deformation.

DRAFT

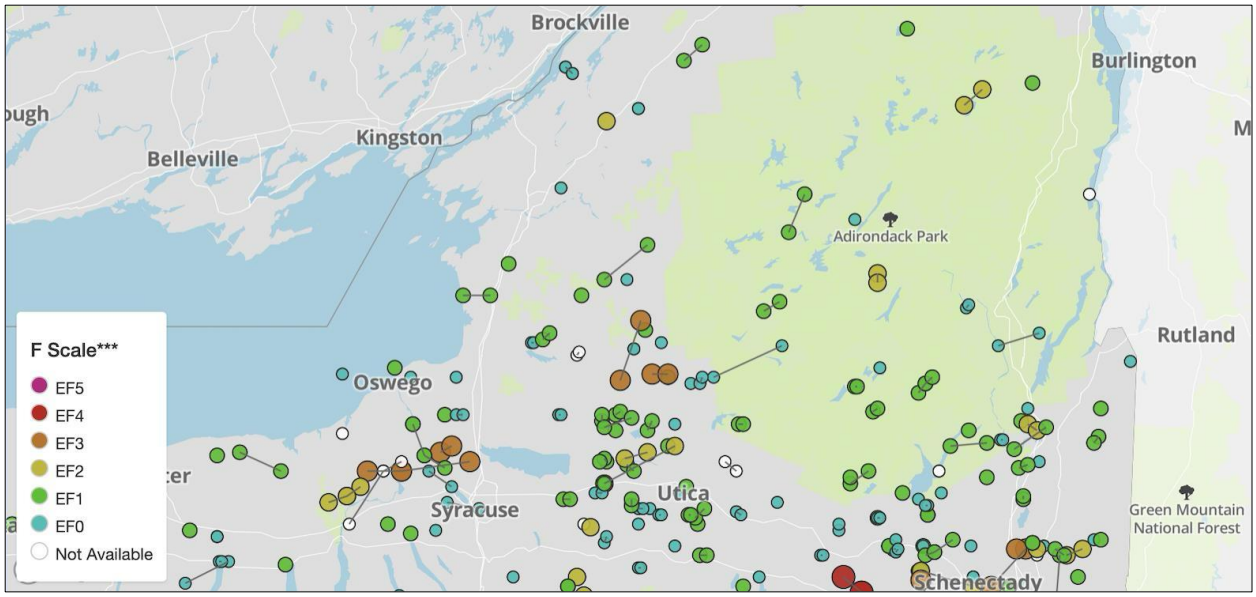


Figure 18. Essex County Tornadoes

Historical Occurrences

Severe thunderstorm events have shown significant variability in both frequency and cost over the years. The highest recorded cost occurred in 1999, with a total of $2,266,000 from just five events—indicating these storms were particularly severe and destructive. Conversely, 2012 saw the highest number of events with 22 storms recorded, yet the total cost of damages from these events that year was $229,000, suggesting that many of these storms caused less severe impacts. The 2008-2012 time period was particularly active, with multiple years experiencing 14 or more events, consistently resulting in significant costs. Storm activity remained Moderate to High in 2021 and 2022, with damages ranging from $148,000 to $200,000.

These events represent reported severe thunderstorms and do not necessarily include costs or impacts associated with declared disasters. Declared disasters typically encompass broader weather systems or compound events like hurricanes or tornado outbreaks, which may have resulted in additional damage not reflected in this dataset. The costs and number of events presented here may underestimate the total impacts of severe weather on the county.

Interestingly, there is not always a direct correlation between the number of events and total costs. For example, in 1999, the average cost per event was exceptionally high at $453,200 while in 2020, the average cost per event was just $4,167 despite six storms occurring that year. This highlights the severity of individual events, rather than just their frequency, plays a critical role in driving economic impacts. The most active and costly years like 1999, 2008, 2011, and 2017 demonstrate challenges posed by severe thunderstorms in Essex County, emphasizing the importance of mitigation strategies.

While storm frequency and costs fluctuate, trends suggest a need for sustained investment in infrastructure resilience, public preparedness, and hazard mitigation, particularly during the active spring and summer months when storm activity is highest. The National Center of Environmental Information (NCEI) and the New York State Hazard Mitigation Plan was used to obtain information on severe thunderstorm events that have impacted Essex County.

Table 44. Events in Essex County 1996-2022

Event	Timeframe	# of Events
Thunderstorm Wind	2018-2024	56
Strong Wind	2018-2024	17
High Wind	2018-2024	3
Tornado	2018-2024	0
Hail	2018-2024	12

Five tornadoes recently impacted Essex County. The 1978 tornado touched down in Port Henry. The 1958 tornado touched down in Jay. The 1952 tornado had a northeast path from west of Moose Island in Lake Placid to Wilmington. One of the more notable incidents occurred on July 15, 1995, when a tornado touched down near Ticonderoga, causing damage to trees, structures, and power lines. Another significant tornado event took place on July 16, 2006, in Schroon Lake where a tornado damaged homes, uprooted trees, and disrupted area travel. The National Centers for Environmental Information (NCEI) had no data on the economic impact from these three tornadoes impacting the county.

The following narratives serve as examples of some of the wind events experienced in Essex County. This is not an exhaustive listing of wind events. Additional information on other wind events can be obtained from the storm events database from the NCEI website.

- November 1998 Wind Event. A strong storm system in the western Great Lakes region Tuesday (November 10) moved into southern Canada late Tuesday night and Wednesday (November 11). Strong southerly winds occurred across the area Tuesday evening into early Wednesday before shifting to the west Wednesday. Strong winds blew across Essex county, downing trees and power lines, with reported power outages. Winds were strongest in eastern portions of the county with a metal storage building blown off its foundation in Elizabethtown during overnight hours.
- November 1999 Wind Event. A storm system formed over the Tennessee Valley Tuesday morning (November 2) and moved northeast into the St. Lawrence Valley Wednesday morning (November 3). Strong winds developed ahead of this system. The strongest wind reported was an estimated 46 knots (53 mph) in Saranac Lake at 10 p.m. Trees and power lines were blown down with approximately 5000 people without power in and around Lake Placid. Trees were blown down with roads closed in the towns of Raybrook, Minerva, and Newcomb.
- February 2001 Wind Event. A strong storm system moved across the Canadian Province of Quebec Friday night, February 9th and Saturday, February 10th. The associated cold front was accompanied and followed by very windy conditions. In Bloomingdale, trees and power lines were blown down around 5:30 a.m. while in Ticonderoga, trees were blown down around 9 a.m.
- May 2018 Wind Event. May 4, 2018, a thunderstorm and wind event impacted 90% of Essex County. An electric trunk line was put out of service. An almost complete power loss event occurred throughout the county. Essex County Department of Public Works was moving generators to facilities to provide temporary power. The Essex County Fish Hatchery lost three years of fish stock due to a lack of a generator at the site. Lewis' water supply was almost lost

DRAFT

without the sharing of generator resources. This loss of water would have impacted the county jail and emergency services building. Towns and Villages informed residents of the situation by the use of municipal Facebook pages. Residents assisted other residents by sharing water, food and generators to preserve food in freezers.

- August 2020 Wind Event. Since 2018, one of the most notable severe thunderstorm events in Essex County, occurred on August 5, 2020, when intense storms swept through the region bringing damaging winds, large hail, and torrential rain. This event was part of the broader impacts of Tropical Storm Isaias, which affected much of the northeastern United States. In Essex County, the storms caused widespread tree damage, downed power lines, and localized flooding. Wind gusts of up to 60-70 mph were reported in several areas and hail up to one inch in diameter was observed, compounding the damage to property and vegetation.

The storm caused prolonged power outages in towns like Ticonderoga, Elizabethtown, and Schroon Lake, leaving thousands of residents without electricity for days. Roads were blocked by fallen trees and debris, disrupting travel and emergency response efforts. The combination of saturated soils and heavy rain led to flash flooding in low–lying areas, further complicating recovery efforts.

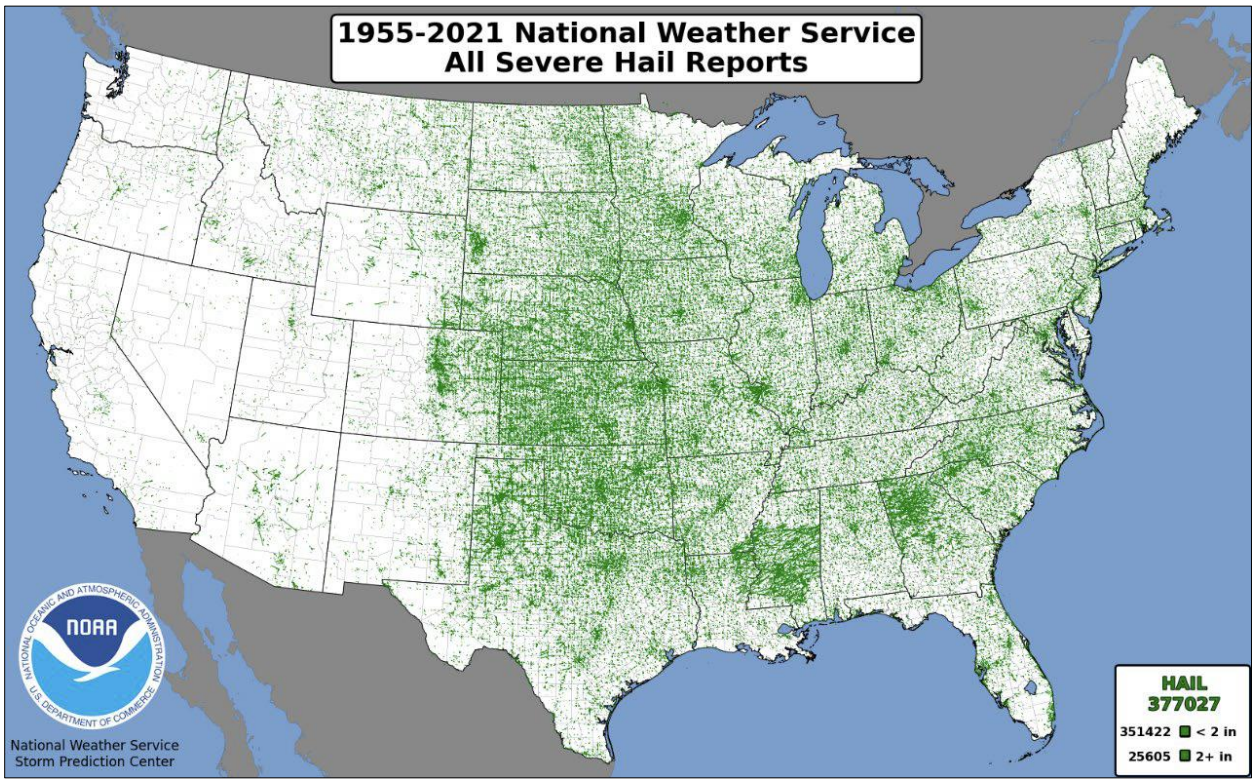


Figure 19. Severe Hail Events, 1955-2021

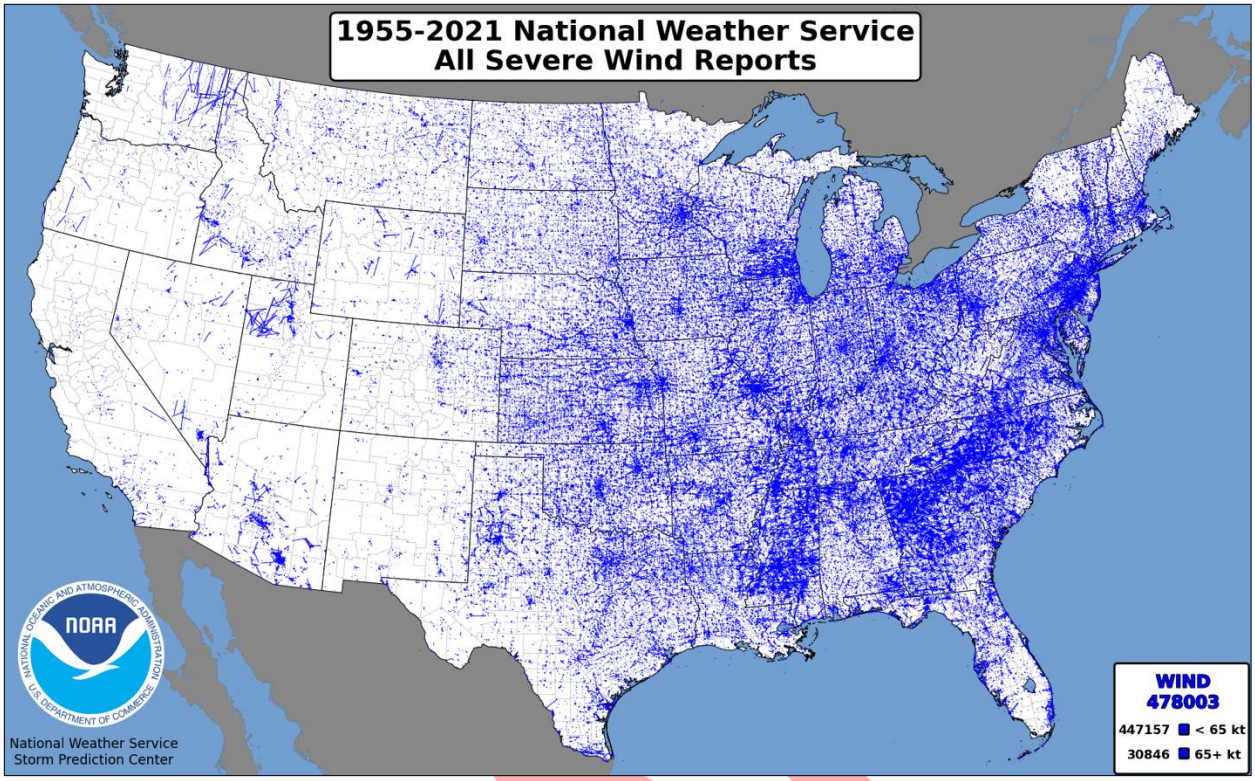


Figure 20. Severe Hail Events, 1955-2021

Future Potential Events

Severe thunderstorms are a recurring hazard, categorized as having a High probability of occurring in the future (once every 1-7 years). These storms are often accompanied by damaging winds, hail, and occasionally tornadoes—all of which pose threats to property, infrastructure, and public safety.

- Damaging Winds. Damaging Winds are the most common threat associated with severe thunderstorms in Essex County and are also categorized as having a High probability of occurrence.
- Hail. Hail, while less common, has been recorded during severe thunderstorms. It is considered a Low probability hazard (less than once every 50 years), as past hail events were infrequent, causing minimal economic impact.
- Tornadoes. Tornadoes are rare in Essex County but are classified as having a Low to Medium probability (once every 8-50 years). Mountainous terrain in the county makes tornado formation less likely compared to flat regions, but severe thunderstorms can still create conditions conducive to tornadoes, especially during the late spring and summer months.

Climate Change

- Wind. Climate change is expected to influence wind patterns and intensities, although the extent and nature of these impacts remain complex and uncertain. Warming temperatures can alter pressure gradients and atmospheric circulation patterns leading to regionally specific changes in wind behavior. Wind speeds may increase in some areas, particularly during extreme weather events like cyclones or thunderstorms, while other areas may experience a reduction in average wind speeds due to changes in global circulation patterns.

DRAFT

In the Northeast, projections suggest that while average wind speeds may not change significantly, there could be an increase in the frequency and intensity of extreme wind events associated with storms like hurricanes and severe thunderstorms. Shifts in storm tracks due to warming could influence areas most affected by high winds. As of early 2023, long–term trends in wind speeds in the U.S. remain unclear. More research is needed to improve predictions of how wind patterns will evolve under future climate scenarios.

- Tornadoes. The relationship between climate change and tornadic activity is not yet fully understood, largely due to the complexity of the atmospheric conditions required for tornado formation. Tornadoes depend on a combination of warm, moist air at low levels and cooler, drier air aloft, along with strong wind shear. While warming temperatures could theoretically increase the energy available for severe storms, changes in wind shear due to climate change could either enhance or suppress tornado formation, depending on the region.

  Recent studies suggest the overall geographic distribution of tornado activity in the U.S. may be shifting, with a decrease in frequency in traditional "Tornado Alley" regions of the Great Plains and an increase in parts of the Midwest, Southeast, and Northeast. There is no clear evidence the total number of tornadoes is increasing. The potential for more intense tornado outbreaks remains a concern, as warming could increase the atmospheric instability required for severe storms. Research into how the effects of climate change may specifically affect tornado frequency, intensity, and duration remains inconclusive. Tornadoes are rare in the Northeast, including Essex County, but any increase in severe weather patterns could elevate risks in the future.

- Hail. Climate change is projected to alter hailstorm frequency and severity across North America, though the effects will vary by region. In general, studies indicate that while the overall number of hail days may decrease in the Northeast, hailstorms that do occur are likely to feature larger hailstones. This shift is linked to the warming atmosphere, which enhances the updrafts within thunderstorms, creating conditions more favorable for the formation of large hail.

  For the Northeast, including Essex County, models suggest that small– and medium–sized hail events will decrease, but the frequency of very large hailstones is expected to rise. These larger hailstones pose greater risks to infrastructure, agriculture, and public safety. The overall trend toward fewer hailstorms means that hail may become a less frequent, but more damaging, hazard.

Uncertainty remains regarding how climate change will affect the duration of hail events or the precise impacts of warming on hailstorm dynamics. Research continues to refine predictions on hailstorm patterns, but current projections indicate the need for resilience planning to address potential increases in hail severity.

Vulnerability Assessment

Severe thunderstorm impacts in Essex County are broad and significant, affecting individuals, communities, infrastructure, and ecosystems. These impacts can be categorized into the following key areas:

- Loss of Human Life and Injuries. Severe thunderstorms pose direct threats to human life, particularly when accompanied by hazards like tornadoes, high winds, and hail. High winds and flying debris can result in trauma or fatalities. Vulnerable populations, including children, the

elderly, and those with disabilities, face heightened risks during evacuation, sheltering, or rescue operations, especially when fast–developing weather events provide little warning.

- Community Displacement. Severe thunderstorms can lead to temporary displacement of residents of damaged or destroyed homes, particularly in cases of wind–driven structural failures or roof collapses. Hail and tornadoes may exacerbate displacement, forcing families to seek temporary shelter. This is especially disruptive for low–income households or those in mobile homes, with recovery from property damage often requiring extended recovery periods. Prolonged displacement periods fragment communities, straining social resources.
- Infrastructure Damage. Infrastructure damage is a significant consequence of severe thunderstorms. High winds and tornadoes can destroy power lines, communication systems, and transportation networks, while hail can damage roofs, siding, and vehicles. Roads may become impassable due to debris or flooding from heavy rain, delaying emergency response efforts, further isolating communities. Utility failures, like power outages or disruptions to water and sewer systems, are common and can have cascading effects on public health and safety.
- Economic Loss. The economic impacts of severe thunderstorms are multifaceted. Businesses suffer from property damage, inventory losses, and downtime, leading to decreased revenue and job losses. Agriculture, a vital sector in Essex County, is particularly vulnerable, with crops and livestock susceptible to hail, wind, and heavy rain. The tourism industry may also experience declines due to damage to natural attractions and outdoor recreational areas. Recovery costs, including repairs to public infrastructure and private property, place financial strains on local governments and residents, often increasing reliance on disaster relief funding.
- Environmental Degradation. Severe thunderstorms can disrupt ecosystems, contributing to environmental degradation. Torrential rain often leads to soil erosion, sedimentation of waterways, and damage to wetlands and forests. Hailstorms can destroy vegetation, while wind and tornadoes may uproot trees and disrupt habitats. Stormwater runoff from heavy rains often carries pollutants, including chemicals and debris, into rivers, lakes, and groundwater, degrading water quality and threatening aquatic life.
- Long–term Social Impacts. The social impacts of severe thunderstorms extend beyond immediate damage. Repeated exposure to such events contributes to long–term psychological distress, including anxiety, depression, and post–traumatic stress disorder (PTSD), particularly in individuals who have experienced significant property damage or injury. Vulnerable populations, like low–income families, often face greater challenges accessing recovery resources and rebuilding after storms, exacerbating existing social inequalities. Severe thunderstorms challenge community cohesion, especially when displacement separates families and disrupts social networks.
- Strain on Emergency Services. Severe thunderstorms place significant demands on emergency services including law enforcement, fire departments, and medical personnel. High call volumes and widespread damage often stretch these resources thin, reducing response effectiveness during rescue and recovery efforts. Tornadoes, hail, and wind events compound challenges faced by emergency personnel by creating hazardous conditions, impeding access to affected areas. Ensuring emergency services are adequately trained, staffed, and equipped to respond to severe thunderstorms is critical to minimizing the impact of these events.

DRAFT

National Risk Index (NRI)

Demonstrating complexities associated with severe thunderstorms, the National Risk Index (NRI) categorizes risks of tornadoes, high wind, and hail individually to better inform preparedness and mitigation efforts. The following information focuses on the NRI's findings for hail, high wind, and tornadoes. Risk Index scores are calculated using an equation that combines scores for Expected Annual Loss due to natural hazards, Social Vulnerability, and Community Resilience.

- High Wind. The NRI includes data on the risk scores for individual natural hazards, historical loss, and overall risk at the county and census tract levels. According to the NRI, Essex County has a Relatively Low risk index rating with a 24.70 score for high wind when compared to other places in the US.

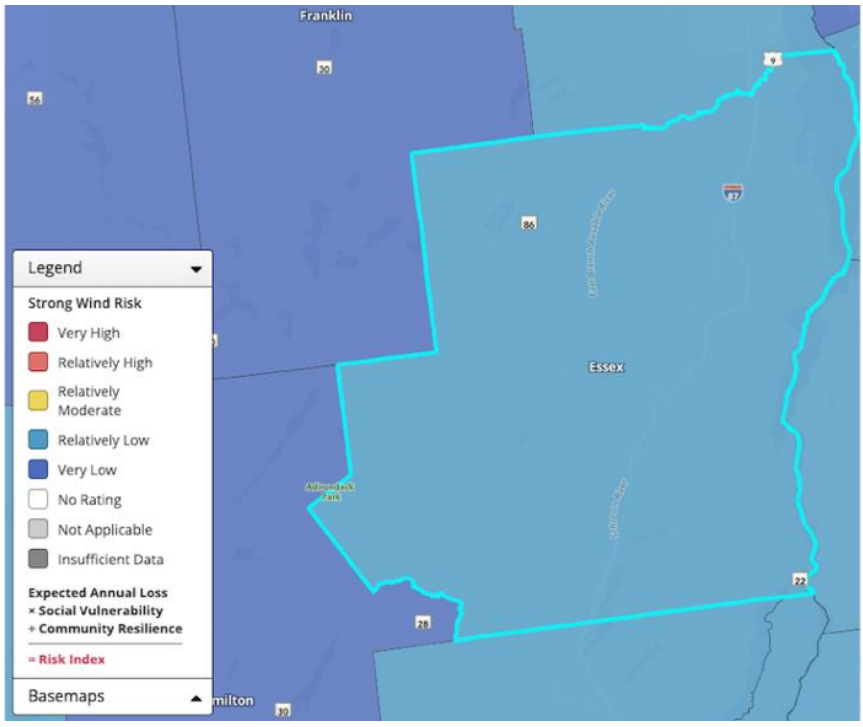


Figure 21. High Wind National Risk Score

- Hail. According to the NRI, Essex County has a Very Low rating risk index rating for hail with a score of 14.00 when compared to the rest of the US.

- Tornadoes. According to the NRI, Essex County has a Very Low risk index rating for tornadoes with a 22.00 score when compared to the rest of the US.

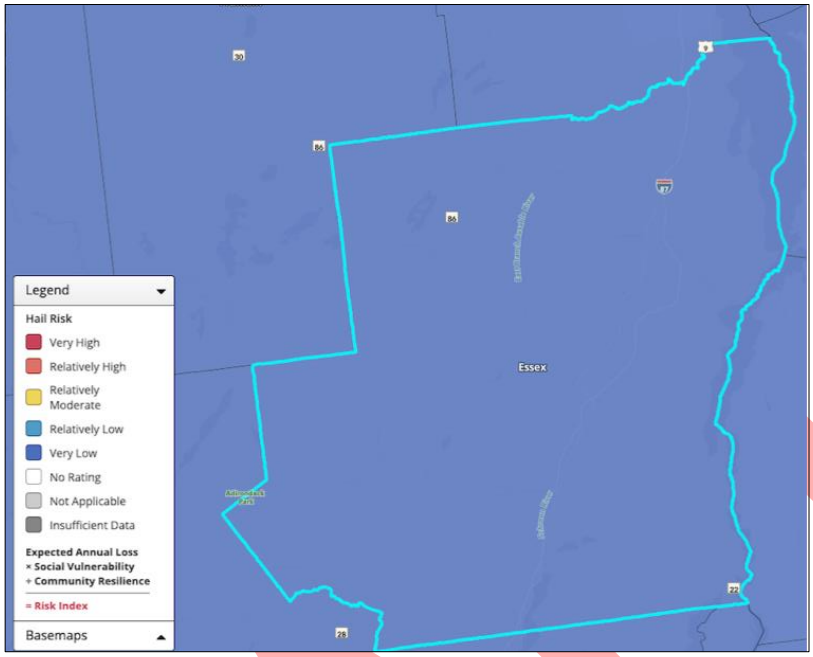


Figure 22. Tornadoes and Hail National Risk Index

Expected Annual Loss (EAL)

Table 45. Expected Annual Loss for Severe Thunderstorm Components

	High Wind	Hail	Tornado
Historic Ration	Relatively Low	Very Low	Relatively Low
Exposure Annual Loss Amount	$140K	$15K	$260K
Frequency	.9 events/year	1.3 events/year	.1 events/year
Population Impacted	0	0	.01
Agriculture Value	$270	$47	$591

Development Trends

Severe thunderstorms pose significant challenges to the growth and development trends. With its location in the Adirondack region and reliance on natural resources, tourism, agriculture, and infrastructure development, the county faces heightened risks from the extreme weather events associated with thunderstorms, including, strong winds, hail, as flooding is discussed in another profile.

DRAFT

Tourism, the cornerstone of Essex County economy, is highly vulnerable to severe thunderstorms. The county outdoor recreation industry, including hiking, camping, skiing, and water sports, depends on favorable weather. Thunderstorms can lead to sudden cancellations of activities, closure of trails, and disruptions to seasonal events, directly reducing visitor numbers and revenue. Infrastructure damage from high winds or flooding, like washed–out trails, roads, and ski facilities, can require significant repairs, further straining the resources of businesses and local governments.

The county agricultural sector, though small, is deeply affected by severe thunderstorms. Wind and hail can damage crops, leading to reduced yields for key products like apples and dairy feed. Strong winds pose risks to livestock shelters and barns, requiring farmers to invest in reinforced structures. Forestry operations, a significant contributor to the local economy, are also disrupted by tree blowdowns and erosion in logging areas, which can make timber inaccessible and increase operational costs.

The environmental conservation efforts in Essex County, particularly in the Adirondack Park, are directly affected by the frequency and severity of thunderstorms. Trails and campgrounds, essential for both conservation and recreation, often require costly repairs after storm damage. The increased frequency of thunderstorms is consistent with climate change projections, further stressing county needs for climate adaptation strategies. Severe thunderstorms significantly impact Essex County development trends, particularly in tourism, infrastructure, agriculture, and environmental conservation.

Community Lifelines

Severe thunderstorms have the potential to significantly disrupt community lifelines—critical services that enable the continuous operation of communities and ensure public safety. These impacts are assessed according to the FEMA Community Lifeline framework which includes seven lifeline categories: Safety and Security, Food, Water, and Shelter, Health and Medical, Energy (Power and Fuel), Communications, Transportation, and Hazardous Materials.

- Safety and Security. Severe thunderstorms can compromise public safety and security by causing widespread infrastructure damage, downed trees, and flying debris. High winds, hail, and tornadoes can damage buildings, including police stations, fire departments, and emergency shelters, reducing their operational capacity. Tornadoes or localized wind damage may also create unsafe areas requiring evacuation or emergency response, further straining law enforcement and emergency personnel resources.
- Food, Water, and Shelter. Thunderstorm–related damage to homes and businesses can displace residents, increasing the need for emergency shelters and food distribution services. Power outages caused by downed lines disrupt refrigeration, leading to potential food spoilage. Heavy rainfall and flooding associated with thunderstorms may contaminate water supplies or damage water treatment facilities, affecting the availability of clean water. Vulnerable populations, including low–income families and elderly residents, are particularly at risk during these disruptions.
- Health and Medical. The health and medical lifeline is often stressed during severe thunderstorms. Injuries from falling debris, flying objects, and structural collapses are common. Prolonged power outages may disrupt critical medical equipment like ventilators, for individuals relying on at–home medical care. Health facilities like hospitals and clinics, may face challenges

maintaining operations due to power outages or damaged infrastructure. Flash flooding can spread waterborne diseases or pollutants, posing long–term health risks.

- Energy (Power and Fuel). Severe thunderstorms are a leading cause of power outages in Essex County, as high winds and downed trees frequently damage power lines and transformers. Prolonged outages disrupt residential areas, businesses, and critical infrastructure like hospitals, emergency shelters, and water treatment plants. Fuel distribution may also be delayed due to blocked roads, making it difficult to resupply generators or emergency vehicles. Restoring power and fuel is often a critical priority after severe thunderstorms.
- Communications. Thunderstorms can severely impact communication lifelines by damaging cell towers, telephone lines, and internet infrastructure. Power outages can further disrupt communication systems, leaving residents without access to critical information, including weather updates and emergency alerts. Isolated rural areas, which are common in Essex County, are particularly vulnerable to communication outages, hindering response and recovery efforts.
- Transportation. High winds, hail, and flooding from severe thunderstorms can disrupt transportation networks by blocking roads with debris, flooding low–lying areas, and damaging bridges or culverts. Downed trees and power lines can make roads impassable, delaying emergency response efforts and isolating communities. Severe hailstorms may also damage vehicles, further hindering mobility for residents and first responders. Restoring transportation lifelines is critical for accessing affected areas and delivering essential supplies.
- Hazardous Materials. Severe thunderstorms can cause hazardous materials incidents like spills or leaks, by damaging industrial facilities or storage areas. Flash flooding can carry contaminants like chemicals and sewage, into water systems, threatening public health and the environment. Wind or hail damage to structures may release hazardous debris like asbestos or chemical residues, requiring specialized cleanup efforts.

Results

The comprehensive analysis of severe thunderstorms in Essex County, encompassing high winds, hail, and tornadoes, highlights the multifaceted challenges these events pose to the region. Several overarching conclusions emerge from this assessment:

- Increasing Frequency and Intensity of Severe Thunderstorms. Climate change is driving more frequent and intense severe weather events, including thunderstorms with high winds, hail, and tornadoes. Warmer temperatures and increased atmospheric instability contribute to the formation of stronger storms, placing greater stress on local communities, infrastructure, and emergency response systems.
- Vulnerability of Critical Infrastructure. Severe thunderstorms significantly impact critical infrastructure like power lines, roads, bridges, and communication networks. High winds and falling debris can cause prolonged power outages, transportation disruptions, and delays in emergency response efforts. Hailstorms damage roofs, vehicles, and crops while tornadoes can destroy entire structures, leaving communities isolated and recovery efforts more complex.
- Disproportionate Impacts on Vulnerable Populations. Vulnerable populations, including low–income families, the elderly, and individuals with mobility challenges, face greater risks during severe thunderstorms. These groups often lack the resources to prepare for storms, access

DRAFT

safe shelter, or recover quickly. Residents living in mobile homes or areas with older infrastructure are particularly susceptible to high winds and hail damage.

- Significant Economic Consequences. Severe thunderstorms result in substantial economic losses for Essex County. High winds damage homes and businesses, hailstorms destroy agricultural crops, and tornadoes cause localized but severe destruction. These impacts disrupt local commerce, reduce agricultural yields, and burden households and governments with repair and recovery costs. Prolonged disruptions to tourism, a vital part of the county economy, further compound these financial challenges.
- Environmental Damage and Ecosystem Disruption. Thunderstorms can also lead to environmental degradation. High winds and flooding from heavy rains erode soil, damage wetlands, and destabilize natural habitats. Polluted runoff from stormwater introduces contaminants into rivers and lakes, threatening water quality and aquatic life. Tornadoes and hailstorms damage vegetation and disrupt ecosystems, further reducing their natural resilience.
- Necessity of Comprehensive Mitigation and Preparedness Strategies. Addressing the challenges posed by severe thunderstorms requires a holistic approach that integrates infrastructure resilience, improved land use planning, and community education. Investments in storm–resistant utility systems, emergency communication networks, and early warning systems are essential to reducing the impacts of future storms.
- Importance of Regional Collaboration and Policy Coordination. Coordinated efforts among local, state, and federal agencies are critical to managing the risks of severe thunderstorms. Funding for mitigation projects, enforcement of building codes, and implementation of climate–resilient policies will enhance the county ability to adapt to increasing severe weather threats.
- Long–term Benefits of Natural Solutions. Preservation and restoration of natural ecosystems like forests and wetlands, provides sustainable and cost–effective defenses against severe thunderstorms. These natural systems help absorb heavy rainfall, stabilize soils, and reduce the downstream impacts of storm runoff, protecting both infrastructure and the environment.

By synthesizing these findings, it is clear that severe thunderstorms pose significant threats to Essex County residents, economy, and environment. The county can enhance its resilience to high winds, hail, and tornadoes while safeguarding its future with targeted investments, proactive planning, and collaborative action.

Hazard: Severe Winter Storms (Heavy Snow, Blizzards, Ice)

Severe winter storms are hazardous weather events that include heavy snow, sleet, freezing rain, or a combination of these conditions. These storms can range from moderate snowfall lasting a few hours to prolonged blizzards with wind–driven snow and dangerously low temperatures. Severe winter storms can cause widespread disruptions to transportation, infrastructure damage, power outages, and public safety risks due to extreme cold and reduced visibility.

- Heavy Snowstorms. Heavy snowstorms occur when a significant amount of snow accumulates, often at a rate of one inch per hour or more. These storms make travel difficult or impossible, leading to road closures and increased accident risks. Accumulated snow causes structural damage to buildings, particularly rooftops, due to excessive weight. Snow–covered power lines and fallen trees often result in power outages, further complicating recovery efforts.
- Blizzards. A blizzard is a particularly dangerous winter storm characterized by sustained winds of 35 mph or more, combined with blowing or falling snow that reduces visibility to less than ¼ mile for at least three hours. These conditions create whiteout scenarios, making travel nearly impossible and significantly increasing the risk of frostbite, hypothermia, and other cold–related health concerns. Wind–driven snow can also create large drifts, blocking roads and isolating communities for extended periods.
- Ice Storms. An ice storm occurs when freezing rain leads to significant ice accumulation on roads, power lines, and trees. Even a thin layer of ice can create treacherous travel conditions, while accumulations exceeding ¼ inch can cause widespread damage to infrastructure. Ice–covered power lines and tree limbs often collapse under the weight, leading to prolonged power outages and costly repairs. Ice storms can also make sidewalks and roads extremely hazardous, increasing the risk of accidents and injuries.
- Sleet. Sleet consists of ice pellets that form when partially melted snowflakes refreeze before reaching the ground. These pellets bounce upon impact and can accumulate on roadways, creating slick and hazardous driving conditions.
- Freezing Rain. Freezing rain falls as liquid but freezes instantly upon contact with surfaces like roads, sidewalks, and power lines. This results in a thin, smooth layer of ice that is extremely dangerous for both pedestrians and vehicles. Freezing rain events can also lead to severe ice accumulation on infrastructure, compounding the risk of power failures and structural damage.

Severe winter storms, including blizzards, ice storms, and Nor'easters, present significant hazards to Essex County. These events can lead to widespread power outages, impassable roads, structural failures, and serious health risks. Understanding the different types of winter storms and their impacts is critical for improving preparedness, emergency response, and community resilience.

Location & Extent

Essex County is highly susceptible to severe winter storms including heavy snow, blizzards, and ice storms. Due to its mountainous terrain and northern location, the county frequently experiences significant snowfall accumulation, strong winds, and extreme cold during the winter months. Winter storms vary in intensity and impact, with some causing hazardous travel conditions, power outages, and disruptions to daily life while others bring record–breaking snowfall

DRAFT

and prolonged recovery periods. The Northeast Snowfall Impact Scale (NESIS) categorizes these storms based on snowfall amount, affected area, and population impact, with storms ranging from Category 1 (minor) to Category 5 (extreme) with higher categories indicating more widespread and severe impacts.

Due to its location in the Adirondack Mountains, the county experiences higher snowfall totals in elevated areas like the Towns of Lake Placid, Keene, and Wilmington where orographic lift enhances precipitation. Lower–lying areas (including Ticonderoga and Moriah) tend to receive slightly less snowfall but remain susceptible to blowing snow, ice accumulation, and wind damage. Storm impacts typically vary by elevation with mountain passes and remote communities experiencing greater snow removal, power restoration, and emergency response challenges.

The Northeast Snowfall Impact Scale (NESIS) is used to classify winter storms in the northeastern US based on snowfall amount, geographic extent, and affected population. Essex County typically experiences winter storms that fall within the Category 1 to Category 3 range, meaning these storms are notable or major events, but generally do not reach the catastrophic levels of Category 4 or 5 storms. Due to its location in the Adirondack Mountains, the county often receives higher snowfall totals in elevated areas with winter storms regularly bringing 12-24 inches of snow, strong winds, and occasional ice accumulation. While blizzards and Nor'easters have historically impacted the county, they tend to disrupt travel and cause power outages rather than result in large–scale destruction. On average, Essex County faces Moderate to Significant winter storm impacts, requiring frequent snow removal efforts, emergency preparedness, and infrastructure resilience to mitigate disruptions.

The NOAA Total Snowfall Map for January 28-30, 2022, (Figure 23) provides a visual representation of storm snowfall distribution and intensity across the Northeastern United States. The map uses a color–coded scale to indicate snowfall accumulations ranging from less than four inches (gray) to over 30 inches (red). Essex County primarily falls within the 4–10-inch range (white), signifying moderate snowfall compared to areas in coastal New England which experienced heavier accumulations of 20 inches or more. This storm was categorized as a Category 1 event (NESIS = 1.73) on the Northeast Snowfall Impact Scale (NESIS), indicating it was notable but Relatively Low in impact compared to more severe winter storms like the March 14-15, 2017, (Figure 24) blizzard, which ranked as a Category 3 event with significantly greater snowfall and widespread disruptions.

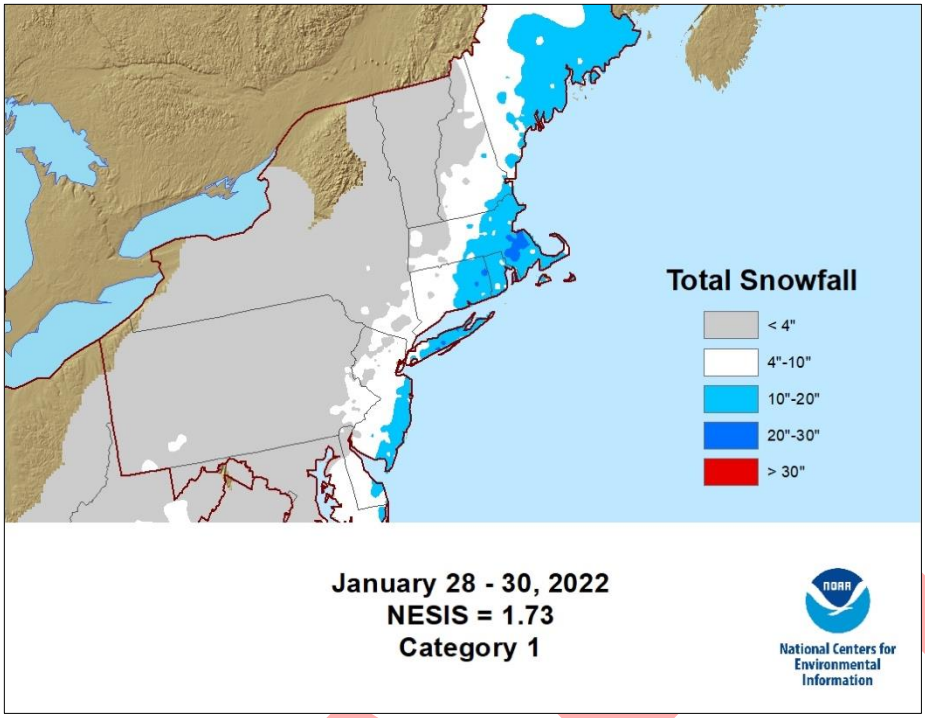


Figure 23. Snowfall Extent, 2022

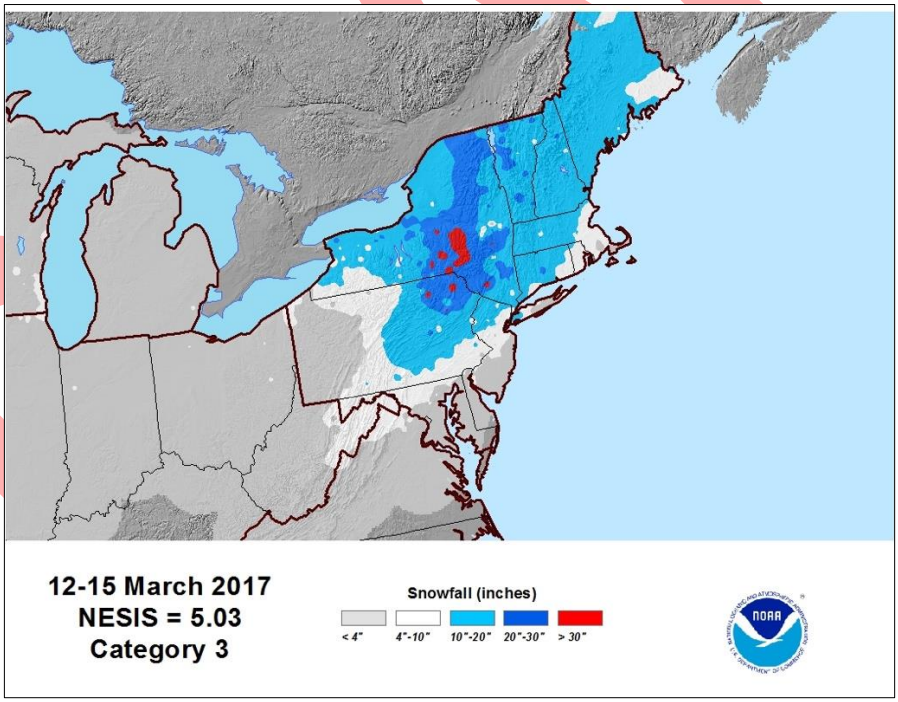


Figure 24. Snowfall Extent, 2017

The Northeast Snowfall Impact Scale describes snow events in the northeast. The following table includes ranking categories of the NESIS:

Table 46. Northeast Snowfall Impact Scale

Category	Description	NESIS Range	Definition
1	Notable	1.0–2.49	These storms are notable for their large areas of 4” accumulations and small areas of 10” snowfall.
2	Significant	2.5–3.99	Includes storms that produce significant areas of greater than 10” snows while some include small areas of 20” snowfalls. A few cases may even include relatively small areas of very heavy snowfall accumulations (greater than 30").
3	Major	4.0–5.99	This category encompasses the typical major Northeast snowstorm, with large areas of 10” snows (generally between 50 and 150 × 103 mi^2–roughly 1 to 3 times the size of New York State with significant areas of 20” accumulations.
4	Crippling	6.0–9.99	These storms consist of some of the most widespread, heavy snows of the sample. They are best described as crippling to the northeast U.S, with the impact to transportation and the economy felt throughout the United States. These storms encompass huge areas of 10” snowfalls, and each case is marked by large areas of 20” and greater snowfall accumulations.
5	Extreme	10+	The storms represent those with the most extreme snowfall distributions, blanketing large areas and populations with snowfalls greater than 10, 20, and 30”. These are the only storms in which the 10” accumulations exceed 200 × 103 mi^2 and affect more than 60 million people.

Historical Occurrences

Essex County experienced multiple significant winter weather events from 2018 to 2024, highlighting regional vulnerability to heavy snowstorms, ice storms, and extreme cold. In December 2020, a powerful Nor’easter brought over 20 inches of snow, causing widespread power outages and hazardous travel conditions. Similarly, in January 2022, a major winter storm dumped up to 18 inches of snow across the county with wind gusts exceeding 40 mph, leading to whiteout conditions and road closures. Ice storms also impacted the area, including the February 2023 ice event which resulted in dangerous road conditions, fallen tree limbs, and scattered power outages. The winter of 2023-2024 saw periods of extreme cold, with temperatures dropping well below zero, increasing the risk of frostbite and straining heating infrastructure. These events reflect the ongoing challenges severe winter weather poses to the county, affecting transportation, emergency response, and public safety.

The National Center of Environmental Information was used to the obtain historic number of winter storm events. This database had numerous categories of winter events, and all categories are displayed in the following table from 2018 to 2024. Since 2018 the financial cost of severe weather on Essex County has been minimal in comparison with other natural hazards link

flooding and severe thunderstorms. In addition, no Disaster Declarations are recorded for Severe Winter Weather in Essex County.

Table 47. NCEI Data on Essex County Winter Events, 2018-2024

Event type	Reporting Timespan	# Reports	Damage (Property)
Extreme Cold/Wind Chill	2018-2024	6	$0
Cold/Wind Chill	2018-2024	4	$0
Winter Storm	2018-2024	46	$330,000
Blizzard	2018-2024	0	$0
Frost/Freeze	2018-2024	1	$0
Heavy Snow	2018-2024	0	$0
Ice Storm	2018-2024	0	$0
Sleet	2018-2024	0	$0
Winter Weather	2018-2024	44	$115,000

The following is a brief history of major storms impacting Essex County during the 2017-2024 time period:

Historical Impacts

January 28-30, 2022, Winter Storm. One notable winter storm that impacted Essex County occurred from January 28-30, 2022. According to NOAA's Total Snowfall Map, this storm affected much of the Northeastern United States with the heaviest snowfall concentrated along New England coastal areas and Long Island. Essex County received 4-10 inches of snow, with slightly higher amounts in higher elevations of the Adirondacks. The storm was classified as a Category 1 event on the NESIS scale with a rating of 1.73, indicating a relatively low–impact storm compared to historical blizzards. While snowfall contributed to slick roads, minor power outages, and travel disruptions, the overall impact was less severe than other major winter storms in the region's history.

More Significant Winter Storms (2017-2024). Between 2017 and 2024, Essex County experienced several winter storms with greater snowfall totals and more significant impacts than the January 2022 storm. The March 14-15, 2017, Blizzard (a Category 3 NESIS storm) brought 18-24 inches of snow to the region with strong winds and whiteout conditions leading to widespread road closures, power outages, and emergency response challenges. The December 1-3, 2019, post–Thanksgiving Nor'easter was another significant event, delivering more than 20 inches of snow with wind gusts exceeding 35 mph, causing transportation disruptions and power failures due to heavy, wet snow accumulating on trees and power lines.

In addition to these major storms, Essex County saw a heavy snow event on February 7-8, 2020, which produced 12-18 inches of snowfall, leading to downed trees, hazardous road conditions, and power outages. The February 2023 Ice Storm resulted in dangerous icy road conditions, fallen tree limbs, and scattered power disruptions, demonstrating the county's vulnerability to both heavy snow and freezing rain events.

DRAFT

Future Potential Events

Future winter weather events in Essex County are expected to continue posing significant challenges, with the potential for increasing frequency and intensity due to climate variability. Trends observed from 2018 to 2024 indicate heavy snowstorms, ice storms, and extreme cold events will likely persist with Nor'easters and Arctic cold fronts bringing substantial snowfall, strong winds, and hazardous travel conditions. Mountainous terrain in the county makes it particularly vulnerable to heavy snow accumulation, road closures, and power outages caused by downed trees and ice–laden power lines. Shifting climate patterns may lead to more frequent freeze–thaw cycles, increasing the risk of ice storms, sleet, and freezing rain—all of which can disrupt transportation, damage infrastructure, challenging emergency response efforts. As extreme weather events become less predictable, the county must enhance winter storm preparedness, focusing on infrastructure resilience, emergency response planning, and community outreach to mitigate the potential impacts of future severe winter storms.

Table 48. Hazard Mitigation Plan Potential Loss from Snow Events

Snow Event Type	Probability	Expected Frequency
Heavy Snowstorms (6" +/event)	High	Expected 2-5 major events/season
Blizzards (Sustained winds 35+ mph, heavy snow, whiteout conditions)	Moderate to High	Likely 1-3 events/decade
Ice Storms (¼" + ice accumulation, widespread power outages)	Increasing	Likely 1-2 significant events/decade
Overall Seasonal Snowfall	Variable	Snowfall expected to remain significant in high elevations

While the county is expected to continue experiencing frequent and severe snow events, climate change is increasing variability in snowfall patterns, raising the likelihood of ice storms and rain–on–snow events. Blizzards and Nor'easters will remain a persistent threat, especially in higher elevations, while lower elevations may see more mixed precipitation and reduced snowpack over time.

Climate Change

According to data from the National Oceanic and Atmospheric Administration (NOAA) and the Northeast Regional Climate Center (NRCC), significant climate trends have emerged. Extreme winter storms like the March 2017 blizzard and the December 2019 Nor'easter resulted in increasingly heavy snow totals, sometimes exceeding 20 inches in a single event. Concurrently, average winter temperatures have risen by 1.5-2°F over the past century, leading to more rain and ice storms instead of snow in some areas. This warming trend increases the likelihood of freezing rain events like the February 2023 ice storm, which caused widespread power outages and hazardous travel conditions. Snowfall patterns have become more unpredictable with some winters experiencing record–breaking snow totals and others seeing below–average accumulation. More frequent rain–on–snow events, where rainfall occurs on top of existing snowpack, are

accelerating snowmelt and increasing flood risks, particularly in low–lying areas near rivers and lakes.

Climate projections indicate Essex County will continue to experience changes in winter weather patterns. While overall snowfall may decline in the long term, extreme winter storms are expected to become more intense, with greater moisture content leading to heavier snowfall in shorter periods.

Vulnerability Assessment

Winter storms present significant risks to individuals, communities, infrastructure, and ecosystems. These impacts can be categorized into the following key areas:

- Loss of Human Life and Injuries. Severe winter storms pose direct threats to human life, particularly when extreme cold, heavy snowfall, and icy conditions create hazardous environments. Prolonged exposure to freezing temperatures can result in hypothermia and frostbite, particularly among vulnerable populations like the elderly, children, and individuals with pre–existing health conditions. Icy roads and poor visibility contribute to an increased risk of vehicle accidents and injuries, while falling ice and snow from rooftops pose additional dangers. Emergency response delays due to impassable roads further escalate health risks during winter storm events.
- Displacement of Communities. Winter storms can lead to temporary or prolonged displacement of residents due to structural damage, power outages, and heating failures. Households that rely on electric heating systems are particularly vulnerable during extended utility disruptions, forcing individuals to seek temporary shelter in warming centers or emergency facilities. Low–income communities and those living in older or poorly insulated homes are at greater risk of displacement, as they may lack the financial resources to quickly recover from storm–related damages or prolonged heating system failures.
- Infrastructure Damage. Severe winter storms have significant impacts on transportation, power grids, and communication systems. Heavy snow and ice accumulation can collapse roofs, weaken bridges, and damage roadways, making travel hazardous. Ice storms like the February 2023 event, have caused widespread power outages by bringing down trees and utility lines, leaving thousands without electricity for extended periods. Freezing temperatures also increase the likelihood of burst pipes and water system failures, further straining infrastructure and local resources. The mountainous terrain in Essex County makes remote communities particularly susceptible to road closures, delaying snow removal and emergency response efforts.
- Economic Loss. The economic consequences of winter storms are far reaching, impacting businesses, agriculture, and tourism. Retail and service industries suffer from reduced foot traffic, supply chain disruptions, and temporary closures due to extreme weather. The agricultural sector faces crop losses, livestock endangerment, and damage to farm infrastructure due to heavy snow, ice accumulation, and freezing temperatures. The Essex County tourism industry, heavily reliant on winter recreation like skiing and snowboarding, is vulnerable to weather variability, unpredictable snow seasons, and infrastructure disruptions that can deter visitors, resulting in significant revenue losses.

DRAFT

- Environmental Degradation. Winter storms can cause long–term environmental damage, including soil erosion, damage to forests, and increased pollution. The frequent use of road salt and de–icing chemicals contributes to water contamination, harming aquatic ecosystems and degrading soil quality. Ice storms and blizzards can also cause tree damage and habitat destruction, impacting local wildlife. Rapid snowmelt following heavy storms can increase the risk of flooding, further stressing natural environments and leading to erosion along rivers and streams.
- Long–term Social Impacts. Severe winter storms contribute to long–term psychological and financial stress, especially for those who experience repeat disruptions, property damage, or displacement. Low–income and elderly populations may struggle to recover financially from storm–related losses, exacerbating existing social inequalities. Repeated power outages, heating failures, and hazardous conditions can create chronic stress, anxiety, and isolation, particularly for individuals living in remote areas with limited access to emergency resources.
- Strain on Emergency Services. Winter storms place significant demands on emergency services, including law enforcement, fire departments, medical personnel, and utility crews. High call volumes related to road accidents, medical emergencies, and power outages can overwhelm response teams, while impassable roads and extreme weather conditions make it difficult for emergency personnel to reach those in need. Storms that cause prolonged utility failures also increase the burden on shelters and warming centers, requiring additional resources to assist displaced residents. Ensuring that emergency services are adequately staffed, trained, and equipped is critical to minimizing the impacts of winter storms in Essex County.

Winter storms including blizzards, ice storms, and heavy snow events, pose severe risks to public safety, infrastructure, the local economy, and emergency response systems. As climate patterns continue to shift, these storms may become more intense and unpredictable, increasing the need for proactive planning, resilient infrastructure, and strong emergency response strategies. Strengthening winter preparedness measures, investing in weather–resistant infrastructure, and improving emergency coordination will be essential in mitigating the long–term effects of severe winter weather.

National Risk Index

Winter weather presents a Relatively High overall risk with certain hazards occurring more frequently and causing greater impacts than others. General winter weather, including snowfall and cold conditions, is a consistent annual occurrence, leading to travel disruptions, emergency response delays, and minor structural damage. Ice storms, cold waves, and strong winds pose Moderate risks, with ice storms being particularly hazardous due to their potential to cause widespread power outages, infrastructure damage, and hazardous road conditions. Cold waves are a recurring concern, impacting vulnerable populations by increasing the risk of hypothermia, frostbite, and heating failures.

Blizzards and heavy snow events are classified as Relatively Low risks, meaning that while they do not occur as frequently as other winter hazards, they can still result in major travel disruptions, visibility issues, and increased accident risks when they do happen. Strong winds, which often accompany winter storms, pose a Moderate to High risk, as they can lead to downed trees, power line failures, and property damage. While major blizzards may be less frequent, the combination of ice, wind, and extreme cold events makes winter weather a significant hazard for county residents, infrastructure, and emergency services. Proper mitigation strategies, including

infrastructure resilience, emergency preparedness, and winter storm response planning, remain critical to reducing risks and ensuring community safety.

Table 49. Essex County Winter Weather Risk Levels

Winter Weather Component	Risk Level Per National Risk Index)	Probability	Primary Impacts
Winter Weather (General)	Relatively High	100% (occurs annually)	Travel disruptions, emergency response delays, minor structural damage
Ice Storms	Relatively Moderate	Moderate	Power outages, infrastructure damage, hazardous road conditions, increased injury risk
Cold Waves	Relatively Moderate	High	Hypothermia, frostbite, heating failures, impact on vulnerable populations
Strong Winds	Relatively Moderate	Moderate to High	Fallen trees, power line failures, structural damage
Blizzards	Relatively Low	Low to Moderate	Reduced visibility, travel disruptions, increased accident risk, snow accumulation
Heavy Snow	Relatively Low	Moderate	Road closures, infrastructure strain, vehicle accidents

Expected Annual Loss (EAL)

The table below presents Essex County's Expected Annual Losses for property, agriculture, and population impacts based on FEMA's National Risk Index (NRI) data.

Table 50. Hazard Mitigation Plan Potential Loss from Snow Events

Event Type	Annual Expected Loss (Property)	Annual Expected Loss (Agriculture)	Annual Expected Loss (Population–Fatalities/Injuries)
Winter Weather	$73,621	$6	0 fatalities, minor injuries expected
Ice Storm	$278,044	$0	Increased risk of injuries due to falls and power outages
Cold Wave	$49,113	$1,071	Hypothermia risk for vulnerable populations
Strong Wind	$140,205	$270	Potential for injuries due to falling trees and debris
Blizzard	$0	$0	High risk of travel–related injuries during severe events
Heavy Snow	$0	$0	Roadway accidents & infrastructure strain

Development Trends

DRAFT

Winter weather significantly influences development trends, shaping the county economy, infrastructure, and long–term planning efforts. The county relies heavily on tourism, outdoor recreation, agriculture, and infrastructure development—all of which face heightened risks from severe winter storms including heavy snowfall, ice storms, and extreme cold.

A major driver of the county economy, tourism is highly dependent on winter weather conditions, particularly for ski resorts, snowmobiling, and outdoor recreation businesses. While consistent snowfall supports winter tourism, unpredictable weather patterns—like unseasonably warm temperatures, rain–on–snow events, or extreme blizzards that disrupt travel—can negatively impact visitor numbers and revenue.

The agricultural industry, though smaller in scale, is vulnerable to winter weather. Extended periods of freezing temperatures and heavy snow can threaten livestock, delay crop production, and increase heating and feed costs for farms. Ice storms like the February 2023 event, have caused significant damage to orchards and farm infrastructure, requiring additional investments in storm–resistant structures and climate adaptation measures.

Infrastructure development must account for the challenges posed by winter storms, particularly in maintaining roads, bridges, and utilities. Snow and ice accumulation can weaken transportation networks, leading to increased maintenance costs and long–term damage. Remote and mountainous communities face longer recovery times following severe storms, further emphasizing the need for climate–resilient infrastructure investments.

Environmental conservation efforts, particularly within the Adirondack Park, are directly affected by changing winter weather patterns. Frequent freeze–thaw cycles and more intense winter storms contribute to soil erosion, tree damage, and disruptions to wildlife habitats. The increasing unpredictability of snowfall and ice formation also affects lake ecosystems and water resources, impacting both local biodiversity and outdoor recreation activities.

Community Lifelines

Severe winter storms pose significant threats to critical community lifelines affecting public safety, infrastructure, and essential services. FEMA's Community Lifeline framework identifies seven key lifelines that are crucial to maintaining stability and ensuring effective disaster response and recovery. The following outlines how winter storms impact these lifelines in Essex County.

- Safety and Security. Winter storms can overwhelm emergency response systems, making it difficult for law enforcement, fire departments, and emergency medical services (EMS) to reach those most in need. Icy roads, heavy snow accumulation, and whiteout conditions hinder emergency vehicle movement and delay response times. Prolonged power outages also increase crime risks, while cold exposure threatens the safety of vulnerable populations.
- Food, Water, and Shelter. Heavy snowfall and ice storms can lead to temporary displacement, especially if homes suffer roof collapses, heating system failures, or structural damage. Those in mobile homes, older buildings, or remote areas face higher risks of prolonged exposure to extreme cold. Supply chain disruptions can limit food availability, particularly for rural communities, while freezing temperatures can damage water pipes, leading to water shortages and contamination risks.
- Health and Medical. Winter storms place significant strain on healthcare facilities. Power outages and transportation disruptions can make it difficult for residents to access medical care,

refill prescriptions, or receive emergency treatment. Elderly individuals and those with chronic illnesses are at higher risk due to hypothermia, frostbite, and heating failures. Carbon monoxide poisoning from improper heating methods also becomes a serious health concern during prolonged power outages.

- Energy (Power & Fuel). Power outages are one of the most severe consequences of winter storms, often caused by downed power lines, heavy ice accumulation, and falling trees. Extended outages impact homes, hospitals, emergency shelters, and businesses, making it difficult to heat buildings and maintain essential services. Fuel shortages can disrupt heating systems and emergency response operations, leaving residents vulnerable to freezing temperatures.
- Communications. Severe winter weather can damage cell towers, telephone lines, and internet infrastructure, leading to communication blackouts. Snow and ice accumulation can disrupt radio signals and emergency alert systems, making it difficult for residents to receive critical updates. In rural areas of the county, limited access to broadband and cellular networks can further isolate communities during emergencies.
- Transportation. Snow and ice can make roads impassable, preventing emergency responders, supply trucks, and utility crews from restoring essential services. Winter storms often lead to road closures, vehicle accidents, and mass transit disruptions, delaying emergency response and leaving residents stranded. Prolonged snow accumulation also increases road maintenance costs and damages infrastructure over time.
- Hazardous Materials. Severe winter storms increase the risk of hazardous material incidents, particularly due to fuel spills, chemical leaks from storm–damaged facilities, and contamination from road salt runoff. Ice and heavy snow accumulation can damage storage tanks and pipelines, increasing the risk of environmental hazards.

Winter storms disrupt all seven FEMA community lifelines with energy, transportation, and health services being the most severely impacted. Strengthening emergency preparedness, upgrading infrastructure resilience, and improving response coordination are essential for mitigating these risks. By investing in weather–resistant energy grids, improving snow removal operations, and enhancing emergency communication networks, Essex County can better protect its residents and maintain essential services during severe winter weather events.

Results

Comprehensive analysis of winter storms including heavy snowfall, blizzards, and ice storms, highlights the multifaceted challenges these events pose to the region. Several overarching conclusions emerge from this assessment.

- Increasing Frequency and Intensity of Winter Storms. Climate change is contributing to more frequent and intense winter storms, with shifting weather patterns leading to higher snowfall variability, increased ice storm occurrences, and more extreme temperature swings. Warmer winter temperatures are intensifying freeze–thaw cycles, resulting in greater infrastructure damage and hazardous road conditions. These changes place greater stress on local communities, emergency services, and transportation networks.
- Vulnerability of Critical Infrastructure. Severe winter storms significantly impact power grids, roads, bridges, and water systems in Essex County. Heavy snow and ice accumulation can

DRAFT

cause widespread power outages, freeze and burst water pipes, and damage roads and bridges, making travel hazardous. Ice storms and freezing rain events increase the risk of utility failures, leaving residents without heat, electricity, and clean water for extended periods. Emergency response efforts are often delayed or hindered due to impassable roads and hazardous conditions.

- Disproportionate Impacts on Vulnerable Populations. Low–income families, elderly residents, and individuals with mobility challenges face greater risks during severe winter storms. These populations often lack access to backup heating, reliable transportation, or financial resources to recover from storm–related damage. Rural and isolated communities are particularly susceptible to prolonged power outages and transportation disruptions, which can delay medical assistance and emergency relief efforts.
- Significant Economic Consequences. Winter storms result in substantial economic, affecting businesses, agriculture, and tourism. Heavy snow and ice can damage buildings, disrupt supply chains, and force businesses to close, leading to lost revenue and job impacts. The agricultural sector faces crop losses and livestock endangerment due to freezing temperatures and ice accumulation. Essex County's winter tourism industry, which relies on consistent snowfall for skiing, snowboarding, and outdoor recreation, is at risk from unpredictable weather patterns, infrastructure damage, and travel disruptions.
- Environmental Damage and Ecosystem Disruption. Winter storms contribute to long–term environmental degradation, including soil erosion, deforestation, and water contamination. The heavy use of road salt and de–icing chemicals can pollute local rivers, lakes, and groundwater, harming aquatic life and drinking water sources. Ice storms can cause widespread tree damage, disrupting ecosystems and increasing the risk of wildfires and habitat loss. Rapid snowmelt following major storms can increase flood risks, further impacting natural environments and local communities.
- Necessity of Comprehensive Mitigation and Preparedness Strategies. Addressing challenges posed by winter storms requires a holistic approach including infrastructure resilience, emergency preparedness, and climate adaptation strategies. Investments in storm–resistant utility systems, improved road maintenance, emergency communication networks, and community education are essential to reducing the impacts of future winter storms.
- Importance of Regional Collaboration and Policy Coordination. Coordinated efforts between local, state, and federal agencies are critical for managing winter storm risks. Funding for snow removal operations, infrastructure upgrades, and power grid resilience will enhance the county's ability to withstand severe winter weather events. Strengthening building codes, emergency response planning, and climate adaptation policies will further reduce county vulnerabilities to winter storms.
- Long–term Benefits of Natural Solutions. Preserving and restoring natural ecosystems, including forests, wetlands, and floodplains, provides cost–effective defenses against the impacts of winter storms. These natural systems help absorb excess runoff, stabilize soils, and reduce the long–term environmental consequences of heavy snowfall and ice accumulation. Sustainable land management practices can also help mitigate flooding risks and protect local water sources.

By synthesizing these findings, it is clear that winter storms pose significant threats to Essex County residents, economy, and environment. With targeted investments, proactive planning, and collaborative action, the county can enhance its resilience to severe winter weather while safeguarding its future against evolving climate risks.

DRAFT

Hazard: Extreme Temperatures (Extreme Cold & Heat Waves)

Extreme temperature events, including heatwaves and severe cold spells, pose significant challenges to the residents of Essex County, New York. As a region characterized by cold winters and moderate summers, sudden temperature extremes can strain infrastructure, impact public health, and disrupt daily life. Prolonged heatwaves increase the risk of heat–related illnesses, particularly among vulnerable populations like the elderly and those with preexisting conditions, while extreme cold can lead to hypothermia, frostbite, and increased energy demands for heating. Temperature fluctuations can affect local ecosystems, agriculture, and the structural integrity of roads and buildings. Understanding and preparing for these extreme temperature events is essential for safeguarding public safety, ensuring the resilience of critical infrastructure, and mitigating potential economic and environmental impacts.

Two types of extreme temperature events pose risks to county public health, infrastructure, and economy:

- Heat Wave. A heat wave is a prolonged period of excessively high temperatures significantly above the average for a given region and can pose serious risks to human health, infrastructure, and agriculture. The National Weather Service (NWS) defines a heat wave as a period of at least two or more consecutive days where the temperature reaches or exceeds 90°F (32°C), though thresholds vary based on regional climate norms. Heat waves often increase humidity levels, worsening health impacts like heat exhaustion and heat stroke, particularly for elderly individuals, young children, and those with pre–existing health conditions.
- Cold Wave. A cold wave is a prolonged period of unusually cold temperatures, often accompanied by strong winds, ice, or snow, which can cause widespread disruptions and health hazards. According to the National Weather Service (NWS), a cold wave is defined as a rapid drop in temperature over a short period (typically 24 to 48 hours) that results in abnormally low temperatures for a specific region. Cold waves increase hypothermia and frostbite risks, particularly for vulnerable populations like the elderly, individuals experiencing homelessness, and those without adequate heating. They can also damage infrastructure, cause power outages, and lead to transportation disruptions due to ice accumulation and frozen pipes.

Location and Extent

Cold waves and heat waves pose significant challenges to Essex County, impacting public health, infrastructure, and the local economy. Extreme cold increases heating costs, damages infrastructure, and threatens vulnerable populations, while extreme heat raises the risk of illness, strains energy resources, and disrupts agriculture. Given climate change trends, heat waves may become more frequent and intense, while cold waves may still occur but with shifting seasonal patterns.

Heat Waves

Location: Heat waves impact the entire county, but lower–elevation areas like Ticonderoga, Elizabethtown, and Schroon Lake tend to experience higher sustained temperatures than higher–elevation regions like Lake Placid and Keene, where mountain breezes help moderate extreme heat. Urbanized areas and places with less tree cover can experience the urban heat island effect, increasing local temperatures.

Impact Extent: Heat waves can push temperatures above 90°F for multiple days, with humidity making it feel even hotter. Prolonged periods of extreme heat increase the risk of heat–related illnesses, particularly for the elderly, children, and outdoor workers. The combination of high heat and humidity can make conditions dangerous, especially for residents without air conditioning. Heat waves also stress water resources, agriculture, and energy grids, leading to higher cooling costs and increased wildfire risks in dry conditions.

The National Weather Service (NWS) provides alert procedures for NWS. In the event of an extreme heat advisory, NWS:

- includes Heat Index (HI) values and city forecasts.
- issues special weather statements including who is most at risk, safety rules for reducing risk, and the extent of the hazard and HI values.
- helps state/local health officials in preparing Civil Emergency Messages in severe heat waves.

The figure below displays a heat index chart created by the National Weather Service. The Heat Index (HI) is a chart that accurately measures apparent air temperature as it increases with relative humidity. The Heat Index can be used to determine what effects temperature and humidity can have on the population. The table also describes the adverse effects that prolonged exposures can have on individuals.

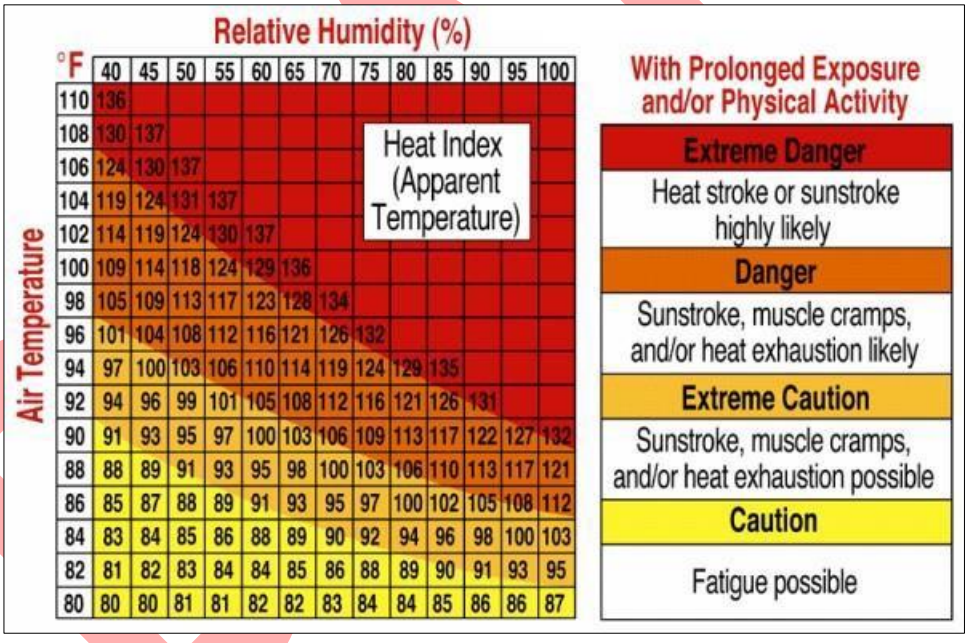


Figure 25. Heat Index Chart (NWS)

Cold Waves

Location: Cold waves affect the entire county, with higher elevations like Lake Placid, Keene, and Wilmington, experiencing colder temperatures and longer–lasting extreme cold events compared to lower–elevation areas like Ticonderoga and Moriah. Mountainous terrain in the county causes temperature drops at night, increasing the risk of severe cold exposure in remote areas.

Extent Impact: Cold waves can bring rapid temperature drops, sometimes by 20-30°F within a day, leading to prolonged freezing conditions, extreme wind chills, and significant disruptions.

These events can last several days to weeks, straining heating infrastructure, causing frozen pipes, and increasing health risks like hypothermia and frostbite. Wind chills in higher elevations can reach -30°F or lower, making outdoor exposure dangerous for extended periods. Cold waves also increase energy demand, leading to higher heating costs and potential power grid strain.

Extreme temperatures, whether excessive heat or extreme cold, pose significant risks to public health and safety in Essex County. Heat waves can lead to heat exhaustion, heat stroke, and increased energy demands, while cold waves can cause hypothermia, frostbite, and dangerous wind chill effects. The National Weather Service (NWS) issues alerts to warn residents about imminent hazardous conditions, allowing individuals and communities to take precautionary measures.

The table below outlines official heat and cold–related alerts, including the criteria for heat advisories, excessive heat warnings, wind chill impacts, frostbite risks, and hypothermia concerns. These alerts help residents understand the severity of weather conditions and take necessary actions to protect themselves, vulnerable populations, and animals from extreme temperatures.

Table 51. Civil Emergency Severe Heat/Cold Messaging

Alert	Criteria
Heat Advisory	Issued 12-24 hours before the onset of the following conditions: heat index of at least 100°F but less than 105°F for at least 2 hours/day.
Excessive Heat Watch	Issued by the National Weather Service when heat indices of 105°F (41°C) or greater are forecast in the next 24-72 hours.
Excessive Heat Warning	Issued within 12 hours of the onset of the following criteria: heat index of at least 105°F for more than 3 hours/day for 2 consecutive days, or heat index more than 115°F for any period of time.
Wind Chill	Wind chill is not the actual temperature, but rather how wind and cold feel on exposed skin. As the wind increases, heat is carried away from the body at an accelerated rate, driving down the body temperature. Animals are also affected by wind chill. Cars, plants and other objects are not.
Frostbite	Frostbite is damage to body tissue caused by extreme cold. A wind chill of -20°F will cause frostbite in just 30 minutes. Frostbite causes a loss of feeling and a white or pale appearance in extremities like fingers, toes, ear lobes or the tip of the nose. If symptoms are detected, get medical help immediately! If you must wait for help, slowly re–warm affected areas. If the person is also showing signs of hypothermia, warm the body core before the extremities.
Hypothermia	Hypothermia is a condition brought on when the body temperature drops to less than 95°F. It can kill. For those who survive, there are likely to be lasting kidney, liver and pancreas problems. Warning signs include uncontrollable shivering, memory loss, disorientation, incoherence,

Alert	Criteria
	slurred speech, drowsiness and apparent exhaustion. Take the person's temperature. If below 95°F, seek medical care immediately.

Historical Occurrences

Essex County experiences both extreme heat and cold events, which have become more frequent and intense in recent years. From dangerous heat waves with temperatures exceeding 90°F to Arctic blasts bringing wind chills as low as -50°F, these extreme temperature fluctuations pose significant risks to public health, infrastructure, and local communities. Heat waves often result in increased energy demands, heat–related illnesses, and drought stress, while cold waves lead to frozen pipes, power outages, and hazardous travel conditions. Between 2019 and 2025, Essex County faced multiple significant heat and cold waves, prompting National Weather Service (NWS) advisories and emergency response measures.

Table 52. Historical Heat and Cold Wave Events

Event type	Reporting Timespan	# Reports	Damage (Property)
Extreme Cold/Wind Chill	2018-2024	6	$0
Cold/Wind Chill	2018-2024	4	$0
Excessive Heat	2018-2024	0	$0
Heat	2018-2024	3	$0

The following section outlines major extreme temperature events in Essex County during this period, highlighting their impacts, trends, and preparedness efforts.

Heat Waves

- July 2019 Heat Wave. Essex County experienced a multi–day heat wave, with temperatures reaching the mid–90s°F and heat indices exceeding 100°F in lower elevations. The National Weather Service (NWS) issued heat advisories, warning of dangerous conditions, especially for elderly residents and outdoor workers.
- June 2021 Heat Wave. A record–breaking heat wave swept through the Northeast, with Essex County recording temperatures above 90°F for multiple consecutive days. The humidity increased the heat index to over 100°F, triggering excessive heat warnings. This event led to higher energy demand, strained cooling centers, and localized drought conditions.
- July 2022 Heat Wave. Essex County saw another severe heat event, with high temperatures near 95°F and high humidity making conditions more dangerous. Emergency services responded to heat–related illnesses, and local municipalities opened cooling centers to assist vulnerable populations.

DRAFT

Cold Waves

- January 2020 Cold Wave. A deep Arctic air mass moved into the region, bringing temperatures as low as -15°F in higher elevations and wind chills of -30°F. Schools experienced delays and closures, and emergency responders attended to cases of frostbite and hypothermia.
- February 2023 Extreme Cold Event. This record-breaking cold wave impacted Essex County, with temperatures plunging to -20°F or lower in some areas and wind chills reaching -50°F in the Adirondacks. The NWS issued wind chill warnings, and residents faced frozen pipes, heating system failures, and hazardous travel conditions.
- January 2024 Arctic Blast. A short but intense cold snap brought temperatures below -10°F across Essex County, with strong winds making it feel even colder. This event stressed energy systems as heating demand surged and caused power outages in some rural areas.

Future Potential Events

Future extreme temperature events in Essex County are expected to increase in both frequency and intensity, driven by climate variability and shifting atmospheric patterns. Observed trends from 2019 to 2025 suggest heat waves will become more prolonged and severe, with higher temperatures and increased humidity leading to dangerous heat index values. Extreme heat events may pose significant risks to vulnerable populations, increase energy demand, and exacerbate drought conditions affecting agriculture and water resources.

Similarly, cold waves and Arctic blasts will continue to impact the region, particularly in higher elevations, where wind chills can reach life-threatening levels. Mountainous terrain in the county increases susceptibility to rapid temperature drops, ice storms, and extreme wind chills, which can lead to power outages, frozen infrastructure, and dangerous travel conditions. Climate shifts may also result in more erratic winter temperature fluctuations, increasing the likelihood of freeze-thaw cycles, ice storms, and mixed precipitation events, all of which can damage infrastructure, disrupt transportation, and strain emergency response systems.

Table 53. Future Probability of Extreme Heat and Cold Events in Essex County

Extreme Temperature Event	Probability	Expected Frequency
Heat Waves (90°F+ for multiple days)	High	Expected 2-4 events/summer, with increasing duration and intensity.
Excessive Heat Events (Heat Index 100°F+)	Moderate to High	Likely 1-2 events/summer, with higher humidity worsening effects.
Cold Waves (Rapid temperature drops, prolonged subzero conditions)	High	Expected 1-3 events/winter, with extreme wind chills possible.
Wind Chill Advisories (-20°F or lower wind chills)	Moderate to High	Likely 1-2 events/winter, particularly in higher elevations.
Frost/Freeze Events (Early or late-season freezes affecting agriculture)	Increasing	Expected 2-4 events/year, with unpredictable seasonal shifts.

Heat waves are expected to increase in frequency and intensity, with longer durations and higher humidity levels, leading to greater health risks, higher energy demand, and potential drought conditions. Excessive heat events, where the heat index surpasses 100°F, are also projected to become more common, particularly during the peak summer months. On the other hand, cold waves will continue to impact the county, particularly in higher elevations where wind chills can drop to dangerous levels. Wind chill advisories of -20°F or lower are likely to occur at least once or twice per winter, posing risks to outdoor workers, vulnerable populations, and emergency services.

Frost and freeze events are becoming more unpredictable with the potential to affect agriculture and infrastructure. Early or late–season freezes may disrupt growing cycles, damage crops, and increase freeze–thaw cycles that weaken roads and bridges. These evolving climate patterns highlight the need for proactive emergency preparedness, infrastructure resilience, and public awareness efforts to mitigate risks and enhance community adaptation to extreme temperature events in Essex County.

Climate Change

Climate change is significantly influencing the frequency, intensity, and duration of both heat waves and cold waves. Rising global temperatures have led to an increase in extreme heat events, with heat waves becoming longer, more frequent, and more intense. Higher humidity levels further exacerbate heat stress, leading to dangerous heat index values, particularly during the summer months. Vulnerable populations, including elderly residents, children, and outdoor workers, face greater health risks due to prolonged exposure to extreme heat. Higher temperatures contribute to increased energy demand, putting a strain on power grids and cooling infrastructure.

At the same time, climate variability has resulted in more erratic cold waves, with sudden Arctic intrusions causing rapid temperature drops. While overall winters are warming, cold waves are still occurring, often with shorter but more extreme temperature fluctuations. These abrupt cold events increase the risk of frostbite, hypothermia, and power outages, especially in higher elevations of Essex County, where wind chills can reach -30°F or lower. The freeze–thaw cycle is also intensifying, leading to infrastructure damage, hazardous road conditions, and increased maintenance costs.

The projected temperature maps illustrate this warming trend, showing a steady increase in annual average temperatures across New York State, with Essex County experiencing significant changes in seasonal cycles, precipitation patterns, and extreme heat events.

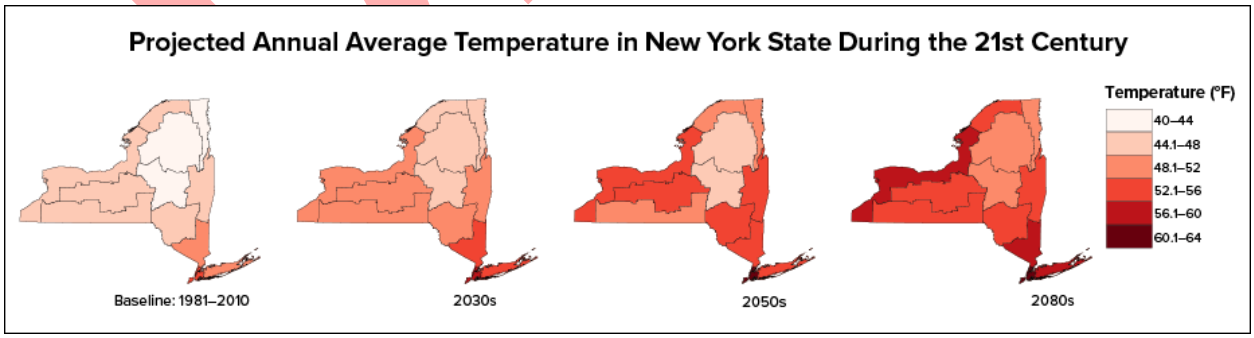


Figure 26. Projected Changes to Annual Average Temperatures New York

Based on climate projections and observed trends, the county and the broader Northeastern U.S. are expected to experience significant warming throughout the 21st century, with major impacts

DRAFT

on seasonal patterns, extreme temperatures, and precipitation trends. The following key changes are anticipated:

- Winters in the Northeast will become significantly shorter, with fewer cold days and increased precipitation, primarily as rain instead of snow.
- The length of the winter snow season will be cut in half across northern New York, with southern parts of the region experiencing only 1-2 weeks of snowfall per year.
- Summer temperatures will rise, with cities that historically experienced few 100°F days now averaging 20 or more such days per summer.
- Short–term droughts (1-3 months) will become more frequent, occurring at least once each summer in the Catskill and Adirondack Mountains, as well as across New England.
- Hot summer conditions will begin three weeks earlier and persist three weeks longer into the fall, effectively extending the summer season by nearly two months.

Vulnerability Assessment

Extreme temperature events, including heat waves and cold waves, pose significant risks to individuals, communities, infrastructure, and ecosystems in Essex County. These impacts can be categorized into the following key areas:

Loss of Human Life and Injuries. Heat waves and cold waves pose direct threats to human life, particularly for vulnerable populations like the elderly, young children, individuals with pre–existing health conditions, and low–income households. Heat–related illnesses, including heat exhaustion and heat stroke, increase during prolonged high–temperature events, while cold waves heighten the risk of hypothermia and frostbite. Extreme heat and cold also exacerbate existing medical conditions, leading to increased hospitalizations and emergency medical calls.

Displacement of Communities. Severe temperature fluctuations can lead to temporary or prolonged displacement of residents, particularly during prolonged power outages or infrastructure failures. Heat waves can make indoor living conditions unbearable, forcing individuals to seek relief in cooling centers, while cold waves can cause heating failures, forcing residents to relocate to warming shelters. Low–income communities, those without adequate insulation or air conditioning, and residents in mobile homes face the greatest displacement risks.

Infrastructure Damage. Heat and cold waves have significant impacts on critical infrastructure, including transportation networks, energy systems, and water supply lines. Extreme heat can weaken roads, railways, and bridges, leading to buckling pavement and transit delays. High temperatures also put stress on power grids, increasing the risk of blackouts. Conversely, extreme cold can lead to frozen and burst water pipes, ice–related road damage, and power line failures. Wind chill events and freeze–thaw cycles can accelerate road deterioration, increasing maintenance costs.

Economic Loss. Extreme temperature events result in major economic losses, particularly in agriculture, tourism, and local businesses. Heat waves can reduce crop yields, stress livestock, and increase irrigation costs, while cold waves can lead to livestock losses, crop damage, and increased heating expenses. Essex County's economy, which relies heavily on tourism, may also experience declines during extreme heat events that discourage outdoor recreation. Business closures due to extreme temperatures can result in lost revenue and productivity.

Environmental Degradation. Heat waves and cold waves disrupt ecosystems and exacerbate environmental stressors. Prolonged heat increases drought risk, reduces water availability, and weakens vegetation, making forests more susceptible to wildfires. Cold waves can damage plant life, disrupt animal migration patterns, and contribute to ice accumulation in rivers and streams, leading to localized flooding during thawing periods.

Long–term Social Impacts. Extreme temperature fluctuations contribute to long–term social and psychological stress, particularly for communities that experience repeated exposure to these hazards. Financial burdens from heating and cooling costs, medical expenses, and property repairs disproportionately affect low–income households. Repeated power outages and infrastructure failures can lead to community–wide distress, social isolation, and mental health challenges.

Strain on Emergency Services. Heat and cold waves increase demand on emergency services, including fire departments, medical personnel, and law enforcement agencies. Heat waves lead to higher emergency room visits due to heat–related illnesses, while cold waves result in increased medical calls for frostbite, hypothermia, and heart–related conditions due to extreme cold exposure. Prolonged temperature extremes can also overwhelm shelters, cooling centers, and public health services, making disaster preparedness and resource allocation critical.

Extreme heat and cold events in Essex County pose serious risks to public safety, infrastructure, and economic stability. As climate change intensifies, heat waves are expected to become longer and more frequent, while cold waves may remain sporadic but extreme. Essex County must enhance climate resilience by investing in infrastructure improvements, emergency preparedness programs, and public awareness initiatives. Strengthening disaster response planning, increasing energy efficiency measures, and ensuring accessibility to cooling and heating shelters will be essential for mitigating the long–term impacts of extreme temperature events.

National Risk Index

The table below outlines the risk levels, probability, and primary impacts of cold and heat waves in Essex County, based on the National Risk Index and historical climate trends.

Table 54. Essex County Heat and Cold Wave Risk Levels

Hazard Component	Risk Level (Per National Risk Index)	Probability	Primary Impacts
Cold Wave	Relatively Moderate	High	Hypothermia, frostbite, heating failures, impact on vulnerable populations
Heat Wave	Relatively Low	Moderate	Heat exhaustion, heat stroke, increased energy demand, impact on vulnerable populations

Essex County, experiences both extreme cold and heat events, each posing unique risks to public health, infrastructure, and emergency services. Cold waves are a more frequent and severe hazard, with High probability and Moderate risk levels, leading to hypothermia, frostbite, heating failures, and increased vulnerability among at–risk populations. While currently less frequent, heat waves are projected to increase in intensity and duration, resulting in heat–related illnesses, higher energy demands, and potential strain on emergency response systems.

DRAFT

Expected Annual Loss (EAL)

The following data indicates that cold waves occur more frequently and result in higher annual losses compared to heat waves, though both hazards have relatively Low risk levels. The impacts on agriculture and infrastructure are notable, with cold waves posing a slightly greater threat to the local economy and population.

Table 55. Heat and Cold Waves

Hazard	Cold Waves	Heat Waves
Historic Rating	Relatively Low	Relatively Low
Exposure Annual Loss Amount	$46K	$27K
Frequency	1.2 events/year	0.8 events/year
Population Impacted	0.02	0.01
Agriculture Value	$325	$290

Development Trends

The impacts of extreme heat and cold events are becoming increasingly significant as Essex County continues to develop. Rising temperatures and shifting climate patterns have led to more frequent and intense heat waves, which strain energy infrastructure, increase cooling costs, and heighten health risks for vulnerable populations, including elderly residents, low–income households, and outdoor workers. The demand for cooling systems and energy–efficient housing is growing, particularly in urbanized areas and tourism–dependent sectors. Longer and hotter summers may impact seasonal tourism patterns, shifting recreational demand from traditional winter sports to warm–weather activities, potentially altering the local economy.

Cold waves continue to pose challenges, particularly in high–altitude and rural areas, where harsh winter conditions, extreme wind chills, and heating failures can disrupt daily life. Older homes and infrastructure are particularly vulnerable, requiring increased investment in winterization efforts and emergency heating assistance programs. The freeze–thaw cycle is also accelerating road and bridge deterioration, increasing maintenance costs for local governments. As climate patterns shift, Essex County must adapt its development strategies to ensure resilient infrastructure, sustainable energy use, and enhanced public health preparedness in response to both extreme heat and extreme cold events

Community Lifelines

Extreme heat and cold waves pose significant challenges to critical community lifelines, affecting public safety, infrastructure, and essential services. FEMA's Community Lifeline framework identifies seven key lifelines that are vital for maintaining stability and ensuring effective disaster response and recovery. The following sections outline how heat waves and cold waves impact these lifelines in Essex County.

- Safety and Security. Extreme heat and cold events pose serious risks to public safety, particularly for vulnerable populations including elderly residents, children, and individuals with pre–existing health conditions. Cold waves increase the risk of hypothermia, frostbite, and heating failures while heat waves heighten the likelihood of heat exhaustion and heat stroke. Prolonged

extreme temperatures can overwhelm emergency services, increasing the demand for medical interventions.

- Food, Water, and Shelter. Severe heat and cold waves can disrupt food supply chains, impacting access to clean water. Heat waves can stress water resources, leading to drought conditions affecting agriculture and drinking water availability. Cold waves, on the other hand, can freeze water lines, limiting access to potable water. Displaced residents—due to power outages, heating failures, or unsafe living conditions—may require emergency shelters, cooling centers, and heating assistance programs.
- Health and Medical. Heat and cold waves put significant strain on healthcare systems, increasing hospital visits for heat–related illnesses, respiratory conditions, and cold–related injuries. Hospitals, clinics, and long–term care facilities must ensure backup power for critical medical equipment during blackouts or extreme weather events. Heat waves can exacerbate respiratory illnesses due to poor air quality, while cold waves can lead to increased cases of pneumonia and cardiovascular stress.
- Energy (Power & Fuel). Both heat and cold waves place heavy demand on energy infrastructure. Heat waves drive up electricity usage for cooling, increasing the risk of grid failures and rolling blackouts. Cold waves can lead to heating system failures, frozen pipelines, and increased fuel consumption for heating. Power outages during extreme cold can be life–threatening, making energy resilience a critical priority for Essex County.
- Communications. Severe cold events can disrupt telecommunications infrastructure, as ice and snow accumulate on power lines and cell towers. Heat waves, while less likely to cause direct damage, can overload power systems, leading to service disruptions. Consistent communication systems are essential for issuing emergency alerts and coordinating public safety measures during extreme temperature events.
- Transportation. Heat waves can weaken roads, expand bridges, and cause rail tracks to buckle, leading to transportation delays and infrastructure damage. Cold waves and freeze–thaw cycles accelerate road deterioration, create black ice hazards, and lead to increased vehicle accidents. Snow and ice accumulation can isolate rural communities, delaying emergency response and supply deliveries. Maintaining road safety and public transit operations is crucial during both extreme heat and extreme cold events.
- Hazardous Materials. Extreme temperatures can lead to hazardous material incidents, particularly in industrial and transportation settings. Heat waves can increase the risk of chemical spills, fires, and air pollution, while cold waves can cause pipelines and storage tanks to crack or leak due to extreme temperature fluctuations. Proper hazard containment measures are essential to mitigate risks and protect public health.

Extreme heat and cold waves pose significant challenges to county lifeline services, affecting public health, infrastructure, and emergency response operations. With heat waves expected to increase in frequency and cold waves remaining a persistent hazard, preparedness strategies must focus on infrastructure resilience, energy reliability, and public safety measures to protect communities from the growing risks of extreme temperature events.

Results

DRAFT

Heat and cold wave analyses in Essex County highlight the increasing risks posed by extreme temperature fluctuations, affecting public health, infrastructure, and emergency response systems. Several key findings emerge from this assessment:

- Increasing Frequency and Intensity of Extreme Temperature Events. Climate change is contributing to longer and more frequent heat waves, with higher humidity levels exacerbating health risks. Cold waves continue to pose threats, especially in higher elevations, where extreme wind chills and heating failures remain concerns.
- Vulnerability of Critical Infrastructure. Heat and cold waves put significant stress on infrastructure, leading to increased energy demand, power outages, road deterioration, and water supply disruptions. Freeze–thaw cycles accelerate road and bridge deterioration, while extreme heat weakens pavement and railway tracks.
- Disproportionate Impact on Vulnerable Populations. Low–income households, elderly residents, and those with pre–existing health conditions face greater challenges in adapting to extreme temperatures. Many lack access to cooling or heating resources, increasing the risk of heat stroke, hypothermia, and other health complications.
- Significant Economic Consequences. Extreme temperature events result in economic losses across multiple sectors including agriculture, tourism, and local businesses. Cold waves damage crops, stress livestock, and increase heating costs, while heat waves disrupt outdoor recreation, increase cooling expenses, and reduce workforce productivity.
- Environmental Degradation and Ecosystem Disruptions. Prolonged heat waves lead to drought conditions, stressing forests, wetlands, and water resources. Cold waves impact wildlife, disrupt migration patterns, and damage vegetation, contributing to long–term ecosystem instability.
- Need for Comprehensive Mitigation and Adaptation Strategies. Addressing the growing risks of extreme heat and cold waves requires a multi–faceted approach that includes improving infrastructure resilience, enhancing emergency preparedness, and implementing energy–efficient solutions. Expanding cooling and heating assistance programs for vulnerable populations will also be critical to reducing health risks and economic burdens.
- Importance of Policy Coordination and Regional Collaboration. Managing extreme temperature risks requires strong coordination between local, state, and federal agencies. Investing in sustainable energy solutions, climate adaptation policies, and emergency response systems will enhance the county's ability to withstand and recover from heat and cold waves.

Heat and cold waves present growing challenges to Essex County, impacting residents, businesses, and infrastructure. As climate patterns continue to shift, both extreme heat and extreme cold events will require proactive planning, investment in resilience strategies, and strengthened emergency response efforts to safeguard public health, economic stability, and community well–being.

Hazard: Wildfires

Wildfires are uncontrolled fires that spread quickly across grasslands, forests, or brush–covered areas, fueled by dry vegetation, wind, and extreme heat. These fires can ignite naturally, like the case with lightning strikes, or result from human activities including campfires, discarded cigarettes, downed power lines, or intentional arson. Wildfires pose significant threats to public safety, infrastructure, and ecosystems, causing property destruction, habitat loss, and hazardous air pollution due to smoke and fine particulate matter. Climate change, drought conditions, and rising temperatures contribute to increased wildfire frequency and severity in many regions.

Location and Extent

Essex County is predominantly covered by forests, grasslands, and wetlands—making it susceptible to wildfires, especially during dry, windy conditions. While wildfires in the county are generally small and localized, prolonged drought conditions, rising temperatures, and increased human activity heighten the risk of larger, more destructive fires.

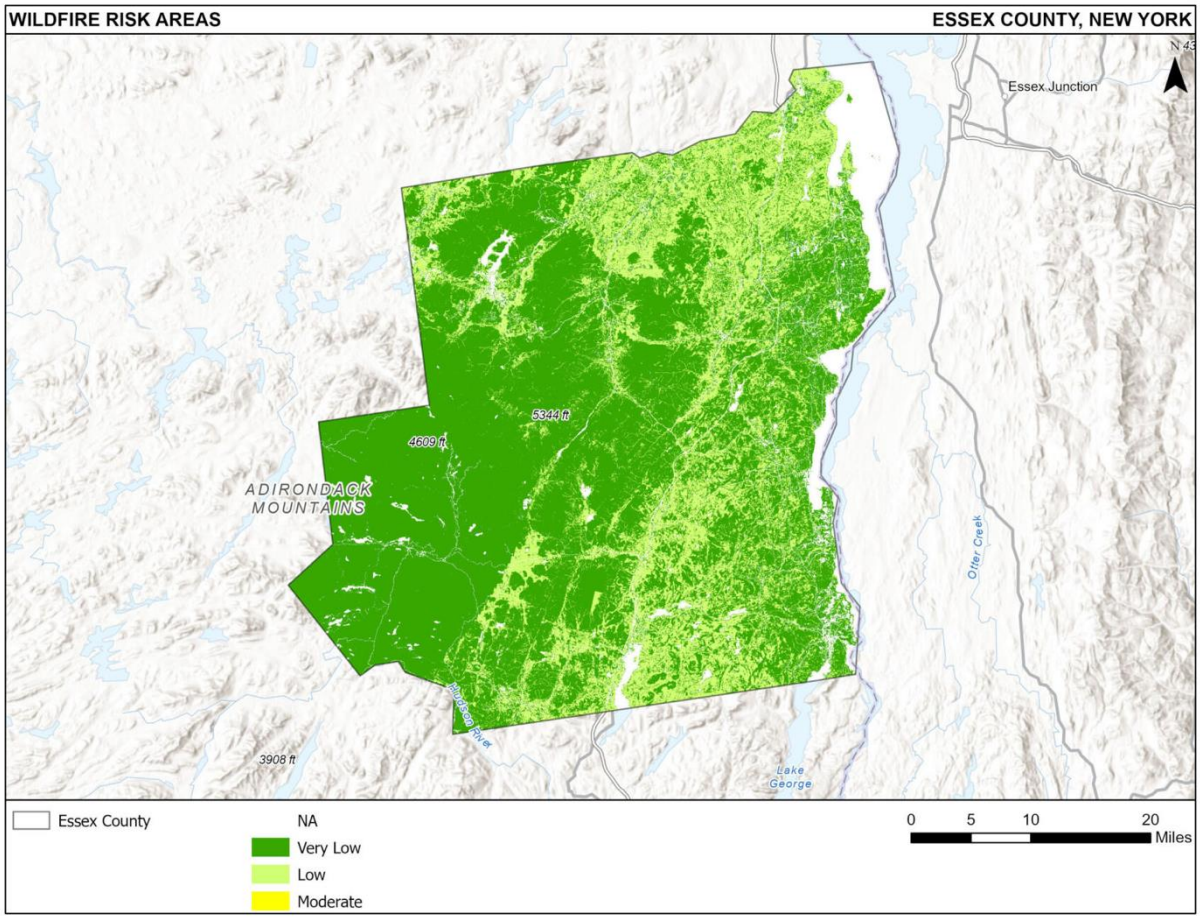


Figure 27. Wildfires Essex County

Wildfire activity in Essex County is typically concentrated in remote forested areas, including:

- the High Peaks Wilderness Area. The county's largest protected wilderness, with dense forests and rugged terrain that can make fire suppression efforts challenging.

- the Champlain Valley. This valley contains grasslands, forests, and agricultural areas that are more susceptible to fast–moving fires.
- state and private forest lands. Areas with significant tree cover where wildfires can ignite due to lightning strikes, campfires, or human activity.
- areas near recreation and tourism. Increased outdoor recreation including camping, hiking, and hunting, can lead to accidental fire ignitions, particularly in dry seasons.

Extent of Wildfire Impact

While wildfires in the county are less frequent and typically lower in intensity compared to western U.S. states, they can still cause significant localized damage.

- Size of Fires. Most wildfires in Essex County are under 100 acres, but extended dry periods can increase the risk of larger fires.
- Air Quality & Smoke Impact. Even smaller wildfires can cause smoke and air pollution, affecting residents and visitors with respiratory conditions.
- Property & Infrastructure Damage. Wildfires near developed areas can threaten homes, roads, and power lines, requiring evacuations and emergency response.
- Environmental Damage. Fires can lead to soil erosion, habitat destruction, and water contamination in affected areas.

Wildfire Risk by Season

- Spring (March-June). Increased wildfire activity due to dry vegetation, high winds, and man–made ignitions before full leaf–out.
- Summer (July-September). Drought periods increase the risk, especially in grasslands and lower elevations.
- Fall (October-November). Leaf litter and dry conditions create additional fire hazards, particularly in forest understory areas.

Although Essex County does not experience large–scale wildfires, the location and extent of fire–prone areas indicate a growing need for preparedness, monitoring, and mitigation efforts. Fire risk in the county may continue to rise with climate change increasing the frequency of dry conditions,

Historical Occurrences

Essex County experienced several notable wildfires over the years, ranging from large historical fires to more recent incidents driven by dry conditions and human activity. The table below highlights significant wildfires that occurred in Essex County. It includes historical and recent incidents, along with their causes and responses.

Table 56. Essex County Wildfires

Year	Fire Name/Location	Acres Burned	Cause	Response
1903	Chateaugay Company Forest Fire	Thousands	Logging, dry conditions	Minimal firefighting resources at the time

Year	Fire Name/Location	Acres Burned	Cause	Response
1908–1915	Multiple Fires (various locations)	Thousands	Industrial activity, drought	Timber loss, long–term soil damage
2002	Multiple Wildfires (across county)	320+	Dry summer, strong winds	DEC burn bans, local FD responses
2018	Altona Flat Rock Fire (Clinton County, near Essex)	328	Unknown	DEC Forest Rangers, National Guard helicopters
2020–2022	Small Wildfires (Wilmington, Keene Valley, & High Peaks)	Varies (small scale)	Unattended campfires, lightning	Local fire departments, controlled burns
2023	Hail Mountain Fire (Crown Point)	30	Dry conditions	DEC Forest Rangers, aerial water drops

In August 2002, Essex County and surrounding areas experienced one of the driest summers in decades, leading to over 320 acres burning in the Adirondack region. Strong winds and low rainfall contributed to fast–moving wildfires, with the county seeing some of the most severe impacts. The New York State Department of Environmental Conservation (DEC) issued a burn ban, prohibiting campfires in forest preserve lands to prevent further spread.

Wildfire activity has increased in recent years due to rising temperatures and drier conditions. Some notable fires include the 2018 Altona Flat Rock Fire, which burned 328 acres in nearby Clinton County and required a large–scale response from local fire departments, DEC Forest Rangers, and National Guard helicopters. Though not directly in Essex County, this fire significantly impacted the broader Adirondack region. From 2020 to 2022, DEC reports indicated a rise in wildfires across the Adirondacks, including Essex County, due to drier springs and summers. Small–scale wildfires were reported near Wilmington, Keene Valley, and the High Peaks region, often caused by unattended campfires or dry lightning.

In 2023, one of the largest recent fires in Essex County occurred on Hail Mountain in Crown Point, burning approximately 30 acres in steep, difficult terrain. The fire was contained with the help of DEC Forest Rangers, local fire departments, and aerial water drops. This incident highlighted the growing wildfire risk in the region, particularly in remote areas where access for firefighting crews is limited.

DEC Forest Rangers and local fire departments play a crucial role in wildfire response. Essex County is part of NYS DEC Regions 5 & 6, which enforce seasonal burn bans, conduct controlled burns, and monitor wildfire risks. Due to increasing fire dangers, the DEC has reinforced restrictions on open burning, particularly in spring and summer months when fire conditions peak. Public awareness campaigns focus on responsible campfire use, firewood transportation regulations, and emergency preparedness to prevent future fires.

Essex County's wildfire history highlights past industrial impacts and modern climate challenges. While major wildfires remain less frequent compared to Western states, the Adirondack region—including Essex County—is increasingly vulnerable due to drier conditions, increased tourism, and climate change. Continued fire management efforts, burn restrictions, and community awareness will be essential in preventing future destructive wildfires.

DRAFT

Figure 28. Historical Wildfires Essex County

Future Potential Events

Wildfire risk in Essex County is expected to increase in both frequency and intensity due to climate change, prolonged droughts, and rising temperatures. Observed trends from 2019 to 2025 indicate that warmer and drier conditions during the spring and summer months will lead to a higher likelihood of wildfires, particularly in forested and mountainous regions. Increased tourism, recreational activities, and man–made ignition sources also contribute to the growing threat.

Drier conditions, combined with longer heat waves, can dry out vegetation, making forests more susceptible to rapid fire spread. In High-risk areas like the Adirondack High Peaks, Wilmington, and Keene Valley, lightning–caused wildfires may also become more frequent as storm patterns shift. Changes in snowfall patterns and earlier spring thaws may reduce moisture availability, extending the traditional wildfire season beyond the late summer and early fall months.

Stronger wind patterns could further accelerate wildfire spread, making suppression efforts more challenging, particularly in remote and rugged terrains. While Essex County has not historically experienced large–scale wildfires like those in the western U.S., climate models suggest an increasing probability of moderate to large wildfires in the coming decades. The New York State Department of Environmental Conservation (DEC) has already increased fire restrictions, particularly during dry months, and is actively monitoring fuel loads, drought indices, and human activity in high-risk zones.

Table 57. Essex County Future Probability of Wildfire Events

Wildfire Event	Probability	Expected Frequency
Small Wildfires (1-10 acres)	High	Expected 5-10 events/year, primarily in dry summer months.
Moderate Wildfires (10-100 acres)	Moderate to High	Likely 2-4 events/year, with longer durations in drought years.
Large Wildfires (100+ acres)	Moderate	Possible once every 5-10 years, with increasing risk due to climate change.
Human–caused Wildfires (campfires, debris burning, etc.)	High	Expected to remain the leading cause, with peak risk in spring and summer.
Lightning–caused Wildfires	Increasing	1-2 events/year, particularly in higher elevations.

Probability ratings in the table are based on observed trends, climate projections, and historical wildfire data for Essex County, as well as broader New York State DEC reports and climate change assessments. They reflect:

- Historical Wildfire Activity. Past fire incidents in Essex County, including small and moderate wildfires reported by the NYS DEC and local fire departments.

- Climate Change Trends. Data from organizations like the National Interagency Fire Center (NIFC) and USDA Forest Service, which predict increased fire risk due to rising temperatures and longer droughts.
- Fire Season Expansion. Research from climate models showing that dry conditions and earlier snowmelt may extend the wildfire season in the Adirondacks.
- Fire Behavior in Similar Regions. Trends from nearby counties in the Adirondack Park that share similar forest density and weather conditions.

As wildfire risks rise, proactive prevention measures like burn bans, fire education programs, and improved emergency response strategies will be critical in protecting county forests, communities, and infrastructure. Local and state agencies, including the DEC and local fire departments, will need to expand monitoring efforts, enforce fire restrictions, and enhance public awareness campaigns to minimize fire risks and improve response times.

Climate Change

Climate change is increasingly contributing to the frequency and intensity of wildfires in Essex County, and the broader Adirondack region. Rising average temperatures, prolonged droughts, and shifting precipitation patterns are creating drier conditions that make forests more susceptible to fire. Warmer winters and earlier snowmelt reduce soil and vegetation moisture, extending the wildfire season beyond its historical late–summer peak. Heat waves and extreme weather events like dry thunderstorms and stronger wind patterns, increase the likelihood of both natural and man–made ignitions.

According to climate projections, by 2050 the Adirondacks may experience up to 30 more days per year with High fire danger due to drier conditions and increased heat stress on vegetation. As tourism and outdoor recreation continue to grow, unattended campfires and accidental ignitions may further drive fire risks. To mitigate these threats, the New York State Department of Environmental Conservation (NYS DEC) and local agencies have implemented stricter fire regulations, expanded wildfire monitoring, and increased public awareness campaigns. As climate change accelerates, proactive forest management, emergency preparedness, and adaptive fire prevention strategies will be essential to protecting Essex County communities, ecosystems, and infrastructure from future wildfire risks.

DRAFT

Vulnerability Assessment

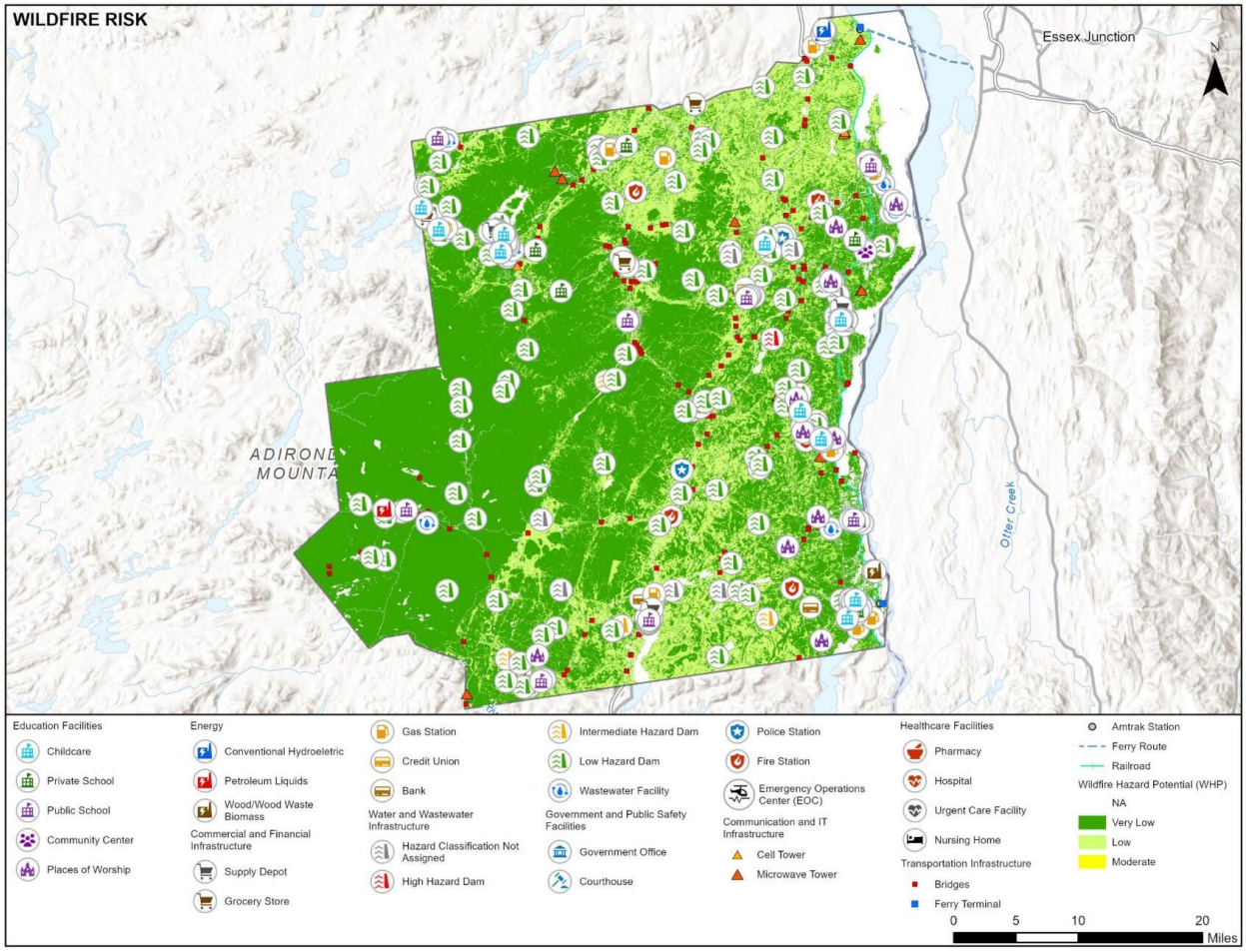


Figure 29. Wildfire Risk Map

The wildfire risk map of Essex County categorizes wildfire hazard potential into "Very Low," "Low," and "Moderate" risk areas, with no High-risk zones identified. While the county is not a major wildfire–prone area, certain regions with dense forests, recreational activity, and limited emergency access face a higher likelihood of wildfire occurrences, particularly during dry conditions.

In Western Essex County, which includes much of the Adirondack Mountain region, the wildfire risk is Low to Very Low due to dense forests, rocky terrain, and natural firebreaks like lakes and rivers. This area has minimal public infrastructure, with only a few fire stations and government facilities. Limited road access and remote locations could make fire response efforts more difficult.

Central Essex County, including the High Peaks Wilderness and surrounding areas, presents Low to Moderate wildfire risk. The mix of forested wilderness, recreational trails, and small communities increases the potential for man–made wildfires, particularly from camping, hiking, and hunting activities. The presence of fire stations, law enforcement, and public facilities improves emergency response, but rugged terrain and limited road networks may still present challenges in wildfire containment.

Eastern Essex County, encompassing the Champlain Valley and Lake Champlain region, has Very Low to Low wildfire risk due to its more urbanized landscape, agricultural fields, and wetlands. This area contains a higher concentration of public services, including hospitals, schools, fire stations, and energy infrastructure. While the overall risk is lower, dry agricultural fields combined with high wind conditions could still contribute to localized fire spread.

In Southern Essex County, particularly near Schroon Lake and the Warren County border, the wildfire risk varies between Low and Moderate, as the region includes a mixture of wooded areas, small towns, and infrastructure corridors. This area is better equipped with several fire stations and emergency operations centers (EOCs), but wildfires near transportation routes (bridges, ferries, and railways) could disrupt travel and create evacuation challenges.

National Risk Index

The table below outlines the risk levels, probability, and primary impacts of wildfires in Essex County, based on the National Risk Index and historical wildfire trends.

Table 58. Essex County Wildfire Risk Levels

Hazard Component	Risk Level (Per National Risk Index)	Probability	Primary Impacts
Wildfires	Relatively Moderate	Moderate to High	Forest loss, property damage, air quality issues, evacuation risks

Essex County has a Moderate wildfire risk due to its heavily forested terrain, increasing drought conditions, and rising temperatures. While wildfires in the region are not as frequent or severe as in the western U.S., climate change is increasing their probability and potential impact. Prolonged dry periods, high winds, and human activity—like campfires and debris burning—contribute to wildfire ignition.

Although most wildfires in the county are small-scale (1-10 acres), larger fires (10-100+ acres) do occur in drought years, threatening forests, homes, and air quality. Future projections suggest that wildfire intensity and frequency will rise, leading to a greater need for fire prevention, emergency preparedness, and resource management in the Adirondack region.

Expected Annual Loss

The following data highlights the risk, frequency, and economic impact of wildfires in Essex County. While wildfires occur less frequently than other climate-related hazards, their potential for rapid spread, forest destruction, and economic losses is increasing due to climate change. The impacts on forests, air quality, tourism, and emergency response resources make wildfires an important hazard to monitor in the region.

Table 59. Essex County Wildfire Risk and Impact

Hazard	Wildfires
Historic Rating	Relatively Moderate
Exposure Annual Loss Amount	$55,000

DRAFT

Hazard	Wildfires
Frequency	1.0 events/year
Population Impacted	.015
Agriculture Value Loss	$310

Wildfires in the county are historically Moderate in frequency but increasing in severity due to drier conditions and human activity. Annual wildfire loss estimates have risen to approximately $55,000, reflecting damage to forests, infrastructure, and firefighting efforts. Wildfire frequency is projected to increase to at least one event per year, with larger fires (10+ acres) becoming more common during drought seasons.

Impact on the local population remains Relatively Low but air quality issues, evacuation risks, and economic damage to agriculture and tourism could become more significant in the future. While wildfire risk in Essex County is generally Low, certain forested and recreational areas require enhanced fire prevention strategies. Emergency services, including fire stations and emergency operation centers, are strategically placed, but difficult terrain and limited access to remote locations could complicate suppression efforts.

Development Trends

As the county continues to develop, the impacts of wildfires are becoming an increasing concern, particularly due to climate change, expanding tourism, and shifting land use patterns. Rising temperatures and prolonged dry seasons are creating conditions more favorable for wildfire outbreaks, increasing the risk to forested areas, residential properties, and infrastructure. As more homes and recreational facilities are built near forested lands, the wildland–urban interface (WUI) is expanding, heightening the potential for fire–related damage and the need for stronger fire management strategies.

Tourism and outdoor recreation, which play a major role in the Essex County economy, are also affected by growing wildfire risks. Increased visitor traffic in hiking and camping areas raises the probability of man–made fires, requiring enhanced fire prevention education, improved emergency response systems, and stricter fire regulations. Wildfire smoke and degraded air quality deters visitors and impacts public health, disrupting outdoor activities, particularly during the peak summer and fall months.

Infrastructure resilience is another concern for the county, as wildfires can damage power lines, roadways, and communication networks—leading to disruptions in emergency services and essential utilities. The county may need to invest in fire–resistant building materials, improved forest management practices, and increased firefighting resources to mitigate these risks. As wildfire frequency and intensity rise, Essex County must integrate fire risk reduction strategies into future development plans, ensuring a balance between economic growth, environmental protection, and public safety.

Community Lifelines

Wildfires in Essex County pose significant challenges to critical community lifelines, impacting public safety, infrastructure, and essential services. FEMA's Community Lifeline framework identifies seven key lifelines necessary for maintaining stability and ensuring effective disaster

response and recovery. The following sections outline how wildfires affect these lifelines in Essex County.

- Safety and Security. Wildfires threaten public safety by endangering residents, emergency responders, and properties. Smoke inhalation, rapid fire spread, and evacuation risks pose serious dangers, particularly for vulnerable populations like elderly residents, individuals with respiratory conditions, and those in remote or heavily forested areas. During large wildfires, first responders face hazardous conditions, limited access to affected areas, and strained firefighting resources, increasing the need for fire prevention measures and emergency preparedness plans.
- Food, Water, and Shelter. Wildfires can severely disrupt food supply chains, agriculture, and water resources. Fires in forested areas can damage farmland and contaminate water sources with ash and debris. Water shortages may arise as fire suppression efforts require large amounts of water, depleting local supplies. Displaced residents may need emergency shelters due to evacuation orders or fire-related home damage. Ensuring adequate shelter, drinking water access, and food distribution is critical during wildfire events.
- Health and Medical. Wildfires place significant strain on healthcare systems by increasing hospital visits due to smoke inhalation, respiratory conditions (like asthma and COPD exacerbation), heat-related illnesses, and burn injuries. Prolonged exposure to wildfire smoke can also lead to long-term cardiovascular and lung damage. Hospitals and clinics must maintain backup power systems to ensure continuous operation during fire-related outages. Wildfire smoke further reduces air quality, increasing the likelihood of respiratory distress for at-risk populations.
- Energy (Power & Fuel). Wildfires can cause widespread power outages by damaging power lines, transformers, and energy infrastructure. High winds during fire events can knock down electrical systems, increasing the likelihood of fire-related blackouts. Energy demand spikes during extreme fire conditions, as people rely on air conditioning and ventilation systems to reduce smoke exposure indoors. Fuel shortages may also occur if wildfires disrupt transportation routes and supply chains. Strengthening energy resilience and backup power systems is crucial for wildfire preparedness.
- Communications. Wildfires can damage telecommunications infrastructure including cell towers, fiber optic cables, and radio transmission equipment—leading to disruptions in emergency communications. In rural areas of Essex County where cell service is already limited, wildfires may further restrict evacuation alerts and emergency coordination efforts. Reliable communication systems are essential for issuing evacuation warnings, coordinating firefighting efforts, and ensuring public safety during wildfires.
- Transportation. Wildfires threaten roadways, bridges, and rail systems by causing reduced visibility from smoke, road closures, and infrastructure damage. Fire suppression efforts may lead to restricted access on highways and forest roads, delaying emergency response and supply deliveries. In mountainous regions of Essex County, steep terrain and dense forests make fire containment challenging, increasing the likelihood of transportation disruptions and evacuation delays. Maintaining clear evacuation routes and emergency access roads is critical in wildfire-prone areas.

DRAFT

- Hazardous Materials. Wildfires can ignite hazardous materials, including fuel storage sites, industrial chemicals, and household waste, leading to toxic air pollution, water contamination, and increased environmental risks. In areas where wildfires occur near businesses, transportation hubs, or waste disposal sites, the potential for chemical releases and hazardous material incidents is heightened. Proper hazard containment measures, fire–resistant infrastructure, and emergency response planning are essential to mitigating wildfire–related hazardous material risks.

Wildfires pose growing risks to public health, infrastructure, and emergency response systems, particularly as climate change increases fire frequency and intensity. With rising temperatures, drier conditions, and expanding development in forested areas, proactive wildfire mitigation, community preparedness, and resilient infrastructure planning are critical. Strengthening fire prevention strategies, evacuation protocols, and emergency response coordination will help protect Essex County residents and essential community lifelines from future wildfire threats.

Results

Essex County wildfire risk analyses highlight increasing threats posed by climate change, human activity, and evolving land use patterns, affecting public safety, infrastructure, and emergency response systems. Several key findings emerge from this assessment:

- Increasing Frequency & Intensity of Wildfires. Climate change is contributing to longer and more intense wildfire seasons, with rising temperatures and prolonged drought conditions drying out vegetation and increasing fire susceptibility. Human–caused ignitions like campfires and debris burning, continue to be the leading wildfire triggers, while lightning–caused fires are becoming more frequent in higher elevations and remote areas.
- Vulnerability of Critical Infrastructure. Wildfires threaten power lines, transportation networks, and communication systems, leading to widespread disruptions and increased maintenance costs. High winds and rapid–fire spread can damage roads, railways, and bridges, while fire–related power outages can disrupt emergency services and essential utilities. Protecting critical infrastructure from fire damage is essential for maintaining community stability.
- Disproportionate Impact on Vulnerable Populations. Rural communities, low–income households, and individuals with respiratory conditions face greater health risks due to smoke exposure, evacuation challenges, and limited access to emergency resources. Residents in heavily forested or remote areas may experience longer emergency response times, increasing their vulnerability during wildfire events.
- Significant Economic Consequences. Wildfires lead to direct and indirect economic losses across multiple sectors, including forestry, tourism, agriculture, and local businesses. Damage to timber resources, reduced air quality, and park closures can disrupt the local economy, while fire suppression costs and property losses place financial strain on county resources and homeowners.
- Environmental Degradation & Ecosystem Disruptions. Wildfires destroy forested landscapes, disrupt wildlife habitats, and degrade air and water quality. Increased fire frequency can lead to loss of biodiversity, soil erosion, and long–term changes in forest composition. Post–fire flooding and landslides may also exacerbate environmental damage in affected areas.

- Need for Comprehensive Mitigation & Adaptation Strategies. Addressing the growing wildfire threat requires a multi-faceted approach, including enhanced fire prevention efforts, improved emergency preparedness, and proactive land management strategies. Implementing fire-resistant building codes, expanding public awareness campaigns, and increasing resources for local fire departments will be critical in reducing fire risk.
- Importance of Policy Coordination & Regional Collaboration. Managing wildfire risks requires cooperation between local, state, and federal agencies to improve fire response capabilities, enforce fire regulations, and invest in sustainable forestry practices. Strengthening regional emergency response networks and increasing funding for wildfire resilience projects will enhance Essex County's ability to withstand and recover from fire-related disasters.

Wildfires present growing challenges to Essex County, affecting residents, businesses, ecosystems, and infrastructure. As climate patterns continue to shift, wildfire frequency and severity are expected to increase, requiring proactive planning, investments in fire resilience, and strengthened emergency response efforts to protect public health, economic stability, and community well-being.

DRAFT

Hazard: Utility Failures (Power & Communication Systems)

Utility failures refer to disruptions in essential power and communication systems that can significantly impact public safety, emergency response, and daily operations. These failures can result from natural disasters, extreme weather events, cyberattacks, aging infrastructure, or equipment malfunctions.

Power failures can lead to blackouts, heating and cooling disruptions, water supply issues, and economic losses, affecting businesses, hospitals, and critical facilities. Communication system failures, including cellular, internet, and emergency alert outages, can hamper disaster response, delay critical information sharing, and isolate communities from essential services.

Utility failures pose a growing risk in Essex County due to increasing extreme weather events, wildfire threats, and the county rural landscape where remote areas may experience prolonged outages. Strengthening grid resilience, backup power systems, and emergency communication networks is essential for mitigating the impacts of utility failures.

Location and Extent

Utility failures can occur countywide, but their severity and duration vary based on geographic location, infrastructure vulnerabilities, and environmental factors. Rural and mountainous areas are particularly at risk due to limited infrastructure, longer repair times, and exposure to extreme weather events. Many communities in Essex County like those in the High Peaks Region, Keene, and North Hudson, experience longer power restoration times due to limited access, challenging terrain, and fewer utility service hubs. Communication infrastructure in these areas is also less developed, leading to cell service dead zones and delayed emergency response coordination.

Areas with high visitor traffic like Lake Placid, Wilmington, and Schroon Lake are vulnerable to power and communication failures, especially during peak tourist seasons when demand surges. Severe weather events or wildfires can disrupt businesses, lodging facilities, and emergency services. Towns like Ticonderoga, Elizabethtown, and Port Henry have stronger utility infrastructure but may still experience widespread outages from storms, equipment failures, or disruptions to regional power grids.

Extent of Utility Failures

Due to the mix of remote wilderness, small towns, and tourism–dependent areas in Essex County, utility failures have widespread social and economic impacts. Strengthening power grid resilience, improving broadband infrastructure, and expanding emergency backup systems are essential to minimizing disruptions and ensuring public safety.

Power outages can last from a few hours to several days, depending on the cause and severity of the disruption. Events like storms, wildfires, or system overloads can strain the electrical grid, leading to widespread outages. Extreme cold or heat events further increase energy demand, potentially causing rolling blackouts or system failures. Major weather events, including winter storms and high–wind conditions, can disrupt power to thousands of residents—particularly in isolated and rural communities where restoration efforts may take longer.

Communication failures are also a significant concern, especially in mountainous and forested regions where cellular and internet service disruptions are more frequent. These failures can impact emergency alerts and first responder coordination, making it more difficult to communicate critical information during disasters. Severe weather, wildfires, and ice storms can cause physical damage to fiber optic lines, cellular towers, and satellite connections, leading to

extended service outages. Public safety systems (including 911 dispatch centers) emergency radio networks, and broadband–dependent services may be compromised during major utility failures, further delaying emergency response and increasing risks to public safety.

Historical Occurrences

Essex County has experienced multiple significant power and communication system failures in the past, primarily due to severe storms, extreme weather events, and infrastructure vulnerabilities. These incidents caused widespread outages, disrupted emergency services, and left thousands of residents without electricity and communication for extended periods. The table below summarizes major historical utility failures in the county—highlighting the causes, impacts, and severity of outages over the years.

Table 60. Essex County Historical Utility Failures

Year	Event	Cause	Impacts
1998	Ice Storm of 1998	Freezing rain, ice accumulation	Widespread power outages lasting up to 2 weeks, downed power lines, and communication failures affecting emergency services. Thousands of residents left without heat and electricity.
2011	Hurricane Irene	Heavy rainfall, flooding, high winds	Severe power outages, flooded roads and bridges, isolated communities, and cell service disruptions lasting several days. Infrastructure damage led to prolonged recovery efforts.
2012	Superstorm Sandy	Strong winds, heavy rain	Localized power failures, damaged power lines, and communication disruptions. Some Essex County areas experienced outages for several days.
2020	Windstorm	High winds, fallen trees	Thousands lost power, with downed trees and power lines causing extended outages. Cell service disruptions impacted emergency response efforts.
Recurring	Winter Storms	Heavy snow, ice, extreme cold	Frequent power failures, overloaded electrical grid, broken utility poles, and communication disruptions due to ice accumulation and strong winds.

These historical occurrences demonstrate the ongoing risks of utility failures in Essex County, highlighting the importance of enhancing infrastructure resilience, expanding emergency backup systems, and improving communication networks to mitigate future outages.

Future Potential Events

As climate change, extreme weather events, and aging infrastructure continue to impact the county, utility failures are expected to become more frequent and severe in the coming decades. Rural landscapes, mountainous terrain, and reliance on above–ground power lines make it particularly vulnerable to future disruptions in power and communication systems.

- Increased Risk of Weather–Related Power Failures. Future severe storms, hurricanes, and winter weather events will likely lead to longer and more widespread power outages. Climate models suggest stronger, more frequent storms will bring heavy rainfall, high winds, and ice

DRAFT

accumulation—all of which can damage power lines, topple trees, and overwhelm the electrical grid. Heat waves may cause energy demand spikes, increasing the likelihood of rolling blackouts or grid failures during extreme temperature events.

- Growing Threat of Wildfire–Related Utility Failures. With rising temperatures and drier conditions, the risk of wildfire–related power and communication disruptions is also increasing. In the future, wildfires could further damage power lines, transformers, and communication towers, leading to prolonged blackouts and emergency service failures. Power companies may also implement preventive shutoffs during periods of extreme fire risk, temporarily cutting off electricity to prevent fire ignitions caused by electrical infrastructure.
- Communication Failures & Cybersecurity Concerns. Essex County reliance on digital communication and broadband networks means cyberattacks, system overloads, and natural disasters could disrupt emergency communication systems, internet access, and cell service. In remote areas where cellular coverage is already limited, extreme weather or power outages could cut off residents from emergency alerts and critical services for extended periods.
- Longer Recovery Times Due to Aging Infrastructure. Much of the county's power and communication infrastructure is aging, potentially making these valuable resources more susceptible to failures and more difficult to rapidly repair. As the demand for electricity, internet access, and emergency communications grows, investment in grid modernization, underground power lines, and backup systems will be necessary to reduce future risks.

Climate Change

Climate change is projected to intensify utility failures in the county, impacting power and communication systems with greater frequency and severity. Rising temperatures, stronger storms, and shifting weather patterns place additional stress on aging infrastructure, increasing the risk of power outages, communication disruptions, and energy supply shortages. Several key climate–related factors contribute to the growing risk of utility failures in the region.

- More Frequent & Severe Storms. As climate change intensifies, hurricanes, severe thunderstorms, and winter storms are expected to become more extreme, leading to greater damage to power lines, substations, and communication towers. Heavy rain and high winds can topple trees onto power lines, causing widespread blackouts and infrastructure failures. Winter storms may bring heavier snow and ice accumulation, increasing the risk of downed power lines, frozen transformers, and prolonged outages.
- Rising Temperatures & Increased Energy Demand. Essex County is projected to experience hotter summers with more frequent and intense heat waves, which will increase energy consumption for cooling systems. This rising demand places stress on the electrical grid, raising the likelihood of rolling blackouts and system failures during peak usage periods. Older power infrastructure may struggle to handle the increased load, leading to transformer failures, overheating equipment, and voltage instability.
- Wildfires & Infrastructure Damage. Drier conditions and rising temperatures increase the risk of wildfires, leading to damaged electrical transmission lines, substations, and communication networks. As a result, planned power shutoffs may be used during High-risk fire conditions to prevent electrical equipment from igniting wildfires, leading to temporary blackouts and communication disruptions.

- Flooding & Water–Related Infrastructure Failures. Increased rainfall and flooding events threaten underground power lines, utility substations, and broadband infrastructure, potentially leading to electrical shorts, equipment failures, and widespread service interruptions. Floodwaters can also damage roads and access routes, delaying power and communication services restoration after a major storm.
- Impact on Communication Systems. Climate change poses significant risks to communication systems by increasing the frequency and severity of extreme weather events that can disrupt infrastructure and connectivity. Rising temperatures, stronger storms, and more frequent flooding heighten the likelihood of power outages, damaged communication towers, and disrupted fiber–optic and satellite networks. Wildfires, intensified by prolonged droughts, can destroy essential communication lines, while heavy snowfall and ice storms may bring down cellular and broadband infrastructure.

Vulnerability Assessment

Utility failures pose a significant risk to county public safety, infrastructure, and emergency response systems—especially as climate change increases the frequency of extreme weather events. The county's rural landscape, aging infrastructure, and reliance on above–ground power lines make it particularly vulnerable to prolonged power outages and communication disruptions. Several key factors contribute to Essex County's vulnerability to utility failures. This table summarizes county vulnerabilities to utility failures, the impacts on infrastructure and residents, and strategies to improve resilience and emergency response.

Table 61. Essex County Vulnerability Assessment of Utility Failures

Category	Vulnerabilities	Potential Impacts
Geographic & Infrastructure	• Mountainous & forested terrain makes repairs difficult. • Aging electrical grids & above–ground power lines are more prone to damage. • Remote areas have limited access to backup power & emergency services.	• Longer restoration times, especially in isolated communities. • Increased risk of prolonged outages due to difficult terrain.
Weather–Related	• Severe winter storms cause ice accumulation on power lines. • High winds & hurricanes topple trees & damage utility poles. • Heat waves increase energy demand, straining the grid. • Wildfires can destroy power lines & communication towers.	• Widespread & prolonged power & communication failures. • Rolling blackouts during heat waves. • Preventive power shutoffs during high wildfire risk.
Impact on Critical Services	• Hospitals & healthcare facilities rely on electricity for life–saving equipment.	• Medical emergencies worsened due to power loss at hospitals.

DRAFT

Category	Vulnerabilities	Potential Impacts
	• 911 dispatch, police, & fire services need stable communication networks. • Water treatment plants require electricity for clean water supply.	• Delayed emergency response due to communication disruptions. • Risk of water contamination & limited access to clean water.
Vulnerable Populations	• Elderly & medically dependent residents rely on electricity for medical devices. • Low–income households may lack backup generators or emergency supplies. • Rural communities face longer outage recovery times.	• Increased health risks for those reliant on power–dependent medical equipment. • Financial strain on households unable to afford backup energy solutions. • Extended isolation for remote communities.
Mitigation & Adaptation Strategies	• Modernizing the power grid by undergrounding power lines. • Expanding backup power sources for hospitals & emergency shelters. • Enhancing broadband & cellular coverage in rural areas. • Developing emergency preparedness programs to improve community resilience.	• Reduced frequency & severity of utility failures. • Faster recovery times after extreme weather events. • Improved safety & accessibility for vulnerable populations.

National Risk Index

The National Risk Index (NRI) assesses hazard risks across the United States based on historical occurrences, expected frequency, and potential impacts. Essex County faces a Moderate to High risk of utility failures, primarily due to severe weather events, aging infrastructure, and geographic challenges. The increasing frequency of storms, extreme temperatures, and wildfires further elevates county vulnerabilities to power outages and communication disruptions.

Power outages occur frequently in the county, particularly during severe weather events, winter storms, and high–wind incidents, often affecting thousands of residents, businesses, and emergency services. Rural and mountainous areas are especially vulnerable, as utility restoration takes longer due to difficult terrain and limited infrastructure. Communication failures are also a growing concern, particularly in remote areas where broadband and cellular service expansion remains limited. Climate change is increasing the risk of weather–related utility failures with more frequent storms, prolonged heat waves, and wildfire threats placing additional stress on infrastructure stability. To mitigate these risks, preventive measures like grid modernization, improved emergency response plans, and investments in backup power sources are essential for enhancing resilience and reducing the impact of future utility disruptions.

Table 62. Essex County National Risk Index for Utility Failures

Hazard Component	Risk Level (Per National Risk Index)	Probability	Primary Impacts
Power Outages	Moderate to High	Likely 3-5 events/year	Loss of electricity for homes & businesses, heating/cooling system failures, disruption of emergency services.
Communication Failures	Moderate	Likely 2-4 events/year	Cellular & internet service disruptions, delays in emergency response, isolation of rural communities.
Weather–Related Utility Failures	High	Increasing frequency	Storms, extreme cold, & high winds causing infrastructure damage & widespread outages.
Wildfire–Related Power Disruptions	Moderate	Possible once every 5-10 years	Damage to power lines & communication towers, preventive power shutoffs, long–term service disruptions.
Cybersecurity Threats to Utility Systems	Moderate	Growing risk due to digital infrastructure reliance	Potential for cyberattacks on power grids & communication networks, disruption of emergency alert systems.

As Essex County continues to experience climate–driven utility failures, proactive planning, infrastructure improvements, and policy coordination will be necessary to enhance community resilience and minimize service disruptions.

Expected Annual Loss

Severe weather events like winter storms, hurricanes, and heat waves, account for most utility–related losses, causing extensive damage to power grids and communication systems. Business disruptions and economic losses from utility failures are particularly significant in tourism–dependent areas where outages impact hotels, restaurants, and recreational facilities. Extended outages also increase emergency response costs as police, fire departments, and medical services must operate under strained conditions with limited communication and power access. Residents, especially those in rural areas, face additional financial burdens, including generator expenses, food spoilage, and medical risks for individuals reliant on electricity for healthcare needs. To mitigate these challenges, upgrading infrastructure, investing in grid resilience, and improving emergency preparedness are essential strategies to reduce long–term financial losses and minimize service disruptions.

The Expected Annual Loss (EAL) measures the estimated financial impact of utility failures, including power outages and communication disruptions on the county economy, infrastructure, and residents. The EAL calculation considers direct repair costs, economic losses from service disruptions, and secondary effects like business closures, emergency response expenses, and public health impacts.

Table 63. Essex County Expected Annual Loss (EAL) from Utility Failures

DRAFT

Category	Estimated Annual Loss ($)	Primary Cost Factors
Power Infrastructure Damage	$2.5M-$4M	Repairs to power lines, substations, & transformers due to storms, wildfires, or ice accumulation.
Business & Economic Losses	$1.8M-$3M	Lost revenue from business closures, supply chain disruptions, & tourism declines during prolonged outages.
Emergency Response Costs	$1M-$2.5M	Increased demand on fire departments, medical services, & law enforcement during power & communication failures.
Residential Impacts	$750K-$1.5M	Costs of backup generators, food spoilage, heating/cooling system failures, & medical complications for vulnerable residents.
Communication System Repairs	$500K-$1M	Repairs to damaged cell towers, fiber optic cables, & emergency communication networks.
Total Estimated Annual Loss (EAL)	$6.5M-$12M	Varies based on severity, duration, & frequency of utility failures.

Given the rising frequency of extreme weather and climate–related risks, Essex County's EAL from utility failures is expected to increase, making proactive mitigation strategies essential for long–term resilience and economic stability.

Development Trends

As the county continues to develop, the demand for reliable power and communication infrastructure is increasing, making utility failures a growing concern. Expanding residential developments, tourism–driven businesses, and remote work reliance have heightened the need for modernized energy grids and broadband networks. The county's aging infrastructure, rural landscape, and exposure to extreme weather events make it more susceptible to prolonged power outages and communication disruptions.

Population growth and increased construction in forested and mountainous areas have expanded the Wildland–Urban Interface (WUI), creating greater challenges for power restoration and emergency response during severe weather events. The rising popularity of ecotourism and outdoor recreation means more visitors depend on cellular service and electricity in remote locations where outages can pose safety risks and disrupt economic activity.

The shift toward electric heating, cooling, and transportation is also placing greater demand on the power grid, increasing the risk of system overloads and blackouts during peak energy usage. As climate change brings more frequent storms, heat waves, and potential wildfire threats, upgrading infrastructure, investing in microgrids, and expanding broadband access will be critical to reducing county vulnerabilities to future utility failures. Integrating renewable energy sources, backup power systems, and resilient communication networks will help support long–term growth while enhancing the county's ability to withstand disruptions.

Community Lifelines

Utility failures in the county pose significant risks to critical community lifelines, affecting public safety, infrastructure, and essential services. FEMA's Community Lifeline framework identifies seven key lifelines necessary for maintaining stability, disaster response, and recovery efforts. The following sections outline how power and communication system failures impact these lifelines in Essex County.

- Safety & Security. Power and communication failures disrupt emergency services, delaying 911 response times, police operations, and fire department coordination. When outages occur during extreme weather events or natural disasters, residents in remote areas face greater isolation, increasing their vulnerability. Security systems, traffic lights, and public safety alerts may also fail, compromising law enforcement efforts and community safety.
- Food, Water, & Shelter. Power outages can shut down water treatment plants and wastewater systems, limiting access to clean drinking water and sanitation services. Grocery stores and food supply chains face disruptions due to refrigeration failures, leading to food spoilage and shortages. Residents affected by long–term outages may require access to emergency shelters, especially during extreme cold or heat events.
- Health & Medical. Hospitals, clinics, and long–term care facilities rely on continuous power to operate life–saving medical equipment, refrigeration for medications and vaccines, and emergency communication systems. Extended outages increase hospital admissions due to heat–related illnesses, respiratory issues from generator fumes, and complications for medically dependent individuals. Healthcare facilities must depend on backup generators, but fuel shortages during long outages can jeopardize patient care.
- Energy (Power & Fuel). Utility failures directly impact the availability and distribution of electricity, heating fuels, and gasoline. Heating system failures pose serious risks during winter storms, especially for elderly residents and low–income households. Fuel shortages can also delay emergency response efforts and prevent residents from using backup generators or transportation.
- Communications. Power failures often result in cellular, internet, and emergency radio network disruptions—limiting the ability to broadcast alerts, coordinate disaster response, and provide residents with essential information. In rural and mountainous areas where cell service is already limited, outages can leave entire communities without access to emergency communication, making it difficult to request help or receive evacuation orders.
- Transportation. Traffic signals, railway systems, and electric vehicle charging stations all rely on a stable power supply. During outages, road congestion increases, and public transportation services may be suspended due to a lack of communication and fuel availability. In winter months, power failures affecting road salt storage and distribution facilities can lead to dangerous travel conditions and delayed snow removal.
- Hazardous Materials. Utility failures can contribute to hazardous material incidents, particularly if industrial sites, fuel storage facilities, or wastewater treatment plants experience prolonged power loss. Without electricity, chemical containment systems, gas pipelines, and hazardous waste facilities may fail, increasing the risk of environmental contamination, fires, or explosions.

DRAFT

Utility failures in Essex County jeopardize public health, emergency response, and economic stability, particularly as climate change and severe weather events become more frequent. Strengthening grid resilience, expanding broadband access, and improving emergency preparedness plans are essential to protecting county lifeline services. Investing in backup power systems, decentralized energy sources, and enhanced communication networks will ensure that Essex County remains resilient in the face of future utility disruptions.

Results

Analyses of utility failures in the county highlight increasing risks posed by aging infrastructure, extreme weather events, and climate change—affecting public safety, critical services, and economic stability. Several key findings emerge from this assessment:

- Increasing Frequency & Severity of Utility Failures. Severe weather events including winter storms, hurricanes, and heat waves, continue to be the leading cause of power and communication system failures. As climate change intensifies storms and temperature extremes, the frequency and duration of outages are expected to increase, placing greater stress on power grids and telecommunication networks.
- Vulnerability of Rural and Remote Communities. Rural and mountainous areas of the county experience longer restoration times due to limited access, difficult terrain, and weaker infrastructure. Residents in isolated regions face extended power outages and communication disruptions, increasing risks for medically dependent individuals and emergency response efforts.
- Significant Economic & Business Impacts. Utility failures cause substantial economic losses, particularly in tourism–dependent areas, where hotels, restaurants, and recreation businesses rely on stable power and internet access. Extended outages disrupt retail operations, transportation systems, and local supply chains, leading to revenue losses and increased operational costs for businesses.
- Strain on Emergency Services & Healthcare Facilities. Power and communication failures complicate emergency response efforts, as 911 dispatch, police, and fire departments struggle to coordinate rescues and provide public safety alerts. Hospitals and long–term care facilities depend on backup generators, but prolonged outages can jeopardize patient care, especially for individuals reliant on electrically powered medical equipment.
- Rising Costs for Residents & Utility Providers. Residents face increased financial burdens from power failures, including backup generator expenses, food spoilage, and heating/cooling costs. Utility providers also face mounting repair and maintenance costs as extreme weather damages power lines, substations, and fiber optic networks, leading to higher rates and service disruptions over time.
- Need for Infrastructure Modernization & Resilience Strategies. Mitigating the impacts of utility failures will require investments in grid modernization, underground power lines, and decentralized energy sources like microgrids and renewable energy storage. Expanding broadband access and improving emergency communication networks will be essential for enhancing disaster response and reducing service disruptions.

Utility failures in Essex County are becoming more frequent and costly with widespread consequences for residents, businesses, and emergency services. As climate change continues to intensify extreme weather events, proactive investments in infrastructure resilience, emergency

preparedness, and sustainable energy solutions will be critical to ensuring a stable and reliable power and communication network for the future.

DRAFT

Hazard: Transportation Accidents (Roadway & Rail)

Transportation accidents (roadway and rail) refer to collisions, derailments, or other incidents involving motor vehicles, trains, or rail infrastructure that result in injuries, fatalities, property damage, or disruptions to transportation networks. These accidents can be caused by human error, mechanical failures, adverse weather conditions, hazardous material spills, or infrastructure deficiencies.

Roadway accidents may involve highways, rural roads, and tourist–heavy routes while rail incidents can affect passenger and freight trains operating throughout the region. The impact of such accidents includes traffic congestion, economic losses, environmental contamination, and emergency response challenges. Effective transportation safety measures, infrastructure improvements, and emergency preparedness plans are essential for reducing risks and mitigating the consequences of roadway and rail accidents.

Location and Extent

The figure below illustrates transportation infrastructure in Essex County, highlighting key roadways, railways, ferry routes, and pedestrian trails. The road network includes primary roads like Interstate 87 (Adirondack Northway) which serves as a major north–south corridor through the county, as well as secondary roads and local neighborhood roads that connect smaller towns and rural areas. Vehicular trails (4WD routes) are marked, indicating off–road access in more remote regions.

The railroad system, which runs primarily along the eastern side of the county near Lake Champlain, is also depicted. Several Amtrak stations, including those in Ticonderoga, Westport, and Port Kent, are marked, signifying passenger rail service that connects the county to New York City and Montreal. Pedestrian and cycling infrastructure is represented by walkways, pedestrian trails, and bike paths, providing alternative transportation options within the county.

Water transportation is another important feature, with ferry routes shown crossing Lake Champlain, linking Essex County to Vermont. Ferry terminals are marked, identifying key locations where ferry services operate. Bridges are highlighted, indicating major crossings over water bodies and transportation links between different parts of the county. The map also depicts county topography, including the Adirondack Mountains and major elevation points that influence road and transportation planning. This map provides a comprehensive view of how different transportation modes—road, rail, water, and pedestrian networks—connect the towns and communities of Essex County.

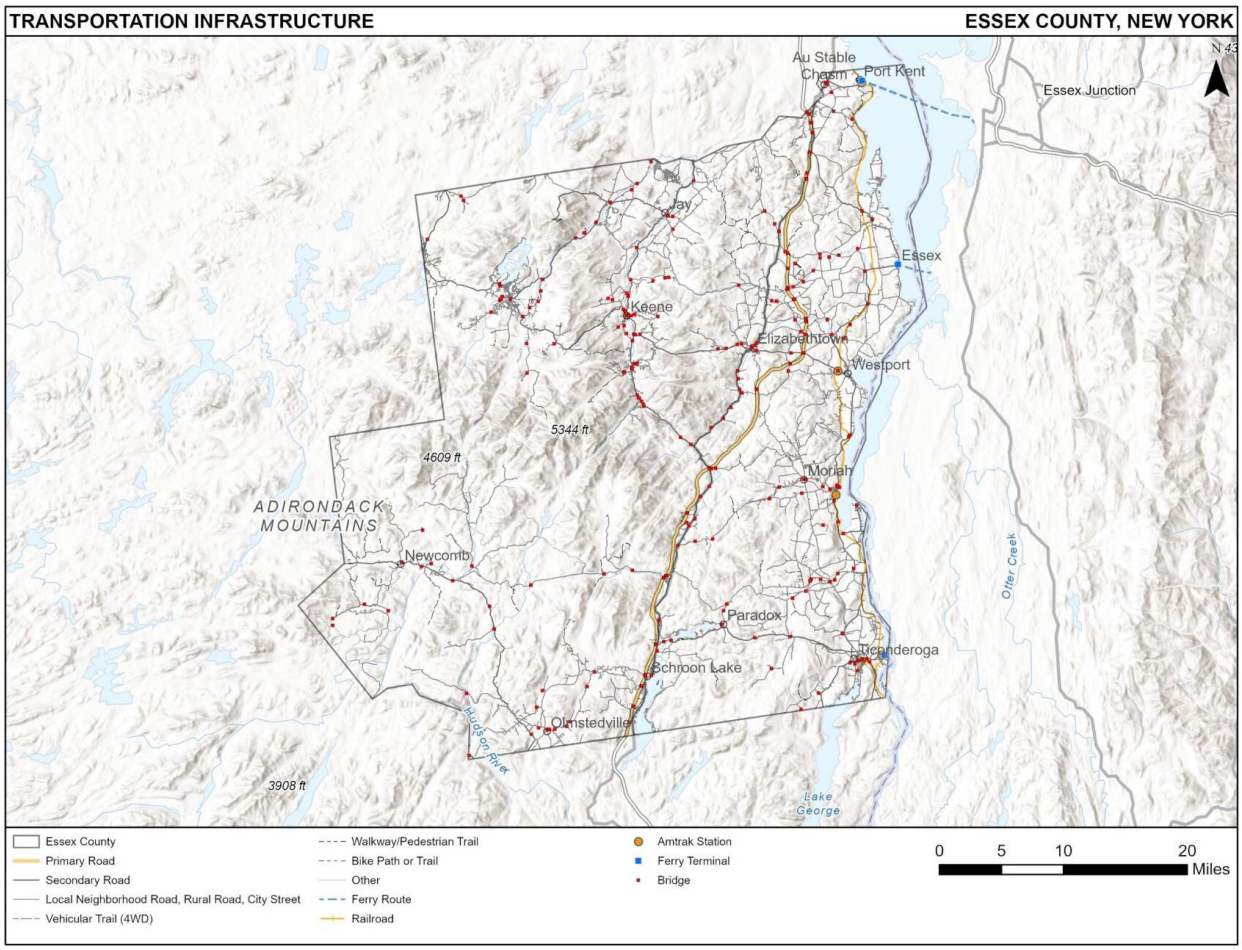


Figure 30. Essex County Transportation Infrastructure

Transportation accidents involving roadways and rail systems occur throughout the county, with varying frequency and severity based on location, traffic density, and infrastructure conditions. Rural roads, major highways, and active rail corridors present unique challenges, particularly with seasonal tourism traffic, severe weather, and limited emergency response access in certain areas.

High risk roadways include Interstate 87 (Adirondack Northway), State Routes 9, 73, 86, and 22, all of which experience frequent vehicle accidents, particularly during peak travel seasons. I–87, a major corridor connecting New York City to the Canadian border, sees heavy commercial trucking traffic, increasing the risk of high–speed collisions and hazardous material spills. Rural and mountainous roads like those in the High Peaks Region, Keene Valley, and Lake Placid, are especially prone to accidents due to icy conditions, steep inclines, sharp curves, and limited visibility. Wildlife crossings and fog–related visibility issues also contribute to frequent roadway crashes, particularly in winter and early morning hours.

Rail transportation accidents, while less frequent in Essex County, pose significant risks, particularly along the Canadian Pacific (CP) freight rail corridor and the Amtrak Adirondack Line. The CP rail line runs parallel to Lake Champlain, carrying hazardous materials, oil shipments, and general cargo, making derailments or spills a major environmental and public safety concern. Passenger rail service on the Amtrak Adirondack Line, which connects New York City to

Montreal, runs through seven towns in Essex County: Ticonderoga, Crown Point, Moriah, Westport, Essex, Willsboro, and Chesterfield. These towns are particularly vulnerable to rail accidents, as the rail line runs primarily near Lake Champlain, increasing the risk of hazardous material spills and transportation–related disruptions. Collisions at rail crossings and extreme weather–related disruptions pose risks to both passenger and freight rail operations in the region.

The extent of transportation accidents in the county varies, with roadway crashes being more frequent but rail incidents having potentially higher consequences. Severe weather conditions, including black ice, snowstorms, and fog, contribute to many vehicle accidents, particularly in high–elevation areas. Commercial trucking accidents on I–87 and major state routes often lead to road closures, hazardous material spills, and extended traffic delays. Rail accidents, though less common, can have far–reaching environmental impacts, especially if derailments occur near populated areas or water sources like Lake Champlain.

Transportation accidents in the county present serious risks to public safety, infrastructure, and emergency response operations. Addressing these challenges requires continued investment in road safety improvements, rail infrastructure maintenance, and emergency response planning to reduce accident risks and enhance transportation resilience in the region.

Historical Occurrences

Essex County has experienced numerous transportation accidents over the years, involving roadways, railways, and ferry routes. Due to the county's rugged terrain, harsh winter weather, and high seasonal traffic, accidents have had significant impacts on public safety, infrastructure, and emergency response operations.

- Major Roadway Accidents. Essex County's winding mountain roads, icy winter conditions, and heavy tourism traffic have contributed to numerous fatal and non–fatal vehicle crashes. One of the most accident–prone routes is Interstate 87 (Adirondack Northway), where high–speed collisions, winter weather crashes, and commercial trucking accidents have frequently caused road closures and hazardous material spills. Several serious accidents have occurred on State Routes 9, 73, and 86, particularly in winter months, when black ice and snow–covered roads increase the risk of vehicle skidding, rollovers, and multi–car pileups. Sections of Route 73 leading into Keene Valley and Lake Placid are known for frequent crashes involving tourists unfamiliar with the steep, winding roads. The table below shows roadway accidents most frequently, with winter weather conditions, distracted driving, and high–speed crashes being major contributing factors.

Table 64. Essex County Roadway Accidents, 2019–2025

Date	Location	Cause	Impact
1/2020	I–87 (Adirondack Northway)	Heavy snow, icy roads, poor visibility	15+ vehicles, multiple injuries, 6+ hour closure
8/2020	Route 73 (Keene Valley)	Speeding, sharp curves	2 fatalities, traffic delays
3/2021	Route 9N (Ticonderoga)	Truck lost control on downgrade	Hazardous material spill, road closed for 12 hours

Date	Location	Cause	Impact
11/2021	Route 86 (Lake Placid)	Black ice, sudden temperature drop	8-car pileup, minor injuries, emergency vehicle extractions
7/2022	Route 9 (Elizabethtown)	Distracted driving, excessive speed	1 fatality, increased patrols
2/2024	I-87 (near Exit 30)	Snowstorm, poor visibility	Tractor-trailer crash, fuel spill, major traffic delays

- Notable Rail Incidents. Rail transportation incidents in the county are less frequent but potentially severe. The Amtrak Adirondack Line, which runs parallel to Lake Champlain, has been involved in several grade-crossing accidents and weather-related delays. One notable incident involved an Amtrak train colliding with a vehicle at an unprotected rail crossing, resulting in fatalities and renewed discussions about rail safety measures in rural areas. The Canadian Pacific (CP) freight rail line—which transports hazardous materials, crude oil, and industrial goods—has faced derailments and hazardous material spills along the Lake Champlain corridor. Concerns remain about the potential for environmental damage and emergency response challenges if a major derailment were to occur in a populated area or near sensitive water sources.

Table 65. Essex County Rail Incidents, 2019–2025

Date	Location	Cause	Impact
9/2019	Moriah	Vehicle ignored rail crossing	One fatality, rail safety review initiated
6/2021	Port Henry	Heavy rain, track erosion	Freight derailment, minor hazardous material spill
11/2023	Westport	High winds, downed tree	Amtrak delays, emergency track clearing

- Ferry and Waterway Accidents. Essex County's ferry system, which connects the region to Vermont via Lake Champlain, has also seen transportation incidents. Historically, ferry operations have faced weather-related challenges including high winds, ice blockages, and mechanical failures, which have caused delays and, in some cases, emergency evacuations. While no major ferry disasters were recorded in recent history, occasional collisions with docks and minor onboard fires have required emergency responses.

Table 66. Essex County Ferry and Waterway Incidents, 2019–2025

Date	Location	Cause	Impact
4/2020	Essex–Charlotte Ferry Route	Engine malfunction	24-hour service disruption, commuter delays
12/2022	Lake Champlain	Extreme cold, ice buildup	Service suspended, emergency vehicle rerouting
5/2024	Essex Ferry Terminal	Strong winds, operator error	Collision with dock, minor damage, temporary suspension

DRAFT

Future Potential Events

As traffic volume, extreme weather events, and infrastructure challenges continue to evolve, the county faces an increasing risk of future transportation accidents involving roadways, railways, and ferry systems. Several key factors, including climate change, population growth, and aging infrastructure, will contribute to potential incidents and disruptions in the coming years.

- Increased Risk of Weather–Related Roadway Accidents. With climate change causing more severe winter storms, heavy rainfall, and extreme temperature fluctuations, the risk of weather–related crashes is expected to rise. Black ice, snowstorms, and flooding will continue to create hazardous conditions on Interstate 87, Route 73, Route 9, and other rural roads, increasing the likelihood of multi–vehicle pileups, skidding accidents, and roadside crashes. Wildlife–related accidents may also become more common as changing ecosystems force animals onto roadways.
- Growing Traffic Volume & Tourism–Related Collisions. As Essex County's tourism industry expands, especially in destinations like Lake Placid, Keene Valley, and the Adirondack High Peaks, the number of vehicles on winding, mountainous roads will increase. More out–of–town drivers unfamiliar with road conditions may lead to a higher frequency of accidents, especially during peak travel seasons. The growing popularity of electric vehicles (EVs) may introduce new risks like battery fires following high–speed crashes or limitations in charging station availability during power outages.
- Higher Risk of Rail Accidents Due to Freight & Passenger Growth. With increasing freight rail traffic along the Canadian Pacific (CP) corridor, the risk of derailments, hazardous material spills, and train–vehicle collisions at crossings will rise. The transport of crude oil and hazardous chemicals through the county presents a significant concern, as an accident could result in environmental contamination of Lake Champlain or nearby residential areas. Passenger rail incidents may also increase as Amtrak ridership grows, raising concerns about service disruptions, mechanical failures, or extreme weather delays.
- Ferry System Challenges & Future Disruptions. Ferry services across Lake Champlain will likely experience more frequent disruptions due to extreme weather events, ice accumulation, and aging infrastructure. Mechanical failures, docking incidents, or climate–driven changes in lake levels could impact ferry operations, leading to delays, travel interruptions, or emergency evacuations. An increase in ferry passenger numbers may lead to overcrowding and safety risks during peak travel seasons.
- Infrastructure Deterioration & Accident Risks. Many county roads, bridges, and rail crossings are aging, increasing the likelihood of infrastructure–related accidents like bridge collapses, pothole–related crashes, and weakened rail tracks leading to derailments. Without significant upgrades these structural weaknesses will continue to pose transportation hazards, especially during severe weather or high–traffic periods.

Climate Change

Climate change is expected to worsen county transportation hazards leading to more frequent roadway, rail, and ferry disruptions. Rising temperatures, severe storms, and shifting weather patterns will increase accident risks, damage infrastructure, and strain emergency response systems. Several key climate–related factors will contribute to future transportation failures and safety concerns in the region.

- More Frequent & Severe Storms Increasing Accident Risks. Essex County is projected to experience stronger winter storms, heavier rainfall, and more intense wind events, leading to hazardous road conditions and increased accident rates. Black ice, snow accumulation, and freezing rain will continue to create treacherous driving conditions, particularly on mountainous roads like Route 73, Route 9, and Interstate 87 (Adirondack Northway). High winds and downed trees will pose risks to both road and rail traffic, leading to lane closures and train delays.
- Rising Temperatures & Pavement Deterioration. Longer and hotter summers will weaken road surfaces, increase pavement buckling, and accelerate bridge deterioration. This will result in more frequent potholes, vehicle damage, and infrastructure failures, increasing the risk of accidents on major roadways. Heat waves may also weaken rail tracks, raising the likelihood of train derailments or mechanical failures on the Amtrak Adirondack Line and Canadian Pacific (CP) freight corridor.
- Increased Flooding & Road Washouts. Extreme rainfall events and rising groundwater levels could lead to flooding, landslides, and washed–out roads, particularly in low–lying areas and near river crossings. Heavy storms have already damaged rural roads, bridges, and embankments, forcing temporary closures and straining local emergency services. Rail tracks near Lake Champlain may also become more vulnerable to erosion, increasing derailment risks.
- Wildfire Risks Affecting Transportation Networks. While wildfires are historically rare in Essex County, rising temperatures and drier conditions could increase wildfire frequency, leading to road closures, train delays, and ferry service disruptions. Smoke from wildfires could reduce visibility on highways, making driving conditions more hazardous. Fire–related damage to power lines and railroad infrastructure could cause extended service interruptions.
- Impacts on Emergency Response & Travel Disruptions. As climate–related transportation hazards increase, emergency response teams will face greater challenges in reaching accident sites during severe weather events. Road closures due to flooding, winter storms, or landslides will slow emergency vehicle access, delaying medical care for crash victims. Extreme weather may also disrupt ferry schedules and railway operations, leading to canceled trips and longer travel delays for commuters and tourists.

Vulnerability Assessment

Transportation accidents pose significant risks to public safety, infrastructure, and emergency response operations. Mountainous terrain, harsh weather conditions, aging infrastructure, and high seasonal traffic volumes in the county contribute to roadway, rail, and ferry–related vulnerabilities. Several factors increase county susceptibility to severe crashes, service disruptions, and emergency response challenges:

- Geographic & Infrastructure Vulnerabilities. Essex County's remote and mountainous terrain makes transportation infrastructure difficult to maintain, increasing the likelihood of weather–related roadway hazards, rail disruptions, and ferry service delays. Steep, winding roads in the High Peaks Region, Keene Valley, and along Route 73 and Route 9 present a higher risk of vehicle crashes, especially in icy or foggy conditions. Aging roads and bridges are more prone to pavement deterioration, potholes, and structural weaknesses, increasing the risk of vehicle damage and accidents. Limited cellular coverage in remote areas further complicates communication between drivers and emergency responders, making it more difficult to coordinate accident response and road closures. County rail infrastructure, particularly near Lake

DRAFT

Champlain, faces vulnerabilities due to old tracks, grade crossings, and potential flooding, all of which can lead to an increase in derailments and hazardous material spills. Ferry terminals and docking facilities on Lake Champlain are at risk of ice accumulation, high winds, and mechanical failures, leading to service disruptions and emergency evacuations. These challenges highlight the critical need for infrastructure resilience and improved emergency response planning in the county.

- Weather–Related Vulnerabilities. Extreme weather events, worsened by climate change, create additional transportation risks in the county. Severe winter storms contribute to black ice, snow accumulation, and reduced visibility, increasing the likelihood of multi–vehicle pileups and highway closures, particularly on I–87, Route 73, and other high–traffic routes. Heavy rainfall and flooding can lead to road washouts, bridge failures, and track erosion, especially near low–lying rail crossings and river–adjacent roadways. High winds and falling trees further obstruct roadways and rail lines, heightening the risk of vehicle crashes, train delays, and ferry service disruptions. Rising temperatures and extreme heat can weaken pavement and rail tracks, increasing accident risks due to road surface failures and track warping. These climate–related hazards underscore the need for transportation infrastructure resilience and proactive adaptation measures.
- Impact on Critical Services & Emergency Response. Transportation accidents disrupt emergency response operations, supply chains, and public safety efforts. First responders, including police, fire, and EMS, may face delays due to road closures, downed trees, or difficult terrain, increasing risks for accident victims in rural or mountainous areas. Hospitals and healthcare facilities depend on safe and efficient transportation networks for ambulance access, medical supply deliveries, and emergency evacuations, making road and rail disruptions a significant concern. School districts and public transit services may also be impacted by road closures and extreme weather, leading to student transportation challenges and missed work for commuters. Hazardous material spills from truck crashes or freight train derailments pose serious risks to nearby communities, drinking water sources, and the environment. These challenges emphasize the importance of resilient transportation infrastructure and emergency preparedness planning.
- Vulnerable Populations at Higher Risk. Certain groups in Essex County are more vulnerable to transportation disruptions and accidents due to limited mobility, financial constraints, or increased reliance on public infrastructure. Elderly residents and individuals with disabilities may face greater challenges evacuating or accessing medical care if road closures occur, particularly in rural or isolated areas. Low–income households, which may lack access to alternative transportation options, are more dependent on public transit, ferries, or carpooling, making service disruptions especially difficult. Tourists and seasonal visitors, often unfamiliar with local roads and driving conditions, face a higher risk of crashes, especially on winding or icy roads during winter months. Rural communities with fewer transportation alternatives may experience longer delays in service restoration when accidents disrupt road, rail, or ferry systems. These factors highlight the need for targeted transportation safety measures, improved accessibility, and enhanced emergency planning to protect vulnerable populations.

National Risk Index

The National Risk Index (NRI), developed by FEMA, assesses the risk of various hazards across the United States by analyzing historical occurrences, expected frequency, and potential consequences. Essex County faces a Moderate risk for transportation accidents, primarily due to harsh winter weather, mountainous terrain, aging infrastructure, and high seasonal traffic volumes.

According to the National Risk Index, the county has a Moderate to High risk for transportation accidents with roadway crashes being the most frequent hazard, followed by rail and ferry–related incidents. Key factors influencing this risk include:

- frequent severe weather events, including snowstorms, ice storms, heavy rain, and high winds, contributing to roadway crashes, train derailments, and ferry service disruptions.
- tourism–related traffic congestion, particularly in Lake Placid, Keene Valley, and the Adirondack High Peaks region, increasing the likelihood of accidents involving unfamiliar drivers on winding roads.
- aging transportation infrastructure, including deteriorating roads, bridges, and rail tracks, increasing accident risks due to pavement failures, potholes, and structural weaknesses.
- rural and remote roadways, where limited cellular coverage and long emergency response times make accidents more dangerous for residents and visitors.
- rail and freight transport risks, particularly along the Canadian Pacific (CP) freight corridor, where hazardous materials are transported, posing risks of derailments, spills, and environmental contamination.
- ferry system vulnerabilities, as Essex County relies on ferries for cross–lake transportation to Vermont, making weather–related service disruptions a significant concern.

The National Risk Index evaluates the expected annual occurrence and potential impact of transportation accidents in Essex County:

Table 67. Expected Frequency and Impact of Transportation Accidents

Hazard Component	Risk Level (Per National Risk Index)	Probability	Primary Impacts
Roadway Accidents	Moderate to High	Frequent (multiple incidents/year)	Injuries, fatalities, road closures, economic losses from disrupted travel and tourism
Rail Accidents (Derailments, Crossing Collisions)	Moderate	Occasional (1-2 major incidents/decade)	HazMat spills, train delays, environmental damage, emergency response challenges
Ferry Disruptions & Incidents	Low to Moderate	Occasional (weather–related delays common, major incidents are rare)	Service suspensions, passenger delays, emergency evacuations, economic impacts

DRAFT

Expected Annual Loss (EAL)

The Estimated Annual Loss (EAL) for transportation accidents in the county is calculated based on historical accident data, infrastructure damage costs, emergency response expenses, and economic disruptions. The National Risk Index (NRI) estimates Moderate annualized economic losses from roadway crashes, rail incidents, and ferry service disruptions, reflecting county vulnerabilities to severe weather, aging infrastructure, and high seasonal traffic volumes.

Table 68. Essex County Estimated Annual Loss (EAL) for Transportation Accidents

Hazard Component	Historic Rating	EAL (Annual Loss Amount)	Frequency	Population Impacted	Infrastructure & Economic Losses
Roadway Accidents	Moderate to High	$1.2M-$2.5M	Frequent (100+ reported incidents/year)	0.05-0.1% of county population annually	Road repairs, emergency response costs, medical expenses, lost productivity, tourism impacts
Rail Incidents (derailments, crossing collisions)	Moderate	$500K-$1.5M	Occasional (1-2 major incidents/decade)	0.01% of county population/event	Rail infrastructure repairs, hazardous material cleanup, train delays, economic losses from freight disruptions
Ferry Disruptions & Accidents	Low to Moderate	$100-500K	Occasional (weather–related service suspensions common, major incidents rare)	Minimal population impact/incident	Lost ferry revenue, commuter delays, emergency response, tourism impacts

Roadway accidents account for the largest share of county transportation–related losses with highway crashes, winter weather collisions, and tourism–related traffic incidents being the primary contributors. The costliest incidents involve multi–vehicle pileups, commercial trucking accidents, and hazardous material spills, particularly on I–87, Route 73, and other High-risk corridors. These accidents lead to significant annualized losses due to medical expenses, emergency response costs, road maintenance, and lost productivity.

While rail accidents are less frequent, derailments, crossing collisions, and hazardous material spills can have major financial and environmental consequences. The Canadian Pacific (CP) freight corridor and Amtrak Adirondack Line are especially vulnerable to track failures, extreme weather damage, and hazardous cargo transport risks. Cleanup efforts, train delays, and infrastructure repairs further contribute to Moderate annualized losses.

Ferry disruptions and accidents, though less common, still result in economic losses for commuters and tourism–dependent businesses. Service suspensions caused by ice accumulation, high winds, and mechanical failures can lead to lost revenue, increased travel delays, and emergency response costs. While major ferry accidents are rare, their impact can be disruptive to local transportation and commerce, particularly for communities reliant on cross–lake travel.

Transportation–related infrastructure damage in Essex County results in millions of dollars in repair and maintenance costs annually. Weather–related damage, including flooding, snow–related potholes, and bridge deterioration, further increases long–term infrastructure expenses, requiring continuous investment in road repairs and reinforcements. Rail and ferry delays significantly impact local businesses and commuter accessibility, especially in tourism–dependent areas where transportation disruptions can lead to economic losses. Emergency response expenses, including police, fire, and EMS services, also contribute to the overall financial burden of transportation accidents, as first responders must allocate resources to crashes, hazardous material spills, and travel disruptions. These combined factors highlight the urgent need for infrastructure resilience, improved maintenance strategies, and enhanced emergency response planning to mitigate future economic losses.

Development Trends

As the county continues to grow, transportation infrastructure faces increasing demands, leading to greater risks of roadway, rail, and ferry–related accidents. Factors like population shifts, expanding tourism, climate change, and aging infrastructure contribute to evolving transportation challenges in the region.

- Increased Population & Commuter Traffic. While the county remains largely rural, there has been steady residential growth in key areas like Lake Placid, Keene Valley, and Ticonderoga. This results in higher daily traffic volumes, increasing the likelihood of commuter accidents on major roads like I–87, Route 73, and Route 9. More residents commuting long distances for workplace greater strain on road networks, particularly during peak travel times and winter months when road conditions are hazardous.
- Growth in Tourism & Seasonal Traffic Congestion. Tourism remains one of the largest economic drivers in the county, particularly in destinations like Lake Placid, the Adirondack High Peaks, and Lake Champlain. The increasing number of visitors, especially in summer and winter, leads to heightened traffic congestion, particularly on scenic and mountainous routes where road conditions can be challenging for out–of–town drivers. More tourists also mean an increased risk of accidents involving unfamiliar drivers, particularly on winding roads, steep inclines, and high–speed highway sections.
- Aging Infrastructure & Transportation Safety Concerns. Many county roads, bridges, and railways were built decades ago and require continuous maintenance. Aging infrastructure increases accident risks due to pavement deterioration, weakened bridges, and outdated railway tracks. Frequent freeze–thaw cycles, heavy snowfall, and flooding accelerate the degradation of roads and rail crossings, making transportation less reliable and more dangerous. Infrastructure failures may lead to more crashes, train derailments, and ferry service disruptions without investment in modernization and maintenance,
- Expansion of Rail & Freight Transportation. The Canadian Pacific (CP) freight rail corridor and the Amtrak Adirondack Line are key transportation routes through the county. As freight and

DRAFT

passenger rail traffic grows, so do the risks of derailments, hazardous material spills, and crossing accidents. Increased freight shipments of oil, chemicals, and industrial goods heighten the potential for environmental hazards and emergency response challenges if an incident occurs near residential areas or water sources like Lake Champlain.

- Climate Change Increasing Transportation Hazards. Rising temperatures and more frequent extreme weather events already affect county transportation infrastructure. Stronger winter storms bring heavy snowfall and ice, leading to more vehicle crashes, road closures, and power outages. Meanwhile, heat waves and flooding accelerate pavement and bridge deterioration, creating additional road hazards. Rail infrastructure is also at risk, with extreme weather causing track warping, signal failures, and derailments.

Essex County's transportation network is under increasing pressure due to population growth, expanding tourism, aging infrastructure, and climate change. Without proactive investments in transportation safety and modernization, the risks of roadway crashes, rail accidents, and ferry disruptions will continue to grow. By prioritizing infrastructure upgrades, traffic management solutions, and emergency preparedness, Essex County can ensure a safer and more resilient transportation system for the future.

Community Lifelines

Transportation accidents in Essex County pose significant risks to critical community lifelines, affecting public safety, emergency response, infrastructure, and essential services. FEMA's Community Lifeline framework identifies seven key systems vital for maintaining stability during disasters, and transportation failures can severely impact these lifelines.

- Safety & Security. Transportation accidents can jeopardize public safety, particularly when they involve hazardous materials, major roadway pileups, or rail derailments. Severe crashes, rail accidents, and ferry incidents require immediate emergency response to prevent injuries, fatalities, and environmental hazards. Traffic congestion from accidents can delay police, fire, and EMS response times, increasing risks for victims in rural or hard–to–reach areas. Railway derailments and truck crashes involving hazardous materials can create public health emergencies, requiring evacuations and specialized response teams. Tourist–heavy traffic during peak seasons puts extra strain on law enforcement and emergency services, especially on mountainous or remote roadways.
- Food, Water, & Shelter. Transportation failures disrupt food, water, and shelter lifelines, affecting supply chains and delaying the delivery of essential goods. Road closures from accidents or severe weather can prevent supply trucks from reaching grocery stores, food pantries, and distribution centers. Ferry service disruptions on Lake Champlain impact the movement of supplies and workers traveling between New York and Vermont. Extended power outages from vehicle crashes damaging utility lines can affect water treatment facilities and food storage systems, leading to additional public health concerns.
- Health & Medical. The health and medical sector is particularly vulnerable to transportation disruptions. Severe roadway accidents and rail derailments can overwhelm local hospitals with multiple casualties, straining healthcare resources. Blocked roads and hazardous conditions can prevent ambulances from reaching accident victims or transporting critical patients to hospitals. Delays in supply chain deliveries can also disrupt pharmaceutical shipments, medical equipment supplies, and emergency services. Medical personnel commuting from neighboring

areas may experience travel disruptions due to ferry cancellations or winter road closures, further impacting patient care.

- Energy (Power & Fuel). Energy and fuel supply chains are also at risk when transportation networks fail. Vehicle crashes involving utility poles or transformers can cause widespread power outages, affecting homes, businesses, and critical facilities. Rail or truck accidents involving fuel transport can lead to hazardous spills, affecting supply chains for heating oil, gasoline, and diesel. Winter weather–related transportation failures may delay fuel deliveries, creating heating shortages for residents in remote areas. Ferry disruptions can limit fuel shipments to areas reliant on cross–lake transportation.
- Communications. Reliable communications systems are essential for emergency coordination and public safety messaging, but transportation failures can disrupt networks. Downed power lines from vehicle crashes can knock out cellular and internet service, making it more difficult for residents to call for help. Limited broadband and cellular service in rural areas means that transportation accidents in remote locations can delay emergency response. Rail accidents or road closures affecting telecommunications infrastructure can interfere with 911 emergency services and public safety alerts. Weather–related disruptions can hinder radio, television, and digital communication channels, making it difficult to relay warnings about hazardous travel conditions.
- Transportation. Transportation networks themselves are directly affected by accidents, leading to travel delays, freight disruptions, and emergency response challenges. Highway closures due to severe crashes or weather–related incidents create major traffic congestion, impacting commuters, businesses, and first responders. Rail derailments can disrupt Amtrak and freight services, delaying passenger travel and goods transport. Ferry cancellations due to extreme weather or mechanical failures limit cross–lake mobility, affecting workers, students, and medical patients who rely on these services. Tourism–related traffic congestion and accidents increase risks on high–traffic corridors, particularly on I–87, Route 73, and other scenic roadways.
- Hazardous Materials. Hazardous materials transported via road, rail, and ferry pose serious threats to public health, the environment, and emergency responders. Freight trains carrying chemicals, fuel, or hazardous waste can derail, leading to toxic spills and environmental contamination. Truck crashes involving hazardous cargo on major highways and local roads can force evacuations and road closures. Lake Champlain ferry routes occasionally transport hazardous materials, increasing risks in cases of mechanical failures or extreme weather–related disruptions. Delayed response times due to transportation failures can make hazardous material incidents more difficult to contain, increasing long–term health and environmental consequences.

Transportation accidents in the county significantly impact critical community lifelines, affecting public safety, emergency response, supply chains, healthcare, energy infrastructure, and mobility. Addressing these challenges requires proactive investment in infrastructure resilience, improved emergency response coordination, and enhanced public safety measures. By strengthening roadway safety, rail transport regulations, ferry system reliability, and hazardous materials management, Essex County can reduce accident risks and improve overall transportation resilience for residents and visitors.

DRAFT

Results

Analyses of transportation accidents in the county highlight growing risks and challenges associated with roadway crashes, rail incidents, and ferry disruptions. Several key findings emerge from this assessment, emphasizing the need for improved infrastructure, emergency preparedness, and transportation safety measures:

- High Frequency of Roadway Accidents. Roadway crashes remain the most frequent and severe type of transportation accident in Essex County, particularly on I–87, Route 73, Route 9, and other major highways. Winter weather conditions, steep terrain, distracted driving, and high tourism traffic contribute to multi–vehicle pileups, commercial truck accidents, and hazardous material spills. The cost of road accidents continues to rise due to medical expenses, emergency response costs, and infrastructure damage, making traffic safety improvements essential.
- Vulnerability of Critical Infrastructure. The county's aging transportation infrastructure is increasingly vulnerable to climate–related damage, heavy traffic loads, and deferred maintenance issues. Road deterioration, bridge aging, rail track wear, and ferry docking facility limitations all contribute to higher accident risks and service disruptions. Transportation failures will become more frequent and costly without continued investment in infrastructure modernization and repairs.
- Disproportionate Impact on Rural & Vulnerable Populations. Rural communities, low–income residents, and elderly populations are more affected by transportation disruptions, particularly in areas with limited public transit, fewer alternative routes, and slower emergency response times. Tourists unfamiliar with local roads and driving conditions also face a higher risk of crashes, particularly during peak travel seasons. Longer service restoration times in remote areas further increase the economic and safety risks for residents who rely on these transportation systems.
- Increasing Economic Losses from Transportation Failures. Transportation–related accidents and infrastructure failures contribute to significant financial losses across Essex County. Highway closures, rail service interruptions, and ferry disruptions impact commuters, businesses, and emergency services. Severe weather–related accidents and road damage lead to higher costs for road maintenance, emergency repairs, and insurance claims. Tourism–based businesses suffer economic setbacks when transportation disruptions deter visitors or delay travel plans.
- Climate Change Exacerbating Transportation Hazards. Extreme weather events are worsening transportation safety risks with severe winter storms, heavy rainfall, flooding, and extreme heat contributing to accident frequency and infrastructure deterioration. Black ice, road washouts, rail track warping, and ferry route disruptions are expected to increase as climate conditions shift, requiring long–term adaptation strategies to ensure transportation resilience.
- Need for Comprehensive Mitigation & Adaptation Strategies. Addressing transportation challenges requires a multi–faceted approach, including infrastructure resilience improvements, emergency response enhancements, and public safety initiatives. Upgrading roadways, modernizing rail systems, reinforcing bridges, and improving ferry operations will be essential to reducing accident risks and minimizing service disruptions. Public safety education campaigns,

early warning systems, and expanded emergency preparedness plans will help reduce casualties and economic losses from future transportation failures.

- Importance of Policy Coordination & Regional Collaboration. Managing transportation risks requires strong coordination between local, state, and federal agencies and collaboration with private sector stakeholders including freight carriers, rail operators, and ferry service providers. Investing in sustainable transportation solutions, hazard mitigation policies, and enhanced emergency response capabilities will improve long–term transportation resilience and protect public safety.

Essex County faces growing challenges from transportation–related accidents and disruptions, with significant impacts on residents, businesses, and infrastructure. As climate conditions continue to shift and traffic patterns evolve, addressing these risks will require proactive planning, targeted investments, and strengthened emergency response systems. By focusing on transportation safety improvements, infrastructure modernization, and climate adaptation measures, the county can reduce accident risks, enhance mobility, and improve overall transportation resilience for the future.

DRAFT

Hazard: Hurricanes & Tropical Storms

FEMA defines hurricanes and tropical storms as tropical cyclones that originate in warm ocean waters, having the potential to cause significant damage due to high winds, heavy rain, storm surge, coastal and inland flooding, tornadoes, and landslides. Hurricanes are classified by sustained wind speeds, with tropical storms having winds between 39-73 mph and hurricanes having winds of 74 mph or higher. These storms can still produce dangerous flooding and wind damage far inland, making them a serious hazard for both coastal and inland communities, even after weakening.

Direct hurricane landfalls are uncommon in the county, but the region can still experience serious effects from remnants of hurricanes and tropical storms. Heavy rainfall from these storms leads to flash flooding, river overflow, and landslides, particularly in mountainous areas. High winds can cause power outages, tree damage, and structural destruction, while saturated soils increase the risk of road washouts and infrastructure failures.

The following terms are used to describe hurricanes and other tropical events:

- Nor'easter: an intense storm that can cause heavy rain and snow, strong winds, and coastal flooding. Nor'easters have cold, low barometric cores.
- Tropical Storm: an organized system of strong thunderstorms with a defined surface circulation and maximum sustained winds of 39-73 mph.
- Tropical Cyclone: an organized, rotating, low–pressure weather system of clouds and thunderstorms that develops in the tropics.
- Tropical Depression: tropical cyclone with sustained winds of 38 mph or less.
- Hurricane. A tropical cyclones formed in the atmosphere over warm ocean areas in which wind speeds reach 74 mph or more and blow in a large spiral around a relatively calm center or "eye." Circulation is counterclockwise in the Northern Hemisphere.
- Storm Watch: a warning issued by the National Weather Service indicating that a Hurricane or Tropical Storm is possible in the specified area, usually within 36 hours.
- Storm Warning: a warning issued by the National Weather Service indicating that Hurricane or Tropical Storm conditions are expected in the specified area, usually within 24 hours.

Location and Extent

Although the county does not have any open–ocean coastline, it is still vulnerable to coastal storm systems including hurricanes, tropical storms, tropical depressions, and Nor'easters. These storm systems typically develop in tropical or subtropical waters of the Atlantic Ocean, Gulf of Mexico, or Caribbean Sea before moving northward. While hurricanes and tropical storms tend to weaken as they move inland, heavy rainfall, strong winds, and flooding effects can still extend hundreds of miles from the coast, impacting the county and the surrounding region.

Tropical storm remnants and Nor'easters bring intense precipitation, strong winds, and flooding—the most common hazards associated with these storms. Nor'easters, which form from low–pressure systems off the Atlantic Coast of North Carolina, often occur during the winter months, producing hurricane–force winds, heavy snowfall, or ice accumulation in Essex County. In some cases, the center of circulation from a tropical system may track directly over New York and Essex County, resulting in widespread impacts. Even when the storm center remains hundreds

of miles away, the sheer size of these weather systems can still cause damaging winds, flooding, and hazardous travel conditions.

While the county is not typically exposed to the extreme hurricane–force winds experienced in coastal areas, tropical storms still produce gusty winds strong enough to bring down trees and power lines, leading to widespread power outages and infrastructure damage. Heavy rainfall associated with these storms can cause severe flooding, particularly in low–lying areas and along rivers like the Au Sable and Boquet Rivers. Mountainous terrain in the county further increases flooding and landslide risks, as saturated soil becomes unstable, leading to road washouts and structural damage.

Hurricane intensity is measured using the Saffir–Simpson Hurricane Wind Scale, which categorizes storms from Category 1 (minimal damage) to Category 5 (catastrophic damage) based on maximum sustained winds, barometric pressure, and storm surge potential. While Essex County is unlikely to experience direct Category 3, 4, or 5 hurricane–force winds, these major hurricanes account for over 70% of hurricane–related damage in the U.S. Even weakened tropical storms or post–tropical systems can still produce significant flooding and wind damage.

Table 69. Saffir–Simpson Scale Categories

Storm Category	Wind Speed (mph)	Description of Damages
1	74-95	Minimal: Damage limited primarily to shrubbery & trees, unanchored mobile homes & signs. No significant structural damage.
2	96-110	Moderate: Some trees are toppled; some roof coverings are damaged, & major damage occurs to mobile homes. Some roofing material, door & window damage.
3	111-130	Extensive: Some structural damage to small residences & utility buildings, with a minor amount of curtain wall failures. Mobile homes are destroyed. Large trees are toppled. Terrain may be flooded well inland.
4	131-155	Extreme: Extensive damage to roofs, windows & doors; roof systems on small buildings completely fail. More extensive curtain wall failures. Terrain may be flooded well inland.
5	>155	Catastrophic: Complete roof failure on many residences & industrial buildings. Some complete building failures with small utility buildings blown over or away. Massive evacuation of residential areas may be required.

Essex County's inland location does not eliminate its risk from hurricanes and tropical storms. The county remains vulnerable to heavy rainfall, flash flooding, high winds, and infrastructure damage, particularly as these storms weaken and transition into extra–tropical systems or Nor'easters. Investing in flood mitigation measures, emergency preparedness, and improved drainage infrastructure will be critical in reducing the long–term impacts of these hazardous storm events.

DRAFT

Historical Occurrences

Although inland and not directly exposed to hurricane landfalls, the county still experiences significant impacts from hurricanes, tropical storms, and their remnants. These storms, often weakening as they move northward, brought heavy rainfall, flooding, strong winds, and infrastructure damage to the region. Some of the most notable historical occurrences include:

Table 70. Essex County Historical Occurrences of Hurricanes & Tropical Storms

Storm Name	Year	Storm Type	Impacts on Essex County
Hurricane Irene	2011	Category 1 (weakened to tropical storm)	Severe flooding along the Au Sable River, road washouts, bridge collapses, evacuations, landslides, & millions in infrastructure damage. One of the most destructive storms in Essex County history.
Tropical Storm Lee	2011	Tropical Storm	Heavy rainfall worsened Irene's damage, prolonging road closures & infrastructure failures. Additional flooding & extended power outages.
Hurricane Sandy	2012	Post–Tropical Cyclone	High winds (60+ mph) caused widespread power outages, downed trees, & road blockages. Rainfall was minimal compared to coastal areas.
Hurricane Floyd	1999	Tropical Storm	Localized flooding in river valleys & low–lying areas. High winds downed trees & power lines, causing extended power outages.
Great New England Hurricane	1938	Category 3 (weakened inland)	Heavy rainfall led to significant river flooding, damaging farms, roads, & infrastructure. Strong winds toppled thousands of trees, disrupting transportation for weeks.
Hurricane Agnes	1972	Tropical Storm	Flash flooding & minor river overflow, but impacts were less severe compared to other storms.
Tropical Storm Isaias	2020	Tropical Storm	High winds caused power outages & tree damage, but flooding was limited.
Tropical Storm Henri	2021	Tropical Storm	Brought heavy rain to parts of New York but had minimal direct impact on Essex County.

Essex County has had four hurricane events that received a presidential disaster declaration, as outlined in the table below:

Table 71. Essex County Hurricane Events that Received a Presidential Disaster Declaration

Disaster #	Date Declared	Incident Type	Towns Impacted	Impact
4825	9/24/2024	Tropical Storm Derby remnants	TBD	Awaiting official reports on rainfall, flooding, & infrastructure damage.

Disaster #	Date Declared	Incident Type	Towns Impacted	Impact
3351	10/28/2012	Hurricane Sandy	• Lake Placid • Ticonderoga • Elizabethtown • Keene • Wilmington	High winds (60+ mph) led to power outages, downed trees, & road blockages. Minimal flooding compared to coastal areas.
4020	8/31/2011	Hurricane Irene	• Keene • Jay, Upper Jay • Au Sable Forks • Elizabethtown • Wilmington • Lake Placid	Severe flooding along the Au Sable River, road & bridge washouts, landslides, power outages. Widespread infrastructure damage in mountain valleys.
1296	9/16/1999	Tropical Storm Floyd	• Ticonderoga • Moriah • Westport • Essex • Willsboro	Heavy rain caused localized flooding, downed trees, & power outages. Some road erosion & travel disruptions.

Sourced from NOAA's Historical Hurricane Tracks, the figure below displays past hurricanes, tropical storms, and other tropical systems that have affected Essex County and the surrounding region. The colored lines on the map indicate different storm categories, as classified by the Saffir–Simpson Hurricane Wind Scale:

- Purple (Category 5): most intense storms (not present in this region).
- Red (Category 4): very strong hurricanes (not present in this region).
- Orange (Category 3): moderate to strong hurricanes.
- Yellow (Category 2): weaker hurricanes.
- Green (Category 1): minimal hurricanes, though still impactful.
- Blue (Tropical Storms & Depressions): less intense storms but capable of causing flooding, strong winds, and infrastructure damage.
- Gray (Extratropical Storms): post–tropical systems that still have significant effects.

Multiple storm tracks have passed near or over Essex County, indicating the region is periodically affected by tropical systems. The figure below highlights 19 past storms, including Hurricane David (1979), Hurricane Dennis (1999), Tropical Storm Fay (2020), Hurricane Fran (1996), and Hurricane Frances (2004). Many of these storms originated in the Atlantic Ocean, Gulf of Mexico, or Caribbean Sea before traveling northward and weakening into tropical storms or extratropical systems as they reached Essex County. The Adirondack region, highlighted in red, is particularly susceptible to heavy rainfall and inland flooding, rather than direct hurricane–force winds. The blue and gray storm tracks, representing tropical depressions and extratropical storms, are post–

DRAFT

tropical remnants of hurricanes which still impacted the region, leading to flooding, power outages, and infrastructure damage.

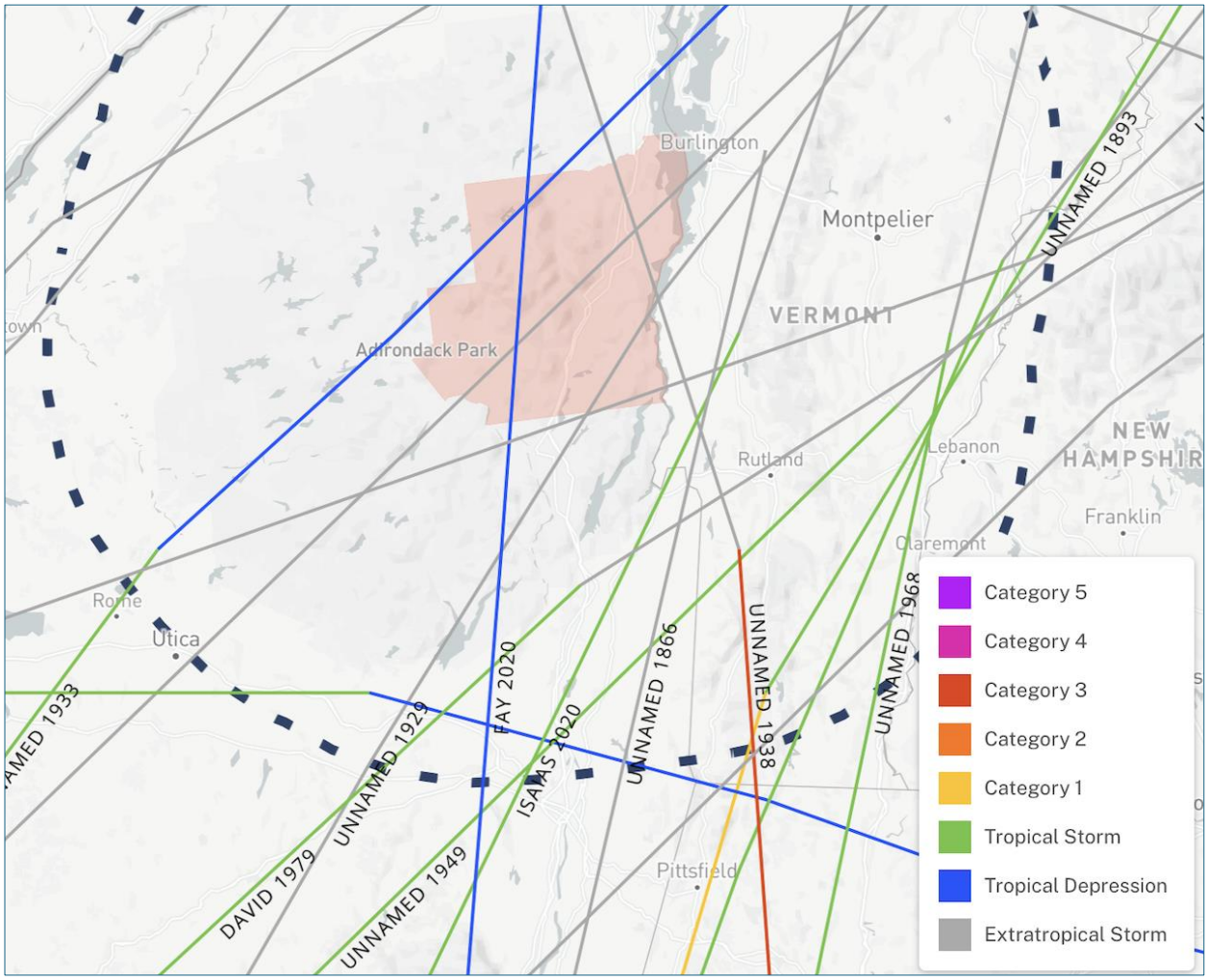


Figure 31. Tropical Storms Impacting Essex County

Future Potential Events

As climate change continues to alter weather patterns, the county may experience increases in the frequency and intensity of hurricanes and tropical storms. While it is not directly exposed to coastal storm surge, primary threats to the county from future tropical systems include heavy rainfall, inland flooding, strong winds, power outages, and infrastructure damage. Warmer ocean temperatures are leading to more intense storms, and hurricanes that were once rare in the Northeast are now tracking farther inland, retaining strength for longer periods.

Historically, hurricanes and tropical storms weaken as they move inland, but recent trends suggest that storm remnants are producing greater amounts of precipitation, increasing the risk of flash flooding and river overflow. The Adirondack region (with its mountainous terrain) is particularly vulnerable to rapid runoff, landslides, and erosion, which could worsen in future storm events. Stronger post–tropical systems could result in widespread wind damage, affecting power infrastructure, communication networks, and emergency response efforts.

Probability estimates for hurricanes and tropical storms in the county are based on historical storm data, FEMA's National Risk Index (NRI), NOAA hurricane tracking models, and climate projections. These sources analyze past storm occurrences, meteorological patterns, and long–term climate trends to assess the likelihood of future events.

- Historical Frequency of Storms. Data from NOAA's Historical Hurricane Tracks Database provides a record of past hurricanes and tropical storms impacting New York State and Essex County, in particular. By analyzing tropical system frequency over the past 100+ years, estimates can be made regarding how often these storms impact the region.
- FEMA's National Risk Index (NRI). FEMA's NRI assigns risk scores for natural hazards based on historical disaster declarations, exposure levels, and community vulnerability. This helps estimate the likelihood of a tropical storm or hurricane impacting the county annually.
- NOAA & Climate Models. NOAA's hurricane risk assessments and climate models provide probability estimates based on ocean temperature changes, atmospheric conditions, and storm track projections. Warmer ocean waters and shifting storm paths increase the likelihood of stronger post–tropical systems reaching farther inland.
- Saffir–Simpson Hurricane Wind Scale & FEMA Risk Categories. The probability of different hurricane intensities (Category 1-5) is derived from storm decay models that estimate how quickly hurricanes weaken as they move inland. Since Essex County is far from the coastline, direct hurricane landfalls are rare, but remnants of hurricanes and tropical storms remain a significant threat.

The table estimates below consider past storm occurrences, climate change trends, and inland storm decay rates to assess the likelihood of future tropical system impacts in the region:

Table 72. Essex County Annual Probability of Tropical Storm & Hurricane Strength Wind Speeds

Storm Type	Estimated Annual Probability	Expected Frequency	Methodology Used
Tropical Storms	20-30%	1 event/ 3-5 years	Based on historical data (NOAA), FEMA disaster records, & climate projections
Post–Tropical Storms (hurricane remnants)	30-50%	1-2 events/ decade	Derived from NOAA storm tracks, FEMA NRI, & storm decay models
Category 1 Hurricane (weakening inland)	~5%	1 event/ 20-30 years	Storm decay rates, historical weakening trends, & land–based storm records
Category 2 Hurricane (retaining strength inland)	~2%	1 event/ 50+ years	Rare inland hurricane events recorded by NOAA & FEMA databases
Category 3+ Hurricane (major hurricane impacts)	<1%	Extremely rare	Long–term storm tracking models, climate change projections

DRAFT

The most common storm type affecting the county is tropical storms or post–tropical hurricane remnants, which have a 30-50% chance of occurring annually. While direct hurricane landfalls are rare, the county remains at risk for flooding, heavy rainfall, and strong winds from weakened systems that travel inland. Climate change is increasing the likelihood of stronger, longer–lasting storms, meaning future storm intensity and inland impacts could be more severe. These probability estimates were determined using FEMA's National Risk Index (NRI), NOAA storm records, and climate modeling techniques, which consider historical trends, storm decay rates, and projected climate shifts to assess future risk levels.

Climate Change

Climate change increases the intensity, duration, and inland reach of hurricanes and tropical storms, making Essex County more vulnerable to extreme weather events. Rising global temperatures are warming ocean waters, which provides more energy for tropical systems, leading to stronger storms with heavier rainfall and higher wind speeds. While the county does not experience direct hurricane landfalls, climate models predict that post–tropical remnants of hurricanes will become more frequent and severe, increasing the risk of flooding, river overflows, and wind–related damage. A warmer atmosphere holds more moisture, meaning tropical storms and their remnants can produce higher precipitation totals, leading to more extreme inland flooding events, particularly in river valleys and mountainous areas.

The increased frequency of heavy rain events also accelerates erosion, landslides, and infrastructure deterioration, further compounding storm–related risks. As climate patterns shift, hurricane remnants may retain their strength longer, causing stronger wind gusts and prolonged power outages further inland than in the past. Adapting to these changes will require enhanced flood control measures, resilient infrastructure investments, and improved emergency preparedness strategies to mitigate the growing threats posed by climate–driven hurricanes and tropical storms in Essex County.

Vulnerability Assessment

While the county is not directly on the Atlantic coastline, it remains vulnerable to hurricanes and tropical storms, particularly their remnants, which bring heavy rainfall, inland flooding, strong winds, and power outages. Regional geography, infrastructure, and population characteristics influence the level of vulnerability. The table below demonstrates these vulnerabilities and potential impacts:

Table 73. Essex County Vulnerability Assessment for Hurricanes & Tropical Storms

Category	Vulnerability Factors	Potential Impacts
Population	• Elderly residents & low–income households may have limited resources for evacuation or preparedness. • Tourists unfamiliar with severe weather risks may ignore warnings or take unsafe routes.	• Increased risk of injuries, fatalities, & displacement. • Stranded tourists due to road closures & lack of public transit. • Greater reliance on emergency aid for vulnerable populations.

Category	Vulnerability Factors	Potential Impacts
	• Rural communities may face longer response times & limited access to emergency shelters.	
Infrastructure	• Older buildings & bridges may not be designed to withstand high winds & flooding. • Roads near rivers & low–lying areas are prone to washouts & erosion. • Limited public transit options increase dependence on personal vehicles for evacuation.	• Severe flood damage to homes, businesses, & roads. • Isolated communities due to road failures & power outages. • High repair costs & long–term economic impacts.
Utilities & Energy	• Power lines & communication towers are exposed to wind damage & falling trees. • Water & sewer systems are vulnerable to contamination & overflow.	• Widespread power outages lasting several days to weeks. • Disrupted emergency communication, delaying response efforts. • Water supply contamination increasing health risks.
Economy	• Tourism & agriculture are major industries, both highly sensitive to storm damage. • Businesses & local governments may lack financial resources for quick recovery.	• Revenue losses for businesses due to prolonged closures. • Crop & livestock damage, impacting local farmers. • Increased insurance claims & economic instability.
Environment & Natural Resources	• Steep terrain increases the risk of landslides after heavy rainfall. • Lakes & rivers can overflow, worsening flood impacts. • Forests may suffer tree damage, increasing wildfire risk in dry seasons.	• Erosion & landslides damaging roads & homes. • Long–term ecological damage affecting wildlife & water quality. • Increased debris & hazardous material contamination.

Flooding poses the greatest risk in the county, particularly in low–lying areas, river valleys, and near Lake Champlain where heavy rainfall from hurricanes and tropical storms can lead to dangerous overflow and flash flooding. Rural and isolated communities are especially vulnerable, as they may face longer emergency response times and limited evacuation routes, making disaster preparedness even more critical. Older county infrastructure is more susceptible to wind damage, power outages, and road washouts, further complicating recovery efforts. The county's economic dependence on tourism and agriculture also makes storm recovery more challenging, as businesses and farms may experience significant financial losses due to prolonged closures or crop damage. Climate change intensifies these risks, increasing storm intensity and frequency. This means future hurricanes and tropical storms could bring heavier rainfall, stronger winds, and more extreme weather events, further threatening county residents, infrastructure, and economy.

DRAFT

National Risk Index

The National Risk Index (NRI), developed by FEMA, evaluates hazard risks across the United States by analyzing historical occurrences, expected frequency, and potential consequences. According to the NRI, Essex County has a Very Low risk for hurricanes, primarily due to its inland location and distance from the Atlantic coastline. The county remains susceptible to heavy rainfall, inland flooding, and strong winds from post–tropical storm remnants, which can still cause significant infrastructure damage and economic disruptions. Essex County has been impacted by hurricanes in the past and these events will continue to occur and impact the county, but floods from hurricanes are more problematic than the winds from hurricanes.

Expected Annual Loss (EAL)

The table below outlines the expected annual losses (EAL) due to hurricanes and tropical storms in Essex County. These estimates account for property damage, agricultural impacts, and population–related losses, including fatalities and injuries:

Table 74. Essex County Annual Expected Loss (EAL) for Hurricanes & Tropical Storms

Event Type	Annual Expected Loss (Property)	Annual Expected Loss (Agriculture)	Annual Expected Loss (Population–Fatalities/Injuries)
Hurricane	$491,217	$7,701	Minimal fatalities, Moderate risk of injuries from flooding & wind damage
Tropical Storm/ Post–Tropical Storm	Estimated within hurricane losses	Estimated within hurricane losses	Increased risk of injuries due to falling trees & road hazards

Development Trends

As Essex County continues to develop, the risks associated with hurricanes and tropical storms evolve. While the county does not experience direct hurricane landfalls, increasing urbanization, infrastructure expansion, and climate change are influencing how storm remnants, heavy rainfall, and inland flooding impact the region. Population growth in flood–prone areas, particularly near river valleys and Lake Champlain, raises concerns about increased property damage and economic losses. As tourism remains a key economic driver, the county sees higher visitor populations during storm–prone months, which can complicate emergency response efforts and evacuation planning. The expansion of transportation networks, housing developments, and commercial properties in low–lying areas heightens vulnerabilities to storm–driven flooding, erosion, and infrastructure strain. As climate change leads to more intense and longer–lasting storms, the county must prioritize resilient development strategies, including flood mitigation projects, stormwater management improvements, and stricter building code, to reduce long–term impacts of hurricanes and tropical storms.

Community Lifelines

Hurricanes and tropical storms can disrupt critical community lifelines, affecting public safety, infrastructure, and essential services. While the region does not experience direct hurricane landfalls, the remnants of tropical storms and hurricanes can still cause widespread flooding, wind damage, and power outages. The FEMA Community Lifeline framework identifies seven key

sectors that are vital for maintaining stability and ensuring effective disaster response and recovery.

- Safety & Security. Hurricanes and tropical storms pose significant risks to public safety, especially for vulnerable populations like the elderly, low–income residents, and individuals with mobility challenges. Flash flooding, downed trees, and road washouts increase response times for first responders, while strong winds and flying debris can lead to injuries and fatalities. In extreme cases, evacuations may be necessary in flood–prone areas, requiring emergency sheltering and coordinated rescue efforts.
- Food, Water, & Shelter. Heavy rainfall and flooding from tropical systems can disrupt food supply chains, damage local farms, and impact access to clean drinking water. Power outages may affect refrigeration, leading to food spoilage and shortages. Displaced residents may require emergency shelters, while floodwaters can contaminate drinking water sources, increasing the risk of waterborne illnesses.
- Health & Medical. Hospitals, clinics, and emergency medical services (EMS) rely on consistent power and transportation access, both of which can be disrupted by storm damage. Road washouts and fallen trees can delay ambulance response times, while prolonged power outages can impact life–saving medical equipment for residents who rely on electricity for oxygen machines, dialysis, and other critical care needs. Storm–related flooding can lead to mold growth and respiratory health issues in water–damaged homes.
- Energy (Power & Fuel). Strong winds and flooding from tropical systems can cause widespread power outages, leaving thousands of residents without electricity for days or weeks. Downed power lines and fallen trees can disrupt fuel supply chains, affecting heating, transportation, and backup generators for hospitals, emergency shelters, and government buildings. Extended outages also impact communications, food storage, and public safety operations.
- Communications. Severe storms can damage cellular towers, telephone lines, and broadband infrastructure, leading to loss of emergency communications and public warning systems. Rural areas with already limited cell coverage are especially vulnerable, making it difficult for residents to receive storm warnings or call for help during emergencies. Disruptions to 911 services and emergency radio networks can further complicate disaster response efforts.
- Transportation. Hurricanes and tropical storms can wash out roads, flood highways, and cause bridge failures, making travel extremely dangerous or impossible. The county's rural road networks and mountainous terrain increase the risk of isolated communities being cut–off from emergency assistance. Damage to railway lines and ferry systems can further hinder transportation for residents, tourists, and supply deliveries.
- Hazardous Materials. Floodwaters and storm debris can damage industrial sites, fuel storage facilities, and wastewater treatment plants, leading to hazardous material spills and contamination. Chemical runoff from flooded roads, gas stations, and industrial areas can pollute local rivers and groundwater supplies, posing long–term environmental and public health risks.

While Essex County does not experience direct hurricane landfalls, the remnants of these storms can still disrupt essential community lifelines, causing flooding, power outages, communication failures, and emergency response challenges. Strengthening infrastructure resilience,

DRAFT

emergency preparedness, and disaster response coordination is critical to minimizing the long-term impacts of hurricanes and tropical storms on county residents, economy, and essential services.

Results

The analysis of hurricanes and tropical storms in Essex County highlights the ongoing risks associated with heavy rainfall, inland flooding, power outages, and infrastructure damage. While direct hurricane landfalls are rare, the remnants of tropical systems continue to pose significant challenges for public safety, emergency response, and economic stability. The following key findings summarize the primary impacts observed in Essex County:

- Increased Frequency and Intensity of Tropical Systems. Although Essex County is not directly exposed to coastal hurricanes, the county regularly experiences the remnants of these storms, which bring extreme rainfall, flash flooding, and wind damage. Climate change is leading to stronger and longer-lasting storms, increasing the likelihood of heavier precipitation and prolonged flooding events.
- Flooding and Infrastructure Vulnerability. Flooding remains the most significant hurricane-related risk in the county, especially in low-lying areas, river valleys, and near Lake Champlain. Stormwater drainage systems and older infrastructure are often unable to handle extreme rainfall, leading to road washouts, bridge failures, and property damage. The county's aging transportation network is also vulnerable, with flood-damaged roads and downed power lines delaying emergency response efforts.
- Economic Consequences for Key Sectors. The county's economic reliance on tourism and agriculture makes it particularly susceptible to financial losses from tropical storms. Flooded roads and power outages can force businesses to close, while agricultural losses from heavy rain and strong winds can result in crop damage and financial hardship for local farmers. Seasonal tourism is also affected, as storms can disrupt travel, outdoor recreation, and hospitality services.
- Disproportionate Impact on Vulnerable Populations. Certain populations in Essex County, including elderly residents, low-income households, and rural communities, face greater challenges in preparing for and recovering from storm events. Limited access to evacuation routes, emergency shelters, and backup power increases their risk during major storms. Extended power outages are particularly dangerous for residents relying on electricity for medical devices, while flood damage to homes in low-income areas may result in longer recovery times due to financial constraints.
- Energy and Communication Disruptions. Tropical storms frequently cause power outages and communication failures, disrupting emergency response efforts and public safety notifications. Downed trees and high winds can damage power lines, leading to extended outages for thousands of residents. Rural areas with limited broadband and cell service may struggle to receive emergency alerts or access recovery resources after a major storm.
- Need for Enhanced Resilience & Mitigation Strategies. With climate change increasing the risk of stronger storms and heavier rainfall, Essex County must prioritize mitigation efforts to protect homes, businesses, and infrastructure. Investments in flood control systems, storm-

resistant building codes, emergency response capabilities, and public awareness campaigns will be essential for reducing future hurricane–related risks.

Hurricanes and tropical storms continue to pose significant challenges, despite its inland location. The most severe impacts include flooding, infrastructure damage, economic losses, and power outages, with climate change expected to worsen these effects over time. To reduce these risks, Essex County must focus on enhancing disaster preparedness, improving flood resilience, and strengthening emergency response systems to protect residents and essential services from future storm events.

DRAFT

Hazard: Landslides & Mudslides (Soil Erosion & Slope Failures)

Landslides are movement of rock, debris, or earth down a slope due to gravity, erosion, or external forces like heavy rainfall, rapid snowmelt, or human activities. They can occur suddenly and move at high speeds, causing widespread destruction by carrying trees, boulders, vehicles, and structures downhill. Others develop gradually over time, shifting entire hillsides, causing severe damage to roads, buildings, and utility lines.

In Essex County, steep mountainous terrain, high annual precipitation, and frequent freeze–thaw cycles make the region particularly susceptible to landslides. Some of the most damaging landslides in the county occur due to water saturation, either from intense storms, long–term soil moisture buildup, or human–related factors like deforestation, road construction, and improper drainage systems.

Mudflows (also called a mudslide) are fast–moving flows of water mixed with fine–grained sediment, often triggered by heavy rain or snowmelt on steep slopes. Debris flows are like mudflows, but contains larger materials like rocks, trees, and other debris. In the Adirondack Mountains, rapid slope failures are commonly referred to as debris avalanches, which move at high speeds—sometimes over 35 mph—destroying everything in its path. While debris flows typically begin on steep slopes, they can extend into flatter areas, causing widespread flooding and infrastructure damage.

Landslides also occur after wildfires when burned vegetation leaves the soil unstable and unable to absorb water, increasing the likelihood of mudflows and debris slides. In some cases, landslides can block rivers and streams, creating natural dams that may burst and trigger flash flooding. Since landslides often strike without warning, they pose significant risks to public safety, transportation networks, utilities, and property. In Essex County, vulnerable areas include steep slopes, river valleys, and developed hillsides where improper land use or severe weather can trigger sudden slope failures. Implementing slope stabilization projects, improving drainage systems, and monitoring High risk areas will be critical in reducing future landslide impacts.

Location and Extent

Landslide susceptibility in the county varies based on terrain, slope stability, and precipitation levels as illustrated in the Landslide Susceptibility Map (Figure 33). The Highest risk areas are concentrated in the central and western parts of the county, particularly within the Adirondack High Peaks region where steep slopes, loose soil, and frequent precipitation contribute to unstable terrain. Areas along major transportation corridors like Route 73, Route 9N, and Route 86 are especially vulnerable to rockfalls, debris flows, and slope failures, posing risks to travelers and infrastructure.

The Au Sable River Valley and other river–adjacent regions also face significant landslide threats due to erosion and water saturation which can weaken slopes and trigger movement., The eastern portion of the county near Lake Champlain has lower landslide susceptibility due to a flatter landscape and more soil stability. Coastal areas including Ticonderoga, Westport, and Crown Point experience fewer landslides, though shoreline erosion can still lead to localized slope failures. Developed areas like Elizabethtown and Schroon Lake have a Moderate risk, but human activities like deforestation and poor drainage management can increase the likelihood of slope instability.

The extent of landslide hazards in Essex County is significant, particularly in the mountainous interior where heavy snowfall, freeze–thaw cycles, and extreme rainfall events contribute to

slope failures. While lowland areas along Lake Champlain face fewer risks, critical roadways, hiking trails, and communities in the High Peaks region remain highly susceptible. Landslides pose risks to transportation, infrastructure, and public safety, emphasizing the need for mitigation efforts like slope stabilization, improved drainage systems, and ongoing monitoring of High-risk areas.

Large lakes are a basin for the types of sediments (clay and silts) that result in slope failures in the state. Figure 32 shows the glacial landscape evolution that contributes to present–day landslide risks in New York State.

The U.S. Geological Survey (USGS) landslide susceptibility mapping uses three basic classifications to communicate the risk, in conjunction with three further classifications to communicate the combinations of susceptibility and incidence:

- High incidence (> 15% of area involved)
- Moderate incidence (1.5%-15% of area involved)
- Low incidence (<1.5% of area involved)
- High susceptibility/moderate incidence
- High susceptibility/low incidence
- Moderate susceptibility/low incidence

The National Landslide Susceptibility Model is incorporated in Figure 33, based on an analysis of terrain features and past landslide locations to model where landslides are more or less likely to occur. The figure shows landslide susceptibility in the Essex County planning area. As noted by color variations, there is a Low to High chance, depending on the location.

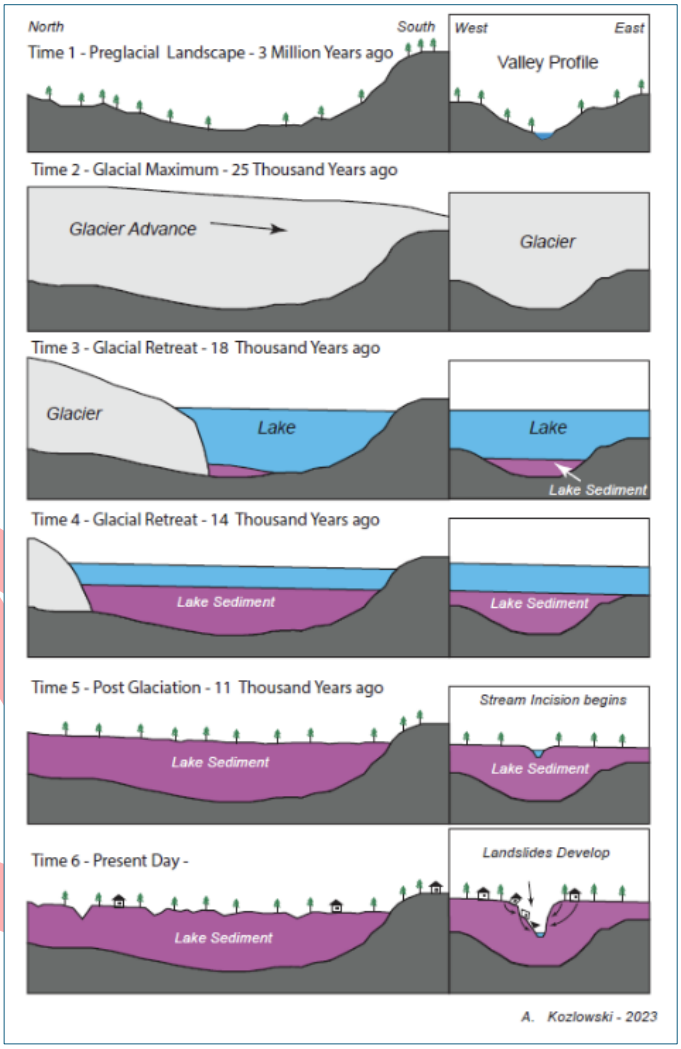


Figure 32. Glacial Landscape Evolution, New York Historical Occurrences

DRAFT

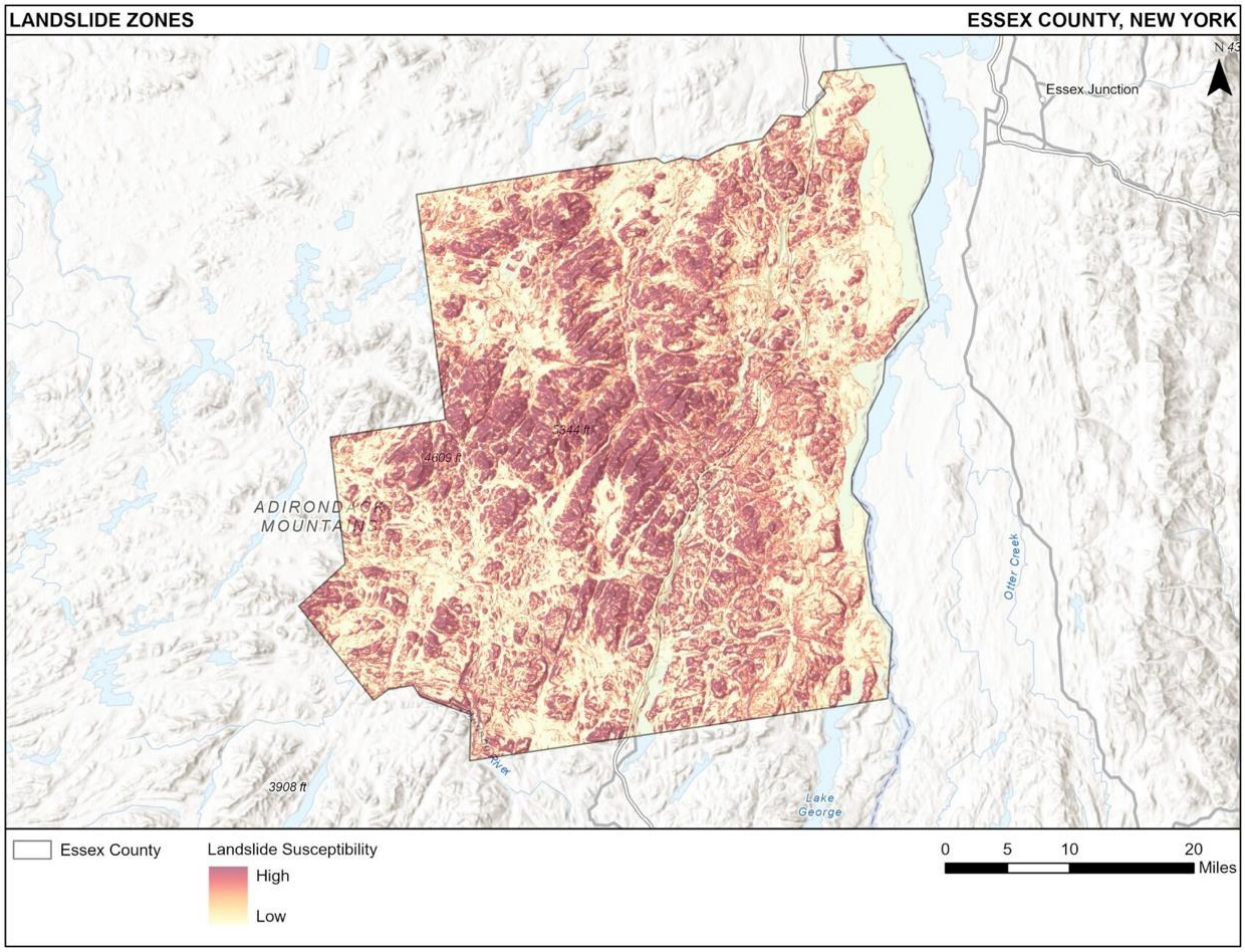


Figure 33. Essex County Landslide Susceptibility Map

Historical Occurrences

Landslides are recurring natural hazards in Essex County, primarily affecting steep mountain slopes, river valleys, and transportation corridors. While small–scale landslides occur annually due to heavy rainfall, snowmelt, and erosion, several notable events have caused significant damage to infrastructure, roadways, and natural landscapes.

One of the most significant landslides in New York State history occurred in May 2011, when melting snowpack and excessive April rainfall triggered an 82–acre landslide on Porter Mountain in Keene Valley. The shifting soil moved at rates between 15 and 60 cm per day, leading to home condemnations and structural instability. Extensive geophysical surveys and geological investigations were conducted to understand the mechanisms driving this landslide.

In January 1996, a series of heavy rainstorms and rapid snowmelt triggered multiple slope failures in the Adirondack High Peaks region, particularly along Route 73 near Keene Valley. This event resulted in debris flows, road washouts, and transportation disruptions, highlighting the vulnerability of critical roadways to slope instability.

In June 2013, a major debris slide occurred along Route 9N near Jay following intense rainfall, leading to temporary road closures and extensive cleanup efforts. Similar events have impacted

hiking trails in the Adirondack Park, where steep terrain and exposed rock faces contribute to rockfalls and minor landslides.

In October 2019, a rockslide along Route 73 near the Cascade Lakes blocked a major roadway, requiring emergency stabilization measures. This incident underscored the ongoing risks posed by freeze–thaw cycles, extreme weather, and erosion in Essex County.

These landslide events emphasize the persistent threat to transportation infrastructure, public safety, and property, particularly in areas with steep slopes and high precipitation. With climate change increasing the frequency of extreme weather, the potential for larger, more frequent landslides continues to grow, necessitating ongoing monitoring, slope stabilization, and infrastructure resilience efforts.

There is no record of a Presidential Disaster Declaration in Essex County specifically for landslides. Multiple documented landslide events have occurred in the region as recorded in the National Centers for Environmental Information (NCEI) Storm Events database and state geological surveys. The table below contains a list of documented landslide events in the county including dates, locations, and impacts. These incidents highlight the recurring nature of landslides in the region, primarily affecting steep slopes, transportation networks, and areas prone to erosion.

Table 75. Essex County Historical Landslides

Date	Location	Landslide Type	Impact
1/1996	Route 73 (Keene Valley)	Debris Flow	Heavy rain & rapid snowmelt triggered multiple slope failures; road washouts & infrastructure damage.
5/2011	Porter Mountain (Keene Valley)	Rotational Landslide	Heavy rain & rapid snowmelt triggered multiple slope failures; road washouts; transportation disruptions.
6/2013	Route 9N (Jay)	Debris Slide	Intense rainfall caused slope failure, leading to temporary road closures & cleanup operations.
10/2019	Route 73 (Cascade Lakes)	Rockslide	Large rockfall blocked a major roadway; emergency roadwork & slope stabilization required.
4/2021	Adirondack Loj Road (North Elba)	Earth Flow	Saturated soil led to slow–moving slope failure, impacting access to popular hiking areas.
8/2023	Hurricane Mountain (Keene)	Rockfall	Heavy rains loosened rock formations, causing trail closures & hazardous hiking conditions.

Most major landslides in the county are triggered by extreme weather events including heavy rain, snowmelt, and freeze–thaw cycles, weakening slopes and increasing the likelihood of slope failures. Transportation routes, particularly Route 73 and Route 9N, are highly vulnerable to rockslides and debris flows, often leading to road closures and infrastructure damage. Landslide activity has increased in recent years, with climate change contributing to more frequent and severe slope failures due to intensified precipitation and temperature fluctuations.

DRAFT

Future Potential Events

Landslides are expected to remain persistent, with climate change and extreme weather events contributing to increased frequency and severity in the county. Rising annual precipitation, heavier storm events, and shifting freeze–thaw cycles will likely destabilize steep slopes, increasing the risk of debris flows, rockslides, and soil movement. Areas with landslide histories like Keene Valley, Route 73, and the High Peaks region, will be especially vulnerable, with potential transportation, infrastructure, and public safety disruptions.

Extreme precipitation events are projected to become more frequent and intense, increasing the likelihood of rapid soil saturation and slope failures. Prolonged wet conditions following major storms will exacerbate groundwater infiltration, weakening soil stability and triggering earthflows and rotational slides in steep terrain. Freeze–thaw cycles will continue to worsen rockfall hazards, particularly along major roadways and exposed cliffs.

Table 76. 2014 Essex County Landslide Probabilities

Landslide Type	Probability	Expected Frequency	Primary Impacts
Rockfalls & Rockslides	High	Multiple events/year	Road blockages, transportation disruptions, trail closures
Debris Flows & Mudslides	Moderate to High	1-3 major events/decade	Property damage, flooding, infrastructure failures
Slow Moving Earth Flows	Moderate	Long–term, evolving hazard	Ground instability, foundation damage, utility disruptions
Rotational & Translational Slides	Low to Moderate	Rare, potentially severe	Large–scale slope failures, major property & infrastructure damage

Climate Change

Climate change is expected to increase the frequency and severity of landslides in Essex County, due to rising annual precipitation, more intense storm events, and shifting freeze–thaw cycles. Warmer temperatures are leading to more extreme rainfall, which can oversaturate soils and destabilize steep slopes, increasing the risk of debris flows, rockslides, and earth movement. Changing winter weather patterns are causing more frequent freeze–thaw cycles, which can weaken rock formations, accelerate erosion, and trigger rockfalls along transportation corridors and exposed cliffs. As extreme precipitation events become more intense and unpredictable, areas with a history of landslides—including Keene Valley, Route 73, and the Adirondack High Peaks region—maintain an even greater risk of recurring slope failures. The increase in rain–on–snow events is particularly concerning, as it can rapidly saturate the soil, causing sudden and large–scale landslides.

Vulnerability Assessment

The table below outlines key vulnerability factors and potential impacts of landslides in Essex County:

Table 77. Essex County Landslide Vulnerability Assessment

Category	Vulnerability Factors	Potential Impacts
Population	• Rural & isolated communities may face delayed emergency response & limited evacuation routes. • Elderly residents & those with mobility issues are more at risk during sudden slope failures. • Tourists & hikers may be unfamiliar with landslide–prone trails, increasing their exposure to rockslides & debris flows.	• Injuries & fatalities due to landslides along hiking trails & roadways. • Displacement of residents due to damaged homes & property loss. • Stranded tourists in High-risk areas requiring emergency rescue.
Infrastructure	• Roads, highways, & bridges near steep slopes are highly vulnerable to rockslides & washouts. • Older buildings & homes constructed on steep terrain are at risk of foundation damage & collapse. • Weak stormwater drainage systems can increase slope instability.	• Road closures & travel disruptions, particularly along Route 73 & Route 9N. • Structural damage to homes, bridges, & critical infrastructure. • Increased repair costs & long–term recovery challenges.
Utilities & Energy	• Power & communication lines that run through mountainous areas are susceptible to falling debris & erosion–related damage. • Water supply infrastructure near landslide zones could be compromised by soil movement & sediment contamination.	• Widespread power outages caused by downed lines & poles. • Disrupted emergency communication, delaying response efforts. • Water contamination, increasing public health risks.
Economy	• Tourism & outdoor recreation in the Adirondacks may suffer from frequent trail closures & safety concerns. • Agricultural land near slopes is at risk of soil loss & reduced productivity. • Businesses near High-risk zones may face economic disruptions from road closures & infrastructure damage.	• Financial losses for businesses due to access restrictions & safety concerns. • Crop & livestock damage caused by sudden slope failures. • Increased insurance claims & disaster relief costs.
Environment & Natural Resources	• Deforestation & human development can destabilize slopes & increase landslide risk. • Heavy rainfall & storm runoff erode soil, making landslides more frequent.	• Erosion & habitat destruction, impacting local wildlife. • Increased sedimentation in rivers & lakes, leading to water contamination & ecosystem damage. • Long–term soil degradation, affecting reforestation & land stability.

DRAFT

Category	Vulnerability Factors	Potential Impacts
	• Landslides near water bodies can cause sediment buildup, affecting water quality & aquatic ecosystems.	

Rural communities, hikers, and residents living near steep slopes in Essex County face the highest risk of injuries and displacement due to landslides. Transportation networks, especially Route 73 and Route 9N, are highly vulnerable to rockslides and debris flows, often leading to road closures and travel disruptions. Utility failures, water contamination, and infrastructure damage present significant long-term recovery challenges for affected areas. Landslides can have severe economic consequences, disrupting tourism, damaging farms, and increasing emergency response costs. The impacts of climate change—including more extreme precipitation, frequent freeze-thaw cycles, and intensified soil erosion—are further increasing landslide risks, making mitigation efforts more urgent.

National Risk Index

The following table summarizes the NRI-assessed landslide risk for Essex County, based on historical data, probability, and potential impacts:

Table 78. Essex County Landslide Risk Assessment (NRI Data)

Landslide Type	Risk Level (Per National Risk Index)	Probability	Primary Impacts
Rockfalls & Rockslides	High	Frequent (multiple events/year)	Road blockages, transportation disruptions, trail closures
Debris Flows & Mudslides	Moderate to High	1-3 major events/decade	Property damage, flooding, infrastructure failures
Slow Moving Earth Flows	Moderate	Long-term, evolving hazard	Ground instability, foundation damage, utility disruptions
Rotational & Translational Slides	Low to Moderate	Rare but potentially severe	Large-scale slope failures, major property and infrastructure damage

Rockfalls and rockslides are the most frequent types of landslides in the county, primarily impacting roadways, hiking trails, and key transportation routes. Debris flows and mudslides pose a Moderate to High risk, especially following heavy rainfall or rapid snowmelt events. Slow-moving earth flows present an ongoing threat to home foundations and utility systems, gradually causing structural instability over time. While rotational and translational slides are less common, they can be devastating when they occur, leading to major property loss and long-term disruptions to communities and infrastructure.

Expected Annul Loss (EAL)

The table below outlines the expected annual losses (EAL) due to landslides in Essex County. These estimates consider property damage, agricultural impacts, and population–related losses, including fatalities and injuries:

Table 79. Essex County Annual Expected Loss (EAL) for Landslides

Event Type	Annual Expected Loss (Property)	Annual Expected Loss (Agriculture)	Annual Expected Loss (Population–Fatalities/Injuries)
Rockfalls & Rockslides	$75,000	$0	Minimal fatalities, moderate risk of injuries from falling debris
Debris Flows & Mudslides	$125,000	$5,200	Increased risk of injuries due to structural collapses & road washouts
Slow Moving Earth Flows	$50,000	$2,500	Low fatality risk, but potential long–term displacement of residents
Rotational & Translational Slides	$200,000	$8,000	High property loss potential, risk of major infrastructure failure

Rockfalls and rockslides frequently block roadways, posing a Moderate injury risk to motorists and hikers. Debris flows and mudslides tend to result in higher financial losses due to their ability to damage homes, roads, and agricultural land. While slow–moving earth flows have lower immediate risks, they gradually weaken foundations and infrastructure, leading to costly mitigation efforts. Rotational and translational slides, though less frequent, have the highest potential for catastrophic damage, particularly in steep, High risk zones.

Development Trends

As the county continues to develop, risks associated with landslides are evolving due to factors like infrastructure expansion, increased land use, and climate change. While landslides have historically been a natural hazard in mountainous regions, growing urbanization and development in steep, High risk areas have heightened the potential for slope failures and debris flows.

Population growth and increased construction in landslide–prone zones like Keene Valley, Route 73, and the High Peaks region pose significant risks to homes, roadways, and critical infrastructure. Expanding transportation networks, recreational developments, and housing in steep terrain increases susceptibility to rockfalls, soil movement, and road washouts, particularly during periods of heavy precipitation or rapid snowmelt.

Climate change is amplifying landslide risks, as more frequent extreme rainfall events, freeze–thaw cycles, and shifting soil stability contribute to an increase in slope failures. Deforestation, excavation, and land modification for construction further exacerbate the problem by removing vegetation that stabilizes soil and increasing erosion.

Community Lifelines

Landslides pose significant threats to Essex County's critical infrastructure and essential services, particularly in steep, mountainous regions. FEMA's Community Lifeline Framework identifies seven key sectors necessary for public safety, economic stability, and disaster response.

DRAFT

Landslides can disrupt these lifelines, causing transportation blockages, utility failures, and emergency response challenges. The following sections outline the primary lifelines affected by landslides in Essex County:

- Safety & Security. Landslides pose serious risks to public safety, particularly in isolated or High-risk areas along steep slopes and roadways. Rockfalls and debris flows can damage homes, block emergency access routes, and endanger residents and first responders. Steep, unstable terrain can also delay search–and–rescue operations, making emergency evacuations more difficult.
- Food, Water, & Shelter. Heavy precipitation–induced landslides can damage water supply infrastructure, contaminate drinking water sources, and cause disruptions to local food supply chains. Areas with limited road access like rural communities, may experience supply shortages if key transportation routes are affected by landslides.
- Health & Medical. Landslides can restrict access to hospitals, medical centers, and emergency response facilities by blocking roads or damaging critical infrastructure. Power outages resulting from landslides can impact medical equipment, emergency shelters, and communication networks, putting vulnerable populations—like the elderly and medically dependent individuals—at higher risk.
- Energy (Power & Fuel). Slope failures and debris flows can damage power lines, gas pipelines, and fuel distribution networks, leading to extended outages in impacted areas. Downed trees and eroded soil can disrupt underground utilities, making power restoration challenging in remote locations.
- Communications. Landslides can severely impact telecommunications infrastructure, including fiber optic cables, cell towers, and radio systems, leading to communication blackouts in affected areas. This reduces the effectiveness of emergency alerts, delays response efforts, and isolates communities during a disaster.
- Transportation. One of the most immediate and severe impacts of landslides in Essex County is the disruption of transportation networks. Key roadways like Route 73, Route 9N, and Interstate 87 are vulnerable to rockslides, debris flows, and soil instability. Landslides can also damage bridges, hiking trails, and rail lines, delaying emergency response and cutting off critical access routes.
- Hazardous Materials. Landslides near industrial or transportation corridors can result in hazardous material spills, particularly if debris impacts freight trucks, rail lines, or underground storage tanks. This can cause environmental contamination, health hazards, and increased cleanup costs.

Landslides threaten multiple community lifelines, especially in steep and mountainous regions where infrastructure is highly vulnerable. As climate change leads to more frequent extreme weather events, the county must focus on landslide risk mitigation, improved monitoring systems, and emergency preparedness to ensure public safety, economic resilience, and infrastructure stability.

Results

The assessment of landslide risks highlights significant challenges posed by steep terrain, extreme weather events, and vulnerable infrastructure. Historical data and recent trends indicate

landslides frequently occur along major transportation routes, hiking trails, and river valleys, often leading to road closures, property damage, and disruptions to emergency response efforts.

Climate change is anticipated to increase landslide frequency and severity, with heavier precipitation, freeze–thaw cycles, and shifting soil conditions contributing to slope instability. Vulnerable populations, particularly those in rural and mountainous areas, may experience limited access to emergency services, prolonged power outages, and increased economic hardships due to infrastructure damage.

Key findings from this assessment emphasize the need for proactive mitigation strategies, including slope stabilization projects, improved drainage systems, enhanced monitoring technologies, and updated emergency response plans. Investing in resilient infrastructure, early warning systems, and community preparedness will be crucial to reducing the long–term impacts of landslides on Essex County residents, economy, and environment.

DRAFT

Hazard: Hazardous Materials Incidents (Transportation Accidents & Industrial Spills)

A hazardous materials incident involves the release, spill, or accidental exposure to substances posing a threat to public health, safety, and the environment. These incidents typically occur during transportation via rail, road, or air or within industrial facilities handling chemicals, fuels, or toxic substances. Hazardous materials (HAZMAT) include flammable liquids, corrosive chemicals, toxic gases, radioactive substances, and explosive materials.

In Essex County, hazardous materials incidents are primarily linked to transportation accidents along major rail corridors like the Canadian Pacific Railway, and roadways like I–87 and Route 9N. Industrial sites, including the International Paper facility in Ticonderoga, also store and utilize hazardous chemicals that could pose risks in case of equipment failure or accidental spills. HAZMAT incidents are caused by:

- transportation accidents: spills and leaks from trucks, trains, and pipelines due to collisions, derailments, or equipment failure.
- industrial spills: releases from factories, storage facilities, or refineries caused by operational errors, equipment malfunctions, or natural disasters.
- natural disasters: earthquakes, floods, or hurricanes that compromise containment structures and lead to hazardous material exposure.
- human error: mishandling, improper storage, or lack of safety procedures leading to accidental spills or releases.

Location and Extent

Hazardous materials risks are primarily concentrated along major transportation corridors and industrial sites. The Canadian Pacific Railway, which runs parallel to Lake Champlain, is a significant transport route for flammable liquids, chemicals, and other hazardous substances, increasing the potential for rail–related spills or derailments. Highways like Interstate 87 (I–87) and Route 9N also see frequent transport of fuel, industrial chemicals, and agricultural pesticides, posing risks of truck accidents and hazardous material leaks. In addition to transportation–related hazards, two major industrial facilities—the International Paper Mill in Ticonderoga and the Sunoco Fuel Storage Facility in Port Henry—store and handle large quantities of chemicals and petroleum products, creating risks of airborne chemical releases, spills, and fires. These facilities and transport routes pose potential environmental and public health concerns, particularly due to their proximity to waterways, residential areas, and critical infrastructure. Given the county's rural nature and mountainous terrain, emergency response to hazardous materials incidents may be challenging, especially in remote or High-risk zones where containment and cleanup could take extended periods.

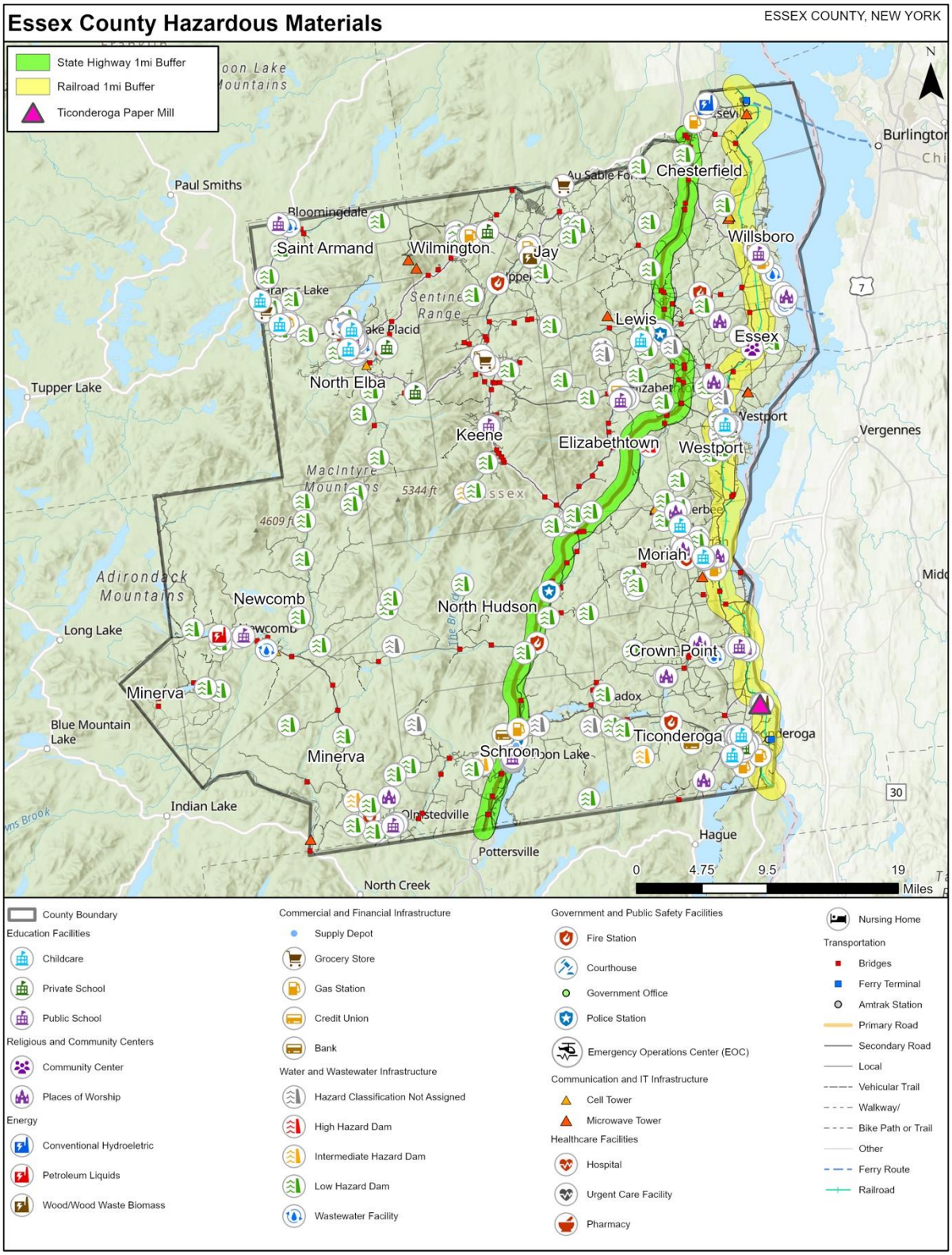


Figure 34. Essex County Hazardous Materials

Historical Occurrences

Hazardous materials incidents in Essex County have occurred due to transportation accidents, industrial spills, and chemical leaks, impacting public safety, the environment, and local infrastructure. While the county has not experienced large–scale industrial disasters, several significant incidents were recorded over the years.

Railroad derailments and spills have posed risks, particularly along the Canadian Pacific Railway, which runs near Lake Champlain. A notable train derailment in the early 2000s near Port Henry raised concerns about chemical contamination of nearby waterways, prompting an emergency response from local and state authorities. Similarly, highway–related hazardous material spills have occurred, including a 2015 fuel tanker truck accident on I–87 that resulted in a diesel spill requiring containment efforts. A chemical transport truck overturned on Route 9N in 2019, temporarily closing the roadway and requiring a hazardous materials response team to prevent contamination of groundwater sources.

Industrial and chemical facility incidents have also been reported, with the International Paper Mill now called Sylvamo Mill in Ticonderoga experiencing periodic hazardous chemical releases including sulfur dioxide leaks and industrial solvent spills. In 2012, a chlorine gas leak at a municipal water treatment facility led to the evacuation of nearby residents as emergency crews worked to contain the hazardous gas. Environmental and waterway contamination incidents were documented, including fuel and chemical spills near Lake Champlain, raising concerns about drinking water safety and aquatic life. Agricultural chemical runoff has also been an issue, particularly after heavy rain events leading to potential contamination of local water systems.

Many of these incidents required coordinated emergency responses from local volunteer fire departments, HAZMAT teams, the New York State Department of Environmental Conservation (DEC), and federal agencies like the Environmental Protection Agency (EPA). Evacuations, road closures, and environmental monitoring are common responses to these hazardous material incidents. The county continues to enhance emergency preparedness efforts by improving first responder training, monitoring hazardous material transportation routes, and enforcing industrial safety regulations. While it has not experienced a catastrophic hazardous materials disaster, the presence of rail transport, industrial operations, and major highways makes ongoing monitoring and response planning at the county level critical for protecting residents and the environment from future incidents.

Future Potential Events

The risk of hazardous materials incidents in Essex County is expected to persist due to ongoing industrial activities, transportation of chemicals, and infrastructure vulnerabilities. As the county continues to see commercial and industrial growth, the likelihood of accidental spills, leaks, and transportation–related hazardous material events may increase.

- Increased Transportation–Related Risks. The transportation of hazardous materials via roadways and rail remains a significant concern. Essex County's proximity to major highways and rail lines means that chemical spills, fuel tanker accidents, and rail derailments involving hazardous substances are potential future threats. An increase in freight transport, particularly along the Canadian Pacific rail corridor, heightens the risk of hazardous material spills that could affect local communities, water sources, and the environment.
- Industrial & Storage Facility Hazards. While Essex County does not have heavy industrial zones, facilities storing and handling hazardous materials like fuel depots, chemical storage sites, and

wastewater treatment plants, pose potential risks. Accidental leaks, explosions, or equipment failures at these locations could lead to dangerous exposure to toxic substances and require large-scale emergency response efforts.

Essex County has two primary facilities that store and handle hazardous materials, presenting potential risks to public safety and the environment. These facilities play a crucial role in regional infrastructure but also require careful monitoring and emergency preparedness measures to mitigate potential hazards.

- Sylvamo Paper Mill–Ticonderoga, NY. The Sylvamol Paper Mill in Ticonderoga is one of the largest industrial facilities in Essex County. This paper manufacturing plant utilizes various chemicals in its production processes, including chlorine compounds, sodium hydroxide, and other hazardous substances. The facility has extensive chemical storage areas and transport operations, increasing the potential for accidental spills, leaks, or exposure to hazardous waste.
  - Potential Hazards: chemical spills, fire hazards, air and water contamination.
  - Emergency Preparedness. The facility has safety protocols in place including spill containment measures, hazardous materials training for employees, and coordination with local emergency responders.
  - Environmental Concerns. This plant is located near Lake Champlain, raising concerns regarding potential chemical runoff/contamination of water resources in the event of a spill.

- Population Growth & Urbanization. As residential and commercial development expands near transportation corridors and industrial sites, the potential for human exposure to hazardous materials increases. More people living near High-risk areas leads to greater health and safety concerns in the event of a spill, fire, or toxic gas release.

Climate Change

Climate change is expected to increase the frequency and severity of hazardous materials incidents due to its effects on extreme weather, transportation infrastructure, and industrial facilities. Rising temperatures and more frequent freeze–thaw cycles can weaken railroad tracks, bridges, and highways, increasing the likelihood of derailments and roadway spills involving hazardous materials. Heavier and more intense rainfall events—a documented impact of climate change—can overwhelm stormwater drainage systems, leading to chemical runoff from industrial sites, fuel storage facilities, and agricultural operations into local water sources like Lake Champlain and the Au Sable River.

More frequent and intense flooding events also increase the risk of hazardous material storage tank failures and pipeline leaks, spreading contaminants over a larger area and complicating emergency response efforts. Increased wildfire risk due to drier conditions may also pose a threat to fuel storage facilities and industrial sites, raising concerns about explosions and toxic smoke exposure. As extreme weather events become more unpredictable, Essex County must enhance its hazardous materials risk management strategies, focusing on infrastructure resilience, spill prevention, and climate-adaptive emergency response planning.

Vulnerability Assessment

DRAFT

Hazardous materials incidents pose significant risks to public health, infrastructure, and the environment in Essex County. Vulnerabilities arise from transportation networks, industrial facilities, population distribution, and emergency response capabilities. The following assessment outlines key vulnerability factors and their potential impacts.

Table 80. Essex County Hazardous Materials Vulnerability Incident Assessment

Category	Vulnerability Factors	Potential Impacts
Population	• Residents near major transport routes, including I–87, Route 9N, & the Canadian Pacific Railway are at higher risk of exposure to chemical spills & air contaminants. • Elderly residents & individuals with respiratory conditions are more vulnerable to hazardous material exposure. • Tourists & seasonal visitors may be unaware of evacuation procedures in the event of a hazardous materials incident.	• Inhalation injuries, chemical burns, & long–term health issues from exposure to toxic substances. • Increased hospital visits due to respiratory complications. • Evacuations & displacement for communities near spill sites.
Infrastructure	• Rail & highway infrastructure near hazardous materials transport routes is vulnerable to accidents & spills. • Industrial sites like the International Paper Mill & the Sunoco Fuel Storage Facility, store large quantities of chemicals that could pose an environmental risk if released. • Limited access to remote locations may delay emergency response efforts in the event of a spill or fire.	• Contamination of roads, railways, & public areas, requiring expensive cleanup. • Damage to critical infrastructure, including water treatment plants & power facilities. • Increased maintenance costs for transportation networks due to hazardous material–related deterioration.
Utilities & Energy	• Fuel storage sites & chemical plants are at risk of fires, explosions, & leaks during extreme weather events. • Aging infrastructure in some areas may increase the likelihood of pipeline failures & storage tank leaks.	• Fires & explosions at fuel storage facilities could cause widespread power outages & air pollution. • Water supply contamination from chemical spills, requiring emergency filtration & treatment. • Long–term environmental cleanup efforts due to persistent

Category	Vulnerability Factors	Potential Impacts
	• Power outages can disrupt containment & emergency response operations, making spills more difficult to control.	soil & groundwater contamination.
Economy	• Hazardous material incidents can disrupt local businesses, agriculture, & tourism. • Fuel spills or industrial chemical leaks can force evacuations & business closures. • High response & cleanup costs put a financial strain on local governments.	• Temporary or permanent closures of businesses, especially those near affected areas. • Loss of revenue for the tourism industry if a hazardous spill occurs near Lake Champlain or popular recreational sites. • Increased insurance claims & financial burdens on local governments.
Environment & Natural Resources	• Proximity to Lake Champlain & other waterways increases the risk of chemical spills contaminating drinking water & aquatic ecosystems. • Extreme weather events (flooding, ice storms, wildfires) increase the likelihood of hazardous material leaks from industrial sites & transportation routes. • Deforestation & land use changes may contribute to soil contamination & habitat destruction following an industrial spill.	• Severe water contamination, affecting aquatic wildlife & drinking water supplies. • Long–term ecological damage, including loss of biodiversity & fish populations. • Costly environmental restoration efforts to mitigate hazardous waste contamination.

National Risk Index

The National Risk Index (NRI), developed by FEMA, evaluates hazard risks across the United States based on historical occurrences, expected frequency, and potential consequences. According to the NRI, Essex County has a Moderate to High risk for hazardous materials incidents, primarily due to its transportation networks, industrial facilities, and proximity to environmentally sensitive areas. The presence of major highways (I–87, Route 9N) and the Canadian Pacific Railway which regularly transport hazardous chemicals, fuels, and industrial materials, increases county vulnerabilities to accidents, spills, and contamination events.

Key Factors Contributing to Essex County's Risk Level:

- Frequent Transportation of Hazardous Materials. County reliance on roadway and rail transport for industrial and fuel shipments increases the probability of spills, derailments, and leaks.

DRAFT

- Proximity to Sensitive Environmental Areas. Many transport routes run near Lake Champlain, rivers, and forested areas, increasing the risk of water and soil contamination in the event of a spill.
- Industrial Facilities Handling Hazardous Materials. Locations like the International Paper Mill in Ticonderoga and the Sunoco Fuel Storage Facility in Port Henry store large quantities of chemicals and petroleum products, which could lead to fires, explosions, or toxic releases.
- Climate Change Impacts. Extreme weather events like heavy rainfall, flooding, and freeze–thaw cycles, may increase infrastructure vulnerability and heighten the likelihood of hazardous material incidents.

Table 81. Risk Level Summary (NRI Data)

Hazard Component	Risk Level (Per National Risk Index)	Probability	Primary Impacts
Hazardous Material Spills (Transportation)	Moderate to High	Frequent (multiple incidents/ decade)	Road closures, water contamination, fire hazards, evacuation needs
Industrial Chemical Leaks & Facility Accidents	Moderate	Occasional (1-2 major incidents/ decade)	Airborne toxic exposure, health risks, environmental damage, economic disruptions
Pipeline & Fuel Storage Facility Risks	Moderate	Occasional	Explosion risks, long–term soil & groundwater contamination

Expected Annual Loss (EAL)Extent

The National Risk Index (NRI) provides Annual Expected Loss (EAL) estimates for hazardous materials incidents based on historical occurrences, infrastructure vulnerability, and economic consequences. These estimates account for property damage, agricultural losses, and population–related impacts, including fatalities and injuries.

Table 82. Essex County Hazardous Materials Incidents Annual Expected Loss (EAL)

Event Type	Annual Expected Loss (Property)	Annual Expected Loss (Agriculture)	Annual Expected Loss (Population–Fatalities/Injuries)
Transportation Spills (Highway & Rail)	$275,000	$5,200	Moderate risk of injuries, potential for short–term evacuations
Industrial Facility Chemical Leaks	$180,000	$2,500	Low fatality risk, but potential long–term health concerns
Pipeline & Fuel Storage Accidents	$350,000	$8,000	Higher injury risk due to fire/explosion potential

Transportation–related hazardous material incidents pose the highest risk in the county, particularly along major highways and rail corridors where spills or leaks can disrupt travel, endanger public safety, and contaminate surrounding areas. While industrial spills and facility accidents are less frequent, they can have severe consequences including toxic exposure, fires, and long–term environmental damage. County proximity to sensitive environmental areas like water sources, agricultural lands, and natural ecosystems increases the long–term impacts of hazardous material releases, making contamination a significant concern. To mitigate these risks, emergency response capabilities must be strengthened, along with stricter monitoring of hazardous material transport and enhanced regulatory enforcement to ensure the safety of residents and the environment.

Development Trends

As Essex County continues to grow, development trends increase the potential risks associated with hazardous materials incidents, particularly in transportation, industrial activities, and infrastructure expansion. The county's dependence on roadways and railways for fuel and chemical transport, combined with the presence of industrial and fuel storage facilities, increases the risk of hazardous spills, leaks, and environmental contamination.

- Expansion of Transportation Networks. With increasing commercial and industrial activities, the volume of hazardous materials transported via highways (I–87, Route 9N) and rail lines (Canadian Pacific Railway) continues to rise. As freight traffic increases, so does the risk of accidents, derailments, and hazardous material spills, especially in areas near Lake Champlain and residential communities.
- Industrial Growth & Storage Facilities. Essex County hosts key industrial and fuel storage facilities like the International Paper Mill in Ticonderoga and the Sunoco Fuel Storage Facility in Port Henry. As demand for industrial production and fuel supply increases, there is a higher likelihood of chemical spills, gas leaks, and fire hazards associated with aging infrastructure, mechanical failures, and human error.
- Climate Change & Infrastructure Vulnerabilities. Extreme weather events, including heavy rainfall, flooding, and freeze–thaw cycles, are expected to worsen infrastructure vulnerabilities, increasing the likelihood of hazardous material leaks from pipelines, fuel storage tanks, and industrial sites. Climate–related disruptions may also make hazardous material containment and cleanup efforts more challenging, particularly in rural and isolated areas.
- Population Growth & Proximity to High-risk Areas. New residential and commercial developments near major transportation corridors, industrial zones, and environmentally sensitive areas may increase human exposure risks in the event of hazardous material spills or releases. Communities located near highways, railways, and industrial sites face greater health and safety concerns, particularly in cases of toxic air releases, water contamination, or fire hazards.

Community Lifelines

Hazardous materials incidents in the county pose significant threats to critical community lifelines, impacting public safety, infrastructure, and essential services. FEMA's Community Lifeline framework identifies seven key lifelines that are vital for maintaining stability and effective disaster response. The following outlines how hazardous material spills, industrial accidents, and transportation–related incidents can affect these lifelines in Essex County:

DRAFT

- Safety & Security. Hazardous materials incidents threaten public safety by exposing residents to toxic chemicals, fires, and explosions. Communities near highways, railways, and industrial sites face higher exposure risks, and emergency response teams may need to evacuate affected areas. First responders require HAZMAT training and specialized equipment to handle chemical spills, making emergency preparedness a critical priority.
- Food, Water, & Shelter. Hazardous material spills—particularly those near Lake Champlain, rivers, and groundwater sources—can contaminate drinking water supplies and agricultural land. Industrial chemical leaks or fuel spills may render water sources unsafe and disrupt food production. Residents in contaminated areas may require emergency shelters and relocation assistance if their homes are deemed unsafe due to toxic exposure.
- Health & Medical. Exposure to hazardous chemicals, toxic fumes, or contaminated water can result in respiratory issues, chemical burns, poisoning, and long–term health effects. Hospitals and healthcare facilities must be prepared for increased patient intake following a hazardous materials incident. They must also have backup power and clean water supplies in case of contamination.
- Energy (Power & Fuel). Hazardous material spills, fires, or explosions can damage energy infrastructure, including fuel storage facilities, gas pipelines, and electrical substations. Power outages may disrupt emergency response operations and delay containment efforts, especially in remote areas with limited access to alternate fuel and energy sources.
- Communications. Severe hazardous material incidents overwhelm emergency communication systems, particularly if chemical fires, toxic plumes, or contamination zones restrict access to emergency personnel and the public. Communication failures may delay evacuation orders, emergency alerts, and first responder coordination in rural parts of Essex County with limited broadband and cellular coverage.
- Transportation. Essex County's transportation networks, including I–87, Route 9N, and the Canadian Pacific Railway, are key hazardous material transport routes. A major spill, derailment, or truck accident could result in road closures, train service disruptions, and supply chain delays. Hazardous material spills may also block evacuation routes, complicating emergency response efforts and isolating communities.
- Hazardous Materials (Containment and Cleanup). The presence of fuel storage facilities, industrial sites, and chemical transport corridors increases the risk of hazardous material releases requiring specialized containment and cleanup efforts. Essex County must maintain trained hazardous materials response teams to contain, neutralize, and mitigate environmental damage following an incident. Long–term recovery may involve soil remediation, water filtration efforts, and rebuilding damaged infrastructure.

Results

Analyses of hazardous material incidents in the county highlight ongoing risks associated with chemical spills, industrial leaks, and transportation–related accidents. As the county continues to grow, transportation networks, industrial facilities, and environmental resources remain vulnerable to hazardous material events. The following key findings summarize the primary impacts and concerns related to hazardous materials incidents in Essex County:

- Increasing Frequency of Hazardous Materials Transport. With Essex County serving as a key transportation route for hazardous materials, including fuel, industrial chemicals, and toxic substances, the risk of transportation–related spills and leaks continues to grow. Freight traffic along I–87, Route 9N, and the Canadian Pacific Railway is expected to increase, raising concerns about future derailments, highway accidents, and hazmat spills that could threaten public safety and the environment.
- Industrial & Storage Facility Vulnerabilities. Major industrial facilities like the International Paper Mill in Ticonderoga and the Sunoco Fuel Storage Facility in Port Henry store large quantities of hazardous chemicals and petroleum products. Aging infrastructure, accidental leaks, and extreme weather events pose an ongoing risk of industrial spills that could affect workers, surrounding communities, and nearby water sources.
- Environmental & Water Contamination Risks. Hazardous material spills in Essex County have the potential to contaminate local rivers, lakes, and groundwater supplies, particularly in areas near Lake Champlain and other environmentally sensitive regions. Chemical spills and fuel leaks could cause long–term damage to soil, aquatic ecosystems, and drinking water resources, making environmental cleanup efforts costly and complex.
- Economic Consequences for Key Sectors. Hazardous materials incidents can cause disruptions to the county economy, particularly in industries like tourism, agriculture, and transportation. Road and rail closures, environmental cleanup costs, and damage to local businesses can lead to financial losses for both the public and private sectors. Agriculture in rural areas could suffer from contaminated soil and water, impacting crop yields and livestock health.
- Health & Safety Risks for Vulnerable Populations. Communities located near major transportation corridors, industrial sites, and fuel storage facilities face the highest exposure risk in the event of a hazardous materials incident. Elderly residents, individuals with pre–existing health conditions, and low–income households may have limited resources for evacuation or medical care in the aftermath of a chemical spill or toxic exposure event.
- Emergency Response Challenges. Due to Essex County's rural landscape and limited emergency response infrastructure, hazardous material incidents can be difficult to rapidly contain, especially in remote and difficult–to–access areas. Many fire departments and first responders require specialized training and equipment to effectively handle chemical spills, toxic releases, and industrial fires.
- Need for Enhanced Mitigation & Preparedness. As hazardous material transport and industrial activity increase, the county must take proactive steps to reduce risks and improve emergency response capabilities. Investments in hazmat response training, infrastructure safety, environmental monitoring, and regulatory enforcement will be essential in preventing hazardous materials incidents and minimizing their impacts on public health, safety, and the economy.

Hazardous materials incidents remain a persistent threat to Essex County, affecting transportation networks, industrial zones, water resources, and emergency response systems. As climate change and infrastructure expansion continue to shape the county risk landscape, improving mitigation efforts and response preparedness will be critical in reducing long–term vulnerabilities and ensuring the safety of residents, businesses, and natural ecosystems.

DRAFT

Hazard: Pandemics & Infectious Disease (Future Pandemics & Influenza Outbreaks)

The Centers for Disease Control and Prevention (CDC) defines a pandemic as “an epidemic that has spread over several countries or continents, usually affecting a large number of people.” The CDC emphasizes that infectious disease pandemics like influenza, COVID–19, and other emerging threats can overwhelm healthcare systems, disrupt economies, and cause significant morbidity and mortality.

The CDC focuses on disease surveillance, vaccine development, infection prevention measures, and emergency response planning to reduce the spread and impact of future outbreaks and to help mitigate pandemic risks. Infectious diseases including influenza, COVID–19, and emerging viral threats pose significant public health risks due to their high transmission rates and potential for severe illness or death. These outbreaks disrupt healthcare systems, strain emergency response efforts, and impact economic stability. They can spread rapidly through person–to–person contact, contaminated surfaces, and airborne transmission, requiring public health interventions like vaccinations, quarantines, and travel restrictions.

Future pandemics remain a critical concern, as new viral strains, antimicrobial resistance, and climate change increase the risk of emerging infectious diseases. Essex County, like many other regions, must prioritize disease surveillance, emergency preparedness, and public health infrastructure improvements to mitigate the impact of future outbreaks and protect community well–being.

Location and Extent

Essex County is vulnerable to pandemics and infectious disease outbreaks due to population mobility, healthcare infrastructure, and community interactions. While the county has a relatively small and rural population. Its tourism–driven economy, with attractions like the Adirondack High Peaks and Lake Placid, attracts visitors from across the country and internationally, increasing the potential for disease transmission.

Healthcare accessibility is a key factor influencing the impact of infectious diseases. The county has limited hospital facilities, relying on regional healthcare networks for specialized care. Rural communities may face challenges accessing timely medical treatment, particularly in the event of a widespread outbreak that strains healthcare resources.

Influenza, respiratory viruses, tick–borne diseases (like Lyme disease), and waterborne illnesses are common public health concerns. The county’s climate, with cold winters and humid summers, influences the seasonality of certain infectious diseases. Essex County is susceptible to emerging infectious diseases, as demonstrated by the COVID–19 Pandemic, which impacted local businesses, schools, and healthcare systems.

Future pandemics and infectious disease outbreaks will continue to pose risks, particularly for vulnerable populations like the elderly, individuals with chronic illnesses, and those with limited access to healthcare. Public health preparedness, vaccination programs, and emergency response planning will be critical in mitigating the impact of future outbreaks.

Historical Occurrences

Essex County has experienced notable infectious disease outbreaks ranging from seasonal influenza to large–scale pandemics. While the rural nature of the county provides some level of

isolation, its tourism industry and connections to larger urban centers contribute to the spread of infectious diseases.

- COVID–19 Pandemic (2020–Present). The COVID–19 Pandemic significantly impacted Essex County, as it did the rest of the world. The first cases emerged in the county emerged in March of 2020, leading to widespread public health measures, including mask mandates, social distancing, and business closures. Healthcare facilities faced staffing shortages. Rural communities encountered challenges in accessing vaccines and testing. The tourism industry, a major economic driver, suffered severe losses due to travel restrictions.
- H1N1 Influenza Pandemic (2009–2010). The H1N1 influenza (swine flu) pandemic affected Essex County, with confirmed cases reported throughout the region. The virus primarily impacted younger individuals and local healthcare providers worked to distribute vaccines to at–risk populations. Schools and workplaces implemented temporary closures and preventive measures to control the outbreak.
- Seasonal Influenza Outbreaks. Annual influenza outbreaks have consistently affected the county, particularly during the winter months. Schools, nursing homes, and healthcare facilities often experience spikes in cases, leading to increased hospitalizations and, in severe cases, fatalities. The county public health response includes flu vaccination campaigns, public awareness efforts, and hospital preparedness planning.
- Tuberculosis (TB) Cases. While rare, tuberculosis has been a public health concern in Essex County. The region has recorded sporadic TB cases, primarily among individuals with underlying health conditions or those in congregate living settings. Local health authorities continue monitoring TB infections and providing treatment to affected individuals.
- Vector–Borne Diseases (Lyme disease, West Nile Virus, Eastern Equine Encephalitis). Essex County has experienced an increase in vector–borne diseases over the years, particularly Lyme disease, due to dense forests and high deer population in the county. West Nile virus and Eastern Equine Encephalitis (EEE) cases were sporadically reported, posing risks to both humans and animals. The county has implemented mosquito control efforts and tick awareness programs to mitigate these threats.

These historical occurrences highlight Essex County vulnerabilities to global pandemics and localized infectious disease outbreaks. Public health preparedness, vaccination efforts, and improved healthcare infrastructure will be essential in mitigating future risks.

Table 83. Essex County Historical Infectious Disease Outbreaks

Outbreak	Year(s)	Pathogen	Impact on Essex County	Sources
COVID–19 Pandemic	2020-present	SARS–CoV–2 (Coronavirus)	Thousands of cases, public health emergency, business closures, strain on healthcare system.	CDC NYSDOH
H1N1 Influenza	2009	H1N1 Influenza Virus	Widespread flu cases, school absences, hospitalizations.	CDC

DRAFT

Outbreak	Year(s)	Pathogen	Impact on Essex County	Sources
Seasonal Influenza	Ongoing (annual)	Influenza A & B	Hundreds of flu cases annually, increased ER visits.	NYSDOH
Lyme Disease	Ongoing (endemic)	Borrelia burgdorferi	High incidence due to tick exposure, rising case numbers.	CDC NIH
West Nile Virus	2012, 2018	West Nile Virus (WNV)	Sporadic cases, mosquito–borne, flu–like symptoms.	CDC
Eastern Equine Encephalitis (EEE)	2011, 2016	EEE Virus	Rare but fatal mosquito–borne disease, detected in wildlife & some human cases.	CDC
Tuberculosis (TB)	Ongoing (low # of cases)	Mycobacterium tuberculosis	Rare but persistent cases, public health monitoring.	NYSDOH

The following table summarizing federally declared disasters related to pandemics and infectious disease outbreaks that have impacted Essex County:

Table 84. Essex County Declared Disasters for Pandemics & Infectious Diseases

Disaster #	Date Declared	Incident Type	Location Affected	Impact
4480	March 20, 2020	COVID–19 Pandemic	Essex County, NY (statewide declaration)	Public health emergency, lockdowns, healthcare strain, economic disruption
4160	July 12, 2013	H1N1 Influenza Pandemic	Essex County, NY (statewide declaration)	Widespread flu cases, hospitalizations, vaccination campaigns
3257	February 1, 2003	SARS–CoV–1 Outbreak	Essex County, NY (statewide response)	Travel restrictions, public health monitoring, limited cases
2953	August 10, 1999	West Nile Virus Outbreak	Essex County, NY (statewide emergency)	First WNV cases detected in NY, mosquito control measures

Future Potential Events

The threat of future pandemics and infectious disease outbreaks remains a significant public health concern. With increasing global travel, climate change, and evolving pathogens, the county must prepare for emerging health threats that could strain healthcare systems, disrupt daily life, and impact economic stability.

- Emerging Infectious Diseases. New and re–emerging infectious diseases, including novel strains of influenza, coronaviruses, and vector–borne illnesses, pose persistent risks for the county. The continued mutation of viruses, antimicrobial resistance, and the potential for

zoonotic spillover (diseases transferring from animals to humans) increase the likelihood of future outbreaks.

- Population Vulnerabilities & Healthcare Capacity. The rural nature of the county presents challenges in accessing healthcare, particularly for elderly and low–income populations. Future pandemics could overwhelm limited hospital capacity and healthcare infrastructure—especially in scenarios requiring large–scale vaccination efforts, critical care services, and emergency medical response.
- Potential Economic & Social Impacts. Future pandemics have the potential to cause significant economic disruptions including business closures, supply chain interruptions, workforce shortages, and tourism declines. Schools, public services, and emergency response agencies may also experience strain due to prolonged outbreaks and necessary containment measures.

Climate Change

Climate change is expected to increase the frequency and severity of infectious disease outbreaks in Essex County by altering disease transmission patterns, expanding the range of disease–carrying vectors, and straining public health infrastructure. Rising temperatures, changes in precipitation, and more frequent extreme weather events create favorable conditions for the spread of vector–borne diseases like Lyme disease, West Nile virus, and other mosquito– and tick–borne infections. Warmer winters and longer growing seasons allow ticks and mosquitoes to thrive year–round, increasing the risk of disease transmission.

Increased flooding and extreme weather events can lead to contaminated water supplies, mold–related respiratory illnesses, and outbreaks of waterborne diseases, particularly in rural communities with older infrastructure. More frequent heat waves and poor air quality days can also worsen respiratory conditions, making populations more vulnerable to viral infections like influenza and COVID–19.

The unpredictability of climate–driven disease emergence poses a significant public health challenge requiring enhanced disease surveillance, emergency preparedness, and stronger public health infrastructure to mitigate risks. Investments in climate adaptation strategies, improved vector control measures, and healthcare system resilience will be crucial in reducing the long–term impacts of climate change on infectious disease outbreaks.

Vulnerability Assessment

County vulnerabilities to pandemics and infectious diseases are influenced by demographics, healthcare capacity, economic factors, and environmental conditions. The table below outlines key vulnerability factors and their potential impacts on the county:

Table 85. Essex County Pandemic & Infectious Disease Vulnerability Assessment

Category	Vulnerability Factors	Potential Impacts
Population	• Aging population increases the risk of severe illness & hospitalization. • Rural communities have limited access to healthcare facilities.	• Higher fatality rates in vulnerable groups. • Increased burden on hospitals & emergency services.

DRAFT

Category	Vulnerability Factors	Potential Impacts
	• Tourists & seasonal residents may introduce new disease strains.	• Greater risk of disease spread due to transient populations.
Healthcare Infrastructure	• Limited hospital & ICU capacity in rural areas. • Few infectious disease specialists within the county. • Dependence on regional healthcare networks for critical care.	• Overwhelmed healthcare facilities during outbreaks. • Delays in receiving specialized treatment. • Higher reliance on state & federal medical support.
Economic & Workforce Impacts	• Heavy reliance on tourism & service industries, which are disrupted by pandemics. • Small businesses lack financial reserves to survive prolonged shutdowns. • Workforce shortages in essential services (healthcare, emergency response, & food supply).	• Economic downturns due to business closures & job losses. • Supply chain disruptions affecting essential goods. • Increased demand for unemployment & social services.
Education & Public Services	• Schools, childcare centers, & universities are major disease transmission hubs. • Limited access to virtual learning & broadband in rural areas. • Public health funding & preparedness vary by region.	• School closures affecting student education & childcare availability. • Unequal access to remote learning opportunities. • Strain on public health agencies during outbreaks.
Environmental & Climate Factors	• Warmer temperatures & changing precipitation patterns increase vector–borne disease risks (Lyme disease, West Nile virus). • Flooding & extreme weather can contribute to outbreaks of waterborne diseases. • Poor air quality from wildfires & heat waves exacerbates respiratory illnesses.	• Increased spread of tick– & mosquito–borne illnesses. • Higher rates of asthma & respiratory infections. • More frequent public health emergencies tied to climate change.

Essex County's aging population, limited healthcare infrastructure, and economic dependence on tourism make it particularly vulnerable to pandemics and infectious disease outbreaks. The county's rural isolation and limited hospital capacity can lead to delayed treatment and strain on emergency medical services, especially during widespread health crises. Climate change is expected to intensify infectious disease risks, increasing the spread of vector–borne illnesses and respiratory infections. To mitigate these threats, the county must enhance disease surveillance,

invest in public health infrastructure, and strengthen emergency preparedness strategies to better respond to future outbreaks.

National Risk Index

The National Risk Index (NRI), developed by FEMA, assesses the relative risk of various hazards across the United States based on historical data, expected frequency, and potential consequences. According to the NRI, Essex County, has a Moderate risk for pandemics and infectious disease outbreaks, influenced by its aging population, healthcare accessibility challenges, and seasonal tourism industry.

Key Factors Influencing Essex County's Pandemic Risk

- Aging & Rural Population. Essex County has a higher percentage of elderly residents, who are at greater risk of severe illness and complications from infectious diseases.
- Limited Healthcare Infrastructure. The county relies on a small number of healthcare facilities, with specialized medical care often requiring travel to larger regional hospitals.
- Tourism–Driven Economy. High seasonal visitation increases the risk of disease introduction and transmission, particularly during peak tourism months.
- Climate Change Impacts. Rising temperatures and changing precipitation patterns may increase the spread of vector–borne diseases like Lyme disease and West Nile virus.

Table 86. Expected Frequency and Impact of Infectious Disease Outbreaks

Hazard Component	Risk Level (Per NRI)	Probability	Primary Impacts
Pandemics (Influenza, COVID–19, Emerging Diseases)	Moderate	Occasional (1 major event every 10-20 years)	Healthcare system strain, economic disruption, increased mortality among vulnerable populations.
Vector–Borne Diseases (Lyme, West Nile Virus, EEE)	Moderate to High	Increasing (annual & seasonal cases expected)	Rising infection rates, long–term health effects, expanding tick/mosquito habitat due to climate change.
Waterborne & Respiratory Illnesses	Moderate	Seasonal (linked to extreme weather & flooding)	Contaminated drinking water, respiratory infections from mold exposure, increased ER visits.

While Essex County does not face frequent large–scale pandemics, it remains vulnerable to emerging diseases, seasonal outbreaks, and climate–driven health threats. A proactive approach to public health infrastructure, emergency preparedness, and mitigation strategies will be essential in reducing long–term risks and protecting community well–being.

Expected Annual Loss (EAL)

The Expected Annual Loss (EAL) metric estimates the financial and human impacts of pandemics and infectious diseases in Essex County. This includes economic losses from healthcare costs, business closures, lost wages, and population health impacts.

DRAFT

Table 87. Essex County Pandemic & Infectious Disease Annual Expected Loss (EAL)

Event Type	Annual Expected Loss (Property)	Annual Expected Loss (Agriculture)	Annual Expected Loss (Population–Fatalities/Injuries)
Pandemic (Influenza, COVID–19, Future Viruses)	$2.1M	n/a	Moderate risk of fatalities and widespread illness, economic impact from business closures and healthcare costs.
Vector–Borne Diseases (Lyme, West Nile, EEE)	$150,000	$25,000	Increasing infections, long–term health effects, rising treatment costs.
Waterborne & Respiratory Illnesses	$80,000	n/a	Increased ER visits due to mold exposure, flooding–related illnesses.

Pandemics pose the highest economic risk of loss in the county, primarily due to disruptions in business operations, tourism losses, and increased strain on the healthcare system. Vector–borne diseases like Lyme disease and West Nile virus are becoming more frequent, increasing healthcare costs and long–term health burdens for affected individuals. Waterborne and respiratory illnesses, often linked to flooding and extreme weather events, further threaten public health infrastructure and require expanded medical interventions to manage outbreaks effectively.

The county's rural healthcare system, aging population, and tourism–based economy make it particularly vulnerable to economic and health losses from pandemics and infectious diseases. Investments in public health preparedness, emergency response, and climate resilience will be essential in reducing long–term financial and human impacts.

Development Trends

Development trends influence regional vulnerability to pandemics and infectious diseases. County reliance on tourism means that seasonal population surges increase the risk of disease transmission, particularly in hospitality, retail, and service industries. Ongoing residential and commercial development in rural and semi–rural areas can strain healthcare infrastructure, as many communities have limited access to medical facilities. Climate change and shifting land use patterns are also contributing to the spread of vector–borne illnesses, as warmer temperatures and changing ecosystems create favorable conditions for ticks, mosquitoes, and other disease–carrying organisms. Future planning efforts must focus on expanding healthcare capacity, improving public health surveillance, and integrating pandemic preparedness into economic and infrastructure development strategies.

Community Lifelines

Pandemics and infectious disease outbreaks can significantly disrupt Essex County community lifelines, affecting essential services and public health systems.

- Safety & Security. Law enforcement, emergency management, and public health agencies play critical roles in enforcing health mandates, managing quarantine efforts, and coordinating

emergency responses. During major outbreaks, first responders may experience staffing shortages due to illness, further straining resources.

- Health & Medical. Essex County's rural healthcare system has limited hospital capacity, making it vulnerable to patient surges during pandemics. Access to specialized care is also restricted, requiring coordination with regional healthcare facilities. Expanding telemedicine services and public health outreach programs is essential for improving medical access during future outbreaks.
- Food, Water, & Shelter. Supply chain disruptions during pandemics can impact the availability of essential goods including food, medicine, and medical supplies. Vulnerable populations, including low–income residents and elderly individuals may struggle to access necessary resources, increasing demand for food assistance programs and social services.
- Energy (Power & Fuel). Prolonged pandemics strain utility services as workforce shortages affect power grid maintenance, fuel distribution, and emergency repairs. Ensuring continuity of operations for essential utility workers is critical for maintaining energy stability.
- Communications. Reliable communication networks are essential for public health messaging, telemedicine services, and emergency response coordination. Rural areas of Essex County may face challenges with broadband access, making it difficult for residents to receive timely updates and access virtual healthcare resources.
- Transportation. Travel restrictions and workforce shortages during a pandemic can disrupt public transportation, freight deliveries, and emergency medical transportation. Road maintenance and infrastructure projects may also experience delays due to reduced staffing and supply chain issues.

Results

Analyses of pandemics and infectious disease risks in the county highlight ongoing challenges posed by disease outbreaks, healthcare system demands, and economic disruptions. While large–scale pandemics are rare, the increasing frequency of infectious disease outbreaks—like influenza, vector–borne illnesses, and waterborne diseases—demonstrates the need for sustained public health investments and emergency preparedness. The following key findings summarize the primary impacts observed in Essex County:

- Increased Frequency & Impact of Infectious Diseases. Emerging infectious diseases including COVID–19 and seasonal influenza demonstrated how rapidly pandemics can strain healthcare systems and disrupt daily life. Vector–borne illnesses like Lyme disease and West Nile virus are on the rise due to changing climate conditions, increasing long–term health risks for residents.
- Healthcare System Vulnerability. Essex County's rural healthcare infrastructure has limited hospital capacity, making it difficult to manage patient surges during disease outbreaks. Limited access to specialized care and reliance on neighboring healthcare facilities further increase vulnerability, requiring improved coordination and telemedicine expansion.
- Economic Consequences for Key Sectors. Pandemics result in significant economic losses, particularly for tourism and local businesses that rely on seasonal visitors. Public health restrictions, workforce shortages, and supply chain disruptions contribute to prolonged financial instability, affecting employment rates and tax revenue.

DRAFT

- Disproportionate Impact on Vulnerable Populations. Elderly residents, low–income households, and individuals with preexisting health conditions face heightened risks during pandemics. Limited healthcare access, transportation barriers, and economic hardships make it more difficult for vulnerable populations to recover from infectious disease outbreaks.
- Strain on Community Lifelines. Pandemics disrupt essential services including emergency response, food distribution, and public transportation. Workforce shortages among first responders and healthcare workers further complicate emergency management efforts, highlighting the need for enhanced resilience strategies.
- Need for Enhanced Preparedness & Public Health Investments. Strengthening public health infrastructure, expanding disease surveillance, and improving emergency response capabilities are critical to reducing the long–term impacts of pandemics. Essex County must invest in healthcare accessibility, vaccination programs, and public awareness campaigns to mitigate future infectious disease risks.

Pandemics and infectious diseases continue to pose significant challenges for Essex County, affecting public health, economic stability, and essential services. As disease outbreaks become more frequent due to global travel, climate change, and evolving pathogens, proactive mitigation strategies and resilient healthcare systems will be essential for protecting residents and sustaining economic recovery.

Hazard: Dam Failures (Structural Integrity Issues)

Dams are barriers across flowing water that obstruct, direct, or that slow water flow. Dams provide benefits like flood protection, power generation, drinking water, irrigation, and recreation. Failure of these structures results in an uncontrolled release of impounded water. Dam failures are relatively rare, but immense damage and loss of life is possible in downstream municipalities when they occur. Aging infrastructure, hydrologic, hydraulic and geologic characteristics, population growth, and design and maintenance practices should be considered when assessing dam failure hazards.

Dam failures most often occur during or after a massive rainfall, flooding, or spring thaws—sometimes with little to no warning. Depending on the size of the water body where the dam is constructed, water contributions may come from distant upstream locations. The Essex County Department of Public Works primarily monitors the county's dam safety program. The New York State Department of Environmental Conservation (DEC) is crucial in overseeing dam safety regulations and inspections statewide. Local municipalities may also have specific responsibilities for the dams within their jurisdictions.

Dam failures can result from:

- prolonged periods of rainfall and flooding (causes most failures).
- inadequate spillway capacity, resulting in excess overtopping of the embankment.
- internal erosion due to embankment or foundation leakage or piping.
- improper maintenance, including failure to remove trees, repair internal seepage problems, or maintain gates, valves, or other operational components.
- improper design or use of improper construction materials.
- failure of upstream dams in the same drainage basin.
- landslides into reservoirs, which cause surges that result in overtopping.
- high winds causing significant wave action, resulting in substantial erosion.
- destructive acts of terrorism.
- earthquakes, typically caused by longitudinal cracks at the tops of embankments, leading to structural failure.

In addition to the risks from failure, dams can be associated with other risks including:

- upstream flooding due to the backwater created by a dam during large flood events.
- non–breach risks. The risk in the reservoir pool area and affected downstream floodplain due to normal operation of the dam (e.g., large spillway flows within the design capacity of the dam that exceed downstream channel capacity) or overtopping of the dam without breaching.
- flooding due to release of water from operation, mis–operation, or failure of dam spillway gates or other outlet works. There are very few dams in New York that can cause significant downstream infrastructure damage due to operation or mis–operation. These dams tend to be some of the larger dams in the state, and therefore professionally managed by a water supplier, hydroelectric utility, or government entity. These entities have institutional and engineering

DRAFT

controls to prevent mis–operation that are reviewed by the State Dam Safety Regulatory Program or Federal Energy Regulatory Commission (FERC).

Dam incidents cause (or nearly cause) small, unintended releases of stored water, but are averted. For the purposes of this plan, dam failures and dam incidents will be referred to as dam failures. Flooding due to normal operation is not considered a dam failure, though these instances may increase flood risk.

Dam failures often occur when a dam is subjected to unprecedented loading. The most common failure from extreme loading usually occurs due to an extreme flood event. This is called a “rainy day” failure and can exacerbate downstream flooding that may already be occurring, creating an increased incremental risk. Dam failure flood flows can be several times as large as the rain–induced flood. Generally, those downstream are aware that flooding is occurring or likely to occur and may already be taking protective measures although those at risk may not be prepared for the magnitude of flooding caused by a dam failure.

A “sunny day” failure occurs during dry weather and may be caused by internal erosion in an earthen dam, ice loading, a seismic event, or other conditions like defects in the dam or foundation. Although the resultant flows are less than during a “rainy day” event, the flows can be large enough to flood overbank areas that are heavily developed. Those downstream may be unaware of the failure in progress and less prepared for the resulting flood, creating an increased incremental risk.

Location and Extent

Essex County has a total of 45 dams (noted in the figure below), with an average age of 82 years.

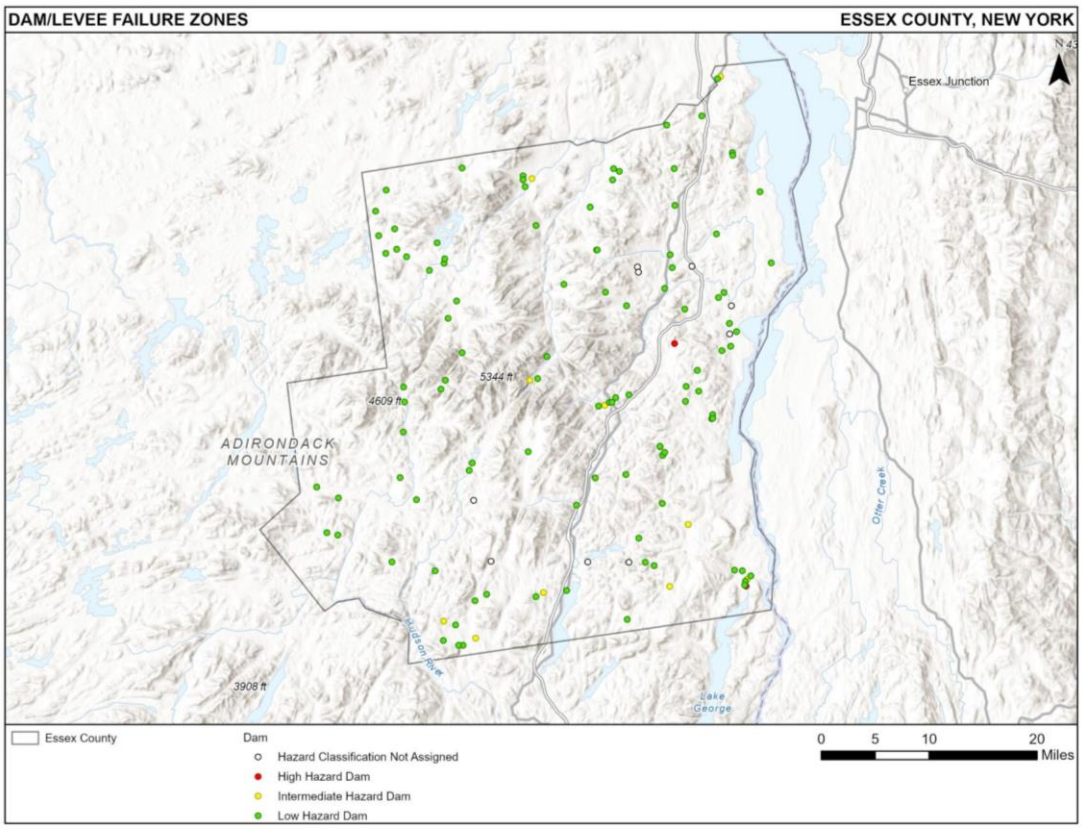


Figure 35. Essex County Dams

All High–Hazard potential dams in the county have an Emergency Action Plan (EAP) in place, ensuring preparedness for potential failures. Approximately 11% of the dams are used for hydro-power, while 7% fall under federal regulation. 100% of county dams are state regulated, highlighting the oversight and management efforts to maintain dam safety and functionality. Of the 45 dams listed in the table below, two dams are rated with a High–Hazard potential, while nine are rated with significant hazard potential, and 34 rate with Low hazard potential In addition to the dams located within Essex County, dams in other counties may have the potential to inflict severe loss of life and property to residents of Essex County.

Table 88. Essex County Public and Private Dams

Name	Condition	Hazard Potential Classification	Owner Type	Primary Purpose	Nearest City/Town (Miles)	Max. Storage (Acre–Ft)	Height (Ft)
Rockport Pond Dam	Not Rated	Low/A	Private	Recreation	Moriah Center (7)	85.0	20
Highlands Forge Lake Dam	Not Rated	Low/A	Private	Recreation	Willsboro (0)	446.0	8

Name	Condition	Hazard Potential Classification	Owner Type	Primary Purpose	Nearest City/Town (Miles)	Max. Storage (Acre–Ft)	Height (Ft)
Defense Plant Corp Pond Dam (Mill #7)	Not Rated	Low/A	Private	Other	Port Henry (2)	150.0	25
C H Walker Dam	Not Rated	Low/A	State	Other	North Hudson (3)	166.0	12
Chubb River Dam	Not Rated	Low/A	Private	Recreation	Lake Placid (1)	67.0	20
Wolf Pond Dam	Not Rated	Low/0	Private	Recreation	North Elba (1)	128.0	7
Sawmill Pond Dam	Not Rated	Low/A	Private	Recreation	Crown Point (4)	245.0	12
Lake Placid Dam	Not Rated	Low/A	Private	Recreation	Lake Placid (2)	112,996.0	7
Horseshoe Pond Dam	Not Rated	Significant /B	State	Water Supply	Schroon Lake (2)	697.0	16
Camp Adiron-dack Dam	Not Rated	Low/A	State	Water Supply	Saranac Lake (5)	161.0	9
Kelso Brook Dam	Not Rated	Low/A	Private	Recreation	Minerva (2)	80.0	10
D Mill at Ticonderoga Dam	Not Rated	Significant /B	Private	Hydro-electric	Ticonderoga (0)	14.0	20
Indian Pass Ranch Dam	Not Rated	Low/A	Private	Hydro-electric	North Elba (2)	27.0	25
North Pond Dam	Not Rated	Low/A	Local Govmt	Water Supply	Moriah (3)	156.0	15
Underwood Dam	Not Rated	Low/A	Private	Recreation	North Hudson (0)	72.0	18
New Pond Dam	Not Rated	Low/A	Private	Recreation	North Hudson (1)	225.0	10
Lake George Outlet – Canal Intake	Satisfac-tory	High/C	Private	Hydro-electric	Ticonderoga (1)	2,250,000.0	28
Olmstedville Pond Dam	Not Rated	Significant /B	Local Govmt	Recreation	Minerva (0)	35.0	10
Flowed Lake Dam	Not Rated	Low/A	State	Recreation	Newcomb (12)	720.0	20

Name	Condition	Hazard Potential Classification	Owner Type	Primary Purpose	Nearest City/Town (Miles)	Max. Storage (Acre–Ft)	Height (Ft)
Kiln Pond Dam	Not Rated	Low/A	Private	Recreation	Chesterfield (5)	231.0	30
Doyle Wildlife Pond Dam	Not Rated	Low/A	Private	Other	Jay (4)	51.0	20
Elk Lake Dam	Not Rated	Low/A	Private	Recreation	North Hudson (8)	4,200.0	23
Tub Mill Pond Dam	Not Rated	Significant /B	Private	Other	Moriah (6)	320.0	21
Lower Au Sable Lake Dam	Satisfac-tory	Significant /B	Private	Recreation	Keene (3)	819.0	10
Wilmington Dam	Not Rated	Significant /B	Local Govmt	Other	Wilmington (0)	250.0	16
Minerva Lake Dam	Not Rated	Low/A	Local Govmt	Recreation	Minerva (2)	460.0	20
Kingdom Dam	Satisfac-tory	High/C	State	Recreation	Elizabeth-town (10)	4,480.0	24
Arbutus Pond Dam	Not Rated	Low/A	Private	Other	Newcomb (4)	55.0	11
Beaver Flow Dam	Not Rated	Low/A	Private	Other	Newcomb (4)	736.0	16
Palmer Lake Dam	Not Rated	Low/A	State	Other	North Hudson (1)	410.0	35
Wadhams	Satisfac-tory	Low	Private	Hydro–electric	Elizabeth-town (0)	75.0	7
Moss Pond Dam #1	Not Rated	Significant /B	Private	Recreation	North Hudson (0)	65.0	12
Sharron Pond Dam	Not Rated	Significant /B	Private	Recreation	Minerva (0)	0.0	8
Boreas Ponds Dam	Not Rated	Low/A	State	Recreation	North River (25)	700.0	16
Penfield Pond Dam	Poor	Significant /B	Private	Fire Protection	Crown Point (0)	1,100.0	14
McKenzie Pond Dam	Not Rated	Low/A	Local Govmt	Water Supply	Saranac Lake (2)	480.0	7
Mill Pond Dam	Not Rated	Low/A	Local Govmt	Other	Lake Placid (0)	266.0	18

DRAFT

Name	Condition	Hazard Potential Classification	Owner Type	Primary Purpose	Nearest City/Town (Miles)	Max. Storage (Acre–Ft)	Height (Ft)
Gooseneck Reservoir Dam	Not Rated	Low/A	State	Recreation	Ticonderoga (3)	310.0	10
Bartlett Pond Dam	Not Rated	Low/A	Local Govmt	Water Supply	Moriah (1)	1,447.0	14
Henderson Lake Dam	Not Rated	Low/A	Private	Recreation	Newcomb (3)	3,468.0	19
Goodnow Flowage Dam	Not Rated	Low/A	Private	Recreation	Newcomb (20)	2,827.0	25
Daniels Dam	Not Rated	Low/A	Private	Other	North Jay (2)	203.0	14
Dam at West End of Good-now Lake	Not Rated	Low/A	Private	Recreation	Minerva (0)	1,333.0	20
Balfour Lake Dam	Not Rated	Low/A	Private	Recreation	Minerva (0)	1,000.0	7
Putnam Pond Dam	Not Rated	Low/A	State	Recreation	Ticonderoga (3)	2,996.0	

Source: USACE

The table above provides key information about dams in the county, detailing various attributes essential for assessing dam safety and potential impacts. Each dam is identified by name with its current structural condition noted, ranging from satisfactory to Poor or Not Rated. Hazard potential classifications indicate the consequences of a failure, categorized as Low, Significant, or High–Hazard, with High–Hazard dams posing the greatest risk to life and property. Ownership type specifies whether the dam is managed by private entities, state agencies, or local governments. The primary purpose of each dam varies, including recreation, hydroelectric power, water supply, or fire protection. The nearest city or town and its distance from the dam are recorded to understand proximity to population centers. The table also includes maximum storage capacity, measured in acre–feet, reflecting the dam's ability to retain water, and height in feet, indicating its vertical structure. These details are crucial for monitoring dam safety, regulatory compliance, and evaluating risks to nearby communities and infrastructure.

Dam failures pose serious threats to municipalities located downstream from major dams. Dam failure impacts are dependent on the volume of water impounded by the dam and the amount of population or assets located downstream. Catastrophic failures are characterized by the sudden, rapid, and uncontrolled release of impounded water or any other fluid or semifluid from a dammed impoundment or water body.

The federal government has a limited role in dam safety. Besides being responsible for federal dams, the U.S. government regulates nonfederal dams used to generate hydroelectric power and those used in mining. Most dams are not subject to federal oversight, with states bearing most

of the responsibility for dam safety regulation in the United States. In New York State, DEC is responsible for regulating most dams.

Owners are generally responsible for inspecting and maintaining dams. DEC has the authority to inspect dams out of concern for public safety and to order owners to repair or even remove those posing a threat of personal injury or substantial damage to property or natural resources. DEC strives to inspect most High–Hazard dams every two years and Intermediate–Hazard dams every four years. Certain state–owned dams are not subject to DEC dam safety regulations. DEC's practice is to inspect state–owned dams and monitor their safety programs as if they were subject to DEC regulation.

In the wake of a 2008 audit of DEC's dam safety program by the Office of the New York State Comptroller (OSC), DEC strengthened dam safety regulations. The new regulations, which took effect in 2009, include a requirement that most owners of High–Hazard and Intermediate–Hazard dams have an engineering assessment (EA) conducted at least every 10 years with a report submitted to DEC. These regulations do not apply to certain state–owned and public authority–owned dams. Also, in DEC 's discretion, owners of dams regulated by the Federal Energy Regulatory Commission (FERC) may file equivalent EA reports prepared for FERC. For those subject to DEC regulations, the first EA reports were due between 2012 and 2015, depending on structure size and hazard classification. DEC's data indicates that more than 30 local High–Hazard and over 100 local Intermediate–Hazard dams have no EA report on file. High–Hazard dams are much more likely than those rated as Intermediate–Hazard to have an EA.

The dam safety regulations implemented in 2009 also require most owners of Intermediate– and High–Hazard dams to file an Emergency Action Plan (EAP) with DEC and certify annually their compliance with certain safety regulations. These include requirements pertaining to EAP reviews and updates, as well as the development and implementation of maintenance and inspection plans.

Dam failures may or may not leave enough time for evacuation of people and property, depending on the abruptness of the failure. Seepages in earthen dams usually develop gradually. Seepages occur when water leaks into the earthen levee or dike. If embankment damage is detected early, downhill residents have at least a few hours or days to evacuate. Concrete or masonry dam failures tend to occur suddenly, sending a wall of water and debris down the valley at more than 100 mph. Survival would be a matter of having the good fortune not to be in the flood path at the time of the break. Dam failures due to the overtopping of a dam normally give sufficient lead time for evacuation.

Property and populations located downstream from any dam are vulnerable to dam failure. Dams are classified by size, the potential of loss of life, and economic loss anticipated in a failure event. The text below describes the dam classification; and although the size of a dam may result in varying impacts, the hazard potential classification of Category C dams is most important since they have the potential to cause substantial loss of life and excessive economic loss.

New York State uses a dam downstream hazard classification system like that of many states and federal agencies. The following three classification levels are used in New York. They are listed in order of increasingly adverse consequences from a dam failure. These classification levels build on each other, with the higher levels adding to the consequences of the lower levels. These downstream hazard classifications are defined in 6 NYCRR Subpart 673.5(b) and are repeated here for reference.

DRAFT

1. Class “A” or “Low Hazard” Dam. A dam failure is unlikely to result in damage to anything more than isolated or unoccupied buildings, undeveloped lands, minor roads like town or county roads. Failure is unlikely to result in the interruption of important utilities, including water supply, sewage treatment, fuel, power, cable or telephone infrastructure; and/or is otherwise unlikely to pose the threat of personal injury, substantial economic loss or substantial environmental damage.

2. Class “B” or “Intermediate Hazard” Dam. A dam failure may result in damage to isolated homes, main highways, and minor railroads; may result in the interruption of important utilities, including water supply, sewage treatment, fuel, power, cable or telephone infrastructure; and/or is otherwise likely to pose the threat of personal injury and/or substantial economic loss or substantial environmental damage. Loss of human life is not expected.

3. Class “C” or “High–Hazard” Dam. A dam failure may result in widespread or serious damage to home(s); damage to main highways, industrial or commercial buildings, railroads, and/or important utilities, including water supply, sewage treatment, fuel, power, cable or telephone infrastructure; or substantial environmental damage such that the loss of human life or widespread substantial economic loss is likely.

A fourth classification is provided in 6 NYCRR Subpart 673.5(b) to track the files of structures that were never built or are no longer dams.

4. Class “D” or “Negligible or No Hazard” Dam. A dam that has been breached or removed, or has failed or otherwise no longer materially impounds waters, or a dam that was planned but never constructed. Class “D” dams are considered defunct, posing negligible or no hazard. The department may retain pertinent records regarding such dams.

Dams that have not been assigned a classification of failure damage potential are assigned a 0 rating by the state. These dams should be assessed as to their potential impact on downstream communities.

Historical Occurrences

There has been one dam breach in Essex County: Marcy Dam during Tropical Storm (later Hurricane) Irene. Tropical Storm Irene rains caused the failure of a dam in the forever wild areas of the Adirondack Park. The dam is a wooden dam on the Marcy Brook in the Adirondack High Peaks in North Elba, impounding Marcy Dam Pond. An early version of the dam was constructed by the Civilian Conservation Corps (CCC) during the 1930s and was rebuilt most recently during the early 1970s. Marcy Dam can be reached only by hiking. It lies 2.1 miles (3.4 km) from the Adirondack Loj at an elevation of 2,362 feet (720 m)



Figure 36. Marcy Dam after Tropical Storm Irene

surrounded by Whales Tail Mountain, Wright Peak, Algonquin Peak, Avalanche Mountain, Mount Colden, TR Mountain, and Phelps Mountain. During Hurricane Irene, the dam was damaged due to flooding and the pond was partially drained. The trail that went over the dam has been re-routed downstream. The dam will not be repaired or replaced.

Essex County has a history of dam–related incidents, primarily due to aging infrastructure, extreme weather events, and insufficient maintenance. Many county dams were constructed decades ago, with some over a century old, increasing their susceptibility to structural failures and safety concerns. Periodic inspections and upgrades have been necessary to mitigate risks, particularly for High– and Significant–Hazard dams.

One of the most notable incidents involved the Lake George Outlet Dam in Ticonderoga, which has required multiple repairs over the years due to concerns over high water levels and potential structural weaknesses. Similarly, the Penfield Pond Dam in Crown Point is classified as a Significant–Hazard dam, requiring ongoing monitoring and maintenance to prevent failures. The Port Henry Reservoir Dam has also faced structural concerns, particularly during heavy rain events that have tested their spillway capacities.

Other smaller dams like the Bartlett Pond Dam and Gooseneck Reservoir Dam, experienced issues related to erosion, sediment accumulation, and outdated emergency action plans. Climate change has increased the frequency of extreme weather events, leading to greater stress on dam infrastructure. Essex County's history of dam–related incidents highlights the need for continued investment in dam safety programs, regular inspections, and emergency preparedness measures. Given the regional reliance on dams for water supply, recreation, and hydroelectric power, ensuring their long–term stability remains a critical priority.

Future Potential Events

Essex County faces ongoing dam safety risks due to aging infrastructure, increasing extreme weather events, and evolving land use patterns. Many county dams were constructed decades ago, with some exceeding 80 years in age, increasing the likelihood of structural weaknesses, erosion, and potential failures if not properly maintained. As climate change intensifies, heavier precipitation, increased freeze–thaw cycles, and more frequent extreme weather events are expected to place additional strain on these structures.

High–Hazard dams like the Lake George Outlet Dam and Kingdom Dam, require ongoing monitoring to mitigate the risk of overtopping or structural failure during heavy rainfall or rapid snowmelt.

Future potential dam–related disasters in Essex County could result from:

- extreme precipitation events that exceed spillway capacity, leading to overtopping.
- seismic activity or erosion weakening dam foundations.
- deferred maintenance issues causing structural deterioration and increasing failure risks.
- increased development downstream, heightening the potential for property damage and loss of life.
- the height of a dam, its maximum impoundment capacity, the physical characteristics of the dam site, and the location of downstream facilities should be assessed to determine the appropriate hazard classification. The hazard classification is not an indication of a dam's condition or likelihood of dam failure.

DRAFT

Dam composition, height, storage, and other factors influence the potential flood that could be caused by its failure. Downstream conditions like channel geometry, and the location of infrastructure influence the potential for damage from a dam failure flood. The hazard classification of a dam may be derived by the risk of an impact to one or more specific features. For example, serious damage to a single home that implies loss of life, or serious damage by the compounding result of many minor economic impacts, are considered in the hazard classification of dams.

The hazard class of a dam can change based on changed downstream conditions like new development or population change. Historically, hazards posed by dams has gradually increased due to downstream development, which is known as "hazard creep."

Climate Change

Climate change is expected to increase dam infrastructure risks in Essex County. Rising temperatures and shifting precipitation patterns may lead to more frequent and intense storms, increasing the likelihood of heavy rainfall events that can overwhelm spillways and stress aging dam structures. Prolonged periods of drought followed by extreme precipitation can weaken embankments, making them more susceptible to failure. Freeze–thaw cycles, which are projected to become more variable with climate change, can also accelerate the deterioration of concrete and earthen dams. As the county relies on dams for water supply, recreation, and hydroelectric power, proactive adaptation measures including enhanced monitoring, infrastructure upgrades, and emergency preparedness planning, will be critical in mitigating the long–term impacts of climate change on dam safety.

Vulnerability Assessment

Quantifying dam hazards posed to downstream areas can be divided into three analyses:

- Quantifying the flow from a theoretical uncontrolled release of the reservoir.
- Identifying the flood inundation from the uncontrolled release.
- Analysis of the likely consequences of the flood in the inundation area.

Each of these analyses includes substantial uncertainty, relying on engineering judgments informed by data and experience. Reasonable estimates of discharge from a breach can differ by a factor or two or more. Discharge from a dam breach is usually several times the one percent–annual chance ("100–year") flood, therefore, typical flood studies are of limited use in estimating the extent of flooding.

Dam failure inundation studies require specialized hydraulic modeling software and modeling expertise. Large floods can alter stream hydraulics in ways that are impossible to predict. For instance, debris may be mobilized, or banks may be scoured, potentially changing channel roughness (a key modeling parameter). Downstream dams, culverts, and other features may become clogged (leading to backwater flooding) or may fail, increasing downstream flooding.

Determining the impact of flooding is difficult to accomplish, especially for estimating loss of life. Loss of life is a function of the failure scenario (antecedent flow conditions), time of day, warning time, awareness of those affected, and willingness and ability to evacuate. Many dam safety agencies have used "population at risk" (PAR), a more quantifiable measurement of the impact to human life, rather than "loss of life." PAR is the number of people in structures within the inundation area that would be subject to significant, personal danger if they took no action to evacuate.

Dam failure inundation maps are on file with the Essex County Office of Emergency Management. These maps exist as paper maps within EAPs. Maps are not in a georeferenced format that can easily be combined with other geographic–based data (like tax parcel or census data) to calculate PAR. These maps are under restricted release. FEMA is currently developing the capacity to demonstrate the potential impacts of dam failure inundation using advanced geospatial analysis and modeling tools. This effort strives to improve risk assessment, emergency response planning, and mitigation strategies by integrating dam failure scenarios with existing geographic information systems (GIS). In the future, Essex County will leverage this modern technology to enhance coordination between state and local agencies, prioritize High risk areas, and facilitate better decision–making regarding infrastructure resilience and public safety. Transitioning from static paper maps to dynamic digital models remains a significant challenge, requiring substantial investment in data conversion, validation, and stakeholder collaboration.

Risk

Dam failures pose a Moderate to High risk in areas with aging infrastructure, extreme weather exposure, and high downstream population density. While the county is not among the Highest–risk areas for dam failures, it does have several High–Hazard potential dams, meaning failure could cause significant downstream impacts. The presence of Class C (High–Hazard) and Class B (Significant hazard) dams suggests that failure events could result in major economic losses, infrastructure damage, and public safety threats.

Multiple factors used in assessing dam failure risks include:

- Age & Condition of Dams. Many dams in Essex County are decades old, increasing the likelihood of failure due to structural deterioration.
- Extreme Weather Events. Heavy rainfall, snowmelt, and flooding contribute to rising water levels and increase stress on dam infrastructure.
- Downstream Development. If a High–Hazard dam were to fail, communities near rivers, transportation routes, and industrial sites could suffer severe damage.
- Emergency Preparedness. Areas with well–developed emergency action plans (EAPs) and early warning systems tend to have lower overall risk, according to FEMA's NRI methodology.

While the rural and mountainous terrain in Essex County reduces the overall downstream population at risk, dams supporting hydroelectric power, recreation, and water supplies remain vulnerable. Failures could lead to power outages, water contamination, road washouts, and disruptions to critical services. Dam failures pose a significant risk, particularly in areas with aging infrastructure and increasing extreme weather events.

Essex County has multiple dams with varying hazard classifications, including Class C (High–Hazard) and Class B (Significant–Hazard) structures. While the likelihood of dam failure is Relatively Low, the consequences of a breach could be severe. The estimated Annual Expected Loss (EAL) for dam failures in Essex County based on historical incidents and infrastructure assessments, is estimated in the table below:

Table 89. Essex County Annual Expected Loss (EAL) for Dam Failures

Event Type	Annual Expected Loss	Annual Expected Loss	Annual Expected Loss (Population–Fatalities/Injuries)

DRAFT

	(Property Damage)	(Infrastructure & Utility Disruptions)	
High–Hazard Dam Failure	$2.5M-$10M	Road washouts, power outages, water contamination	Moderate to High risk, potential for injuries or fatalities
Significant–Hazard Dam Failure	$500K-$2M	Bridge failures, temporary displacement of residents	Low to Moderate risk, emergency response required
Low–Hazard Dam Failure	<$500K	Minimal impact, localized flooding	Very low risk, no expected fatalities

The EAL for dam failures in Essex County is influenced by:

- aging infrastructure. Many dams are over 50 years old, increasing the risk of failure due to aging and deterioration.
- extreme weather events. Heavy rainfall, rapid snowmelt, and flooding heighten the likelihood of dam overtopping or structural damage.
- population and infrastructure exposure. The number of people, businesses, and transportation networks downstream from dams affects potential losses.
- Emergency Action Plans (EAPs). Areas with well–developed EAPs and early warning systems have lower projected losses due to faster response times.

While dam failures in the county are rare, EAL projections highlight the importance of continued investment in dam maintenance, monitoring, and emergency preparedness. The county can reduce the long–term financial and safety risks associated with dam failures by prioritizing infrastructure upgrades and flood mitigation efforts,

Development Trends

As the county continues to develop, balancing growth and infrastructure resilience remains a priority. Many dams in the county serve essential functions like water supply, recreation, hydroelectric power, and flood control—yet aging infrastructure and increasing development near flood–prone areas raise concerns. The expansion of residential communities, businesses, and public services requires updated hazard mitigation strategies to protect against dam–related risks.

As population density increases near waterways and reservoirs, the potential impacts of dam failures grow more severe. New housing developments and commercial expansion in downstream flood zones heighten economic and public safety vulnerabilities. Road and bridge expansions intersecting with dam–regulated waterways must factor in potential flood risks and structural failures.

Community Lifelines

Dam failures or uncontrolled water releases present a serious threat to safety and security, resulting in widespread destruction and devastating floods that endanger lives. Emergency response agencies may be overwhelmed by large–scale evacuations and rescue efforts. Essex

County's Marcy Dam suffered severe damage during Tropical Storm Irene in 2011, illustrating the dangers posed by dam failures during extreme weather events.

- Food, Water, & Shelter. The food, water, and shelter lifeline is heavily dependent on dams. Many dams support public water supplies, and failure could lead to water shortages or contamination. Flooding from dam failures can destroy agricultural lands, impacting crops and livestock. Disruptions in water reservoirs may also affect emergency shelter facilities and food distribution networks.
- Health & Medical Services. Dam failures can have a serious impact on health and medical services, as hospitals and healthcare facilities may face power outages or structural damage due to flooding. Water contamination resulting from a dam breach can lead to public health crises, increasing the spread of waterborne diseases. Disruptions in transportation could delay the delivery of medical supplies to affected areas.
- Energy. The energy sector is particularly vulnerable, as many dams like the Lake George Outlet Dam, provide hydroelectric power. A failure at one of these sites could result in widespread power outages affecting businesses, homes, and emergency services. Downstream flooding can also damage fuel storage facilities and power grids, further exacerbating the impact on energy supplies.
- Communications. Communication networks are at risk during dam failures, as floodwaters can damage communication towers and underground fiber–optic cables, leading to disruptions in emergency alerts and public warnings. Extended power outages could further impact phone and internet services, making emergency coordination more difficult.
- Transportation. Transportation networks can suffer extensive damage if a dam fails, as floodwaters may wash out roads, bridges, and railways, cutting off access for emergency responders and supply chains. Major evacuation routes may become impassable, delaying rescue efforts and stranding communities in High-risk areas.
- Hazardous Materials & Waste Management. The hazardous materials and waste management lifeline is also at–risk during dam–related disasters. Flooding can overwhelm wastewater treatment plants, leading to hazardous material spills. Chemical storage sites located near hydroelectric dams may release toxic substances into the water supply. Industrial sites and refineries downstream of dams face heightened risks in the event of a failure, increasing the potential for environmental contamination.

Dams are considered critical infrastructure in the United States. They support multiple FEMA lifelines, but aging structures, extreme weather, and climate change increase failure risks. Essex County has several High–Hazard potential dams, making proactive risk management essential. Without proper maintenance and emergency preparedness, dam failures could have devastating consequences for public safety, infrastructure, and the regional economy.

Results

- Aging Infrastructure & Maintenance Challenges. Many dams in Essex County are aging, with some structures exceeding 100 years in operation. The lack of routine maintenance, structural upgrades, and engineering assessments increases dam failure risks and the potential for dam–related emergency incidents. High–Hazard and Significant–Hazard dams require ongoing inspections.

DRAFT

- Extreme Weather & Increased Failure Risks. Climate change intensifies extreme precipitation events, freeze–thaw cycles, and storm surges, which accelerate dam erosion and overtopping risks. Historic storms like Tropical Storm Irene already demonstrated the damaging effects of heavy rainfall and flooding on county dam infrastructure. Future climate projections indicate more frequent and intense storms, increasing the likelihood of dam–related emergencies.
- Impacts on Public Safety & Critical Infrastructure. Dam failures can result in catastrophic flooding, road washouts, transportation disruptions, and property damage. Critical infrastructure including water treatment facilities, power plants, and emergency response systems, is at risk when dam breaches lead to widespread inundation. Mountainous terrain and limited evacuation routes in the county further complicate emergency response efforts in the event of a dam failure.
- Economic & Environmental Consequences. The financial burden of dam maintenance, emergency repairs, and post–disaster recovery places economic strain on local governments and private dam owners. Flood–induced pollution, sedimentation, and habitat destruction can cause long–term ecological damage to rivers, lakes, and wetland ecosystems. The tourism and agriculture sectors, key economic drivers in the county, are particularly vulnerable to water resource disruptions caused by dam–related incidents.
- Need for Enhanced Mitigation & Preparedness. Essex County must prioritize dam safety measures, emergency preparedness, and climate resilience strategies to reduce risks associated with aging dams and extreme weather. Strengthening monitoring programs, enforcing dam safety regulations, and integrating hazard mitigation into development planning will be essential in protecting communities, infrastructure, and natural resources from future dam–related disasters.

Hazard: Earthquakes

An earthquake is the sudden shaking or vibration of the Earth's surface caused by the release of energy from the Earth's crust. This energy release typically occurs along geological fault lines due to tectonic plate movement along tectonic faults, creating seismic waves that travel through the ground. Earthquakes vary in intensity and magnitude, ranging from barely felt small tremors to large, destructive quakes causing significant damage to buildings, infrastructure, and landscapes. Earthquake severity is measured using scales like the Richter Scale (which measures magnitude) and the Modified Mercalli Intensity (MMI) Scale (which assesses shaking intensity and damage).

Common causes of earthquakes include:

- tectonic activity (movement of Earth's plates).
- volcanic eruptions.
- man–made activities (like mining, fracking, or reservoir–induced seismicity).

Earthquakes also trigger secondary hazards including landslides, tsunamis, ground liquefaction, and structural collapses, making them one of the most devastating natural hazards worldwide. Preparedness and mitigation efforts like seismic–resistant construction, early warning systems, and emergency planning, are essential in reducing earthquake–related risks.

The U.S. Geological Survey lists earthquake hazards as follows:

- Surface Faulting: displacement reaching the Earth's surface during a slip along a fault. Commonly occurs with shallow earthquakes (those with an epicenter less than 20 km (12.43 mi)).
- Ground Motion (Shaking): the movement of the Earth's surface caused by earthquakes or explosions. It is generated by seismic waves that result from either a sudden slip along a fault or a sudden release of pressure at an explosive source. These waves travel through the Earth's surface and subsurface, causing the ground to vibrate. Ground motion is a key factor in earthquake hazards, influencing structural damage and seismic risk assessment.
- Landslide: the movement of a surface material down a slope.
- Liquefaction: the process by which water–saturated sediment temporarily loses strength, acting as a fluid, like the movement of wriggling one's toes in the wet sand near the water at the beach. The effect can be caused by the shaking that occurs during an earthquake.
- Tectonic Deformation: a change in the original shape of a material because of stress and strain.
- Tsunami: a sea wave of local or distant origin stemming from large–scale seafloor displacements associated with large earthquakes, major submarine slides, or exploding volcanic islands.
- Seiche: a standing wave oscillating in a body of water.

Location

DRAFT

Essex County is underlaid by fault lines where earthquakes occur. The county falls within a Low to Moderate earthquake hazard zone as indicated by the USGS Earthquake Hazard Map in the figure below. While the county is not in a High-risk seismic area, minor earthquakes are possible. Given the county's location in the Adirondack region, occasional tremors were recorded in the past.

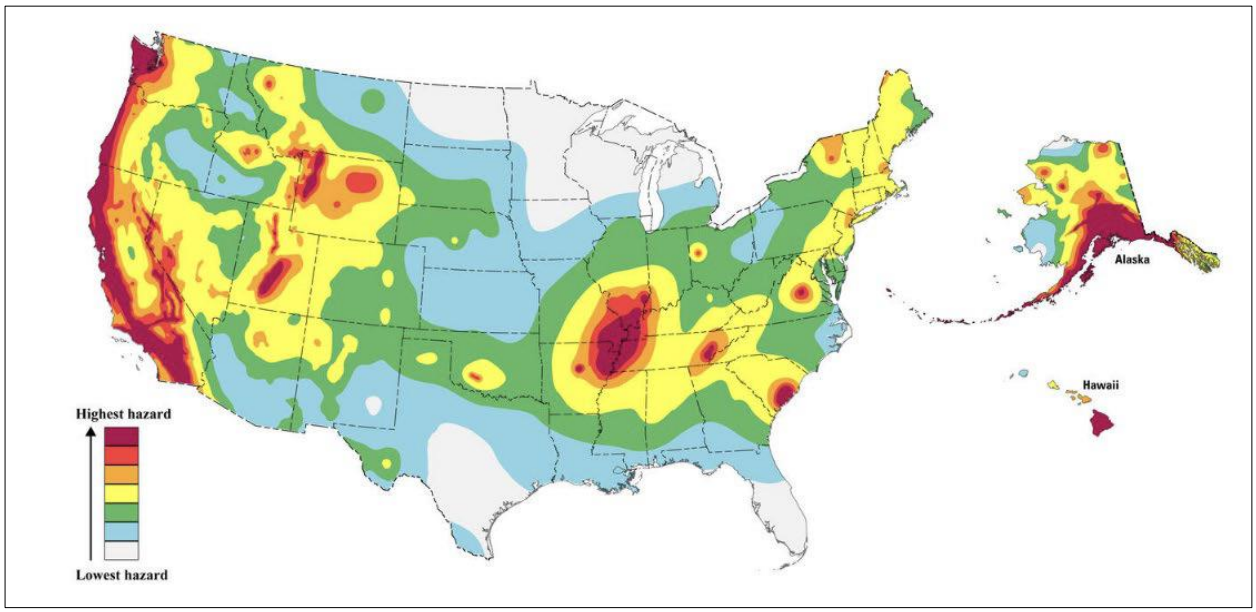


Figure 37. 50-State Update of the National Seismic Hazard Model Project

Though Essex County is located in a Low to Moderate earthquake hazard zone, it is still influenced by regional seismic activity. The county lies within the Adirondack region, an area with a history of Minor to Moderate earthquakes. Several faults in and around Essex County contribute to the county's seismic potential including the Clarendon–Linden Fault System, the Western Quebec Seismic Zone, the Champlain Valley Faults, and the Adirondack Fault System.

The Clarendon–Linden Fault System (located in western and central New York) has been responsible for several Moderate earthquakes in the past. While not directly beneath Essex County, its activity can influence regional seismic events. Another important fault system is the Western Quebec Seismic Zone, situated north of Essex County in Canada. This zone produced Moderate earthquakes felt in northern New York, occasionally impacting Essex County. Closer to Essex County, the Champlain Valley Faults, running along Lake Champlain and into Vermont, has produced minor earthquakes. The Adirondack Fault System consists of faults within the Adirondack region which, although not traditionally seen as highly active, have generated measurable seismic activity. Regional intra–plate stress contributes to occasional earthquakes.

While the county does not sit directly on a major fault line, it is influenced by seismic activity from surrounding fault systems. Earthquakes in the region are typically Low to Moderate, but larger events (though rare) are possible. As a result, the county should still consider seismic resilience in planning and infrastructure, particularly for older buildings and critical facilities. Essex County's earthquake risk is primarily influenced by regional fault systems, making strong earthquakes unlikely but Minor to Moderate tremors still possible due to regional tectonic activity.

Historical Occurrences

The following information pertains to past earthquakes in Essex County. The region and its surrounding areas have experienced seismic activity, with minor earthquakes occasionally being felt within the county. Essex County has recorded one earthquake that was officially declared a Presidential Disaster:

Table 90. New York State Declared Earthquake Disasters, 1950-2012

Disaster # and Date	Affected Counties
FEMA: DR 1415, 5/16/2002	Washington, Warren, Hamilton, Franklin, Essex, & Clinton

Essex County and the surrounding region have experienced numerous Small to Moderate earthquakes, with the most significant in recent history being the M5.3 Au Sable Forks earthquake in 2002. This event caused damage to roads, bridges, and homes. A M5.1 earthquake (aftershock) also struck near Au Sable Forks on May 20, 2002, with many residents across New York State and the northeastern United States awakened by the rumbling of the earthquake.

According to the United States Geological Survey (USGS), the M5.3 earthquake struck at 6:50 a.m. (EDT) approximately 15 miles southwest of Plattsburgh, New York. The USGS reported a preliminary magnitude of 5.1. Shaking was felt throughout New England, and as far west as Cleveland, Ohio; as far south as Baltimore, Maryland; and as far north as Quebec, Canada. The earthquake epicenter was at 44 degrees 5 minutes north latitude and 73 degrees 7 minutes west longitude, measured at a shallow depth of 5 kilometers. There were reports of minor damage in the epicentral area. A bridge was damaged in Jay, and road damage was reported in Keeseville. A chimney was reported damaged in Lake Placid, and a window and foundation were cracked in Au Sable Forks. The earthquake was similar in size to one which occurred approximately 80 miles to the southwest, near Blue Mountain Lake, New York in October of 1983.

Table 91. New York State Earthquake History, 1983-2024

Date	Magnitude (M)	Location	Impact
5/21/2024	2.1	Adirondack Mountains, ~7 miles east of Elizabethtown, Essex County	Light shaking, no damage
2/6/2023	3.8	Near West Seneca, NY	Regional shaking, no significant damage.
4/23/2023	3.6	Near Watertown, NY	Felt locally, no significant damage.
5/17/2013	3.7	Near Westport, Essex County	Widely felt across the county, no structural damage.
5/20/2002	5.1	Near Au Sable Forks, NY	Felt widely but caused less damage than the April 20 quake. Considered an aftershock of the April event.
4/20/2002	5.3	Near Au Sable Forks, NY	Caused damage to roads, bridges, and homes; strongest earthquake in the region since 1988.

DRAFT

Date	Magnitude (M)	Location	Impact
1983	5.1	Near Newcomb, Essex County	Moderate earthquake; widely felt in the region.
10/7/1983	4.0	Near Schroon Lake, Essex County	Minor damage reported.

The figure below provides a graphical representation of historic earthquakes in the State of New York.

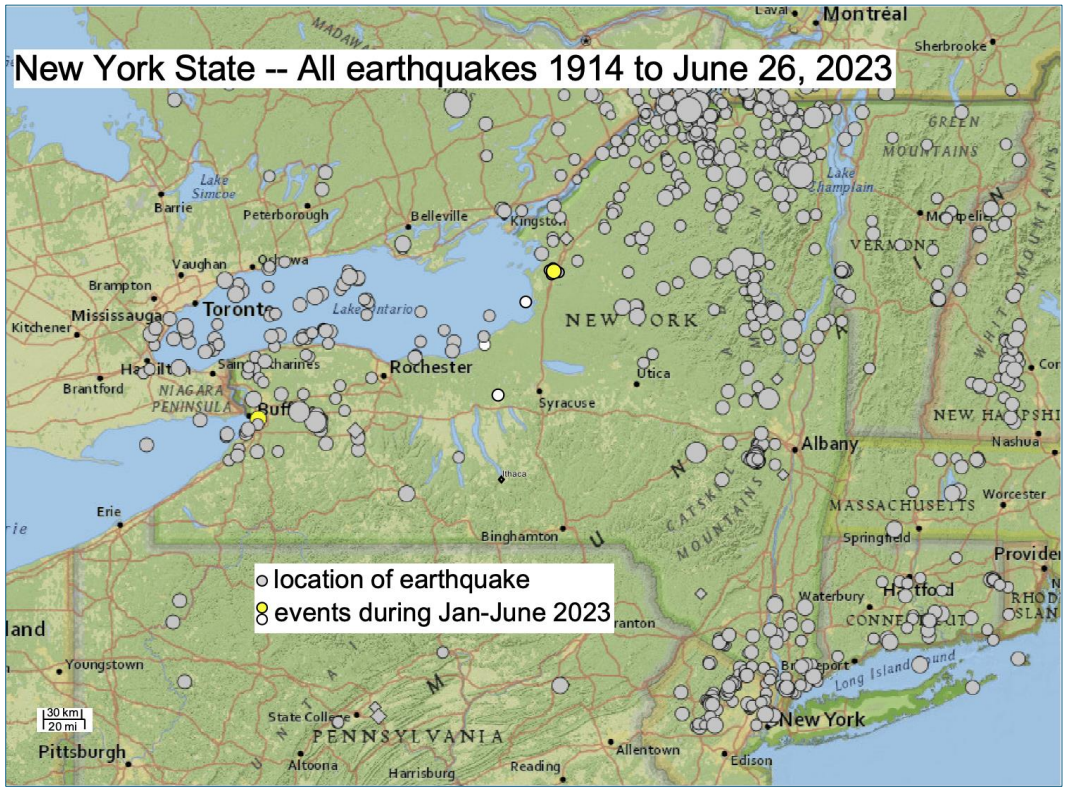


Figure 38. New York Historical Earthquakes 1914-2023 (USGS)

Future Potential Events

The map included in the figure below shows areas of Essex County most vulnerable to earthquakes. Red and darker areas show areas that can be most impacted by the event. This map illustrates seismic hazard levels or ground shaking intensity for the northeastern United States and southeastern Canada including New York State. Contour lines and color gradients indicate different levels of seismic risk or shaking intensity from past earthquakes or modeled scenarios. This depicts seismic hazard levels in terms of percent gravity (%g), which represents Peak Ground Acceleration (PGA)—a measure of how much the ground could shake during an earthquake. The color scale (on the right) ranges from Low (gray and blue) to High (yellow, orange, and red), indicating varying levels of earthquake hazard.

Essex County shows a Low to Moderate seismic hazard zone, represented by lighter blue and green shading. While the county is not in a High-risk earthquake zone, it remains susceptible to

occasional Minor to Moderate earthquakes due to its proximity to regional fault systems like the Champlain Valley Faults and the Western Quebec Seismic Zone.

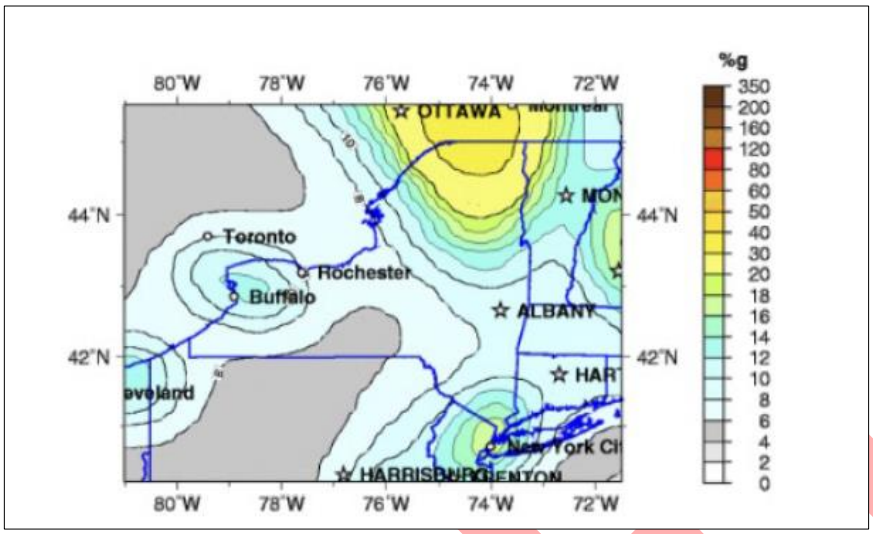


Figure 39. Peak Acceleration (%g) with 2% Probability of Exceedance in 50 Years

Peak ground acceleration (PGA) is one method of indicating the systemic hazard of an area. PGA is what is experienced by a particle on the ground. This PGA indicates three things: the geographic area affected, the probability and level of severity of an earthquake, and ground movement strength. There are numerous faults throughout the state.

Developed in 1932, the Richter Scale has been one of the most commonly used scales to measure earthquakes in the past, based on a logarithmic scale. Due to the logarithmic basis of the scale, each whole number increase in magnitude represents a tenfold (10x) increase in measured amplitude. As an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 (31x) times more energy than the amount associated with the preceding whole number value. This scale has no upper limit and does not address earthquake damages.

Table 92. Enhanced Fujita Scale (EF-Scale) Categories with Associated Wind Speeds and Description of Damages.

Richter Scale Magnitudes & Associated Earthquake Size Effects	
Richter Magnitude	**Earthquake Effects**
Less than 3.5	Generally, not felt, but recorded.
3.5-5.4	Often felt but rarely causes damage.
Under 6.0	At most, slight damage to well–designed buildings; can cause major damage to poorly constructed buildings over small regions.
6.1-6.9	Can be destructive in areas where people live up to about 100 kilometers across.

DRAFT

Richter Scale Magnitudes & Associated Earthquake Size Effects	
7.0-7.9	Major earthquake; can cause serious damage over large areas.
8.0 or Greater	Great earthquake; can cause serious damage in areas several hundred kilometers across.

Although numerous intensity scales were developed over the last several hundred years to evaluate the effects of earthquakes, the one currently used in the United States is the Modified Mercalli (MM) Intensity Scale. It is used to express the damage potential of earthquakes in addition to how people experience earthquake effects. This scale, composed of increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. It does not have a mathematical basis; instead, it is an arbitrary ranking based on observed effects.

Table 93. Modified Mercalli Intensity Scale with Associated Impacts

Scale	Intensity	Description of Effects	Richter Scale Magnitude
I	Instrumental	Detected only on seismographs	<4.2
II	Feeble	Some people feel it	<4.2
III	Slight	Felt by people resting; like a truck rumbling by	<4.2
IV	Moderate	Felt by people walking	<4.2
V	Slightly Strong	Sleepers awake; church bells ring	<4.8
VI	Strong	Trees sway; suspended objects swing; objects fall off shelves	<5.4
VII	Very Strong	Mild alarm, walls crack, plaster falls	<6.1
VIII	Destructive	Moving cars uncontrollable, masonry fractures, poorly constructed buildings damaged	<6.9
IX	Ruinous	Some houses collapse, ground cracks, pipes break open	<6.9
X	Disastrous	Ground cracks profusely, many buildings destroyed, liquefaction & landslides widespread	<7.3
XI	Very Disastrous	Most buildings/bridges collapse; roads, railways, pipes & cables destroyed; general triggering of other hazards	<8.1

Scale	Intensity	Description of Effects	Richter Scale Magnitude
XII	Catastrophic	Total destruction, trees fall, ground rises & falls in waves	>8.1

The Modified Mercalli Intensity value assigned to a specific site after an earthquake has a more meaningful indication of severity to the nonscientist than the magnitude, because intensity refers to the effects experienced at that place. Lower numbers of the intensity scale generally deal with the way the earthquake is felt by people. Higher numbers of the scale are based on observed structural damage. Structural engineers usually contribute information for assigning intensity values of VIII or above.

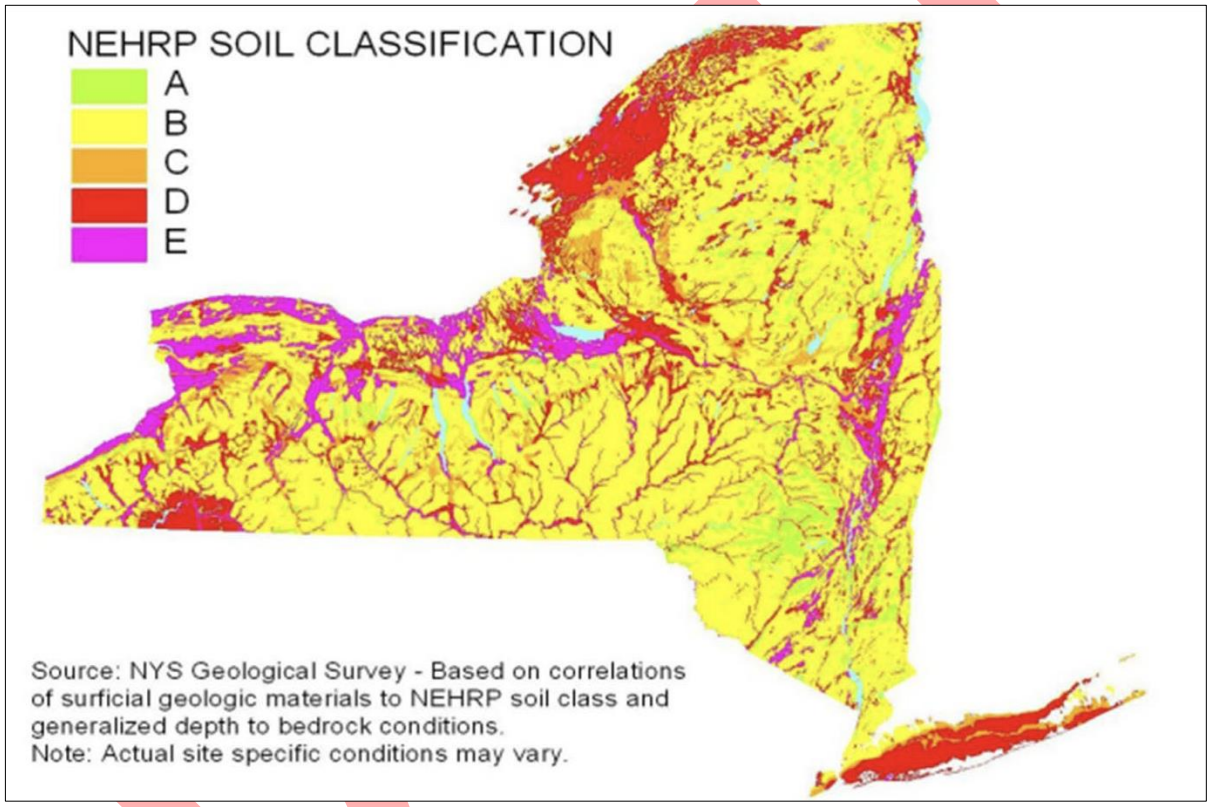


Figure 40. National Earthquake Hazard Reduction Program,

Soil types can impact earthquake severity at a given location. For instance, soft soils (fill, sand) are more likely to amplify ground motion during an earthquake and liquefaction is more likely to occur in soft soil areas. Conversely, harder soils (granite, etc.) typically reduce ground motion. The figure below was developed by the National Earthquake Hazard Reduction Program (NEHRP) and the NYS Geological Survey. It displays soil types in five basic categories with varying degrees of likelihood of amplifying earthquake effects. Category A is far less likely to intensify seismic motion than Category E. Soil types and surficial materials were combined with baseline seismic hazards by NYS DHSES to provide an adjusted, more refined image of earthquake hazards in terms of earthquake spectral acceleration (SA), a better indicator of building damage. While PGA

is what is experienced by a particle on the ground, SA approximates what is experienced by a building, as modeled by a particle on a massless vertical rod having the same natural period of vibration as the building, according to the USGS definition.

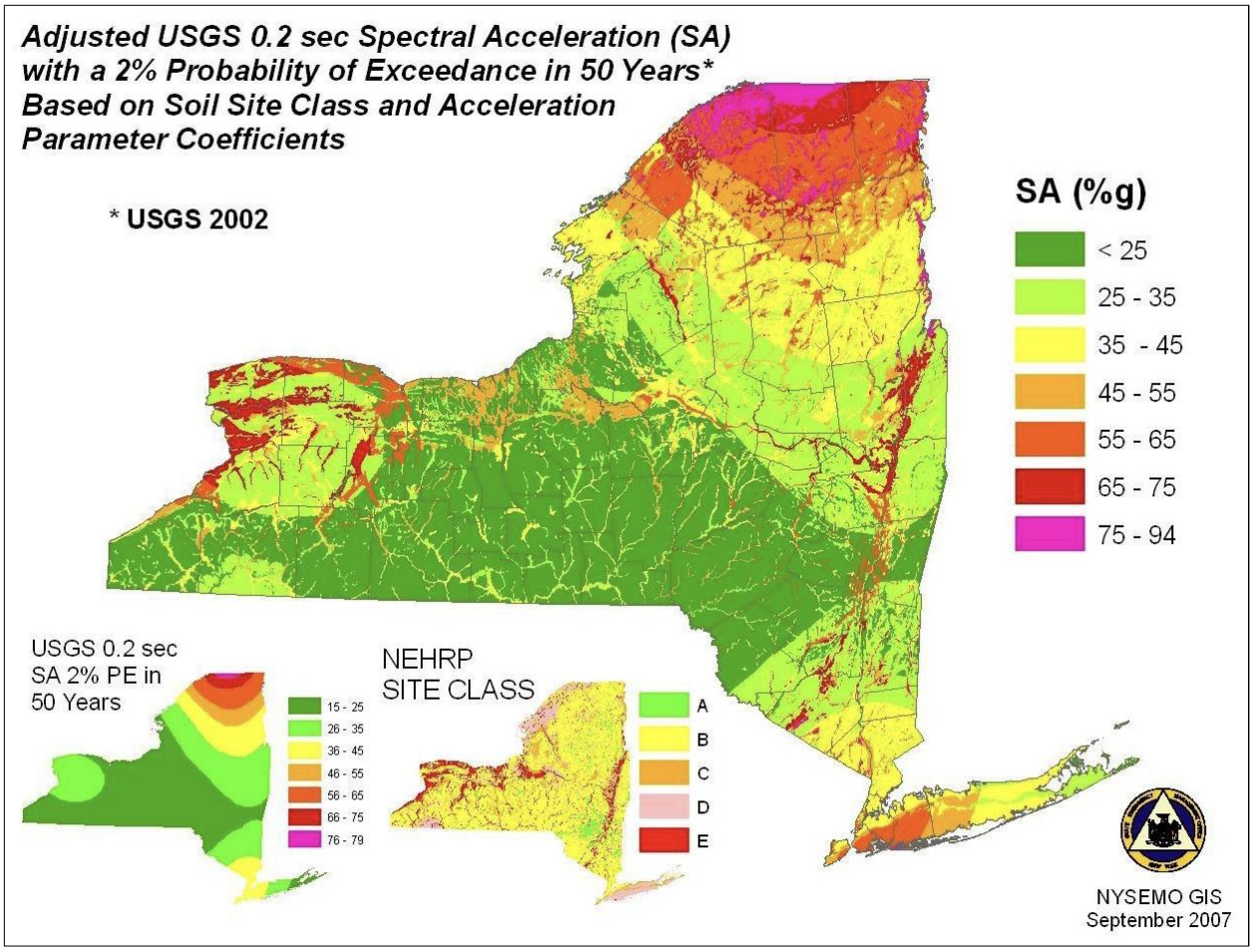


Figure 41. National Earthquake Hazard Reduction Program, New York State Geological Survey, 2007

The map located in the figure above provides an overview of seismic hazard levels in New York State, specifically showing Spectral Acceleration (SA) at 0.2 seconds with a 2% probability of exceedance in 50 years. The data, based on soil site classifications and ground acceleration parameters, helps estimate the potential intensity of ground shaking during an earthquake.

For Essex County, the map indicates Moderate to Elevated seismic hazard levels, with SA (%g) values ranging between 35%g and 75%g. Most of the county falls within yellow and orange zones, suggesting Moderate seismic risk, while northeastern Essex County (near Lake Champlain) has higher hazard levels (red/pink zones). This means that if an earthquake occurs, ground shaking could be Moderate to Strong in certain areas.

Compared to other parts of New York, Essex County has a higher seismic hazard than downstate regions like New York City and Long Island which are mostly in the green and yellow zones. It has a lower seismic hazard than western New York near Buffalo and northern New York near the Canadian border where the highest hazard levels are present. The region's elevated risk is due to

geological factors like the Champlain Valley Faults and the Western Quebec Seismic Zone, and intraplate stress within the Adirondack region.

Although major earthquakes are rare in the county, Moderate tremors have occurred in the past, including the 2002 Au Sable Forks M5.3 earthquake which caused infrastructure damage. Given this Moderate to Elevated hazard, earthquake–resistant building designs and preparedness planning should be considered—especially for critical infrastructure.

Climate Change

Climate change is not a direct cause of earthquakes. Seismic activity is driven by tectonic forces, but it can influence factors impacting earthquake risks in the county. One key concern is the effect of changing precipitation patterns on regional geology. Increased rainfall and flooding, projected to become more frequent with climate change, can lead to soil saturation and erosion, potentially weakening the stability of slopes and fault lines. This can increase the likelihood of landslides following an earthquake, particularly in the Adirondack region where Essex County is located. Glacial rebound, a long–term process in which land previously compressed by ice sheets slowly rises, continues to create minor stress in the Earth's crust in parts of the Northeast. While this process has been ongoing since the last Ice Age, research suggests melting glaciers (due to climate change) may accelerate stress redistribution, potentially influencing seismic activity over time.

Although the county does not sit on a major active fault, it is still influenced by regional seismic sources like the Champlain Valley Faults and the Western Quebec Seismic Zone. Climate–driven changes in groundwater levels, erosion, and ice melt could subtly alter stress along these faults, potentially impacting future earthquake activity. While the direct connection between climate change and earthquakes remains uncertain, secondary effects highlight the importance of integrating earthquake preparedness into the county's broader climate resilience planning.

Vulnerability Assessment

The Hazus Earthquake Risk Report in the figure below contains a FEMA model using loss estimation methodology software incorporating scientific and engineering knowledge to simulate potential earthquake impacts. Hazus enables the creation of hypothetical earthquake scenarios based on fault characteristics, ground shaking intensity, and soil conditions. This means the model considers multiple scenarios, including:

- a probabilistic hazard assessment based on USGS seismic hazard maps.
- historical data from regional earthquakes like the 2002 Au Sable Forks M 5.3 earthquake (caused damage to infrastructure in northern New York).
- the potential effects of a Moderate earthquake occurring directly in Essex County based on ground shaking intensity, soil conditions, and population exposure.

The probability of an earthquake in Essex County depends on regional seismic activity influenced by the Champlain Valley Faults, Adirondack Fault System, and the Western Quebec Seismic Zone. Historical records suggests that while major earthquakes are rare, Moderate tremors have occurred like the 2002 Au Sable Forks M 5.3 earthquake, which caused structural damage. The Hazus model also assesses potential social and economic losses, including the number of displaced households, injuries, fatalities, and damage to commercial, residential, and government buildings.

DRAFT

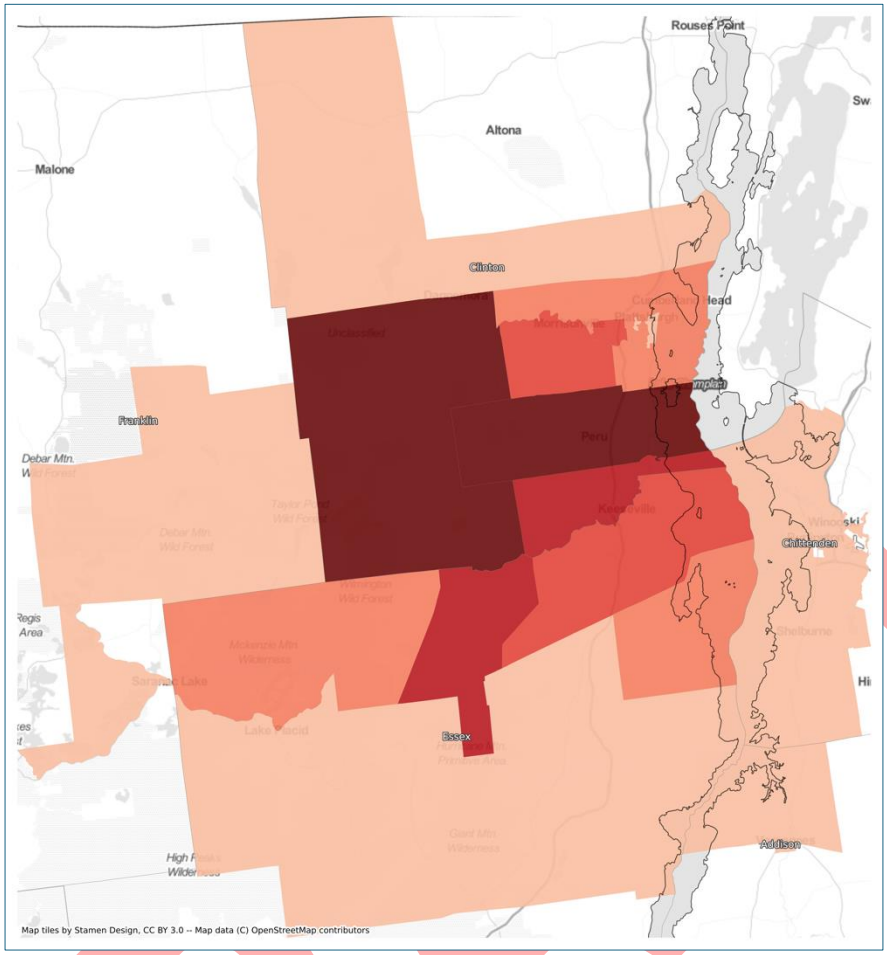
Figure 42. Hazus Earthquake Risk Report

Given the county's Moderate seismic hazard, there is a low but present probability of an earthquake occurring in the region with the potential for noticeable ground shaking and localized damage. While not at the same risk level as western New York or areas along the Ramapo Fault, the county should still prioritize preparedness, earthquake–resistant infrastructure, and emergency planning to mitigate potential impacts.

Hazus was used to determine the potential loss from an earthquake in the county in the table below, with all displayed values noted in thousands of dollars for the potential loss from an earthquake.

Table 94. Essex County Potential Loss to Earthquakes; Hazus–MH 2.1
(values in thousands of dollars)

County	Structural Damage	Non–structural Damage	Contents Damage	Inventory Loss	Relocation Loss	Capital Related Loss	Wage Loss	Rental Income Loss	Total Loss
Essex	$62	$209	$72	$2	$47	$21	$31	$26	$470



Source: Hazus–MH 2.1 (values in thousands of dollars)

Essex County has a history of seismic activity, though most earthquakes are minor and often go unnoticed by the public. Occasionally, these events cause structural damage like toppled chimneys and compromised walls. Similar occurrences can be expected in the future.

National Risk Index

Table 95. Essex County Earthquake Risk Assessment (NRI Data)

Earthquake Type	Risk Level (per National Risk Index)	Probability	Primary Impacts
Small to Moderate Quakes	Relatively Low	1-3 events/decade	Minor structural damage, infrastructure stress.
Moderate to Strong Quakes	Relatively Low	Rare (1 significant event/50+ years)	Road & bridge damage, building failures.
Induced Seismic Activity	Very Low	Uncommon	Localized tremors from human activities.

According to the NRI Report (above), Essex County has a Relatively Low earthquake risk index score of 67.3. The expected annual loss (EAL) from earthquakes in the county is approximated at

$405,012, ranking lower compared to other hazards like flooding and ice storms. While strong earthquakes are rare, Small to Moderate tremors are possible due to regional seismic activity from the Champlain Valley Faults and the Western Quebec Seismic Zone.

Expected Annual Loss (EAL) Extent

Table 96. Essex County Earthquake Expected Annual Loss (EAL)

Event Type	Annual Expected Loss (Property)	Annual Expected Loss (Agriculture)	Annual Expected Loss (Population–Fatalities/Injuries)
Small to Moderate Quakes	$38,818	Not Reported	Low fatality risk, potential minor injuries from falling objects.
Moderate to Strong Quakes	$366,194	$10,000	Increased risk of structural failures, moderate injuries possible.

Essex County experiences occasional minor earthquakes resulting in localized structural damage and economic losses in property and infrastructure. Moderate to Strong earthquakes, while rare, could lead to significant repair costs and potential injuries. Induced seismic activity is not a major concern regionally, but minor tremors could still impact buildings and transportation networks. The NRI Report estimates earthquakes in the county could cause over $405,000 in annual economic losses, mostly affecting property and infrastructure. Fatality and major injury risks remain low, but Moderate to Strong quakes could result in structural damage and localized disruptions.

Community Lifelines

Community lifelines are essential services and infrastructure that support public health, safety, and economic stability, particularly during and after disasters like earthquakes. While Essex County has a Relatively Low earthquake risk, ensuring these lifelines remain operational is crucial for disaster response and recovery. Critical infrastructure damage, degraded communication systems, and reduced or nonexistent essential services could significantly impact residents, particularly in rural and remote areas. The FEMA Community Lifelines framework categorizes these systems into seven key lifelines, all of which must be assessed for seismic resilience:

- Safety & Security. Safety and security services, including emergency response teams, law enforcement, and fire departments, play a vital role in earthquake response, but seismic events can disrupt operations by damaging facilities, roads, and communication systems. The county's rural geography and community remoteness can lead to longer emergency response times, especially if roads become impassable from debris or landslides. Law enforcement and government buildings must be structurally sound to ensure public safety operations continuity and emergency coordination.
- Food, Water & Shelter. Food, water, and shelter resources are critical for maintaining public health and stability after an earthquake. County water supply systems including wells, water treatment plants, and distribution networks could be vulnerable to ground shaking, shifting soil, or contamination. Water supply infrastructure damage could cause boil water advisories or shortages, affecting both residents and emergency response teams. Food supply chain disruptions may arise if transportation routes are blocked, delaying shipments of food, medical

supplies, and emergency rations. Housing and emergency shelter facilities must be assessed for seismic safety, as older buildings in the county may not be earthquake–resistant and could become unsafe for residents.

- Health & Medical. Healthcare facilities and medical services must remain operational to treat injuries and provide essential care. Hospitals, clinics, and nursing homes must have seismic resilience measures in place including backup power sources and reinforced structures. Vulnerable populations like elderly residents and individuals with disabilities, require specialized emergency plans to ensure their safety during evacuations or service disruptions.
- Energy (Power & Fuel). Energy systems, including power and fuel supplies, are also critical lifelines that must remain intact. Earthquakes cause power outages by damaging substations, transformers, and power lines, leading to prolonged disruptions. Backup generators should be available for hospitals, emergency shelters, and government facilities to maintain essential services. Fuel storage facilities and gas stations must be assessed for seismic vulnerabilities to prevent shortages that could hinder response efforts.
- Communications. Reliable communication networks are essential for emergency response and public safety. Earthquakes may damage cell towers, fiber optic networks, and radio transmission systems, causing service disruptions. Redundant communication systems like emergency radios and satellite phones must be available to ensure law enforcement, fire departments, and emergency management agencies can coordinate rescue and relief efforts even if primary networks fail. Maintaining 911 dispatch centers and emergency alert systems is also crucial to informing residents of potential dangers.
- Transportation. Transportation infrastructure, including roads, bridges, and evacuation routes, must be prepared to withstand seismic activity. Earthquakes can cause road damage, landslides, and bridge failures, making it difficult for emergency responders to reach affected areas. Key transportation routes like Interstate 87 (Northway) and bridges near Lake Champlain, should undergo regular seismic assessments to ensure these resources remain functional after an earthquake. Public transit systems, while limited in the county, must have contingency plans in place for emergency evacuations, particularly for individuals without personal vehicles.
- Hazardous Materials. Environmental and hazardous material risks must also be considered in earthquake preparedness planning. Dams and reservoirs in the county could experience structural weakening, leading to potential flood risks. While there are few large industrial sites, hazardous materials stored in commercial, agricultural, or industrial facilities must be secured against seismic activity to prevent contamination or explosions.

Although Essex County's earthquake risk is Relatively Low, ensuring community lifelines remain functional is essential for public safety and resilience. Strengthening infrastructure, emergency response capabilities, and disaster preparedness efforts help minimize the potential earthquake impacts. Investing in seismic retrofitting, backup power systems, and emergency communication networks will enhance the county's ability to withstand and recover from seismic events efficiently.

Results

DRAFT

While Essex County is not considered a High-risk area for earthquakes, the region is still vulnerable to Moderate seismic activity due to its proximity to Champlain Valley Faults and the Western Quebec Seismic Zone. Although major earthquakes are rare, aging infrastructure, population centers, and critical lifelines remain at risk from ground shaking, landslides, and structural damage. Even minor earthquakes could disrupt emergency services, transportation networks, and essential utilities, affecting residents and businesses alike.

This section examines the key challenges posed by earthquake hazards including aging infrastructure vulnerabilities, seismic hazards, public safety concerns, economic and environmental impacts, and the need for enhanced mitigation strategies. Strengthening earthquake preparedness, retrofitting critical infrastructure, and improving response coordination are essential to ensuring community resilience and long–term disaster mitigation.

- Aging Infrastructure & Seismic Vulnerabilities. Many buildings, bridges, and roads in the county were constructed before modern seismic codes were established. Lack of retrofitting and structural reinforcements increases the risk of damage or collapse during an earthquake. Historic buildings, critical infrastructure, and aging transportation networks require ongoing inspections and upgrades to withstand potential seismic activity.
- Seismic Hazard & Ground Instability. Although the county is not in a High-risk seismic zone, regional fault lines like the Champlain Valley Faults and the Western Quebec Seismic Zone contribute to occasional Moderate earthquakes. Certain areas, particularly near Lake Champlain and the Adirondack foothills, are susceptible to ground shaking, soil liquefaction, and landslides. These hazards increase the likelihood of infrastructure failures and road blockages, complicating emergency response efforts.
- Impacts on Public Safety & Critical Services. Even a Moderate earthquake could disrupt emergency services, transportation routes, and utility networks, posing significant challenges for first responders and residents. Structural damage to hospitals, fire stations, and government buildings could hinder disaster response operations. Disruptions to power grids, water supply systems, and communication networks could prolong recovery efforts, particularly in remote areas of the county.
- Economic & Environmental Consequences. The financial costs of earthquake recovery, infrastructure repairs, and business disruptions could place a strain on local governments and private property owners. Damage to key economic drivers like bridges, roads, and commercial buildings could impact tourism and local businesses. Earthquakes could destabilize slopes, trigger landslides, and impact water quality, leading to long–term environmental degradation in sensitive ecosystems.
- Need for Enhanced Mitigation & Preparedness. To reduce earthquake risks, the county must prioritize infrastructure resilience, strengthen building codes, and integrate seismic hazard assessments into development planning. Investments in seismic retrofitting, emergency preparedness programs, and public awareness campaigns will enhance the county's ability to mitigate earthquake damage and improve disaster response capabilities. Proactive planning and cross–agency coordination is essential to protect lives, infrastructure, and economic stability in the event of a significant earthquake.

Hazard: Avalanche

Avalanches are rapid flows of snow, ice, and debris down a mountain or steep slope, often triggered by natural forces like heavy snowfall, temperature fluctuations, and wind–loading, or by human activities like skiing or construction. Avalanches occur when a layer of snow loses stability and collapses, causing cascading effects that can be destructive to infrastructure, transportation routes, and human life.

Avalanches generally occur on slopes greater than 20 degrees. Snow accumulates on mountainsides, creating conducive conditions. Avalanche hazards increase as snow accumulates after major snowfall events, as well as freeze–thaw conditions on slopes. These freeze–thaw conditions result in slip surfaces for new snow accumulations to slide down the mountainside. More than 80 percent of avalanches occur during or just after large snowstorms. The most avalanche–prone months are (in order) February, March, and January. Avalanches caused by freeze–thaw conditions occur most often in April.

When snow cover is very unstable, nature often broadcasts clear danger signals. Fresh avalanches are the best clue. Snow that cracks, collapses, or makes hollow sounds is also unstable. Weak layers found by digging snow pits are signs of unstable snow. Snow that has become wet from thaw or rain can be dangerous.

About 90 percent of all avalanches start on slopes of 30-45 degrees; about 98 percent of all avalanches occur on slopes of 25-50 degrees. Avalanches release most often on slopes above timberline that face away from prevailing winds because leeward slopes collect snow blowing from windward sides of ridges. Avalanches can occur on small slopes well below the timberline like gullies, road cuts, and small openings in the trees. Very dense trees can anchor the snow to steep slopes and prevent avalanches from starting, however, avalanches can release and travel through a moderately dense forest. Most avalanches occur in the backcountry, outside of developed ski areas.

Location and Extent

Essex County is home to the High Peaks Region, including:

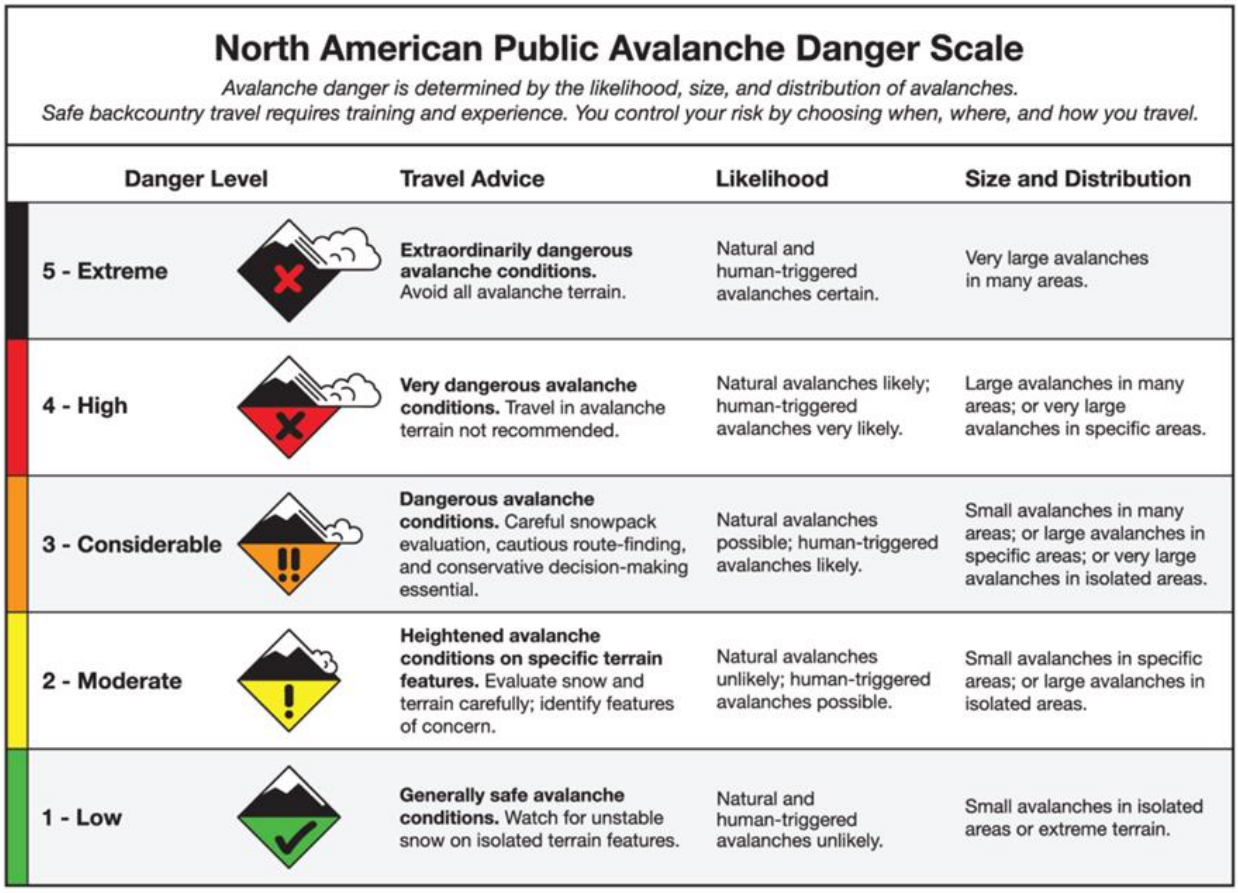
- Algonquin Peak: 1,556 m (prom: 639 m)
- Mount Haystack: 1,505 m (prom: 244 m)
- Mount Skylight: 1,499 m (prom: 171 m)
- Whiteface Mountain: 1,481 m (prom: 950 m)
- Basin Mountain: 1,479 m (prom: 234 m)
- Dix Mountain: 1,478 m (prom: 862 m)
- Iroquois Peak: 1,475 m (prom: 47 m)

Avalanches are relatively rare in New York State, but the state does have areas prone to avalanches, particularly in the Adirondack and Catskill Mountains. These areas are higher risk due to steep slopes, large snowfalls and snowpack, and an increased exposure to human activity that can increase the risk of avalanche trigger events. The most significant risks are associated with backcountry skiing, snowboarding, and hiking in steep, snow–covered terrain. The Adirondacks

DRAFT

are a popular winter destination for recreational activities with hundreds of acres of trails and 12 ski resorts.

Although avalanches do not typically threaten major roads, infrastructure, or populated areas, they pose a serious hazard to outdoor recreationists. The combination of heavy snowfall, steep terrain, and frequent winter activity makes the county one of the most at–risk regions for avalanches in the eastern United States. Proper avalanche forecasting, education, and preparedness are essential for mitigating risks in backcountry travel areas. The extent of avalanche hazards in Essex County is largely limited to high elevation, snow–covered slopes in winter and early spring. Areas with frequent winter recreation activities like skiing, snowboarding, and mountaineering, are at greater risk. While avalanches in the Adirondacks are generally smaller and less frequent than those in the western U.S., they can still pose significant risks to hikers, climbers, and winter sports enthusiasts. Notably, regions within the Adirondack High Peaks Wilderness and steep gullies near Avalanche Lake and the Trap Dike on Mount Colden have experienced avalanches in the past.



North American Public Avalanche Danger Scale

Avalanche danger is determined by the likelihood, size, and distribution of avalanches.
Safe backcountry travel requires training and experience. You control your risk by choosing when, where, and how you travel.

Danger Level	Travel Advice	Likelihood	Size and Distribution
5 - Extreme	**Extraordinarily dangerous avalanche conditions.** Avoid all avalanche terrain.	Natural and human-triggered avalanches certain.	Very large avalanches in many areas.
4 - High	**Very dangerous avalanche conditions.** Travel in avalanche terrain not recommended.	Natural avalanches likely; human-triggered avalanches very likely.	Large avalanches in many areas; or very large avalanches in specific areas.
3 - Considerable	**Dangerous avalanche conditions.** Careful snowpack evaluation, cautious route-finding, and conservative decision-making essential.	Natural avalanches possible; human-triggered avalanches likely.	Small avalanches in many areas; or large avalanches in specific areas; or very large avalanches in isolated areas.
2 - Moderate	**Heightened avalanche conditions on specific terrain features.** Evaluate snow and terrain carefully; identify features of concern.	Natural avalanches unlikely; human-triggered avalanches possible.	Small avalanches in specific areas; or large avalanches in isolated areas.
1 - Low	**Generally safe avalanche conditions.** Watch for unstable snow on isolated terrain features.	Natural and human-triggered avalanches unlikely.	Small avalanches in isolated areas or extreme terrain.

Figure 43. North American Public Avalanche Danger Scale

In the figure above, the North American Public Avalanche Danger Scale (NAPADS) is a system used to rate avalanche danger, providing general travel advice based on the likelihood, size, and distribution of expected avalanches. The scale consists of five levels from least to highest amount of danger:

- 5–Extreme
- 4–High

- 3–Considerable
- 2–Moderate
- 1–Low

Danger ratings are typically provided for three distinct elevation bands. Although the ratings are assigned numerical levels, the danger increases exponentially between levels. In other words, the hazard rises more dramatically as it ascends toward the higher levels on the scale.

Historical Occurrences

There are only two avalanche events recorded by FEMA and NCEI since 1996, and one that was not recorded, none of which resulted in a presidential disaster declaration:

- February 19, 2000, Essex County. An avalanche occurred at the 3500' level of Wright Peak, southwest of Mt. Van Hoevenberg in Essex County. The avalanche was about 400 feet in length. One person was killed and five sustained minor injuries while skiing.
- February 14, 2022, Essex County. In February 2022, two skiers were caught in an avalanche in Essex County. The skiers triggered the slide from below and were swept 150' and buried. One skier was buried 1-2' under the snow the other skier was buried under 4-5 feet of snow. One was able to free himself, locate, and dig out his friend. The skiers estimated the avalanche to be 1,500' long and 100' wide. There were no significant injuries.

Future Potential Events

As climate patterns continue to shift, the potential for future avalanche events in Essex County may be influenced by changes in snowfall patterns, temperature fluctuations, and extreme weather events. Warmer winter temperatures could lead to more frequent freeze–thaw cycles, increasing snowpack instability and the likelihood of avalanches, particularly in the High Peaks Region. More intense snowstorms and higher precipitation levels contribute to heavier snow accumulation on steep slopes, creating conditions favorable for larger and more unpredictable avalanches.

With the increasing popularity of backcountry skiing, mountaineering, and winter hiking, risks to recreationists may grow over time. Areas like Mount Colden's Trap Dike, Avalanche Pass, and the steep slopes of Algonquin Peak will likely remain High risk avalanche zones, particularly following major snowstorms or rapid warming events. As winter tourism in the Adirondacks expands, there may be a greater need for avalanche forecasting, public awareness campaigns, and rescue preparedness to mitigate future risks.

While Essex County does not experience frequent large–scale avalanches, climate variability and increased human activity in avalanche–prone areas could lead to greater exposure to avalanche hazards in the coming decades. Strengthening avalanche education, monitoring programs, and early warning systems are critical in ensuring public safety and reducing potential fatalities and injuries from future avalanche events.

Climate Change

Climate change is expected to have a significant impact on avalanche risk in Essex County, particularly in the High Peaks Region of the Adirondacks. Rising temperatures may lead to more frequent freeze–thaw cycles, destabilizing the snowpack and increasing the likelihood of wet slab avalanches which occur when melting snow weakens underlying layers. Shifting precipitation patterns could result in heavier snowfall during extreme weather events, creating unstable snow

DRAFT

conditions on steep mountain slopes. More intense storms, coupled with periods of rapid warming, may lead to the increased frequency and unpredictability of avalanches in traditionally at-risk areas like Mount Colden, Avalanche Pass, and Algonquin Peak.

While some models predict shorter and less snowy winters, snowfall variability, intensity, and temperature fluctuations may create more hazardous conditions for winter recreationists. The growing popularity of backcountry skiing, mountaineering, and winter hiking in the Adirondacks increases the potential for human-triggered avalanches—especially in areas with unstable snow layers. As climate change alters seasonal snowfall patterns, improving avalanche monitoring, public education, and early warning systems will be essential in mitigating risks and protecting both residents and visitors.

Vulnerability Assessment

Avalanches in the county primarily threaten winter recreationists, infrastructure, and tourism-related businesses, particularly in high elevation areas. As winter tourism grows and climate patterns shift, the risks associated with unstable snowpack and human-triggered avalanches may increase. Strengthening avalanche education, monitoring, and emergency preparedness will be essential in reducing future vulnerabilities.

Table 97. Avalanche Vulnerability Assessment

Category	Vulnerability Factors	Impacts
Population	• High exposure for hikers, backcountry skiers, snowboarders, & ice climbers. • Popular avalanche-prone areas: Mount Colden, Avalanche Pass, Algonquin Peak, Trap Dike. • Increasing winter tourism & outdoor recreation.	• Higher risk of human-triggered avalanches. • Limited access to emergency response due to remote locations. • Increased need for search & rescue operations.
Infrastructure	• Trails, backcountry shelters, & mountain access routes are at risk. • Roads like Route 73 could be impacted by heavy snowfall & snow slides. • Cell towers & power lines in high altitude areas may be damaged.	• Travel disruptions & blocked roads. • Delays in emergency response due to hazardous conditions. • Potential power & communication outages.
Economic	• Tourism industry relies on winter sports & recreation. • Increased costs for search & rescue operations. • Climate change may lead to more unstable snowpack conditions.	• Trail & park closures, reducing visitor revenue. • Financial strain on outdoor businesses, including ski resorts & rental shops. • Higher emergency response expenses.

Category	Vulnerability Factors	Impacts
Environmental	• Avalanches cause tree & vegetation loss. • Sediment & debris can move into waterways. • Changing snowpack conditions due to climate change.	• Soil erosion & habitat disruption. • Potential water quality issues in lakes & streams. • Altered long–term winter conditions in the Adirondacks.

National Risk Index

According to the NRI Report, Essex County has a Very Low avalanche risk index score of 18.3. The expected annual loss (EAL) from avalanches is $61,612, indicating that avalanches pose minimal financial and structural risk compared to other hazards. While avalanches are rarely recorded, human activity in high-risk recreation areas like Mount Colden, Avalanche Pass, and Algonquin Peak increases the potential for small–scale events.

Table 98. Essex County Avalanche Risk Assessment (NRI Data)

Avalanche Type	Risk Level (Per National Risk Index)	Probability	Primary Impacts
Small to Moderate Avalanches	Very Low	Less than 0.01 events/year	Minimal infrastructure damage, possible road blockages
Large Avalanches	Very Low	Extremely rare	Risk to recreationists, disruption of backcountry access
Human–Triggered Avalanches	Very Low	Seasonal risk in winter	Increased risk to hikers, climbers, & skiers

Expected Annual Loss (EAL)

Avalanches are primarily a recreational hazard rather than a widespread infrastructure threat. While Small to Moderate avalanches can cause localized disruptions, large avalanches are extremely rare. The county's rugged terrain and winter tourism industry mean that avalanche risk is concentrated in backcountry areas, affecting hikers, climbers, and skiers rather than residential communities. The NRI Report estimates that avalanches cause less than $62,000 in annual economic losses, mainly impacting property and tourism–related activities. Human–triggered avalanches remain a safety concern, emphasizing the need for public awareness, avalanche forecasting, and backcountry rescue preparedness.

Table 99. Essex County Avalanche Expected Annual Loss (EAL)

Event Type	Annual Expected Loss (Property)	Annual Expected Loss (Agriculture)	Annual Expected Loss (Population–Fatalities/Injuries)
Small to Moderate Avalanches	$59,000	None Reported	Low fatality risk, potential for minor injuries.

DRAFT

Large Avalanches	$2,612	None Reported	Increased risk for recreationists, possible fatalities.

Community Lifelines

Community lifelines are critical services and infrastructure essential for public safety, economic stability, and emergency response. While Essex County has a Very Low overall risk of avalanches, certain high elevation areas in the Adirondack High Peaks Region are vulnerable. Avalanches primarily impact winter recreationists, emergency response operations, and transportation routes, rather than large populations or major infrastructure. Disruptions to community lifelines in affected areas can pose risks to both residents and visitors:

- Safety & Security. Avalanches can jeopardize emergency response efforts, particularly for search and rescue operations in remote areas. County emergency services may experience delays in reaching trapped or injured individuals, as avalanches often occur in locations that are difficult to access. The need for specialized rescue teams trained in avalanche recovery is critical, especially for incidents involving backcountry skiers, hikers, and climbers.
- Food, Water & Shelter. While avalanches do not typically threaten water treatment plants, food supply chains, or residential areas, extreme snowfall and avalanche events can impact mountain lodges, shelters, and backcountry cabins. In rare cases, blocked roads can delay food deliveries to small mountain towns and seasonal recreational outposts, causing temporary shortages.
- Health & Medical. Avalanches pose a direct risk to human life, with victims often suffering from trauma, suffocation, and hypothermia if buried under snow. Medical facilities must be prepared for injuries resulting from avalanche–related incidents, especially in hospitals near outdoor recreation hubs like Lake Placid and Keene Valley. Air and ground ambulance services may be delayed if avalanche conditions make transport hazardous.
- Energy (Power & Fuel Systems). Although avalanches are unlikely to damage power plants or fuel infrastructure, they may knock down power lines or disrupt heating systems in remote areas. Backcountry huts, ski lodges, and communications towers in higher–altitude regions are particularly vulnerable to power outages. Heavy snow accumulation and unstable slopes can also damage fuel storage sites or propane heating systems, impacting lodges and emergency facilities.
- Communications. Avalanches can disrupt communication networks, particularly in areas that rely on radio signals, cell towers, and satellite connections. Emergency responders, ski patrol teams, and recreationists in avalanche–prone areas must have access to backup communication systems like emergency beacons, satellite phones, and two–way radios to ensure effective rescue coordination.
- Transportation. Avalanches can block roads, trails, and access routes, creating travel disruptions for emergency responders, tourists, and residents. Key transportation routes like Route 73 near Keene Valley, pass through areas with significant snowfall, making them vulnerable to snow slides or avalanche–related delays. Trail closures in High-risk areas can also affect hikers and backcountry travelers, increasing the need for alternative routes and emergency evacuation plans.

- Hazardous Materials & Environmental Risks. Avalanches can disrupt ecosystems by uprooting trees, altering landscapes, and introducing debris into water sources. In extreme cases, they may affect infrastructure storing hazardous materials, like fuel storage sites or remote research stations. Melting avalanche debris can cause localized flooding or soil erosion, which may have long–term environmental consequences.

While avalanches in the county do not pose a widespread threat to community lifelines, they remain a serious risk for recreationists, emergency responders, and transportation networks in higher elevation areas. The county's emergency services, healthcare facilities, and transportation infrastructure must be prepared for avalanche–related incidents, particularly in High-risk winter recreation areas. Investments in avalanche forecasting, public education, and rescue training will improve community resilience and response capabilities, ensuring public safety in avalanche–prone regions.

Results

While Essex County is not considered a High-risk area for avalanches, the region is still vulnerable to localized snow slides, particularly in the Adirondack High Peaks Region. Steep mountain terrain, heavy snowfall, and fluctuating winter temperatures contribute to avalanche hazards in popular backcountry areas. Although large–scale avalanches are rare, smaller events could pose significant risks to recreationists, emergency responders, and transportation networks.

This section examines the key challenges posed by avalanche hazards, including emergency response vulnerabilities, risks to recreationists, potential infrastructure disruptions, and environmental impacts. Strengthening avalanche forecasting, search and rescue capabilities, and public awareness initiatives is essential to ensuring safety and preparedness in High-risk areas.

- Steep Terrain & Avalanche–Prone Areas. The High Peaks Region of Essex County features steep slopes, narrow gullies, and remote wilderness areas where unstable snowpack can lead to avalanches. Locations like Mount Colden, Avalanche Pass, Algonquin Peak, and the Trap Dike are known for frequent snow slides, particularly following heavy snowfall, rapid warming, or high winds. These conditions create hazards for backcountry skiers, mountaineers, and winter hikers.
- Impacts on Public Safety & Emergency Response. Avalanches pose significant risks to outdoor recreationists who may become trapped, buried, or injured in snow slides. Search and rescue efforts in avalanche zones are challenging due to difficult terrain, harsh weather conditions, and limited access to emergency services. Emergency responders require specialized training, avalanche safety equipment, and rapid response capabilities to improve survival rates in avalanche incidents.
- Transportation & Infrastructure Disruptions. While Essex County's major roadways and population centers are not directly at risk from avalanches, certain mountain access roads and backcountry trails could be affected. Route 73 near Keene Valley and remote trails in the High Peaks Wilderness may experience temporary closures due to avalanche risk, limiting access for residents, tourists, and emergency services. In rare cases, avalanches may damage power lines, ski facilities, or backcountry shelters, disrupting local services.
- Economic & Environmental Consequences. Avalanches can impact tourism–based businesses, including ski resorts, rental shops, and guided tours, particularly if safety concerns cause trails or recreational areas to close. Avalanches can cause environmental damage, leading to

DRAFT

deforestation, erosion, and sedimentation of nearby waterways, which may impact local wildlife habitats and water quality.

- Need for Enhanced Mitigation & Preparedness. Essex County must prioritize public awareness campaigns, avalanche forecasting improvements, and emergency response training to reduce avalanche risks. Implementing avalanche education programs, increasing monitoring of High-risk areas, and enhancing coordination between search and rescue teams will improve safety and preparedness for winter recreationists and emergency responders. Proactive planning and continued investment in avalanche mitigation efforts will be essential in protecting lives, infrastructure, and economic stability in Essex County's High risk mountain regions.

Hazard: Ground Subsidence

Ground subsidence is the gradual settling, sudden sinking, or collapse of the Earth's surface due to natural geological processes or human activities. This phenomenon commonly occurs in areas with carbonate bedrock like limestone, dolomite, or gypsum, as well as other soluble rock types. When water percolates through naturally occurring fractures, it dissolves these materials over time, forming underground voids. Eventually, the overburden (soil and rock layers above the voids) loses support, which can lead to gradual settlement or sudden collapse, particularly affecting structures with low strain tolerance. This process may occur slowly over time or catastrophically in a single event.

According to the Federal Emergency Management Agency (FEMA), subsidence is a serious geologic hazard that can cause significant structural damage, particularly in urban areas with aging infrastructure. Karst topography is a key contributor to subsidence, as it leads to the formation of sinkholes, linear depressions, underground drainage systems, and caves. In addition to natural dissolution processes, human activities like groundwater extraction, mining, oil and gas drilling, and excessive surface loading can accelerate subsidence and contribute to sinkhole formation.

Subsidence and sinkhole formation can occur gradually or abruptly, leading to varying degrees of impact. Minor subsidence may result in small elevation changes while more extreme cases can create deep depressions or large–scale collapses. These events pose significant risks to infrastructure, buildings, and transportation networks, particularly in urbanized areas. While gradual subsidence can often be monitored and mitigated before severe damage occurs, sudden collapses can cause catastrophic structural failures. If not properly managed or addressed, subsidence–related hazards may lead to foundation fractures, roadway failures, and even the complete collapse of buildings and essential infrastructure.

Subsidence impacts can be costly and hazardous, affecting public safety, economic stability, and environmental conditions. Effectively managing subsidence risks includes geotechnical investigations, land use planning, hazard mapping, and early detection through remote sensing technologies. Implementing mitigation strategies like controlled groundwater management, soil stabilization techniques, and reinforced construction practices, is essential to minimizing long–term risks and preventing widespread damage.

Location and Extent

Ground subsidence can occur due to various natural and man–made processes including mine subsidence, shrinking and swelling soils, and the characteristics of different rock formations. Mine subsidence happens when underground mining operations create voids, causing the overlying ground to gradually sink or suddenly collapse. This is particularly common in regions with extensive coal, salt, or metal mining. Shrinking and swelling soils like clay–rich soils, expand when they absorb moisture and contract when they dry out, leading to uneven ground movement that can damage buildings, roads, and pipelines. Rock formation types play a crucial role in subsidence, with carbonate rocks like limestone, gypsum, and dolomite are highly susceptible to dissolution by groundwater, forming sinkholes and karst landscapes. Similarly, poorly consolidated sediments can compact over time, leading to gradual subsidence in river valleys, coastal plains, and delta regions. Understanding these geological and environmental factors is essential for mitigating subsidence risks and protecting infrastructure in vulnerable areas.

DRAFT

- Rock Formations. Essex County lacks any of the three types of rock formations leading to subsidence as demonstrated in the US Land subsidence map in the figure below. This hazard will not be considered a hazard and will not be profiled.

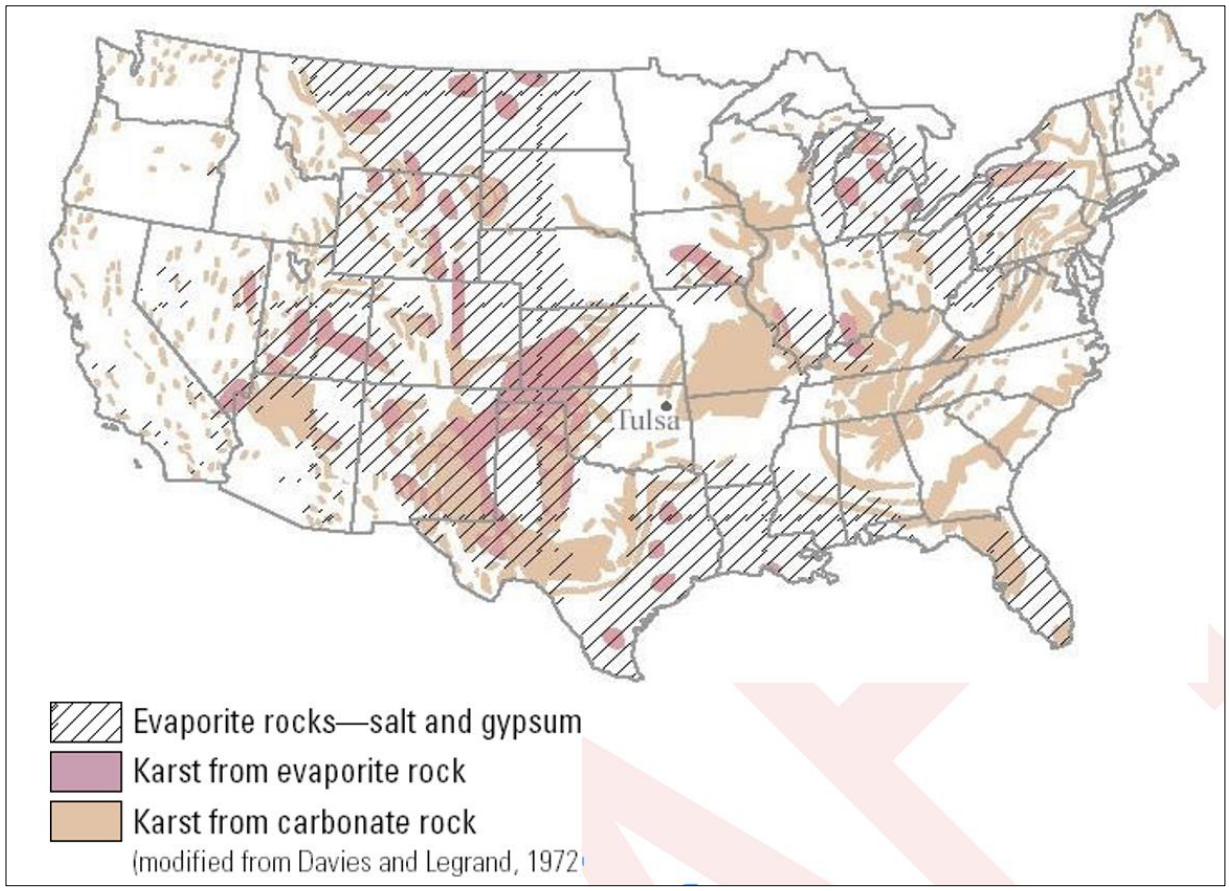
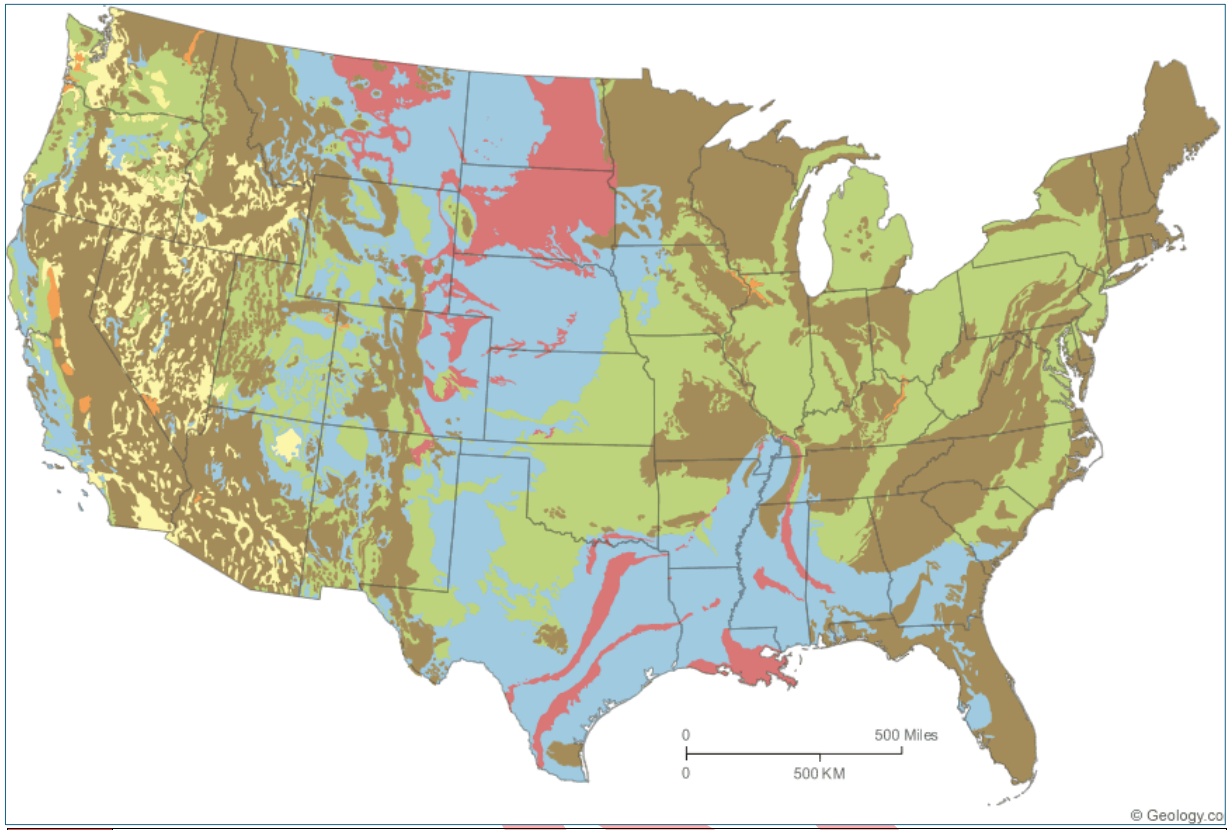


Figure 44. Land Subsidence in the United States

- Shrinking & Swelling Soils. Shrinking and swelling soils are also considered hazards in some areas. The map below indicates the county lacks clay soils that lead to a significant amount of shrinking and swelling. This hazard will not be addressed in this updated plan, due to the fact there is little potential for shrinking and swelling of soils.



	Over 50% of these areas are underlain by soils with abundant clays of high swelling potential.
	Less than 50% of these areas are underlain by soils with clays of high swelling potential.
	Over 50% of these areas are underlain by soils with abundant clays of Slight to Moderate swelling potential.
	Less than 50% of these areas are underlain by soils with abundant clays of Slight to Moderate swelling potential.
	These areas are underlain by soils with little to no clays with swelling potential.
	Data insufficient to indicate the clay content or the swelling potential of soils.

Figure 45. Expansive Soils Map

- Mine Subsidence. Essex County has a rich history of mining operations with numerous iron, titanium, and other mineral extractions occurring throughout the region. Some of the most notable mining sites include the Cheever Mines and the National Lead Company, both of which played a significant role in county's economic and industrial development. Large–scale mining operations led to the establishment of company towns where workers and their families settled to support the mines, many of which became permanent Adirondack communities.

Mining–induced subsidence is a significant geologic hazard that occurs due to the collapse of abandoned underground mine shafts and tunnels. Unlike natural subsidence, which is often

DRAFT

gradual, mine subsidence can be sudden and unpredictable, posing serious risks to infrastructure, roads, and nearby communities. A notable example of this occurred in Mineville (Essex County) in April 2004 when an iron mine collapse resulted in localized ground failure. While additional mine subsidence events may have occurred in the region, documented cases are limited.

The table below, sourced from the New York State Department of Environmental Conservation (DEC), lists current mining operations in the county. Not all mines use subsurface extraction methods, meaning subsidence vulnerabilities vary depending on factors like mine depth, structural integrity, and post–mining land use.

Table 100. Essex County Current Mining Operations

Mine Name	Type of Mining	Primary Resource	Subsurface Extraction	Subsidence Risk
Cheever Mines	Underground & Open pit	Iron Ore	Yes	Moderate to High
National Lead Company	Underground & Open pit	Titanium, Iron	Yes	High
Mineville Mines	Underground	Iron Ore	Yes	High
Barton Mines	Open pit	Garnet	No	Low
Willsboro Quarry	Open pit	Limestone	No	Low
Jay Limestone Quarry	Open pit	Limestone	No	Low

Historical Occurrences

Essex County has a long history of mining–related subsidence, particularly in areas with extensive underground mining operations. Regional iron ore, titanium, and garnet mining industries left behind abandoned mine shafts and tunnels, contributing to instances of ground collapse and instability over time. Below are some of the most notable occurrences of mine subsidence in the county:

- Mineville Iron Mine Collapse (April 2004). One of the most well–documented mine subsidence events occurred in Mineville in April 2004. A section of an abandoned iron mine collapsed, causing localized ground failure. While the full extent of damage was not widely reported, the event highlighted the ongoing risks of underground mine instability in the region.
- Port Henry and Witherbee Subsidence Events (mid–20th Century). Port Henry and Witherbee, both historical mining communities, have experienced subsidence incidents linked to abandoned iron mines. As underground tunnels collapsed over time, surface–level ground depressions formed, affecting roads, buildings, and other infrastructure. Many of these events occurred gradually, but some areas suffered sudden cave–ins, requiring mitigation efforts like backfilling and land stabilization.
- Cheever Mine Area Ground Instability (late 1900s-Present). The Cheever Mine was one of the largest iron ore mines in Essex County, operating for decades before its closure. The site has shown evidence of subsidence, particularly in areas where mine shafts were left unsealed. Some minor collapses have occurred in the region, leading to concerns about ground stability and potential hazards for development projects.

While the county has not experienced large–scale, catastrophic mine collapses, the presence of abandoned underground mines in Mineville, Port Henry, and other areas presents a continuing subsidence risk. Regular monitoring, hazard mapping, and site stabilization efforts are essential to prevent future occurrences.

Future Potential Events

National Lead Company Mine (Tahawus): Potential Future Risk. The National Lead Mine in Tahawus, which was once a major titanium and iron mining site, has not reported significant subsidence events. Because the site has extensive underground workings, the potential for future ground movement remains a concern. If shafts or tunnels degrade over time, subsidence could become a hazard for surrounding areas.

As former mining sites continue to degrade, Essex County remains susceptible to future subsidence events, particularly in areas with extensive underground mining operations like Mineville, Cheever Mines, and Port Henry. Over time, aging mine shafts and tunnels may weaken, leading to gradual surface settling or sudden collapses. Climate factors like increased precipitation and groundwater infiltration, could accelerate erosion within abandoned mines, further destabilizing the ground. Land development and infrastructure expansion in areas with historical mining activity may increase the likelihood of subsidence–related damage, particularly if proper geotechnical assessments are not conducted beforehand.

Climate Change

Climate change is expected to exacerbate subsidence risks in Essex County, particularly in areas with historical mining activity. One of the most significant factors is increasing precipitation and extreme weather events, which can accelerate groundwater infiltration into abandoned mine shafts and naturally occurring voids, weakening underground structures and making sudden collapses more likely. Shifts in seasonal temperature patterns may contribute to freeze–thaw cycles, expanding cracks in subsurface rock formations and further destabilizing the ground. As climate patterns continue to shift, the risk of subsidence–related events may increase, particularly in Mineville, Cheever Mines, and other former underground mining sites.

Vulnerability Assessment

Essex County has a long history of underground mining operations, particularly in Mineville, Witherbee, and Port Henry where extensive iron ore extraction took place. Once key economic drivers, their abandonment left behind underground voids and unstable ground conditions, increasing the risk of subsidence. Over time, mine shafts and tunnels weaken, potentially leading to gradual sinking or sudden collapses affecting residents, infrastructure, and the local economy. Mine subsidence vulnerabilities vary across the county, with areas directly above or near abandoned underground tunnels facing the highest risk. This assessment examines potential impacts on population centers, critical infrastructure, economic stability, and environmental conditions, emphasizing the need for monitoring and mitigation strategies to reduce long–term risks.

DRAFT

Table 101. Essex County Subsidence Vulnerability Assessment

Category	Vulnerability Factors	Impacts
Population	• Communities near historic underground mining sites like Mineville, Witherbee, & Port Henry are at higher risk of ground collapse. • Residents living above or near abandoned mine shafts may experience property damage or displacement.	• Sudden or gradual ground collapse can endanger lives & displace residents. • Financial burdens from property damage & mitigation costs.
Infrastructure	• Roads & bridges built over abandoned mine tunnels are vulnerable to sudden collapse or gradual sinking. • Water & sewer lines may be compromised by ground movement, leading to leaks or contamination. • Older buildings near former mine sites are at risk of foundation failures & structural damage.	• Increased repair costs for transportation & utility infrastructure. • Potential disruption of municipal water & sewage services. • Building instability, leading to unsafe living conditions.
Economic	• Property values may decline in areas where underground mine subsidence is a known risk. • Businesses & industries relying on stable infrastructure could be affected by ground collapse. • High costs for mine remediation & land stabilization.	• Loss of commercial & residential property value. • Increased expenses for stabilization & repairs. • Limited land development opportunities in subsidence–prone areas.
Environmental	• Alteration of groundwater flow due to mine collapses can impact drinking water sources. • Mine subsidence may trigger localized flooding by changing surface drainage patterns. • Soil destabilization could lead to erosion & habitat loss.	• Risk of contaminated water sources from mine–related groundwater shifts. • Land degradation & ecological disruption in affected areas.

Results

Essex County is not a High risk for widespread subsidence but remains vulnerable to localized ground collapse, especially in areas with past mining activity. Abandoned mine shafts in Mineville, Witherbee, and Port Henry can cause gradual sinking or sudden collapses. Groundwater infiltration, soil instability, and aging infrastructure increase these risks to residents and infrastructure. This section examines the key challenges posed by mine subsidence in Essex County,

including vulnerabilities in infrastructure, risks to public safety, economic impacts, and environmental concerns. Strengthening geotechnical monitoring, land use planning, and mitigation efforts will be essential to reducing subsidence risks and protecting communities in former mining areas.

- High risk Areas & Subsidence–Prone Locations. The Mineville, Witherbee, and Port Henry regions contain extensive underground mine workings, many of which have deteriorated over time. As mine tunnels weaken and collapse, they create voids beneath the surface, leading to ground instability and sinkhole formation. Certain areas above abandoned mine shafts are at a higher risk of surface settlement, particularly when heavy rainfall or shifting groundwater levels accelerate erosion and structural weakening.
- Infrastructure & Transportation Disruptions. Essex County's road network, bridges, and underground utilities may be affected by subsidence–induced structural failures. Roads built over former mine sites could experience sudden depressions or pavement cracking, leading to transportation hazards and costly repairs. Subsidence can damage water and sewer lines, disrupting municipal services and increasing maintenance costs. In extreme cases, structural instability could compromise critical infrastructure like buildings and power lines, posing a threat to public safety.
- Economic & Environmental Consequences. Mine subsidence can have long–term economic implications, particularly for property owners, local businesses, and municipal governments. Properties located in subsidence–prone areas may experience decreased land values and higher insurance costs, making development and real estate transactions more challenging. The cost of mitigating subsidence risks, repairing damaged infrastructure, and stabilizing land places a financial burden on local governments and private property owners. From an environmental perspective, subsidence can alter drainage patterns, contribute to soil erosion, and impact groundwater flow, potentially affecting wetlands, streams, and ecosystems.

DRAFT

Assets at Risk

Critical Infrastructure includes essential systems, assets, and networks vital for the functioning of the county and its economy. These include buildings and systems like energy, water, transportation, communications, healthcare, finance, and emergency services. If disrupted or destroyed, critical infrastructure failures have significant impacts on public safety, security, economic stability, and community well–being. Protecting critical infrastructure is a key priority to ensure resilience against natural disasters, cyberattacks, and other threats.

Critical Facility Inventory

Table 102. Essex County Critical Facilities and Systems

Hazard	Facility Name	Address/ Location	Town	Contact/ Notes	Additional Information
Communication Towers					
All	Angier Hill Site	333 Halds Road	Westport		
All	Belfry Mountain Site	729 Dalton Hill Road	Witherbee,		
All	Public Safety Building	702 Stowersville Road	Lewis		
All	Little Whiteface Site	Whiteface Mountain	Wilmington		
All	Mount Defiance Site	72 Defiance Street	Ticonderoga		
All	Ray Brook Site	1097 New York 86	Ray Brook		
All	Wells Hill Site	189 Seventy Lane	Lewis		
Hospitals/Health Centers					
Flooding, Severe Weather	Elizabethtown Community Hospital	75 Park St	Elizabethtown	(518) 873-6377	Regional ARC-designated hospital. 15 Bed capacity Level 4 center
Flooding, Severe Weather	Elizabethtown Community Hospital -Ticonderoga	101 Adirondack Dr	Ticonderoga	(518) 585-2831	UVM Hospital satellite Main Campus Generator
None	Elizabethtown Community Hospital Crown Point	2679 Main St	Crown Point	(518) 597-3029	UVM Hospital satellite Main Campus Generator

DRAFT

Hazard	Facility Name	Address/ Location	Town	Contact/ Notes	Additional Information
None	Elizabethtown Community Hospital Westport	6097 NYSRT-9N	Westport	(518) 962-2313	UVM Hospital satellite Main Campus Generator
None	Elizabethtown Community Hospital Elizabethtown	66 Park St	Elizabethtown	(518) 873-6896	UVM Hospital satellite Main Campus Generator
None	Adirondack Medical Center	203 Old Military Rd,	Lake Placid	(518) 523-3311	Medical Center Primary Care
None	HHHN	101 Adirondack Dr	Ticonderoga	(518) 585-3700	Health Center Primary Care
None	Lake Placid Health Center	203 Old Military Rd	Lake Placid	(518) 523-1717	Health Center Primary Care
None	Smith House Health Care Center	39 Farrell Rd	Willsboro	(518) 963-4275	Health Center Primary Care
None	High Peaks Health Center	18 Community Center Cir	Wilmington	(518) 946-1111	Health Center Primary Care
None	Mountain Medical Services Saranac	354 Broadway	Saranac Lake	(518) 897-1000	Urgent Care Center
None	Lake Placid Health Center	203 Old Military Road	Lake Placid	(518) 523-1717	Health Center
None	Wilmington Health Center	18 Community Center Circle	Wilmington	(518) 946-1111	Health Center
None	Willsboro Health Center	39 County Route 62	Willsboro	(518) 963-4275	Health Center
None	HHHN	24 Fairfield Ave	Schroon Lake	(518) 532-7120	Health Center
None	Ausable Forks Health Center	15 Pleasant Street	Jay	(518) 647-8164	Health Center
None	HHHN	33 Town Phelps Lane	Moriah	(518) 942-7123	
Fire Station					
Flooding, Erosion	Wilmington Fire District	1199 Haselton Rd	Wilmington	(518) 946-7187	Generator-equipped

Hazard	Facility Name	Address/ Location	Town	Contact/ Notes	Additional Information
None	Essex Fire Department	2659 Station St	Essex	(518) 963-7619	
None	Crown Point Fire District	2764 Main St	Crown Point	(518) 597-3211	
None	Chilson Fire Dept.	60 Putts Pond Rd	Ticonderoga	(518) 585-2510	Volunteer
None	Keene Volunteer Fire District	10858 State Hwy 9N	Keene	(518) 576-4301	Volunteer
None	Saranac Lake Volunteer Fire Department	100 Broadway	Saranac Lake	(518) 891-2333	Volunteer
None	Lake Placid Volunteer Fire Department	456 Old Military Rd	Lake Placid	(518) 523-3211	Volunteer
None	Au Sable Forks Fire Station	29 School Ln, Au Sable Forks	AuSable-Chesterfield-Keeseville	(518) 647-5582	
Floodplain	Whallonsburg Fire Department	10 School St	Essex	(518) 963-4027	Needs relocation from floodplain
None	Jay Fire Department	13029 NY-9N	Jay	(518) 946-2552	Volunteer
None	Keeseville Fire & Rescue	8 Pleasant St, Keeseville	Chesterfield	(518) 834-9727	Community emergency response
Structural Updates Needed	Ticonderoga Fire Department	60 Montcalm St	Ticonderoga	(518) 585-6661	Requires structural updates
None	Moriah Fire Department	60 Broad St	Moriah	(518) 546-3301	ARC-designated
None	Port Henry Fire Department	10 Church St	Moriah	(518) 546-7771	
None	Schroon Lake Fire Department	28 Industrial Dr	Schroon	(518) 546-7477	
None	Westport Fire Department	911 Main Road	Westport	(518) 962-4701	

DRAFT

Hazard	Facility Name	Address/ Location	Town	Contact/ Notes	Additional Information
None	Willsboro Fire Department	17 Farrell Road	Willsboro	(518) 963-8316	
Police Stations					
Power/ Water	Essex County Sheriff's Office	702 Stowersville Rd	Lewis	(518) 873-6900	Regional HQ
None	NY State Police Troop B Barracks	1097 NY-86, Ray Brook	North Elba	(518) 897-2000	Regional HQ
None	Ticonderoga Police Department	135 Burgoyne Rd	Ticonderoga	(518) 585-3456	Relocated from floodplain
None	Moriah Police Department	42 Park Pl Suite 2, Port Henry	Moriah	(518) 546-7286	
EMS Agencies					
None	Ausable Forks Emergency Squad	26 School Ln	Ausable Forks	(518) 946-7405	Independent
None	Ticonderoga Emergency Squad	118 Champlain Ave	Ticonderoga	(518) 503-5055	Independent
None	Elizabethtown Emergency Squad	8143 US-9	Elizabethtown	(518) 873-2122	Independent
None	Willsboro Emergency Squad		Willsboro	(518) 569-1224	Independent
None	Keene Emergency Squad	10858 State Hwy 9N	Keene	(518) 576-4444	Part of Fire Department
None	Keene Valley Emergency Squad	15 Market St	Keene	(518) 576-4727	Part of Fire Department
None	Lake Placid Emergency Squad	388 Mill Pond Dr	Lake Placid	(518) 523-9511	Independent
None	Moriah Emergency Squad	628 Tarbell Hill Rd	Moriah	(518) 546-7012	Independent
None	Newcomb	20 Marcy Lane	Newcomb	(518) 582-3211	Part of Fire Department

Hazard	Facility Name	Address/ Location	Town	Contact/ Notes	Additional Information
	Emergency Squad				
None	Schroon Lake Emergency Squad	Cedar Hill Drive	Schroon Lake	(518) 532-7477	Independent
None	Westport Emergency Squad	22 Champlain Ave	Westport	(518) 962-4419	Part of Fire Department
None	Wilmington Emergency Squad	1197 Haselton Road	Wilmington	(518) 946-7187	Part of Fire Department
None	Lamoille Ambulance Service	94 Montcalm St	Ticonderoga		Independent
Municipal Facilities					
None	Town of Jay Community Center (Emergency Shelter/Heating and Cooling Center)	11 School Lane, Au Sable Forks, NY 12912	Jay	(518) 647-2204	
None	Town of Jay Highway Garage	168 Valley Road, Jay, NY 12941	Jay	(518) 647-2204	
None	Town of Jay Au Sable Forks Wastewater Facility	219 Grove Road, Au Sable Forks, NY 12912	Jay		
Berm	Town of Jay Au Sable Forks Water Treatment Plant	196 Grove Road, Au Sable Forks, NY 12912	Jay		
Berm	Town of Jay Nugent Water Treatment Plant	73 Nugent Lane, Jay, NY 12941	Jay		
Power/ Water	Essex County Emergency Services	702 Stowersville Rd, Lewis, NY 12950	County	(518) 873-3900	

DRAFT

Hazard	Facility Name	Address/ Location	Town	Contact/ Notes	Additional Information
Floodplain	Westport Wastewater Treatment Plant	Champlain Ave, Westport, NY	Westport	(518) 962-4419	Needs flood mitigation
None	Wilmington Pumping Station	295 Whiteface Memorial Hwy	Wilmington	(518) 946-2105	Fully generator-supported
None	Essex-Charlotte Ferry Dock	25 Ferry Dock Rd	Essex	(518) 834-7600	Year-round ferry
Power/ Backup generator	Essex County Public Health	132 Water St	Elizabethtown	(518) 873-3500	Public health Department
None	Pump Station	Quaker Mountain, Manning Road	Wilmington		
None	Highway Department Garage	45 Evergreen Lane Wilmington NY	Wilmington		
None	Wilmington Library	5751 Route 86 Wilmington NY	Wilmington		Used as a cool center during summer
Emergency Shelters					
None	Willsboro Central School	29 School Ln	Willsboro	(518) 963-4456	ARC-designated shelter
None	Ticonderoga High School	5 Calkins Pl	Ticonderoga	(518) 585-7400	ARC-designated shelter
None	Whallonsburg Grange	1610 NY-22	Essex	(518) 963-4170	Temporary shelter
None	Ball Park and Festival Field	7 Park Ln	Wilmington		Mobile housing
None	Boquet Valley Central School	25 Sisco St	Westport	(518) 962-8244	ARC-designated shelter
Education Facilities					
None	Keene Central School	33 Market St	Keene	(518) 576-4555	Public (K-12)

Hazard	Facility Name	Address/ Location	Town	Contact/ Notes	Additional Information
None	Au Sable Forks Elementary School	28 Church Lane, Au Sable Forks, NY 12912	Jay	(518) 647-5503	
Severe Weather	Lake Placid High School	34 School St	North Elba/Lake Placid	(518) 523-2474	Public Emergency shelter Elementary
None	Newcomb Central School District	5535 Route 28	Newcomb	(518) 582-3341	Public PK-12
None	Moriah Elementary School	39 Viking Lane, Port Henry	Moriah	(518) 546-3301	Public PK-6
None	Moriah Junior-Senior High School	39 Viking Lane, Port Henry	Moriah	(518) 546-3301	Public 7-12
None	Minerva Central School District	1466 County Route 29 Olmstedville	Minerva	(518) 251-2000	Public (K-12)
None	Northwood School	92 Northwood Rd	Lake Placid	(518) 523-3357	Private - High School
Severe Weather	Lake Placid Elementary School	318 Old Military Rd	Lake Placid	(518) 523-3640	Public K-5
Severe Weather	Lake Placid Junior-Senior High School	34 School Street	Lake Placid	(518) 523-2474	Public 6-12
None	Crown Point Central School	2758 Main Street	Crown Point	(518) 597-4200	Public (K-12)
None	Elizabethtown-Lewis Central School	7530 Court St	Elizabethtown-Lewis	(518) 873-6371	Public (K-12)
None	Adirondack Christian School	220 Crosby Rd	Wilmington	(518) 946-2395	Private (K-12)
None	Schroon Lake Central School	1125 Us Rt 9	Schroon Lake	(518) 532-7164	Public K-12
Severe Weather	Ticonderoga High School	5 Calkins Pl	Ticonderoga	(518) 585-7400	Public (High School)

DRAFT

Hazard	Facility Name	Address/ Location	Town	Contact/ Notes	Additional Information
None	Ticonderoga Central School District	9 Amherst Avenue	Ticonderoga	(518) 585-6674	Public
None	Ticonderoga Elementary School	116 Alexandria Avenue	Ticonderoga	(518) 585-7437	Public K-5
None	Ticonderoga Middle School	116 Alexandria Avenue	Ticonderoga	(518) 585-7442	Public 6-8
None	Ticonderoga Senior High School	5 Calkins Place	Ticonderoga	(518) 585-6661	Public 9-12
Flooding	Willsboro	29 School Lane	Willsboro	(518) 963-4456	Public PK-12
Flooding	Westport Central School	25 Sisco Street	Westport	(518) 962-8244	Public K-12
Transportation					
	Adirondack Regional Air-port (SLK)	96 Airport Road	Saranac Lake	(518) 891-4600	
	Lake Placid Airport (LK)	27 Airport Lane	Lake Placid	(518) 523-2473	
	Schroon Lake Airport (4B7)	126 Alder Meadow Rd	Schroon Lake	(518) 532-7737	
	Ticonderoga Municipal Air-port (K4B6)	Shore-Airport Rd	Ticonderoga	(518) 369-9967	
	Essex Ferry	2758 Essex Rd	Essex	(802) 864-9804	

The following figure shows the critical infrastructure used as a base map when applying hazard mapping.

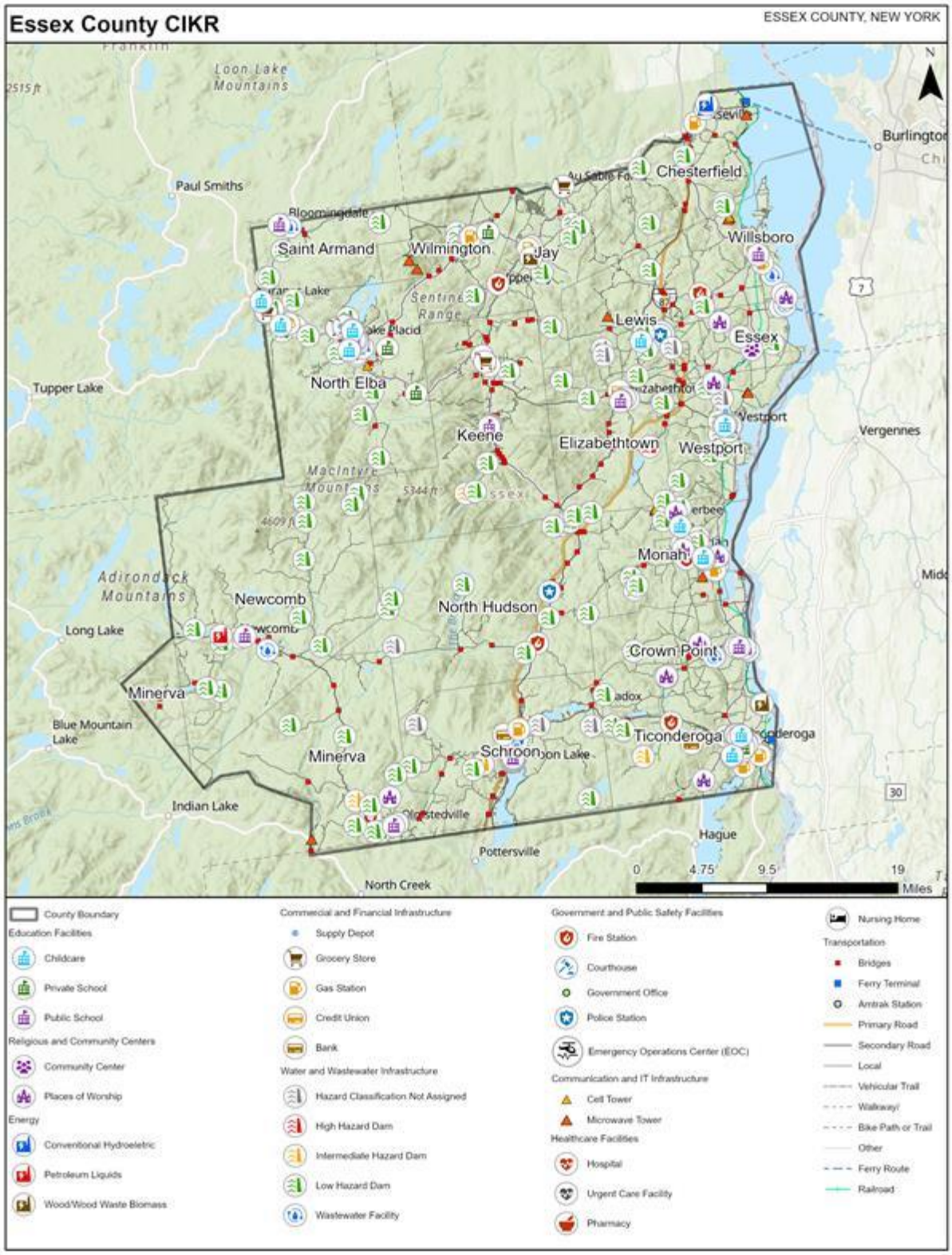


Figure 46. Essex Critical Infrastructure

Estimating Potential Loss

Essex County may experience losses from a variety of hazards. Losses range from minimal operational interruptions to catastrophic destruction of buildings and infrastructure. In addition to the potential for loss of life and property, the county could incur liability from numerous sources and stakeholder groups. Business interruption losses could exponentially increase county loss exposure. A catastrophic loss to all structures including loss of life, and business interruption could reach 12 billion dollars or more.

Potential loss for Essex County was calculated using data obtained from the Essex County Real Property website. Property values were analyzed for all parcels, then categorized into nine class codes. Total property value for each class code was determined, and potential losses were estimated under the assumption that 10% of properties in each class code would be impacted by a hazard event. Projected loss was then calculated as 10% of the total property value within each class code.

The Essex County Real Property Tax Services website designates real property into nine class codes:

- 100 Agriculture
- 200 Residential
- 300 Vacant Lands
- 400 Commercial
- 500 Recreation and Entertainment
- 600 Community
- 700 Industrial
- 800 Public Services
- 900 Forest, Conservation Lands and Parks

Table 103. Essex County Critical Facilities and Systems

Class Code	Number of Structures	Structure Values	Number of Structures Impacted	Potential Loss
100	326	$55,459,040	32	$5,545,904
200	19,767	$6,744,435,860	1,976	$674,443,586
300	9,189	$567,743,119	918	$56,774,312
400	1,226	$655,617,046	122	$65,561,704
500	206	$502,305,731	20	$50,230,573
600	557	$855,887,628	55	$85,588,763
700	81	$116,344,340	8	$11,634,434
800	1,084	$362,299,133	108	$36,229,913
900	3,941	$1,612,555,737	394	$161,255,573

Totals	36,377	$11,472,647,634	3,233	$1,147,264,759

DRAFT

Capability Assessment

A capability assessment is an inventory of a community's missions, programs, and policies and an analysis of its capacity to carry them out. This assessment is an integral part of the planning process. The assessment process enables identification, review, and analysis of current local and state programs, policies, regulations, funding, and practices that could either facilitate or hinder mitigation (FEMA 2013).

County Capability Assessment

The county has a range of capabilities in place to support hazard mitigation and emergency response including institutional resources, regulatory frameworks, technical expertise, and established partnerships with neighboring jurisdictions and state agencies. This assessment highlights current strengths, identifying areas where additional resources or improvements are needed to enhance community resilience and reduce vulnerabilities to natural and man–made hazards.

During the plan update process, the county and its jurisdictions developed or update their capability assessment, paying particular attention to evaluating the effectiveness of these capabilities in supporting hazard mitigation, and identifying opportunities to enhance local capabilities.

Municipal capabilities in the Planning and Regulatory, Administrative and Technical, and Fiscal arenas can be found in the Capability Assessment section of each jurisdictional annexes. Within each annex, participating jurisdictions identified integration of hazard risk management into their existing planning, regulatory, and operational/administrative framework ("integration capabilities") and intended integration promotion (integration actions).

The county agencies provide assistance to the 18 towns with a variety of services and grants as the town often lack the expertise and staff to accomplish these tasks. Several county agencies are profiled to document programs and projects that mitigate hazards.

Essex County has a number of resources it can utilize to implement hazard mitigation initiatives including emergency response measures, local planning and regulatory tools, administrative assistance and technical expertise, fiscal capabilities, and participation in local, regional, state, and federal programs. The presence of these resources enables municipal resiliency through actions taken before, during, and after a hazard event.

A summary of the various federal, state, county, and local planning, and regulatory, administrative, and technical, and fiscal programs available to promote and support mitigation and risk reduction in Essex County are presented below.

New York State Flood Management

There are two departments that have statutory authorities and programs that affect floodplain management at the local jurisdiction level in New York State: the New York State Department of Environmental Conservation (NYSDEC) and the Department of State's Division of Code Enforcement and Administration (DCEA).

The NYSDEC is charged with conserving, improving, and protecting the state's natural resources and environment, and preventing, abating, and controlling water, land, and air pollution. Programs that have bearing on floodplain management are managed by the Bureau of Flood Protection and Dam Safety, which cooperates with federal, state, regional, and local partners to protect

lives and property from floods, coastal erosion, and dam failures. These objectives are accomplished through floodplain management and both structural and nonstructural means.

The Coastal Management Section works to reduce coastal erosion and storm damage to protect lives, natural resources, and properties through structural and nonstructural means. The Dam Safety Section is responsible for "reviewing repairs and modifications to dams and assuring [sic] that dam owners operate and maintain dams in a safe condition through inspections, technical reviews, enforcement, and emergency planning." The Flood Control Projects Section is responsible for reducing flood risk to life and property through construction, operation, and maintenance of flood control facilities.

The Floodplain Management Section is responsible for reducing flood risk to life and property through management of activities, such as development in flood hazard areas, and for reviewing and developing revised flood maps. The Section serves as the NFIP State Coordinating Agency and in this capacity is the liaison between FEMA and New York communities that elect to participate in the NFIP. The Section provides a wide range of technical assistance.

Boquet Watershed Association

The Boquet River Association (BRASS) is a small, membership-based and volunteer-oriented nonprofit organization dedicated to enhancing the quality of water and life in the 280-square-mile Boquet River watershed. BRASS uses a collaborative, non-regulatory approach to watershed management, and works with individuals, organizations, local governments, state agencies, and federal agencies to solve problems affecting the river.

Formed in 1984, BRASS has a long-standing involvement in issues related to land use, point and non-point source pollution, in-stream and riparian species and habitats, wetlands, water quality monitoring, recreation, and the economy. In 2010, BRASS updated its strategic plan outlining its response to new and existing challenges in the watershed. Other recent projects include a culvert assessment study to identify structures prohibiting fish passage, and monitoring vegetation (including invasive species) in wetlands throughout the watershed. It also continues to conduct its annual events including river cleanups, planting projects, informal BRASS Rambles throughout the watershed, and several educational fundraising events.

BRASS serves the Boquet watershed populations and municipalities, including residents and visitors in Elizabethtown, Essex, Lewis, Willsboro, and Westport, N.Y. Local landowners and businesses are its members, and the Board of Directors is composed of appointees from the five watershed towns as well as Directors elected by the membership. To maintain its operation, BRASS relies on membership dues, generous donations and individual contributions of time, talents, skills, and resources. Special projects, like the culvert assessment, wetland monitoring, and the watershed management plan, are funded by various state and federal agencies, regional organizations, or trusts. BRASS has a history of implementing projects that mitigate hazards to residents and others in the watershed of the Boquet River. They will continue to implement project and will continue to make the Boquet River a rich resource in Essex County. Additional information of BRASS can be obtained on their website.

Essex County Department of Health:

The Essex County Department of Health is a county agency focused on health. The mission statement of the agency on the agency website is "to prevent disease, promote health, and protect life by contributing to the conditions within our communities such that people can be healthy".

DRAFT

This mission is achieved by:

- assessing and responding to public health needs,
- educating and empowering people about health issues,
- mobilizing community partnerships,
- assuring effective programming and practices,
- linking people to health services

New York is one of 26 states where the provision of public health services is decentralized. The Essex County Health Department (ECHD) is one of fifty-seven local public health departments (plus the New York City Department of Health and Mental Health) in NYS that operates under the administrative authority of local government. The Essex County Health Department has been in operation since the inception of Essex County in 1877

There are currently four major program delivery units

- Public Health
- Children's Services
- Women, Infants & Children (WIC)
- Home Health

Essex County Health Department (ECHD) relies on multiple funding sources to fulfill its mission including: NYSDOH State Aid Grants (~70%), NYS Department of Education, Billed Revenue, and Local Appropriations (~30%). The Agency also has a fiscal group managing all funds, billing and reimbursement collection for programs and services.

The public health preparedness and response program is responsible for ensuring local ability to respond to ever evolving public health threats such as communicable disease outbreaks; natural disasters; bioterrorism; hazardous substance release or accidents; or events requiring mass care. There are six categories to achieve this:

- Bio Surveillance: Lab Testing; Surveillance & Epidemiological Investigation
- Community Resilience: Community Preparedness; Community Recovery
- Countermeasures & Mitigation: Medical Countermeasure Dispensing; Medical Material Management & Distribution; Responder Health & Safety
- Incident Management: Emergency Operations Coordination
- Information Management: Public Information & Warning; Information Sharing
- Surge Management: Mass Care; Medical Surge; Fatality Management; Volunteer Management.

Essex County Department of Public Works

The EC DPW has responsibility of all county roads, county bridges, and all of the county government buildings. Bridges on town roads are also considered Essex County bridges and the DPW has responsibility over those bridges. They perform essential services such as paving of roads, installations of culverts, replacement of county bridges, maintenance of buildings, and assisting all towns and villages during times of disasters.

Essex County Department of Emergency Services:

Essex County Department of Emergency Service's Mission is to protect the lives and property of our citizens and that of the visitors to Essex County from the harmful effects of natural and man-

made disasters, through experience, training, knowledge and resources. This is accomplished through planning, response, recovery, and mitigation efforts. Coordination of the Enhanced 911 Communications System for the protection and safety of the citizens and visitors to Essex County is vital to accomplishing the agency mission.

Essex County Emergency Service's mission is achieved by many specific programs:

- Emergency Scene Coordination (Fire, EMS, HAZMAT, Cause and Origin)
- Hazardous Materials / WMD Response Team Operation
- Operation of the County Emergency Operations Center (EOC)
- Operation and Maintenance of a County-Wide Public Safety Radio System
- Development and Maintenance of Emergency Planning Documents
- Development and Maintenance of Emergency Mutual Aid Agreements
- 911 System Coordination, Public Safety Answering and Radio Dispatch

Emergency Services Training Programs consists of the following:

- Fire prevention and suppression
- Emergency Medical Service (EMS)
- HAZMAT / WMD Response
- Incident command and management training

The Emergency Services Office has 6 budgets within its department that include:

- Communications
- Fire Coordinator
- Emergency Services
- Homeland Security
- Enhanced 911
- Emergency Medical Services

The department is a critical component of mitigating hazards in Essex County. When considering the four phases of emergency management; preparedness, response, recovery and mitigation. The department is critical in ensuring residents and others are prepared for an emergency, can respond to an emergency, can recover from the emergency, and mitigate that emergency or hazard.

Essex County Office for the Aging:

Essex County Office for the Aging mission is to provide leadership and advocacy which creates an environment enabling the County's aging residents to determine their own destiny in a positive productive manner.

Outreach workers help to identify older adults who are in need and aid them in accessing services. Staff will provide home visits and help in completing paperwork which may include, but not limited to, applications for Lifeline, insurance forms, Medicare, SNAP (food stamps), Medicaid, HEAP, and other programs.

Office for the Aging also works closely and makes referral s to other agencies such as Adult Protective Services , Cornell Cooperative Extension, Public Health Nurses, Coordinated Care Unit, Retired Seniors Volunteer Program (RSVP), Third Age Adult Day Care, Social Services.

DRAFT

The Agency provides the following to older residents of Essex County:

Congregate Meal Sites: There are 13 congregate meal sites throughout the county where older adults enjoy a hot meal as well as socialization and educational, recreational and health related programs.

- Home Delivered Meals are available for those older adults who are home bound or have a nutritional need. The program covers all the towns in Essex County and provides a healthy, hot meal as well as the benefit of a daily check on the senior's well -being.
- Medical Transportation Clients 60 and over can contact the Transportation Department to arrange rides to medical appointments.
- EISEP (Expanded In -Home Services for the Elderly Program) Directed at elderly individuals and couples who need homemaker or personal care services as well as a Lifeline unit .
- Health Insurance Counseling Staff can assist with health insurance such as enrollment into Medicare plans, Prescription drug plans, etc. Employment Opportunities Our office can help coordinate employment opportunities for individuals 55 and older.
- Home Rehabilitation helps older adults apply for home rehabilitation programs for those who cannot make necessary repairs.
- Legal Services Office for the Aging contracts with a local lawyer to provide older adults basic legal assistance. Call us for an appointment.
- Respite Care Office for the Aging can assist in connecting families to short term care that can help provide a break from the daily routine and stress involved with care giving.

The Department is also critical during emergencies. They keep and maintain a list of all Essex County residents who receive their assistance. A separate list indicates older residents and other who require medical needs at home such as kidney dialysis or oxygen. The agency supports the Emergency Operation Center during a disaster as a resource for person who many need additional or specific assistance such as medical needs. They are instrumental in ensuring the older residents of the Essex County survive disasters.

Essex County Soil and Water Conservation District

The Essex County Soil and Water Conservation District was formed in 1965 and was authorized under NYS law to develop and carry out programs of soil, water, and related natural resource conservation by providing technical assistance and programs to residents, landowners, and governmental entities. The Essex District is run out of a DPW offices in Lewis. Cooperative Extension, run through Cornell in New York as New York's land-grant university, are state-wide entities that provide a myriad of services to persons and entities in a state, including, but not limited to, informational programs and classes for residents, assistance for agricultural entities in the state, and a voice for natural resource conservation. The Essex County Soil and Water Conservation District (hereafter SWCD) has at any point multiple programs occurring to benefit the county. Highlights of these annual programs include:

- Agricultural Environmental Management: It is a voluntary, incentive- based program, to help farmers to address natural resource concerns through the help of conservation agencies. The benefits provided by AEM help to establish Best Management Practices (BMPs), increase awareness of impacts on the environment and protect drinking water, on top of several other benefits. Several funding sources are available to Essex AEM farms in order to implement BMPs and conservation stewardship. The SWCD also works closely with the

USDA's Natural Resource Conservation Service to help landowners secure cost sharing for their conservation efforts.

- Conservation Reserve Enhancement Program: The New York State Conservation Reserve Enhancement Program (CREP) encourages farmers to reduce nutrients and sediments that enter water bodies to improve water quality, protect public water supplies and uphold good farming practices. CREP provides an economic incentive to farmers who participate in the program by renting less productive areas of land that are placed into vegetative cover near sensitive water bodies. CREP practices include tree plantings, creating wildlife habitat, riparian buffer, filter strips, restoring wetlands, and many others.
- Forestry Management Advice: Managing a forest provides several tangible benefits, including protecting both the natural beauty and wildlife habitat that draw people and animals to a location, and the economic value provided by timber or forest farming to the landowner. The SWCD provides forestry assistance to county forest lands, several towns, and from some participating AEM farms.
- Stormwater Management: With the goal of reducing rainwater runoff and excess sedimentation entering waterways, the District has made educational programs available to residents and construction projects completed. Some examples of these are rain barrel construction classes (to capture runoff from roofs), roadway temporary storage tanks to ease sedimentation, properly sizing and constructing culverts near roadways, and hydroseeding ditches.
- Informational Brochures: There is a brochure on their website from pond management – how and why ponds are built, as well as information about how to choose a good pond site and how different elements of the environment affect these choices. There is also a post-flood stream rehabilitation handout, that outlines the basics of debris removal and stream channel reworking that can be necessary after a flood event. These brochures are useful for those who are undertaking these sorts of projects.
- Habitat Enhancement Programs: Programs to enhance natural habitats include educational classes like Salmon in the Classroom, designed to teach schoolchildren about environmental lifecycles, assistance to landowners in providing habitat on their properties, i.e. birdhouses and native shrubs, and a culvert inventory program. The culvert inventory is part of a larger regional program, and it designed to assess county inventories and decide which culverts may need upgrades due to under sizing or being in poor condition.
- Equipment Rental: There are some specialized pieces of equipment that the average landowner needs infrequently enough that owning it is a bad choice or are too expensive to own for the average landowner. The SWCD has the ability to rent some of these pieces out and thus allow landowners access to this equipment that makes jobs easier and faster. Examples include broadcast seeders, trailer or tractor mounted post pounders, and straw bale mulchers.
- Tree and Shrub Sale: A yearly event that allows residents to purchase young trees and shrubs for their lands

Essex County Office of Community Resources:

The Office of Community Resources assists the local municipalities plan, prioritize, develop, fund and manage capital and community development projects. By providing a comprehensive planning & administration approach, they help address and fund the critical infrastructure projects that shape the growth, sustainability & resiliency of the communities. Their core competencies are municipal & financial planning, public funding acquisition, financial & public funding

DRAFT

administration, project and management within the areas of water and sewer treatment works, public utilities, public environmental protection & improvement, public recreation, and historic preservation, as possible. The Office of Community Resources was developed to better serve the residents of Essex County by combining the offices of Planning and Grant administration. By combining these offices, the county is able to better utilize staff to better manage the grants of the towns and county. Primary responsibilities are

- to provide grant services to towns,
- to provide grant services to County agencies,
- claim administration,
- project management,
- fiscal services for grants,
- environmental permitting and review,
- and general municipal law review.

The Ausable River Watershed Association

The Ausable River watershed covers 512 square miles and includes 94 miles of river channel. It is fed by more than 70 streams, including its two major tributaries, the Chubb River and Black Brook. Seven towns, eight hamlets, and one incorporated village are located in the watershed, which covers portions of two counties. Except for a small area at the river's mouth on Lake Champlain, the entire watershed is located within the boundaries of the six-million-acre Adirondack Park.

The watershed contains many ecologically rich environments with vibrant human histories. Home to over 20,000 people, it is largely rural in character with its population concentrated in small communities in the downstream portions of the river. Upstream, the Ausable's two branches flow through protected forestlands that are part of the New York State Forest Preserve.

The Ausable River faces numerous threats and challenges, ranging from global issues such as climate change, to local issues including road salt migration into waterways, undersized culverts, and encroaching invasive species. The Ausable River Association is working to address each of these issues. They work collaboratively with towns, counties, other non-profits, universities, and state and federal agencies. AsRA works in partnership with landowners, municipalities, other non-profits, and government agencies. We foster collaboration and information sharing for the benefit of the Ausable River among organizations, universities, government agencies, local businesses, and individuals who care about the river.

The AsRA mission statement is: “helping communities protect our streams and lakes”. The vision statement of the association is: “we envision a community of watershed residents and visitors enjoying the Ausable River, its lakes and tributaries and working to protect its clean waters, healthy free-flowing streams, and the diverse habitats that sustain its native plants and wildlife.”

Goals developed by the association are as follows:

- Clean Water: Streams, lakes, wetlands, and aquifers capable of supporting a full complement of human and ecosystem needs.
- Healthy Streams: Shaded, cool waters, with ample floodplains and self-regulating flows sustaining ecological diversity and thriving communities
- Biodiverse Habitats: Habitats and ecosystems fostering native plant and animal species in and alongside streams, lakes, and wetlands

- Public Enjoyment: Responsible, low-impact recreational opportunities protective of Ausable waterways and adjacent lands
- Engaged Communities: Informed residents and visitors caring for the health of the watershed where they live, work, and play.
- A Voice for the River: A strong, sustainable Ausable River Association working in partnership to achieve shared goals
- The Ausable River Association (AsRA) works broadly to protect the Ausable River for its ecological value and its value to the human communities that care for and enjoy its many benefits. The association organizes work into three broad program areas:
- Identify and Understand Watershed Resources - AsRA supports and implements science, data collection, and information sharing projects. Our goal is to understand and document current problems and measure the effectiveness of solutions to manage, protect, and restore the Ausable River watershed.
- Conserve and Steward Watershed Resources - AsRA works to create an ethic of river stewardship - a sense of common purpose and shared goals for protecting the river among private landowners, residents, business owners, municipalities, and others.
- Restore the Ausable River - AsRA integrates natural stream restoration planning and techniques into public storm response, infrastructure development, road maintenance, and private projects that will improve the ecology, morphology and hydrology of the river.

Water quality monitoring programs include:

- Bi-Weekly River Monitoring. We monitor temperature, dissolved oxygen, specific conductance, and pH at 25 stream locations throughout the watershed on a bi-weekly basis. This effort helps us identify where major water quality problems occur and predict future problems. We are tracking two primary pollutants, chloride and sodium. Both enter the river as a result of winter road deicing practices. Specific conductance measures the ability of water to conduct an electrical current, which indirectly measures the salinity of the water.
- Lake Monitoring. AsRA is monitoring water quality at Mirror Lake, Lake Everest, Upper Cascade Lake, Lower Cascade Lake, Taylor Pond, and Butternut Pond. This work has been supported by Mirror Lake Watershed Association, Town of Wilmington, NY State Department of State, and private donors. In addition to collecting surface water samples from each lake during the summer months, AsRA's staff also takes vertical profiles of temperature, dissolved oxygen, specific conductance, and pH. These data help us understand the impact phophorus, road salt, and climate change are having on our lakes.
- Chubb River Continuous Monitoring Stations. Working in partnership with the Adirondack Watershed Institute, AsRA maintains two continuous monitoring stations on the Chubb River. One station is located above the Village of Lake Placid and the other just below the Municipal Wastewater Treatment Facility. These stations continually monitor water height, temperature, and conductivity on an hourly basis. Coupled with regular discharge readings and water chemistry sampling these stations give us a detailed picture of the total amount of nutrients and pollutants being exported from the Lake Placid area. This work is critical to understanding how road salt moves through and exported from the watershed.
- River Temperature Monitoring. AsRA has placed 13 temperature data loggers in the Ausable River to provide a continuous measure of water temperature. Warmer waters seriously threaten the survival of many native Adirondack species, most notably Brook Trout. Given the challenges posed by global climate change, our goal is to understand where waters are

DRAFT

warming in the watershed, whether our restoration efforts have a cooling effect, and the long-term suitability of the Ausable and its tributaries as habitat for Brook Trout.

- River Steward Programs include: The Ausable River Association (AsRA), with funding from the Lake Champlain Basin Program, created the river steward program in 2009 to educate river users about the threat of aquatic invasive species. Since then, the work of the river steward has broadened to include terrestrial invasive species that also affect the Ausable River and its lakes. The river steward is an information resource to river users and the general public, educating and creating awareness, helping people to identify infestations when they happen and to mitigate their spread.
- The river steward:
    - educates river users on how to prevent the spread of aquatic invasive species,
    - attends local events to educate the public on river ecology and indicators of water quality,
    - monitors the river and watershed for new invasive species infestations, both terrestrial and aquatic,
    - maintains wader wash stations throughout the watershed during fishing season.

The river steward spreads the Check-Clean-Dry message to encourage anglers to remove "invasive hitchhikers" from their gear. The steward is often on the river sharing this message with anglers. They also travel to local fly shops, visitors' bureaus and farmers' markets, providing general information about the river and watershed. The river steward serves as a liaison between AsRA and lake associations within the watershed. The river steward works closely with the Adirondack Park Invasive Plant Program sharing their tested techniques for identifying and managing invasive species with lake association members and the public.

The Ausable River Watershed Association has implemented many projects that have mitigated hazards. The association will continue to advance mitigation in the watershed as additional programs and projects are completed.

These county agencies, non-governmental organization, towns will continue to implement mitigation projects to increase resiliency in Essex county.

Capability assessment additionally looks at the resources available to local municipalities to reduce disaster risks. These resources are expanded in the following sections.

Planning and Regulatory Capabilities

- Comprehensive Plan. Essex County has a countywide comprehensive plan which includes guidelines for sustainable development and land use management. This plan integrates hazard mitigation principles, particularly for flood–prone and environmentally sensitive areas.
- Zoning & Land Use Codes. Local zoning and land use ordinances are managed at the town and village levels with support from the county. These codes incorporate provisions to limit development in floodplains and other High-risk areas, reducing potential hazard impacts.
- Building Codes. The county enforces New York State building codes, which include standards for wind, snow loads, and earthquake resistance. Further integration of hazard–specific building standards (like wildfire resilience, flood resilience) could enhance community safety.
- Floodplain Management Plan. Essex County participates in the National Flood Insurance Program (NFIP) and maintains floodplain management ordinances. Towns within the county follow

FEMA floodplain mapping and regulate development in Special Flood Hazard Areas (SFHAs) to minimize flood risk.

- Stormwater Management Plan. The county has stormwater management policies that strives to prevent runoff and flooding in urbanized and rural areas. These policies align with state and federal regulations and include strategies for green infrastructure and water quality improvement.

Technical and Staff Capabilities

- Emergency Services & Public Safety. The Essex County Office of Emergency Services (OES) coordinates disaster response and preparedness activities countywide. OES staff are trained on Incident Command System (ICS) protocols, receiving ongoing training in disaster response and mitigation planning.
- GIS & Mapping. The county has a Geographic Information System (GIS) team that supports hazard mapping, floodplain identification, and critical infrastructure mapping. This capability allows for detailed risk assessments and improved decision–making in response to hazards.
- Soil & Water Conservation District. The Essex County Soil and Water Conservation District plays a significant role in erosion control, water quality management, and land use planning. The district provides expertise in natural resource conservation, which supports efforts to mitigate flood, wildfire, and landslide risks.
- Public Health Resources. The Essex County Health Department has the necessary capabilities to support public health and safety in emergencies. The department can coordinate disease outbreak response, pandemic mitigation, and public health education—critical for community resilience.

Financial Capabilities

- Grants & Federal Funding. The county actively pursues federal and state grants to support hazard mitigation and resilience projects. Recent grant funding supported flood mitigation projects, infrastructure upgrades, and public education initiatives.
- Budget Allocation for Mitigation Projects. The county budget includes funding for essential mitigation projects like infrastructure improvements, emergency preparedness, and resilience planning. Additional funds are needed to address identified gaps, especially for projects targeting wildfire mitigation, utility resilience, and extreme weather adaptation.
- Capital Improvement Plan (CIP). The county and individual towns maintain Capital Improvement Plans prioritizing infrastructure upgrades. Many projects address critical resilience needs like road maintenance, stormwater systems, and drainage improvements.
- Financial Resources: Funding for hazard mitigation current federal and state sources of funding include:
    - Hazard Mitigation Grant Program (FEMA)
    - Pre-Disaster Mitigation Program (FEMA)
    - Flood Mitigation Assistance Program (FEMA)
    - Flood Mitigation Assistance Planning Grant (FEMA)

DRAFT

- USACE Water Resource Development Block Grant
- Small Business Administration Loan Program
- DOT (Transportation Enhancement Program)
- DEC (Dam safety program, Stormwater Management Program)
- Community Development Block Grants (CDBG)
- Department of Agriculture

Additional State and Federal funding opportunities are included in Appendix G of this Plan.

Education and Outreach Capabilities

- Public Awareness Programs. The county collaborates with local media, schools, and community organizations to provide hazard awareness and preparedness information. Programs include seasonal campaigns on winter storm preparedness, wildfire safety, flood prevention, and emergency kit preparation.
- Community Emergency Response Teams (CERT). Essex County supports CERT programs in several towns, training volunteers in basic disaster response skills like fire safety, light search and rescue, and first aid. CERT enhances local response capabilities and promotes community–level preparedness.
- School Emergency Preparedness Programs. The county partners with local school districts to implement emergency preparedness plans. This includes conducting evacuation drills, lockdown exercises, and public safety education for students and staff.
- Informational Resources and Public Awareness and Education Efforts include:
    - National Weather Service
    - American Red Cross-Disaster Education
    - Salvation Army
    - Business groups
    - Existing public outreach of Emergency Management Agency
    - Local Emergency Planning Committee's
    - Regional Groups
    - School District Plans
    - Brochures on hazards to be distributed to various locations throughout the county.

Partnerships and Inter–Jurisdictional Coordination

- Mutual Aid Agreements. Essex County maintains mutual aid agreements with neighboring counties and state agencies, allowing for resource–sharing during large–scale emergencies. These agreements include provisions for fire, EMS, law enforcement, and public health support.
- State & Federal Coordination. The county has strong relationships with FEMA and the New York State Division of Homeland Security and Emergency Services (DHSES). This coordination relationship facilitates access to technical assistance, training, and grant funding for mitigation and resilience projects.

- Regional Planning Councils. Essex County participates in regional planning councils addressing cross-county issues like transportation, environmental conservation, and disaster resilience. This regional approach helps align mitigation strategies and fosters collaboration on large-scale projects.

Infrastructure Resilience

- Utility Resilience & Redundancy. The county works with local utility providers to enhance power grid resilience, especially against severe winter storms and flooding. Plans include power line hardening, backup power for critical facilities, and routine maintenance of utility infrastructure.
- Transportation Infrastructure. Road and bridge maintenance is a priority, particularly due to county vulnerabilities to flooding, landslides, and snowstorms. It has invested in elevating roadbeds, reinforcing bridges, and improving drainage systems to prevent damage from severe weather.

Gaps and Needs

- Wildfire Mitigation. While there are programs for wildfire education, there is limited capacity for active wildfire mitigation like fuel reduction in High-risk areas. Enhanced resources for fire breaks, controlled burns, and wildfire mapping could help mitigate this risk.
- Climate Change Adaptation. Essex County has begun addressing climate resilience but lacks a formal Climate Adaptation Plan. As climate change impacts intensify, the county will need to strengthen its ability to address extreme temperatures, changing precipitation patterns, and associated hazards.
- Comprehensive Hazard Mitigation Strategy. Smaller towns may lack resources to maintain updated emergency and mitigation plans. Essex County could support these communities by providing additional technical assistance, funding, and shared resources.

Essex County possesses a solid foundation for hazard mitigation with strong emergency response capabilities, public outreach programs, and regulatory measures. Increased funding and technical support are needed to address emerging risks, especially related to wildfire, climate change, and infrastructure resilience. By expanding resources and enhancing interagency coordination, it can continue to build resilience and protect its residents and assets from natural and man-made hazards.

Local Capability Assessment

Refer to individual Town Appendices for local capability assessments.

Assessment Analysis

Strong foundational capabilities exist for hazard mitigation and emergency response including effective planning, robust technical resources, and established partnerships. The county comprehensive plan integrates hazard mitigation principles particularly for flood-prone areas, while local zoning and land use ordinances limit development in High-risk areas, reducing potential hazard impacts. The county enforces New York State building codes addressing wind, snow

DRAFT

loads, and earthquake resistance, although integrating hazard–specific building standards for wildfire and flood resilience could further enhance safety. Participation in FEMA's National Flood Insurance Program (NFIP) ensures effective floodplain management, aligning with FEMA's emphasis on pre–disaster risk reduction. The county has stormwater management policies to mitigate flooding, along with a strong GIS capability that supports hazard mapping and critical infrastructure identification. The Essex County Office of Emergency Services (OES) coordinates disaster response and preparedness, with trained staff following Incident Command System (ICS) protocols.

County financial capabilities are solid with active pursuit of federal and state grants for flood mitigation, infrastructure upgrades, and resilience planning. Capital Improvement Plans (CIPs) prioritize infrastructure upgrades, focusing on transportation resilience and stormwater systems—crucial for mitigating flood and weather–related risks. Education and outreach are also strengths, with public awareness programs and Community Emergency Response Teams (CERT) promoting disaster preparedness at the community level. School emergency preparedness programs further enhance readiness by conducting evacuation drills and public safety education. Essex County maintains mutual aid agreements with neighboring jurisdictions, allowing for resource–sharing during large–scale emergencies. Partnerships with state and federal agencies like the New York Division of Homeland Security and Emergency Services (DHSES) and FEMA, provide access to technical support, training, and funding. Infrastructure resilience initiatives focus on utility hardening like backup power for critical facilities, and road and bridge improvements to mitigate flooding, landslides, and snowstorm impacts.

Despite these strengths, Essex County faces gaps that need to be addressed to fully align with FEMA's 2023 requirements. Wildfire mitigation capacity is limited, with insufficient resources for active efforts like fuel reduction and controlled burns. Enhanced wildfire risk mapping is necessary to identify and prioritize vulnerable areas. The county also lacks a formal Climate Adaptation Plan, a critical need as climate impacts intensify. Addressing changing precipitation patterns, heatwaves, and extreme temperatures requires integrating climate projections into land use planning, infrastructure design, and emergency strategies. Smaller towns within the county face challenges in maintaining updated emergency and mitigation plans, highlighting the need for county–level technical support and resource sharing. Education campaigns could be expanded to focus on wildfire awareness, heatwave preparedness, and utility outage resilience.

Securing additional funding is essential to close these gaps. Pursuing FEMA grants like the Building Resilient Infrastructure and Communities (BRIC) program and Hazard Mitigation Grant Program (HMGP) can support priority projects. Increased budget allocations for wildfire mitigation, utility resilience, and extreme weather adaptation are necessary to address emerging risks. Strengthening infrastructure resilience should include accelerating road and bridge upgrades, expanding utility redundancy measures like grid hardening, and implementing backup power systems for critical facilities. Public outreach must also expand to underserved populations to ensure equity in mitigation planning.

By addressing these gaps, Essex County can significantly enhance its resilience to natural and man–made hazards. Focusing on wildfire mitigation, climate adaptation, infrastructure improvements, and community outreach will enable the county to better protect residents, infrastructure, and critical assets. With increased funding, technical support, and coordinated efforts, Essex County is well positioned to meet FEMA's 2023 requirements and build a safer, more resilient community.

Mitigation Strategy

The Mitigation Strategy section of the Essex County Hazard Mitigation Plan (HMP) provides a comprehensive strategy for reducing the community's vulnerabilities to natural and human-made hazards. Grounded in the findings of the risk assessment, the plan outlines targeted strategies to address the specific risks faced by the county and its individual jurisdictions. This section includes:

- Update and Development
- Mitigation Strategy Planning Approach
- Past Mitigation Actions
- Review and Update of Mitigation Goals and Objectives
- Mitigation Strategy Development and Update

Town appendices provide town-specific mitigation action plans tailored to the unique risks, vulnerabilities, and priorities of each community. For example, flood-prone towns like Willsboro and Westport focus on strategies to mitigate flood risks, while wildfire risk reduction is emphasized in forested areas such as Wilmington and Keene. The town appendices also identify timelines, responsible parties, potential funding sources, and metrics for evaluating success, providing a structured framework for implementation. By addressing local needs, these appendices ensure equitable resource allocation and empower each jurisdiction to take ownership of its mitigation efforts.

Each mitigation action is developed with clear goals, objectives, and implementation steps, ensuring the plan is actionable and achievable. Actions are prioritized based on criteria such as risk reduction potential, cost-effectiveness, technical and administrative feasibility, and alignment with county-wide goals. Additionally, town mitigation actions integrate with ongoing local and regional initiatives, fostering collaboration and maximizing resource efficiency.

This strategy includes clearly defined goals and objectives, along with a mitigation action plan featuring a series of targeted projects and implementation measures.

Mission Statement

The Essex County Hazard Mitigation Plan Team reviewed the mission statement to ensure it aligns with FEMA guidance (386-1) and effectively define the purpose of the planning process. The intent of this statement is to guide the development of goals and objectives that support the overarching mission of the plan.

Following the committee's review, the 2025 Essex County Hazard Mitigation Plan updated its mission statement to emphasize strengthening community resilience. The revised statement shifts the focus to proactive planning and coordinated response, ensuring an adaptive and sustainable approach to mitigating natural, technological, and human-caused hazards. The updated mission statement is provided below.

"To enhance community resilience by reducing risks and impacts from natural, technological, and human-caused hazards through proactive planning and coordinated response."

Goals & Objectives

DRAFT

According to CFR 201.6(c)(3)(i): "The hazard mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards."

The mitigation goals for Essex County have been developed based on risk assessment results, research, stakeholder input, and existing policies, programs, and resources. These goals and objectives provide a foundation for reducing hazard vulnerabilities and strengthening community resilience.

For the purposes of this plan, goals and objectives are defined as follows:

- Goals are broad, long-term policy statements that outline what the mitigation strategy aims to achieve. They define the overall benefits the plan seeks to accomplish and provide a global vision for hazard mitigation.
- Objectives are specific, measurable actions that contribute to achieving the broader goals. Unlike goals, objectives serve as independent benchmarks for evaluating the effectiveness of mitigation efforts and help establish priorities.

The goals and objectives for Essex County were developed through a review of the 2019 New York State Hazard Mitigation Plan (HMP), and the 2017 Essex County HMP. These goals also align with broader county and community planning initiatives to ensure a coordinated and effective approach to hazard mitigation. The goals and objectives are designed to address the most significant risks and build resilience within the community.

Table 104. Modoc County Mitigation Plan Goals and Objectives

Number	Goal	Objective
1	Reduce risk to lives and property from frequent natural, technological and human-caused disasters.	**Objective 1.1**: Introduce targeted projects to mitigate hazards in high-risk areas, reducing vulnerability to life and property.
		Objective 1.2: Introduce initiatives that support the long-term sustainability of Essex County's natural and economic resources.
		Objective 1.3: Update land use plans and zoning regulations to avoid new development in hazard-prone areas.
		Objective 1.4: Enhance watershed management programs to protect water resources and promote ecosystem health.
2	Provide Protection for Critical Facilities, Infrastructure, Utilities, and Services from Hazard Impacts.	**Objective 2.1**: Identify critical infrastructure and actions necessary to improve resilience against hazards such as flooding, storms, and power outages.
		Objective 2.2: Develop redundant systems for critical facilities to maintain operations during and after hazard events.
		Objective 2.3: Implement preventive maintenance programs to ensure reliable utility and service operations, especially in vulnerable areas.
3	Improve Public Awareness,	**Objective 3.1**: Expand community outreach programs on hazard awareness and preparedness.

Number	Goal	Objective
	Education, Communication, and Preparedness for All Hazards.	**Objective 3.2**: Increase accessibility of hazard-related information, utilizing multiple platforms to reach diverse audiences, including vulnerable populations.
		Objective 3.3: Conduct regular workshops and simulations to educate the public on emergency response, evacuation planning, and hazard-specific precautions.
		Objective 3.4: Implement a comprehensive alert system to provide timely warnings in multiple languages and formats.
4	Increase Community Capabilities to Mitigate Losses and to Be Prepared for, Respond to, and Recover from a Disaster Event.	**Objective 4.1:** Improve interagency coordination at local, state, and federal levels for seamless disaster response and recovery.
		Objective 4.2: Invest in new technology and equipment to improve response times and reduce risks to emergency responders.
		Objective 4.3: Strengthen mutual aid agreements and shared resources among local jurisdictions.
		Objective 4.4: Establish mechanisms for debriefing and evaluating response effectiveness post-disaster to continuously improve response capabilities.
5	Ensure a More Resilient County That Can Adapt to Hazards Created or Exacerbated by Climate Change.	**Objective 5.1:** Integrate climate adaptation measures into countywide planning, with a focus on high-risk areas such as floodplains and fire-prone zones.
		Objective 5.2: Identify and develop greenhouse gas reduction strategies to address climate change impacts on hazard severity.
		Objective 5.3: Protect water supplies by managing drought risks and promoting water conservation.
		Objective 5.4: Prioritize green infrastructure projects that enhance natural resilience to climate-related hazards.
6	Reduce Fire Severity and Mitigate Undesirable Fire Outcomes in Essex County.	**Objective 6.1:** Create and maintain defensible space around structures in fire-prone areas to reduce wildfire risk.
		Objective 6.2: Establish fire prevention education programs to raise public awareness about fire hazards and safety practices.
		Objective 6.3: Promote fire-resilient landscaping practices for both public and private properties.
		Objective 6.4: Facilitate partnerships with state and federal agencies to improve wildfire response capabilities.

DRAFT

Number	Goal	Objective
7	Maintain FEMA Eligibility and Position the Community for Grant Funding.	**Objective 7.1:** Ensure that the Hazard Mitigation Plan is reviewed and updated every five years as per FEMA requirements.
		Objective 7.2: Encourage broad participation in the HMP update process to increase eligibility for FEMA and other federal and state funding opportunities.
		Objective 7.3: Enhance the county's participation in the National Flood Insurance Program (NFIP) Community Rating System (CRS) to secure lower insurance premiums for residents.
		Objective 7.4: Track and leverage grant opportunities for mitigation projects to continually improve community resilience.

Mitigation Strategy Planning Approach

The mitigation strategy updated planning approach is detailed in subsequent sections to include the following steps:

- Assess Progress: Review past county and local mitigation projects, noting completed and ongoing initiatives.
- Update Strategies: Develop revised mitigation approaches based on evolving risks, capabilities, and priorities.
- Prioritize Actions: Rank mitigation projects to ensure resources are allocated effectively for maximum impact.

Changes from the 2019 to 2025 Plan

- Mission Statement: the previous (2011 and 2019) Hazard Mitigation Plans included Vision Statements now restated as Mission Statement.
- Goals and Objectives: Overhauled to provide overarching strategic goal with supportable objectives.
- Climate Change Adaptation: Newly integrated in the 2025 plan.
- Public Awareness and Inclusivity: Greater emphasis on accessible, inclusive communication.
- Fire-Specific Mitigation: New focus on wildfire risk management and adaptation.
- Critical Infrastructure Protection: More targeted approach to protect essential services.
- Enhanced Coordination and Mutual Aid: Improved focus on interagency collaboration.
- Grant Funding and FEMA Compliance: Dedicated goal to maintain and enhance eligibility for funding.

Mitigation Strategy Update and Development

To assess progress on local mitigation actions, each jurisdiction with previously identified actions from past DMA 2000 Hazard Mitigation Plans or related efforts was provided with a Mitigation Action Plan Review Worksheet. These worksheets were pre-populated with prior mitigation

actions, and municipalities were asked to review and update the status of each action using the following categories:

- No Progress/Unknown
- In Progress/Not Yet Complete
- Continuous
- Completed
- Discontinued

Municipalities were also required to provide details on the extent of progress, limited progress or discontinuation, and refine project descriptions for better implementation.

Status of Local Mitigation Actions

- Actions marked as Completed or Discontinued have been removed from the updated mitigation strategy.
- Actions categorized as No Progress/Unknown, In Progress/Not Yet Complete, and certain Continuous initiatives have been carried forward into the updated mitigation strategies for each jurisdiction.
- Municipalities provided further details to define project scope, expected benefits, cost estimates, and potential funding sources as possible.

Support for Municipalities in Identifying Mitigation Actions

During the Kick-Off and planning meetings, municipalities received assistance in identifying completed, ongoing, and potential mitigation activities. Additional projects and initiatives emerged throughout the plan update process, particularly through:

- Risk assessment updates
- Public and stakeholder outreach
- Direct municipal engagement via meetings, emails, and phone discussions

Development of Updated Mitigation Strategies

The Essex County Hazard Mitigation Planning Committee, along with contract consultants, worked closely with each jurisdiction to refine and develop their mitigation strategies. The focus was on identifying well-defined, implementable projects while considering:

- Identification of specific areas and assets at risk
- Risk reduction benefits
- Losses avoided
- Estimated costs
- Potential funding sources (including state and federal mitigation grants)
- Updates to comprehensive plans, transportation studies, environmental assessments, and past HMPs.
- Alignment of mitigation actions with ongoing initiatives and strategic priorities.

The development process followed FEMA's Local Mitigation Planning Handbook (March 2013), ensuring mitigation actions align with the following categories:

- Local Plans and Regulations – Actions involving policies, codes, and land-use regulations that influence development.

DRAFT

- Structural and Infrastructure Projects – Projects aimed at modifying, protecting, or relocating structures and infrastructure to reduce hazard risks.
- Natural Systems Protection – Initiatives that preserve or restore natural systems to minimize hazard impacts.
- Education and Awareness Programs – Efforts to inform residents, property owners, and officials about hazards and mitigation strategies.

Incorporating Equity, Climate Change, and Resilience

To align with federal and state mitigation priorities, the Planning Committee ensured that local mitigation strategies included initiatives focused on:

- Protecting vulnerable public and private properties.
- Improving public education and awareness regarding hazard mitigation
- Strengthening countywide mitigation capabilities

Additionally, in response to the growing impacts of climate change, municipalities have integrated strategies to address long-term risks from:

- Extreme temperatures
- Flooding
- Severe storms and winter storms
- Wildfire risk

Mitigation Strategy Workshop & FEMA Guidance Implementation

In February 2025, a Mitigation Strategy Workshop was held for all participating jurisdictions, conducted. Key improvements to the mitigation planning process included:

- Refining mitigation strategies to focus on specific, actionable projects rather than broad objectives.
- Focused on specific areas and assets at risk to guide targeted mitigation efforts.
- Using Action Worksheet templates to document selected priority projects, ensuring each includes details on hazards addressed, project description, benefits, costs, responsible agencies, funding sources, timeline, and prioritization.

By adopting these updates, Essex County aims to strengthen its mitigation strategy, ensuring it is actionable, well-documented, and aligned with state and federal priorities.

Mitigation Strategy and Prioritization Process

Section 201.c.3.iii of 44 CFR requires an action plan describing how the actions identified will be prioritized.

Recent FEMA planning guidance (March 2013) identifies a modified STAPLEE (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) mitigation action evaluation methodology that uses a set of 10 evaluation criteria suited to the purposes of hazard mitigation strategy evaluation. This method provides a systematic approach that considers the opportunities and constraints of implementing a particular mitigation action. Based on this guidance, the Planning Committee applied an action evaluation and prioritization methodology which includes an expanded set of criteria to include the consideration of cost-effectiveness, availability of funding, anticipated timeline, and if the action addresses multiple hazards.

Table 105. HMP Mitigation Prioritization Process

Criteria	Description
Life Safety	Will the action be effective at protecting lives and preventing injuries?
Property Protection	Will the action be effective at eliminating or reducing damage to structures and infrastructure?
Cost-Effectiveness	Are the costs to implement the project or initiative commensurate with the benefits achieved?
Technical Feasibility	Is the mitigation action technically feasible? Is it a long-term solution?
Political Support	Is there overall public support for the mitigation action? Is there the political will to support it?
Legal Authority	Does the municipality have the authority to implement the action?
Fiscal Feasibility	Can the project be funded under existing program budgets? Or would it require new budget authorization or external funding (e.g., grants)?
Environmental Impact	What are the potential environmental impacts of the action? Will it comply with environmental regulations?
Social Considerations	Will the proposed action adversely affect a segment of the population? Will it disrupt neighborhoods, break up voting districts, or cause displacement?
Administrative Capacity	Does the jurisdiction have the personnel and administrative capabilities to implement and maintain the action, or will outside help be necessary?
Multi-Hazard Mitigation	Does the action reduce the risk to multiple hazards?
Timeline	Can the action be completed in less than five years (within the planning horizon)?
Local Champion	Is there a strong advocate for the action among the jurisdiction's staff, governing body, or committees to support its implementation?
Alignment with Local Objectives	Does the action advance other local goals, such as capital improvements, economic development, environmental quality, or open space preservation? Does it support policies in other plans and programs?

Participating jurisdictions used evaluation criteria to rank mitigation actions from the 2014 update. Each action received a numeric rank (-1, 0, or 1) based on effectiveness and feasibility:

- 1 = Highly effective/feasible
- 0 = Neutral
- -1 = Ineffective/not feasible

Jurisdictions provided rationale for their rankings, which helped classify actions as Low, Medium, or High priority. While this system ensured consistency, additional local factors could influence final prioritization.

Some jurisdictions carried forward prior mitigation actions, originally ranked using different but comparable criteria:

DRAFT

- High Priority: Aligns with multiple goals, cost-beneficial, funded or grant-eligible, and completable in 1–5 years.
- Medium Priority: Meets at least one goal, cost-beneficial, funding uncertain, and completable in 1–5 years.
- Low Priority: Risk-mitigating, cost-beneficial, but lacks funding and has a long-term timeline (5–10 years).

Jurisdictions were encouraged to reassess past priorities if conditions had changed. If prior rankings remained valid, they were retained and marked as carried forward.

For the plan update, efforts focused on clear, action-oriented mitigation strategies. Vetted projects seen as most effective were prioritized as High or Medium, while lower-priority initiatives were screened out during evaluation.

Cost Benefit Review

Per Section 201.6.c.3iii of 44 CFR, mitigation actions must prioritize cost-effectiveness, ensuring benefits outweigh costs. This plan's cost/benefit review was qualitative as detailed in Table X. Jurisdictions identified both costs (e.g., administrative, construction, maintenance) and benefits (e.g., avoided losses, life safety, infrastructure protection, economic/environmental savings). When possible, actual or estimated dollar values were provided to assess cost-effectiveness. However, in many cases, numerical estimates were unavailable.

For this plan, jurisdictions rated cost-effectiveness using High, Medium, and Low categories:

- Low = < $10,000
- Medium = $10,000–$100,000
- High = > $100,000

Where precise cost/benefit data was unavailable, qualitative ratings were applied.

Table 106. Qualitative Cost and Benefit Ratings

Category	High	Medium	Low
Costs	Requires additional funding sources (e.g., grants, bonds, fee increases) beyond existing levels.	Can be funded with existing resources but needs budget adjustments or multi-year funding.	Can be fully funded within the current budget as part of an ongoing program.
Benefits	Immediate and significant risk reduction for life and property.	Long-term risk reduction for life and property or immediate property risk reduction.	Benefits are difficult to quantify in the short term.

Projects with a positive benefit-cost ratio (e.g., high-over-high, high-over-medium, medium-over-low) are considered cost-effective. For some Essex County initiatives, the Planning Committee may seek FEMA funding through HMGP or HMA programs, which require a detailed benefit-cost analysis (BCA). These analyses will be conducted during funding applications using the FEMA BCA model. The Planning Committee is committed to implementing cost-effective mitigation strategies. For projects not seeking FEMA grant funding, the committee may define "benefits" based on local priorities and the plan's objectives.

Overview of Historical Mitigation Efforts

In accordance with the requirements of the Disaster Mitigation Act of 2000, a discussion regarding past mitigation activities and an overview of past efforts is provided as a foundation for understanding the mitigation goals, objectives, and activities outlined in this plan update.

Severe Snow/Ice Storms & Storm Events

- Conducted surveys and maintained emergency preparedness lists for vulnerable populations.
- Established shared service agreements for resource coordination during disasters.
- Developed and implemented a debris management plan for post-storm cleanup.
- Enforced building codes related to severe storms.
- Implemented tree-trimming programs to reduce storm damage.
- Installed generators in several county, town, and village facilities (additional generators still needed).

Flooding Mitigation

- Implemented flood mitigation projects in Jay and Keene through NY Rising initiatives.
- Replaced culverts and implemented flood mitigation strategies in the AuSable Watershed.
- Updated regulatory tools for floodplain ordinances at town and village levels.
- Educated communities on NFIP policies post-Tropical Storm Irene.
- Provided public outreach and education regarding flood risks.

Wildfire Mitigation

- DEC provided wildfire management training to local fire departments.
- Educated residents on wildfire risks and mitigation strategies.

Earthquake Mitigation

- Enforced seismic building codes in multiple towns, including educating contractors.
- Educated communities about earthquake risks and mitigation.

Multiple Hazard Mitigation

- Integrated hazard mitigation into county planning and community development strategies.
- Formalized hazard mitigation in future county development efforts.
- Maintained an inventory of at-risk buildings and infrastructure.
- Coordinated with municipalities for emergency preparedness and response efforts.
- Held public hearings for including mitigation activities in local laws.
- Educated the public through brochures, newsletters, and social media on disaster risks.
- Established shared services agreements for emergency resource management.
- Ensured zoning and local regulations discourage development in disaster-prone areas.
- Implemented building codes to ensure disaster-resistant construction.
- Developed a centralized library of hazard mitigation documents.
- Initiated buyouts of flooded homes after Tropical Storm Irene.
- Educated residents about landslide risks and mitigation strategies.

DRAFT

Public Education & Awareness

- Created and distributed brochures on hazard mitigation.
- Conducted community outreach on flooding, severe storms, wildfires, and landslides.
- Provided education for code enforcement officers on hazard-resistant building practices.
- Developed online public awareness campaigns through social media and newsletters.

Mitigation Action Plans

The table below outlines a comprehensive framework for enhancing community resilience and preparedness through actionable goals and plans. Each goal is paired with targeted actions, clear objectives, and specific implementation strategies to address diverse hazards, ranging from natural disasters to infrastructure vulnerabilities. The initiatives span critical areas like minimizing risk and vulnerability, protecting infrastructure, improving public awareness, increasing community capabilities, adapting to climate change, reducing wildfire risks, and maintaining FEMA eligibility for funding. By addressing identified gaps and leveraging coordinated efforts, the strategies strive to ensure community safety, enhance operational continuity, and foster sustainable adaptation to future challenges.

Table 107. Mitigation Project Actions

Project Name	Hazard Addressed	Town	Goal/ Objectives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Estimated Cost	Funding Sources
Earthquake Impact Reduction	Earthquake	Schroon, Chesterfield, Westport, Ticonderoga, Willsboro, Jay, Elizabethtown	1, 2,3,4	Conduct training for code officers and update municipal plans to reflect new seismic standards.	Town Supervisors, Town Code Officers	Ongoing/ 1-5 years	Ongoing progression by towns	Variable	Local Budgets, FEMA Hazard Mitigation Grant Program (HMGP), NY State Division of Homeland Security and Emergency Services (DHSES) Grants
Power Grid Resilience Program	All	Countywide	1,2	Implement grid hardening and develop microgrid solutions with utility companies.	Essex County DPW	Ongoing/ 1-5 years	Coordination with utility companies for grid hardening	Variable	Utility Grants, County Funds, FEMA Building Resilient Infrastructure and Communities (BRIC), NYSERDA

DRAFT

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
									Clean En-ergy Fund
Public Safety Com-munications Network Upgrade	Communi-cation Failures	County-wide	1,2,3,4	Upgrade emer-gency radio sys-tems and imple-ment paging sys-tem improve-ments.	Essex County OES	Ongoing 3-5 Years	Phase 1: Complete Radios Upgraded; Phase 2: Paging Upgrade	$600,000	DHS State Homeland Security Program (SHSP), County Budgets, FEMA Public Assistance (PA), NY DHSES Grants
School Emergency Shelter Up-grades	Severe Weather Events	Multiple towns	2,4	Retrofit schools with emergency power, water systems, and shelter ameni-ties.	Local School Dis-tricts	In Pro-gress/1-5 years	Ongoing improve-ments to provide power, water, and shelter	Variable	FEMA Pre-Disaster Mitigation (PDM), Edu-cation Grants, Lo-cal Budgets, NY State Emergency Services Grants
Tree Trim-ming and Vegetation Manage-ment	Wildfire, Winter Storms	County-wide	2	Maintain routine trimming in high-risk areas and collaborate	DPW (County, Towns)	Ongoing/ 1-5 years	Routine trimming in high-risk areas	Varied	County and Utility Com-pany Con-tributions, FEMA BRIC,

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
				with utility com-panies.					NY Depart-ment of En-vironmental Conserva-tion (NYSDEC) Grants
Community Wildfire Awareness Campaign	Wildfire	County-wide	3,6	Host public workshops and distribute infor-mational materi-als.	County OES, Local Fire Depts, Red Cross	Planned/ 1- 5 years	Public work-shops and distribu-tion of in-forma-tional ma-terials	$10,000	FEMA Fire Prevention & Safety (FP&S) Grants, Lo-cal Budgets, NYSDEC Firewise USA Pro-gram
Countywide Culvert Up-grade	Flooding, Soil Ero-sion	County-wide	1,2,4,5	Complete county assessment, pri-oritize needs, and replace cul-verts systemati-cally.	DPW Engi-neering	Ongoing/ 1-5 years	Review of historical prioritiza-tion stud-ies, com-plete studies and es-tablish prioritized list, con-tinue up-grades	Variable	FEMA HMGP, NYSDEC Water Qual-ity Improve-ment Pro-gram (WQIP), Lo-cal Budgets

DRAFT

Project Name	Hazard Addressed	Town	Goal/ Objectives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Estimated Cost	Funding Sources
Community Preparedness Education	Fire, Winter Storms	County-wide	3	Conduct community outreach through public workshops and educational campaigns.	County OES, Red Cross	New Project/ 1-5 years	Public workshops and distribution of informational materials	$10,000	Red Cross, FEMA Community Resilience Education (CRE) Grants, NY DHSES Preparedness Grants
Flood Conditions and Resiliency AuSable and Bouquet Rivers	Flooding	County-wide	2,4,5	Develop and execute projects based on study recommendations.	Essex County OES, NY DEC	New Project/ 1-5 years	Study being conducted with recommendations due by end of 1st Quarter FY	Variable	FEMA Flood Mitigation Assistance (FMA), NYSDEC WQIP, Local Budgets
Urban/Forested Fire Equipment & Access	Wildfire	County-wide	1, 6	Acquire firefighting equipment and enhance access routes.	Essex County OES	New Project/ 1-5 years	Initial Planning	TBD	FEMA Assistance to Firefighters Grant (AFG), NYSDEC Fire and Emergency Management Grants

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
350 Excava-tor	Flooding, Winter Storms, Ice Jams	County-wide	1, 2,4	Procure equip-ment and de-velop debris management strategies.	DPW Engi-neering	New Pro-ject/ 1-5 years	Initial Planning	$1 Million	FEMA PA, USDA Emergency Watershed Protection Program, Essex County, NY DHSES In-frastructure Grants
Back-Up Generators for Radio Tower Sites	All	County-wide	1,2,4	Install genera-tors at all critical radio tower sites.	DPW Engi-neering	New Pro-ject/ 1-5 years	Data Col-lection and Mainte-nance History	TBD	FEMA BRIC, FEMA HMGP, Es-sex County OES, NY DHSES Grants
Radio Site Reliability for Power and Light-ening Pro-tection	All	County-wide	1,2,4	Implement power and surge protection up-grades.	DPW Engi-neering	New/ 1-5 years	Not Started	$600,000	**F**FEMA PA, FEMA HMGP, Es-sex County, NY DHSES Hazard Mit-igation Grants
Radio Sys-tem Relia-bility	All	County-wide	1,2,4	Goal is to have reliable radio communication thru out the	DPW Engi-neering	New/ 1-5 years	Coverage Study Quotes	$ 2-5 Million	FEMA PA, FEMA BRIC, FEMA HMGP,

DRAFT

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
				county for all de-partments that use the system					Essex County, NY DHSES Haz-ard Mitiga-tion Grants
Radio Tower Road Access	Severe Storm, Winter, Fire, Flood	County-wide	1,2,3,4	Build and up-grade roads to withstand storm damage.	DPW Engi-neering	New/1-5 years	Not Started	$6 Mil-lion	FEMA BRIC, FEMA PA, NY DHSES Infrastruc-ture Grants, NYSDOT BRIDGE NY Program
UPS 130KVA Replace-ment	All	County-wide PSB	1,2,3,4	Procure and in-stall new UPS system to pre-vent communi-cations failure.	DPW Engi-neering	New/1-5 years	Spec and Quotes Pending	$500,000	FEMA PA, FEMA BRIC, NY DHSES Communi-cations Re-siliency Grants
PSB Power Study	All	County-wide	2,3,4	Assess replace-ment process and costs for transfer switch.	DPW Engi-neering	New/ 1-5 years	Conduct-ing study	$1.2 Mil-lion	FEMA PA, FEMA BRIC, NYSERDA Resiliency Grants, NY DHSES Grants
Terry Mtn Building Re-placement	All	County-wide	2,4	Building Failure. will take offline a shared site for	DPW Engi-neering	New/ 1-5 years	Initial As-sessment	$1 Million	FEMA BRIC, FEMA HMGP,

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
				radio and micro-wave backhaul. Currently held together with two sets of come along straps.			& Plan-ning		FEMA PA, NY DHSES Infrastruc-ture Grants, NYSERDA Resiliency Grants
Essex County Owned Bridges	Flood	County-wide	1,2,4	Replace bridges with designs meeting 1.5 times bank full width standards.	DPW Engi-neering	Ongoing/ 1-5 years	Bridges identified, prioritized and need funding	Multiple ($1.5 mil-lion per bridge)	FEMA BRIC, FEMA FMA, US DOT Bridge In-vestment Program, NYSDHSES Transporta-tion Infra-structure Grants, BRIDGE NY Program
NFIP Partic-ipation	Flooding	County wide	1,2,4	Community par-ticipation with NFIP Community Assessment	Town Super-visors	NFIP Map-ping Up-dated/ On-going	Continue participa-tion of Towns in new map-ping and updating of flood areas.	Variable	FEMA CAP-SSSE, FEMA NFIP Tech-nical Assis-tance Grants, NYS DEC Flood-plain Man-agement As-sistance

DRAFT

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
FEMA Digit-ized Map Updates	Flooding	County-wide	1,2,4	Update local plans and regula-tions with re-vised DFIRM	County Planner	Contin-ued/Ongo-ing	Analyzing DFIRM	TBD	NYS DEC WQIP (Wa-ter Quality Improve-ment Pro-gram)
Floodplain Administra-tors	Flooding	County-wide	1,2,3,4,5	Use established programs by FEMA and NYS Flood-plain/Storm-water Managers Association to train a floodplain administrators for each town	Town Super-visors & Director of Emer-gency Services	Contin-ued/Ongo-ing			FEMA BRIC, FEMA HMGP, FEMA NFIP Training Programs, NYS DHSES Training Grants, NYS Floodplain Manager Training
Ausable Riv-ier Associa-tion Coop-erative Ef-forts	Flooding	County wide	1,2,3,4,5	Maintain interest and action in Au Sable River Asso-ciation's Boquet and Au Sable River Flood Feasi-bility Study and Flood Control Project Manage-ment Plan for the Au Sable River	Town Super-visors and Di-rector of Emer-gency Services	Completed & Ongoing	Imple-mented projects in Jay and Keene from NY Rising document, post TS Irene ef-forts. Bo-quet pro-jects being	Variable	FEMA HMGP, USDA Natu-ral Re-sources Conserva-tion Service (NRCS) Pro-grams, NYS DEC WQIP, NYS Envi-ronmental

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
							completed. Projects will con-tinue as funding is obtained.		Protection Fund (EPF)
Community Rating Sys-tem (CRS)	Flooding	County-wide	2,3,4,	CRS participation by towns	Town Super-visors	New Pro-ject (re-start)/ 1-5 years	Deter-mine via-bility for participa-tion	TBD	FEMA Com-munity As-sistance Program (CAP-SSSE), FEMA BRIC, NYS DEC Floodplain Manage-ment Assis-tance, Essex County Support
Essex County Public Health	Flu/Pan-demic	County-wide	1,3,4	Set up backup generators and establish power redundancy.	DPW Engi-neering	New Pro-ject/ 1-5 years		$500,000	FEMA PA, Essex County, NY DHSES Health In-frastructure Grants
Agriculture Drainage Improve-ments	Flooding, Soil Ero-sion	Wills-boro, Lewis	2, 4,5	Improve agricul-tural resilience to flooding	Essex County Soil and water	New Pro-ject/ 1-5 years	Surveys and initial planning phases	$150,000	USDA, Agri-cultural Grants

DRAFT

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
Jersey Bridge over AuSable River	Ice Jam, Flooding	AuSable Forks	2,4,5	Replace bridge with proper sized structure to handle the flow of ice	DPW Engi-neering	Ongoing/1-5 years	Surveys and initial planning phases	1.5 Mil-lion per Bridge	NYS De-partment of Transporta-tion (NYSDOT) BRIDGE NY Program, NYS Empire State Devel-opment (ESD) Infra-structure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Develop-ment Water Grants, US DOT Bridge Investment Program
Amy Hill Road CR 47 Bridge	Flood-ing/Ero-sion (Scour)	Crown Point	2,4,5	Flooding of bridge due to scour	DPW Engi-neering	Ongoing/1-5 years	Initial Plan-ning/Ob-servation	1.5 Mil-lion	NYS De-partment of Transporta-tion (NYSDOT) BRIDGE NY Program,

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
									NYS Empire State Devel-opment (ESD) Infra-structure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Develop-ment Water Grants, US DOT Bridge Investment Program
Elizabeth-town Flood Wall Instal-lation	Flooding	Eliza-beth-town	2,4,5	Prevent flooding downtown	Town Engi-neering Depart-ment	Ongoing/1-5 years	Initial de-signs complete: funding pending	$400,000	NYS De-partment of Transporta-tion (NYSDOT) BRIDGE NY Program, NYS Empire State Devel-opment (ESD) Infra-structure Grants, BRIC, FEMA

DRAFT

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
									HMGP, FEMA FMA, USDA Rural Develop-ment Water Grants, US DOT Bridge Investment Program
Elizabeth-town Water System	Flooding	Eliza-beth-town	2,4,5	Resiliency of Drinking water	Eliza-beth-town Con-tracted Engi-neer	New Pro-ject/1-5 years	Initial Planning	TBD	NYS Envi-ronmental Facilities Corporation (EFC) Grants, NYS Department of Environ-mental Con-servation (DEC) Water Quality Im-provement Program (WQIP)
Simonds Hill Road Bridge	Flood-ing/Ero-sion (Scour)	Eliza-beth-town	2,4,5	Flooding of bridge due to scour	DPW Engi-neering	Ongoing/1-5 years	Initial Plan-ning/Ob-servation	1.5 Mil-lion	NYS De-partment of Transporta-tion (NYSDOT) BRIDGE NY

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
									Program, NYS Empire State Devel-opment (ESD) Infra-structure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Develop-ment Water Grants, US DOT Bridge Investment Program
Scriver Road Bridge	Flood-ing/Ero-sion (Scour)	Eliza-beth-town	2,4,5	Flooding of bridge due to scour	DPW Engi-neering	Ongoing/1-5 years	Initial Plan-ning/Ob-servation	1.5 Mil-lion	NYS De-partment of Transporta-tion (NYSDOT) BRIDGE NY Program, NYS Empire State Devel-opment (ESD) Infra-structure Grants,

DRAFT

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
									BRIC, FEMA HMGP, FEMA FMA, USDA Rural Develop-ment Water Grants, US DOT Bridge Investment Program
Hurricane Road Bridge	Flood-ing/Ero-sion (Scour)	Eliza-beth-town	2,4,5	Flooding of bridge due to scour	DPW Engi-neering	Ongoing/1-5 years	Initial Plan-ning/Ob-servation	1.5 Mil-lion	NYS De-partment of Transporta-tion (NYSDOT) BRIDGE NY Program, NYS Empire State Devel-opment (ESD) Infra-structure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Develop-ment Water Grants, US

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
									DOT Bridge Investment Program
Public Safety Bldg Water Is-sues		Lewis	2,4	Improve water reliability by in-stalling water system as a backup to pro-vide clean drink-ing water	DPW Engi-neering	New Pro-ject/ 1-5 years	Not Started	$400, 000	Essex County, NYS Environ-mental Fa-cilities Cor-poration (EFC) Grants, NYS Department of Environ-mental Con-servation (DEC) Water Quality Im-provement Program (WQIP)
Town of Lewis Water System	Flooding	Lewis	2,4	Resiliency of Drinking water	Town of Lewis Super-visor/ DPW Engi-neers	New Pro-ject/ 1-5 years	Initial Planning	TBD	NYS Envi-ronmental Facilities Corporation (EFC) Grants, NYS Department of Environ-mental Con-servation

DRAFT

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
									(DEC) Water Quality Im-provement Program (WQIP)
Crowning Shield Road Bridge	Flood-ing/Ero-sion (Scour)	Lewis	2,4,5	Flooding of bridge due to scour	DPW Engi-neers	Ongoing/1-5 years	Initial Plan-ning/Ob-servation	1.5 Mil-lion	NYS De-partment of Transporta-tion (NYSDOT) BRIDGE NY Program, NYS Empire State Devel-opment (ESD) Infra-structure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Develop-ment Water Grants, US DOT Bridge Investment Program

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
Town of Jay Water Sys-tem	Flooding	Jay	2,4	Resiliency of Drinking Water	Tow of Jay, Es-sex County	New Pro-ject/1-5 years	Initial Planning	1.2 Mil-lion	NYS Envi-ronmental Facilities Corporation (EFC) Grants, NYS Department of Environ-mental Con-servation (DEC) Water Quality Im-provement Program (WQIP)
Morrison Road Bridge	Flood-ing/Ero-sion (Scour)	Keene	2,4,5	Flooding of bridge due to scour	DPW Engi-neering	Ongoing/1-5 years	Initial Plan-ning/Ob-servation	1.5 Mil-lion	NYS De-partment of Transporta-tion (NYSDOT) BRIDGE NY Program, NYS Empire State Devel-opment (ESD) Infra-structure Grants, BRIC, FEMA HMGP,

DRAFT

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
									FEMA FMA, USDA Rural Develop-ment Water Grants, US DOT Bridge Investment Program
Parking Lot 1	Erosion	Keene	2,4,5	Repair and cor-rect from road from further im-pact	Town Super-visor	1-5 years	New Pro-ject	TBD	NYS Empire State Devel-opment (ESD) Infra-structure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Develop-ment Water Grants, US DOT Bridge Investment Program
Road 1	Erosion	Keene	2,4,5	Repair and cor-rect from road from further im-pact	Town Super-visor	1-5 years	New Pro-ject	TBD	NYS Empire State Devel-opment (ESD) Infra-structure Grants,

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
									BRIC, FEMA HMGP, FEMA FMA, USDA Rural Develop-ment Water Grants, US DOT Bridge Investment Program
Point Park	Flood-ing/Ero-sion	Keene	2,4,5	Repair and cor-rect from further impact	Town Super-visor	1-5 years	New Pro-ject	TBD	NYS Empire State Devel-opment (ESD) Infra-structure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Develop-ment Water Grants, US DOT Bridge Investment Program
Whitney Park	Flood-ing/Ero-sion	Keene	2,4,5	Repair and cor-rect from road from further im-pact	Town Super-visor	1-5 years	New Pro-ject	TBD	NYS Empire State Devel-opment (ESD)

DRAFT

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
									Infrastruc-ture Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Develop-ment Water Grants, US DOT Bridge Investment Program
The Beach	Flood-ing/Ero-sion	Keene	2,4,5	Repair and cor-rect from further impact	Town Super-visor	1-5 years	New Pro-ject	TBD	NYS Empire State Devel-opment (ESD) Infra-structure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Develop-ment Water Grants, US DOT Bridge Investment Program

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
The Holt House	Flooding	Keene	2,4,5	Repair and cor-rect from further impact	Town Super-visor	1-5 years	New Pro-ject	TBD	NYS Empire State Devel-opment (ESD) Infra-structure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Develop-ment Water Grants, US DOT Bridge Investment Program
Laight Hall Road	Flood-ing/Ero-sion (Scour)	Keene	2,4,5	Flooding of bridge due to scour	DPW Engi-neering	Ongoing/1-5 years	Initial Plan-ning/Ob-servation	1.5 Mil-lion	NYS De-partment of Transporta-tion (NYSDOT) BRIDGE NY Program, NYS Empire State Devel-opment (ESD) Infra-structure Grants, BRIC, FEMA

DRAFT

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
									HMGP, FEMA FMA, USDA Rural Develop-ment Water Grants, US DOT Bridge Investment Program
River Road lake Placid	Flooding	North Elba	2,4,5	Infrastructure repairs – annual flooding and road closure	Town Super-visor/ DPW Engi-neering	Ongoing/1-5 years	Initial Planning	TBD	NYS De-partment of Transporta-tion (NYSDOT) BRIDGE NY Program, NYS Empire State Devel-opment (ESD) Infra-structure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Develop-ment Water Grants, US DOT Bridge

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
									Investment Program
River Street Bridge Lake Placid	Flood-ing/Ero-sion (Scour)	North Elba	2,4,5	Flooding of bridge due to scour	DPW Engi-neering	Ongoing/1-5 years	Initial Plan-ning/Ob-servation	1.5 Mil-lion	NYS De-partment of Transporta-tion (NYSDOT) BRIDGE NY Program, NYS Empire State Devel-opment (ESD) Infra-structure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Develop-ment Water Grants, US DOT Bridge Investment Program
Engine Pond Road	Flooding	Moriah	2,4,5	Infrastructure repairs – annual flooding and road closure/	Town Super-visor/ DPW	Ongoing/1-5 years	Initial Planning	TBD	NYS De-partment of Transporta-tion (NYSDOT)

DRAFT

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
				Major Travel Route	Engi-neering				BRIDGE NY Program, NYS Empire State Devel-opment (ESD) Infra-structure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Develop-ment Water Grants, US DOT Bridge Investment Program
River Road Bloomindale	Flooding/ Road washout	St Ar-mand	2,4,5	Infrastructure repairs – Repair failed culver with sheet pile 3-sided structure	Town Super-visor/ DPW Engi-neering	Ongoing/1-5 years	Initial Plan-ning/Ob-servation	TBD	NYS De-partment of Transporta-tion (NYSDOT) BRIDGE NY Program, NYS Empire State Devel-opment (ESD) Infra-structure

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
									Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Develop-ment Water Grants, US DOT Bridge Investment Program
Moose Pond Bridge	Flooding	St Ar-mand		Equipment Stag-ing for resident evacuation	Town Super-visor/ DPW Engi-neering	Ongoing/1-5 years	Initial Plan-ning/Ob-servation	TBD	NYS De-partment of Transporta-tion (NYSDOT) BRIDGE NY Program, NYS Empire State Devel-opment (ESD) Infra-structure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Develop-ment Water

DRAFT

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
									Grants, US DOT Bridge Investment Program
Marriam-Forge Road Bridge	Flood-ing/Ero-sion (Scour)	Westport	2,4,5	Flooding of bridge due to scour	Essex County DPW	Ongoing/1-5 years	Initial Plan-ning/Ob-servation	1.5 Mil-lion	NYS De-partment of Transporta-tion (NYSDOT) BRIDGE NY Program, NYS Empire State Devel-opment (ESD) Infra-structure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Develop-ment Water Grants, US DOT Bridge Investment Program
Vulnerable Population	Severe Winter Weather	County	1,3,4	Identify Emer-gency concerns	County OES, Town	Com-pleted/On-going	DOA maintains		FEMA HMGP, FEMA PA,

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
				of specific popu-lation needs	Super-visors		emer-gency prepared-ness list which contains infor-mation which residents receive special medical or other needs		CDC Public Health Emergency Prepared-ness (PHEP), NY DHSES Prepared-ness Grants, NYS DOH Special Needs Plan-ning
FireWise Communi-ties	Wildfires	County-wide	1,2,3,4,5,6	Update "Firewise Community" best practices and modify zoning and plans across the county	County OES	Ongoing/ 1-5 years	Imple-mented, needs re-view and update	TBD	FEMA BRIC, FEMA Fire Prevention & Safety (FP&S) Grants, NYS DEC Fire-wise Pro-gram, NY DHSES Haz-ard Mitiga-tion Grants
Building In-ventory	All Haz-ards	County-wide	2,3,7	Develop and Main-tain a current in-ventory of critical	County OES	Ongoing/ 1-5 years	Com-pleted, needs	TBD	FEMA BRIC, FEMA HMGP,

DRAFT

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
				infrastructure & buildings, year built, and level of vulnerability			review and up-date		Department of Home-land Secu-rity (DHS) Infrastruc-ture Protec-tion Grants, NY DHSES Hazard Mit-igation Grants, NYSERDA Resiliency Grants
Public Infor-mation and Training on Prevention and Prepar-edness	All Haz-ards	County-wide	3,4		County OES	Ongoing/ 1-5 years		TBD	FEMA HMGP, FEMA Com-munity Edu-cation & Outreach Programs, NY DHSES Prepared-ness Train-ing Grants, NYS Citizen Prepared-ness Corps

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
County OES Website Up-date	All	County-wide	3,4,7	Update website to add Prevention, Preparedness and Response Aware-ness for all Haz-ards	County OES	New Pro-ject/ 1-5 years	New Pro-ject	TBD	FEMA BRIC, FEMA Emergency Manage-ment Per-formance Grant (EMPG), NY DHSES Communi-cations Grants, NYS Division of Consumer Protection (Public Awareness Funding)
Emergency Power Up-grade	All	Jay	1,2,4,5	Upgrade existing power system with a propane generator and automatic trans-fer switch to en-sure continuous operation during emergencies.	Town Super-visor	1-5 years	New Pro-ject	TBD	FEMA PA, FEMA BRIC, NY DHSES Communi-cations Re-siliency Grants
Nugent Wa-ter Treat-ment Plant	Flood	Jay	2	The brook near the Nugent Wa-ter Treatment	Town Super-visor	1-5 years	New Pro-ject	TBD	NYS Envi-ronmental Facilities

DRAFT

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
Flood Miti-gation				Plant was dam-aged during Hur-ricane Irene, leading to sedi-ment buildup and flooding near the water tank. Mitigation efforts will focus on restoring proper water flow and reduc-ing flood risks.					Corporation (EFC) Grants, NYS Department of Environ-mental Con-servation (DEC) Water Quality Im-provement Program (WQIP)
Sheldrake Road Bridge Improve-ment	Flood, Ice Jam	Jay	1,2,4	Lengthen the ex-isting bridge to allow better wa-ter and ice flow, reducing bottle-necks that lead to flooding in nearby residen-tial areas.	Town Super-visor	1-5 years	New	New Pro-ject	NYS De-partment of Transporta-tion (NYSDOT) BRIDGE NY Program, NYS Empire State Devel-opment (ESD) Infra-structure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural

Project Name	Hazard Addressed	Town	Goal/ Objec-tives	Targeted Actions	Lead Agency	Status/ Timeframe	Progress Details	Esti-mated Cost	Funding Sources
									Develop-ment Water Grants, US DOT Bridge Investment Program

DRAFT

The 2025 Essex County Hazard Mitigation Plan (HMP) is designed to protect the community from a wide range of natural and man–made hazards that threaten its towns. By identifying vulnerabilities, assessing risks, and outlining comprehensive mitigation strategies, the HMP serves as a proactive roadmap to reduce the potential impacts of disasters. The plan's overarching goal is to safeguard lives, property, and critical infrastructure, while enhancing the county's overall resilience and ability to adapt to changing environmental and societal conditions.

Developed through extensive collaboration with key stakeholders, including local agencies, municipal leaders, emergency responders, and community members, the HMP integrates local knowledge with technical expertise. The plan includes a variety of mitigation actions like floodplain management, wildfire prevention, infrastructure retrofitting, evacuation planning, and public education initiatives. These strategies are tailored to address Essex County's unique hazards, including flooding along Lake Champlain, severe winter storms in mountain communities, and wildfire risks in the Adirondack Park.

By incorporating both immediate and long–term solutions, the HMP ensures that Essex County is well–prepared to respond to and recover from potential emergencies while fostering a culture of preparedness and resilience throughout its communities. The plan emphasizes localized mitigation efforts, with appendices for each town detailing specific actions to address their unique risks and vulnerabilities. This collaborative and forward–thinking approach ensures that Essex County and its residents are equipped to face current and future challenges with confidence and strength.

Plan Maintenance

This plan will be reviewed and updated regularly to reflect changes in community priorities, new scientific data, and lessons learned from recent disasters. The review cycle will occur every five years or after a significant disaster. The update process will involve stakeholders and the public to ensure the plan remains relevant and effective.

Continued public involvement is crucial for plan success. Community meetings will be hosted annually to discuss progress and gather input and feedback mechanisms like online portals and hotlines will be provided for residents to submit feedback and suggestions. Regularly reporting progress to local government officials, stakeholders, and the public is also essential. An annual report detailing the progress made towards implementing the mitigation actions will be published.

The hazard mitigation plan is a critical element designed to ensure that all systems, equipment, and infrastructure essential for disaster preparedness, response, and recovery are regularly inspected, serviced, and maintained. This helps prolong the life of assets and helps ensure key systems are operational during emergencies, reducing vulnerability and mitigating risks.

HMP Maintenance Schedule Components

Critical Infrastructure Identification

The Maintenance Schedule includes all critical infrastructure and equipment necessary for emergency operations like:

- communication systems (radios, satellite phones).
- backup generators.
- water and wastewater systems.
- emergency shelters.
- firefighting equipment.
- utility infrastructure (power, gas).
- transportation networks (roads, bridges).

Regular Inspections and Testing

The Maintenance Schedule should outline regular inspection times and test dates for critical systems to ensure operational readiness like:

- monthly generator testing to ensure backup power is available.
- quarterly communication system checks to verify redundancy (radios, satellite phones).
- annual inspections of shelter facilities for safety, functionality, and supply levels.
- seasonal inspections of firebreaks, flood barriers, or levees.

DRAFT

Risk–Based Prioritization

Infrastructure or equipment that poses the highest risk during a disaster should receive more frequent maintenance. High risk items should be inspected or tested more often than those deemed lower risk.

Types of Maintenance Activities

- Preventive Maintenance: scheduled, routine maintenance tasks to prevent system failures like changing air filters in EOC HVAC systems or calibrating communication equipment.
- Corrective Maintenance: repairs made to equipment or systems following a fault or failure, ensuring they are returned to operational readiness as quickly as possible.
- Seasonal Maintenance: adjustments and preparations ahead of seasonal hazards like clearing drainage systems ahead of the rainy season or inspecting wildfire–prone areas.
- Assigned Responsibilities: clearly define the personnel or departments responsible for performing each task like:
  - Public Works for utility infrastructure maintenance.
  - IT departments for communication systems testing.
  - fire departments for equipment and fire suppression system maintenance.
- Maintenance Records: detailed records of all maintenance activities should be kept to track:
  - when the maintenance was performed.
  - what tasks were completed.
  - whether any issues were identified.
  - follow–up actions required.

These records ensure the HMP can be updated to reflect any vulnerabilities identified during maintenance and that all critical systems remain operationally ready.

Table 108. Schedule for Critical Infrastructure in HMP

Asset/System	Task	Frequency	Assigned Team	Notes
Backup Generators	Run load test, change oil, inspect	Quarterly	• Public Works • Electricians	Ensure fuel levels are adequate
Town Halls	Inspect communication systems, test HVAC	Monthly	• IT, • Facilities Mgr.	Ensure redundancy with backup systems
Water Supply Systems	Inspect/test valves & pressure	Bi–annually	• Water • Utility • Team	Ensure water availability during emergencies

Asset/System	Task	Frequency	Assigned Team	Notes
Fire Suppression Equipment	Check & recharge fire extinguishers	Annually	• Fire • Department	Update inventory of fire suppression tools
Emergency Shelters	Inspect structural integrity, supplies	Annually	• Facilities • Team	Ensure food, water, & medical supplies are stocked
Flood Control Barriers	Inspect for wear, debris clearing	Seasonal	• Public • Works	Clear channels before rainy season
Roadway Infrastructure	Inspect bridges, clear debris	Annually/ After major events	• Public • Works	Ensure roadways are clear for evacuation routes
Communication Systems	Test radios, satellite phones	Monthly	• IT	Ensure all communication channels are operational

Importance of the HMP Maintenance Schedule

The Hazard Mitigation Plan (HMP) Maintenance Schedule is a critical component of an effective mitigation strategy. It ensures the plan remains up to date, relevant, and aligned with evolving risks, regulatory requirements, and community needs. Key reasons why the maintenance schedule is important include:

- Ensures Plan Relevance & Effectiveness. Hazard risks, vulnerabilities, and mitigation priorities change over time due to new developments, climate change, and shifts in population demographics. Regular maintenance ensures the plan remains an effective, reliable tool for reducing disaster impacts.
- Compliance with Federal & State Requirements. Jurisdictions seeking FEMA funding under the Disaster Mitigation Act of 2000 (DMA 2000) must update their mitigation plans at least every five years to remain eligible for funding. Regular maintenance keeps the plan in compliance with federal, state, and local laws.
- Tracks Progress on Mitigation Actions. Scheduled reviews help assess whether mitigation actions were implemented as planned, require modification, or need to be reprioritized. Consistent reviews also help ensure accountability among stakeholders responsible for implementation.
- Facilitates Stakeholder Engagement. The maintenance schedule includes opportunities for public participation, ensuring community needs and concerns are continuously incorporated. Engaging stakeholders helps maintain relevant, effective collaboration with emergency management agencies, public works, utility companies, and other key stakeholders.
- Allows for Integration with Other Plans. Hazard mitigation plans are often integrated with comprehensive plans, emergency operations plans, climate adaptation plans, and capital improvement programs. Regular updates ensure alignment across different planning efforts.

DRAFT

- Improves Preparedness & Resilience. Keeping the plan updated ensures mitigation efforts remain proactive rather than reactive. Regular HMP maintenance strengthens overall community resilience by ensuring risk reduction strategies remain current and actionable.
- Identifies New Funding & Grant Opportunities. Regular updates provide an opportunity to identify new state and federal grant opportunities that require an up–to–date HMP. Maintaining a valid, current HMP helps ensure Essex County and applicable jurisdictions remain competitive for mitigation grant funding.

The county can enhance resilience, maintain compliance, and effectively reduce disaster risks over time by adhering to a structured maintenance schedule. This proactive approach reduces risks, ensures operational continuity, supporting the overall goals of hazard mitigation and emergency preparedness.

Monitoring Progress of Mitigation Activities

The Monitoring Progress of Mitigation Activities is a critical element of maintaining the hazard mitigation plan. This process ensures planned actions are implemented and effective in reducing vulnerabilities and managing risks. Monitoring progress should be conducted semi–annually by the Hazard Mitigation Plan Maintenance Committee or designated team. Tasks involved include tracking the status of mitigation projects, documenting completed and ongoing actions and identifying any projects that are delayed or have encountered barriers to implementation. It is essential to evaluate the reasons for delays and develop practical solutions to overcome obstacles. The progress monitoring process requires updating timelines, responsible agencies, and funding sources associated with each mitigation activity to reflect any changes in circumstances or priorities. The results of these evaluations should be communicated to stakeholders to maintain transparency and accountability. This monitoring process keeps the plan dynamic, providing valuable insights for improving future mitigation efforts. Regular tracking ensures mitigation activities align with the county's overarching hazard reduction goals, supporting community resilience against emerging threats.

The table below organizes the monitoring process into clear, actionable steps with assigned responsibilities, objectives, and timeframes to guide the county in effectively tracking mitigation activities:

Table 109. HMP Maintenance Schedule

Step	Description	Frequency	Responsible Party	Objective
Establish Monitoring Team	Form a team with representatives from, local, stakeholders, & experts.	Initial setup (then ongoing)	HMP Maintenance Committee	Define roles & responsibilities for tracking & evaluating mitigation actions.
Develop Monitoring Framework	Create an action inventory, set performance metrics, & establish a review schedule. Use tools	Initial setup (then ongoing)	HMP Maintenance Committee	Organize & standardize the process for effectively tracking

Step	Description	Frequency	Responsible Party	Objective
	like spreadsheets or project management software.			mitigation actions.
Gather Mitigation Actions Data	Collect updates via reports, field inspections, & stakeholder feedback to track action status (completed, in progress, delayed, not started).	Semi–annually	Agencies & responsible parties for each action	Collect accurate, up–to–date mitigation activity information.
Evaluate Progress & Identify Barriers	Compare actual progress with planned timelines & objectives, assess effectiveness, & identify challenges like funding or resource limitations.	Semi–annually	Monitoring Team	Identify what works well & what needs adjustment to ensure progress.
Update Action Details	Revise timelines, funding sources, responsible parties, & priorities based on evaluations.	Semi–annually	HMP Maintenance Committee	Keep mitigation plan dynamic & responsive to changing conditions or emerging hazards.
Report Progress	Prepare detailed progress reports & a public summary to share updates & maintain transparency.	Semi–annually	County Emergency Manager	Maintain accountability & ensure community involvement in mitigation efforts.
Integrate Lessons Learned	Use findings from monitoring to refine mitigation actions & improve future planning & execution.	Semi–annually	HMP Maintenance Committee	Enhance effectiveness of future mitigation activities.
Conduct Annual Review	Include monitoring results in the annual HMP review to ensure the plan reflects updated priorities and mitigation status.	Annually	County Emergency Manager	Keep HMP up–to–date and aligned with city goals and community needs.

Maintenance Evaluation & Enhancement

DRAFT

Maintenance Evaluation and Enhancement is critical for ensuring the HMP remains a dynamic, effective tool for risk reduction and disaster resilience. This process involves regularly assessing plan relevance, identifying opportunities for improvement, and implementing enhancements based on changing conditions, stakeholder input, and lessons learned.

Evaluation Framework

An evaluation framework is used to systematically evaluate HMP effectiveness. The framework includes:

- Performance Metrics. These are used to establish clear criteria to measure mitigation actions success and overall plan objectives. Metrics may include reductions in community vulnerability, project implementation rates, and improvements in preparedness and response capabilities.
- Progress Reviews. Conducting regular reviews of mitigation actions helps ensure alignment with the timeline, budget, and intended outcomes. This includes determining whether projects effectively address identified hazards.
- Stakeholder Feedback. Gather input from government agencies, local jurisdictions, community organizations, and the public to assess plan effectiveness, identifying areas for improvement.

Annual Maintenance Review

HMP annual review helps ensure the document reflects current conditions and priorities. This review includes:

- incorporating updates to hazard profiles based on new data, recent disasters, or scientific studies.
- assessing the adequacy of current mitigation actions and identifying new strategies to address emerging risks.
- updating key sections like risk assessments, critical facilities, and community capabilities.

Post–Disaster Plan Updates

Significant HMP updates should be undertaken following disaster events to ensure lessons learned are integrated. This involves:

- documenting disaster impacts, including damages to infrastructure, community resources, and vulnerable populations.
- evaluating the effectiveness of mitigation strategies during the disaster.
- adjusting risk assessments, mitigation priorities, and strategies based on new insights.

Enhancing the Plan

HMP enhancements may be discovered and guided by ongoing evaluations and new opportunities as they become available. These enhancements include opportunities for:

- Addressing Gaps: identifying and resolving gaps in mitigation actions like underserved populations, underfunded projects, or unaddressed hazards.

- Leveraging Technology: using Geographic Information Systems (GIS), data analytics, and other tools to improve hazard mapping and risk assessments.
- Strengthening Partnerships: building stronger collaborations with state and federal agencies, tribal governments, and private–sector organizations to enhance mitigation capabilities and funding opportunities.

Integration with Other Plans

The HMP should be regularly integrated with other county and regional plans including the emergency operations plan and climate action plan. This ensures mitigation strategies are consistent across all planning efforts, aligning with broader community goals.

Documentation and Reporting. All maintenance and enhancement activities must be well documented to provide a clear record of updates and changes. This includes:

- preparing annual progress reports detailing the status of mitigation actions, evaluation outcomes, and HMP updates.
- sharing summaries with the public to maintain transparency and accountability.
- submitting updates to FEMA and State Emergency Management for review and compliance.

Continuous Improvement

The maintenance process should incorporate a continuous improvement cycle where evaluations drive enhancements, then enhancements feed back into the next review cycle. This iterative process ensures the HMP remains responsive to changing conditions, emerging hazards, and community needs. By maintaining a proactive approach to evaluation and enhancement, the county can ensure that its hazard mitigation plan remains a living document that effectively reduces risks, builds resilience, and supports the safety and well–being of its communities.

Incorporation into Existing Planning Mechanisms

The successful implementation of this plan depends on its seamless integration into existing planning mechanisms. HMP incorporation into other county, regional, and state plans ensures hazard mitigation strategies align with broader community goals, enhance resilience, optimizing resource use. Integration also ensures the HMP becomes a living document, driving and supporting decision–making actions across various sectors.

The HMP should be directly linked to the Essex County Comprehensive Plan, which serves as the overarching framework for land use and development. Hazard mitigation strategies can be incorporated into land use policies to restrict construction in high-risk areas like floodplains or wildfire–prone zones. Infrastructure planning should align with mitigation priorities to reduce vulnerabilities while growth management policies should incorporate hazard assessments to avoid creating new risks as communities develop. Coordination with the Emergency Operations Plan (EOP) is another essential element of integration. The HMP can complement the EOP by providing pre–disaster mitigation actions reducing the impact of hazards on response and recovery efforts. Preparedness activities like training, exercises, and community education should include mitigation strategies. Protecting critical facilities identified in the EOP and aligning mitigation goals with continuity of operations plans are key areas for coordination.

DRAFT

Capital Improvement Plans (CIPs) offer another opportunity to integrate hazard mitigation measures, ensuring the protection of new and existing infrastructure investment. By incorporating the HMP into CIPs, Essex County can prioritize resilient infrastructure projects like upgrades withstanding floods and wildfires. This alignment helps the city leverage funding opportunities (like grants) to improve infrastructure and promote sustainable development. Similarly, hazard mitigation strategies must be incorporated into Climate Action Plans to address the growing impacts of climate change. This integration enables synergy between mitigation and adaptation, allowing actions to address current and future hazards. Strategies that reduce greenhouse gas emissions (energy–efficient rebuilding or green infrastructure) can also serve a dual purpose by reducing vulnerabilities to hazards while protecting natural ecosystems acting as buffers against disasters.

The HMP should also be integrated with regional and state–level planning efforts to ensure consistency and to maximize the use of external resources. Aligning local actions with the State Hazard Mitigation Plan (SHMP) enhances effectiveness, increasing funding eligibility. Coordination with regional transportation plans ensures the resilience of evacuation routes and transportation infrastructure, while integration with watershed and resource management plans supports flood mitigation strategies and natural resource conservation. At the community level, local and neighborhood plans should reflect hazard mitigation goals to build resilience from the ground up. Public engagement is essential for informing local initiatives and encouraging community involvement in risk reduction. Town–specific mitigation strategies can address risks unique to particular areas within the county, ensuring all residents benefit from the HMP.

Several tools and mechanisms can be used to facilitate effective integration. Policy alignment is a critical step, requiring a crosswalk analysis to identify opportunities for incorporating HMP goals into existing policies and programs. Training and education for staff and stakeholders reinforces their understanding of how to apply hazard mitigation strategies within their respective plans. Periodic reviews of planning documents help maintain alignment with the HMP, while GIS mapping can overlay hazard data with existing plans to identify integration opportunities. Monitoring and reporting are necessary to evaluate how effectively the HMP has been incorporated into existing mechanisms. Regular updates to integrated plans ensure these plans reflect changes in hazard assessments or mitigation priorities, while annual integration effort reporting provides transparency and tracks progress. implementation feedback and lessons learned should drive continuous improvement.

By fully incorporating the hazard mitigation plan into existing planning mechanisms, Essex County can help ensure mitigation strategies are effectively implemented, risks minimized, and the community becomes more resilient to natural and man–made hazards. This integrated approach fosters coordination across departments and agencies, maximizes resource efficiency, enhancing overall safety and sustainability.

Continued Public Involvement

Public involvement is a cornerstone of a successful hazard mitigation plan (HMP). Involvement and engagement must be maintained throughout the life of the plan to ensure community buy–in, transparency, and inclusiveness. Continued public involvement allows the community to actively participate in hazard mitigation efforts, providing valuable insights, fostering ownership, and ensuring the HMP reflects the priorities and needs of Essex County residents.

To sustain public involvement, Essex County hosts regular public meetings to provide updates on the HMP, discusses progress on mitigation actions, and gathers feedback from community members. These meetings should be accessible to all residents including individuals with functional needs, non–English speakers, and those in remote areas. By using various outreach methods like virtual platforms, community newsletters, and local media, the city can maximize participation, ensuring all residents have engagement opportunities.

Community surveys are essential tool for public involvement. Periodic surveys can be used to assess public hazard awareness, understand community concerns, and gather input on the effectiveness of mitigation strategies. These surveys should be distributed through multiple channels like online forms, paper surveys at public events, and distributed through local organizations to reach diverse population segments. Survey results should drive HMP updates, guiding future mitigation actions.

Partnerships with community organizations, non–profits, and neighborhood groups are vital for fostering continued engagement. These partnerships help extend city reach, ensuring vulnerable populations like seniors, low–income residents, and tribal communities are represented in the planning process. Local organizations can assist in hosting workshops, distributing educational materials, and encouraging their members to participate in HMP–related activities.

Educational initiatives are another critical aspect of continued public involvement. Essex County should develop ongoing campaigns to increase public awareness of local hazards, preparedness measures, and mitigation efforts. These campaigns can include workshops, school programs, and outreach events promoting the understanding of the HMP, further encouraging proactive community involvement in risk reduction activities.

A dedicated webpage for the Essex County HMP serves as a central hub for public information. The webpage includes the current plan, progress updates, meeting schedules, and opportunities for public comment. It provides an easy way for residents to submit feedback or report hazard mitigation concerns. Maintaining an active and transparent online presence helps foster trust, ensuring the public remains informed and engaged.

Essex County documents all engagement activities including meeting attendance, survey participation, and feedback received to track public involvement. This documentation should be reviewed during the HMP annual evaluation to assess the effectiveness of public outreach efforts and identify areas for improvement. Lessons learned from these evaluations should be used to enhance future public involvement strategies.

By fostering continued public involvement, the county ensures the HMP remains a collaborative effort. Engaging the community strengthens local resilience, ensures the plan addresses real–world concerns, and builds a culture of preparedness and risk reduction. This approach enhances the effectiveness of the HMP and promotes trust, cooperation, and a shared commitment to county safety and sustainability.

DRAFT

Annexes: Towns & Villages

Annex	Jurisdiction
Annex A	Chesterfield
Annex B	Crown Point
Annex C	Elizabethtown
Annex D	Essex
Annex E	Jay
Annex F	Keene
Annex G	Lewis
Annex H	Minerva
Annex I	Moriah
Annex J	Newcomb
Annex K	North Elba
Annex L	North Hudson
Annex M	St. Armand
Annex N	Schroon
Annex O	Ticonderoga
Annex P	Westport
Annex Q	Willsboro
Annex R	Wilmington

Annex A: Town of Chesterfield

Profile

The Town of Chesterfield is located in the northeastern corner of Essex County, bordered by Lake Champlain to the east, the Au Sable River to the north, Jay to the west, and the Towns of Lewis and Willsboro to the south. The town includes the hamlet of Keeseville, spanning the Au Sable River as part of both Essex and Clinton Counties. Keeseville was incorporated into Chesterfield in 2013. As of the 2020 census, Chesterfield had a population of approximately 2,476, while Keeseville's estimated population in 2024 was 2,969.

Chesterfield features diverse topography with open fields and flat areas near the Au Sable River, contrasting with steep, forested, mountainous terrain in the south. The town faces several natural hazard challenges, including steep slopes, streams, and spring runoff, which pose risks to roadways. Recent mitigation efforts, supported by the Essex County Department of Public Works, have helped reduce these risks.

Chesterfield is home to several notable cultural and historical sites. Au Sable Chasm, a popular tourist attraction, has been in operation since 1870, drawing visitors to its scenic rock formations and outdoor activities. Poke–O–Moonshine Mountain Fire Observation Station is another significant landmark, which was added to the National Register of Historic Places in 2001 and remains an important symbol of the region's firefighting history. The North Star Underground Railroad Museum highlights Chesterfield's connection to the Underground Railroad, a network that helped enslaved African Americans escape to freedom in the mid–19th century. These sites contribute to the town's rich historical and cultural heritage.

Table 110. Table of Facts: Town of Chesterfield

Fact	Description
Land Area	105 sq. miles, 66,866.2 acres
Incorporated Village(s)	Portion of Keeseville, 327.2 acres
Hamlets	Keeseville
Population Census	2,476 (2020 Census)
Governance	Town
Total Assessed Valuation	$137,651,461
Highest Elevation	Bald Face Mt. 2220'
Largest Lake	Lake Champlain–eastern border, Auger Lake
River(s)	Au Sable
Dams	3
Bridges	9 County Road
Interstate Highway	I–87 north/south
State Routes	9, 22, & 373
County Roads	15, 16, 17, 23 & 71

DRAFT

Fact	Description
Land Agriculture Use	3,458 acres
Land Classified Industrial	None
Land Classified Residential, as Hamlet	819.9 acres
Hospital/Medical Facility	–
Fire & Rescue	Keeseville Fire & Rescue
Schools	Au Sable Valley Central Schools
Railroads	CP Rail north/south
Passenger Trains/Day	Amtrak 68 and 69 2/day
Freight Trains/Day	CP Rail approx. 5/day
Ferry Dock(s)	Port Kent to Burlington, VT (seasonal)
Interstate Bridge	–
Largest Employer	ARC
Law Enforcement	NYSP and County Sheriff
Correctional Facility	None
Power Utility Provider(s)	NYSEG
Water Supply Source(s)	Butternut Pond, Lake Champlain and private wells
Emergency Shelters	4
Critical Facilities	6

Notable Updates

Chesterfield, in partnership with Au Sable, has joined the New York Forward Grant initiative to revitalize the hamlet of Keeseville. This collaboration seeks to enhance Keeseville's appeal as both a residential and business hub by capitalizing on its unique recreational and historical assets. Under the leadership of Supervisor Clayton Barber, Chesterfield is committed to fostering a vibrant small–town community through projects that focus on adaptive reuse, building renovations, and the activation of upper–story spaces for housing and commercial use. The grant supports the town's vision of a connected, culturally rich downtown while promoting economic growth and sustainable development that aligns with the region's character.

Planning Process

The town initially took part in a Hazard Mitigation Survey, followed by an in-person Stakeholder Hazard Mitigation Introduction Meeting. Subsequently, the Town Supervisor received a copy of the town's section of the county plan for review and revisions. The Town Supervisor participated in county-level meetings related to the plan and attended a final mitigation strategy meeting.

Capability Assessment

Chesterfield implemented a range of planning mechanisms to support hazard resilience and community development, including floodplain regulations, floodplain management plan, zoning laws, subdivision regulations, comprehensive plan, building codes, and fire codes. Collectively, these regulatory measures ensure that new development is both hazard–resistant and aligned with sustainable growth objectives. Through an assessment of its planning capability, the town recognizes that these mechanisms play a critical role in mitigating potential hazards and fostering long–term community resilience.

Table 111. Planning Documents: Town of Chesterfield

Planning Documents
Floodplain Regulations (1985)
Floodplain Management Plan (1985)
Zoning Law (2002)
Subdivision Regulations (2002)
Comprehensive Plan (1997)
Building Codes (1985)
Fire Codes (1985)

This hazard mitigation plan is integrated into other existing plans in Chesterfield. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. Integration can ensure consistency between enabling legislation. Chesterfield completed a capabilities self–assessment as part of the plan update in 2024. Chesterfield is one of four Essex County towns having land use approval authority granted by the APA. The town has a planning board, with APA as a backup. They use AES for engineering issues with the water system and other engineering needs. The town also uses Essex County community resources for planning and grant assistance. A board member is designated as the town emergency manager. The code enforcement officer also serves as the floodplain administrator. Land survey needs are provided by ADK Surveyors, a private company. The APA, SWCD, DEC and Au Sable River Watershed Association provide scientific and other expertise. GIS assistance is provided by AES and the county system. Grant writing assistance is provided by Essex County Community Resources.

A variety of funding sources are used to implement programs and projects. CDBGs were used to renovate residential housing. Special taxes were used to control plant growth in Auger Lake. Water and sewer fees are used to maintain and expand systems when needed. The town used loans to fund the Port Kent water system. The town has shared services agreements with several towns and the county. Education and outreach programs are implemented and available in Chesterfield. Fire prevention and school safety programs are delivered. The town educates residents on water use issues and fire safety programs.

Chesterfield also completed a self–assessment on four areas. Planning and regulatory capabilities, financial, education and outreach, and administrative and technical capabilities were all

DRAFT

ranked as High. If the town lacks resources to implement programs, they know the experts to ask for assistance. Critical facilities were also evaluated as to their flood vulnerability.

Critical Facilities

Flood vulnerabilities to critical facilities were assessed as the plan was updated. The table below describes if these facilities are located in the 500–year floodplain, if the facility has been flooded in the past, and if any kind of mitigation was completed to reduce the flood potential of these structures. Generator capabilities were also assessed to determine if these facilities could function without electric power—a common issue for critical facilities during disaster events.

Table 112. Critical Infrastructure in Floodplain: Town of Chesterfield

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Town Offices	No	No	No	No
Frontier	No	No	No	Yes
Elementary School	No	No	No	Yes
Fire Department	No	No	No	Yes
Drinking Water Plant (Town of Au Sable)	No	No	No	Yes
Drug Treatment Center	No	No	No	Unknown

During disasters, town offices serve as the Emergency Operations Center (EOC). The elementary school is the primary designated shelter, with the fire department available as an additional shelter if needed. The town's drinking water plant (located in Au Sable in Clinton County) supplies water to residents in both Clinton and Essex Counties. The town has one drug and alcohol treatment facility, which operates on a day–use–only basis.

Two locations were identified for temporary housing in the aftermath of a disaster. The town park serves as a designated site when needed, offering both paved and unpaved areas suitable for temporary housing units like RVs or mobile homes. The site is equipped with power, water, and sewer connections, making it a viable option for short–term accommodations. The elementary school, designated as an American Red Cross shelter, can provide temporary housing for residents displaced during or after a hazard event. Historically, many displaced residents have found temporary housing with friends, relatives, or neighbors.

Table 113. Housing for Displaced Residents: Town of Chesterfield

Facility	Type of Housing
Elementary School	American Red Cross Shelter
Commerce Park	RV, mobile homes

National Flood Insurance Plan (NFIP) Summary

The following information concerns flood vulnerable structures in Chesterfield. The numbers of actual structures in the flood vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will determine the actual number of vulnerable structures.

Table 114. Flood Insurance: Town of Chesterfield

Policies	2011	2018	2024	Total Amount of Claims
Policies	11	9	8	$230,558
Number of Repetitive Loss Structures	1	1 (single family)	-	-

Chesterfield will continue to actively manage floodplains to mitigate future flood risks. New development within special flood hazard areas will be carefully reviewed and approved to ensure compliance with the local floodplain ordinance. As FEMA updates the Flood Insurance Rate Maps (FIRMs), the town will hold meetings with floodplain managers, town supervisors, and village mayors to provide training on the National Flood Insurance Program (NFIP). These meetings will also serve as a forum to discuss compliance requirements and best practices for floodplain management.

Hazard Identification & Ranking

Table 115. Hazard Ranking: Town of Chesterfield

Hazard Ranking	Hazards
HIGH	• Floods • High Wind Events • Wildfires
MEDIUM	• Extreme Temperatures • Hurricanes • Ice Storms • Severe Winter Events • Rail Events
LOW	• Avalanches • Drought • Earthquakes • Hailstorms • Land Subsidence & Expansive Soils • Landslides

DRAFT

Hazard Event History

Table 116. Hazard Events: Town of Chesterfield

Hazard	Event	Year	Impact
Flooding	Lake Champlain flood	2011	Significant property damage & road closures due to record–breaking floods.
	Flash flooding	2024	Snowmelt & heavy rain caused road & bridge damage in spring.
	July flooding	2023	Intense rainfall led to evacuations & widespread infrastructure damage.
Winter Storms & Cold	Ice storm	1998	Weeks–long power outages, tree damage, & hazardous conditions.
	February blizzard	2024	Over 30 inches of snow disrupted travel & caused power outages.
Severe Thunderstorms	Severe summer storms	2024	High winds & hail caused tree & power line damage, leading to outages.
Tornadoes	EF1 Tornado	2014	Localized property damage.
Earthquakes	Adirondack regional quake	2002	M5.1 earthquake felt in Chesterfield, minor damage reported.
Wildfires	Adirondack forest fires	1903	Large–scale fires threatened communities.
	July wildfire threats	2024	Small fires occurred due to drought, quickly contained.
Transportation	I–87 Highway incidents	Recurring	Accidents with hazardous material spills affecting local response.
Power Outages	February blizzard	2024	Major outages during severe winter storms.
	Summer thunderstorms	2024	Power outages caused by downed lines from high winds.
Drought	Prolonged dry conditions	2024	Stressed water supplies & agriculture during the summer.
Public Health	Lyme disease	Recurring	High tick populations persist as a health risk.
	COVID–19 Pandemic	2020+	Highlighted public health challenges & improvements in response infrastructure.

Hazard Analysis

Chesterfield's historical and recent hazards, emphasize trends in increasing weather severity and climate–related risks.

Hazard Mapping

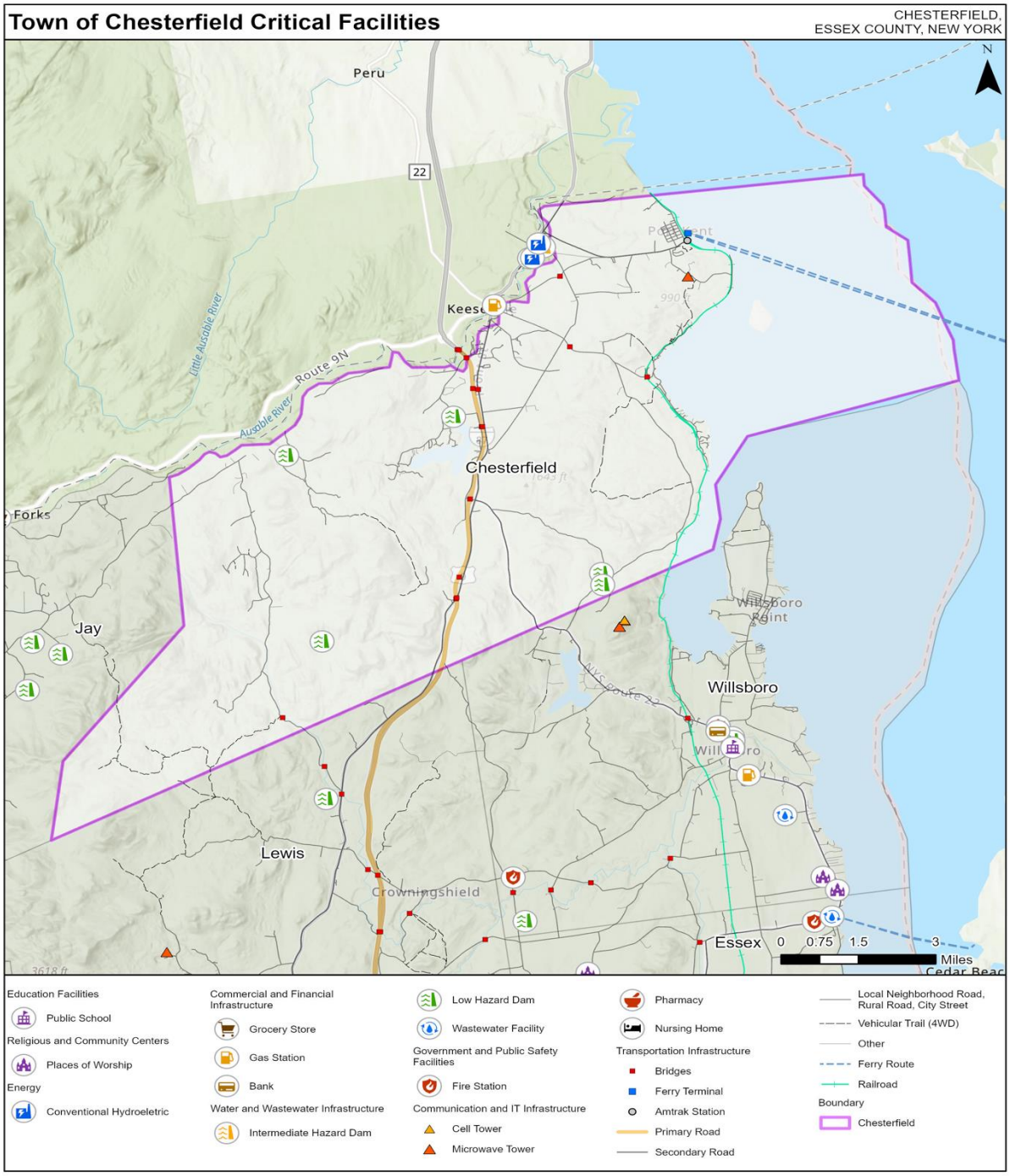


Figure 47. Critical Facilities: Town of Chesterfield

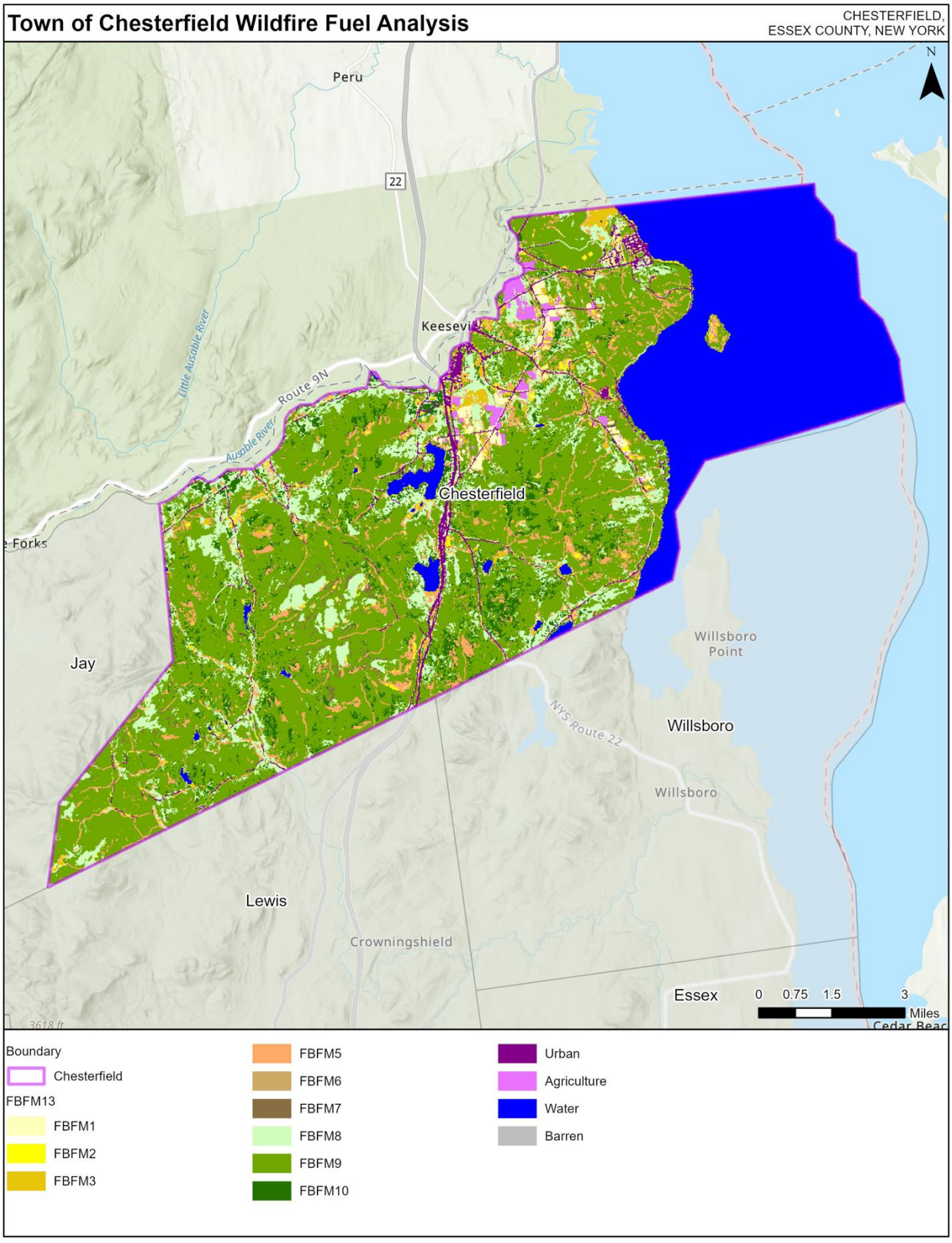


Figure 48. Wildfire Fuel Analysis: Town of Chesterfield

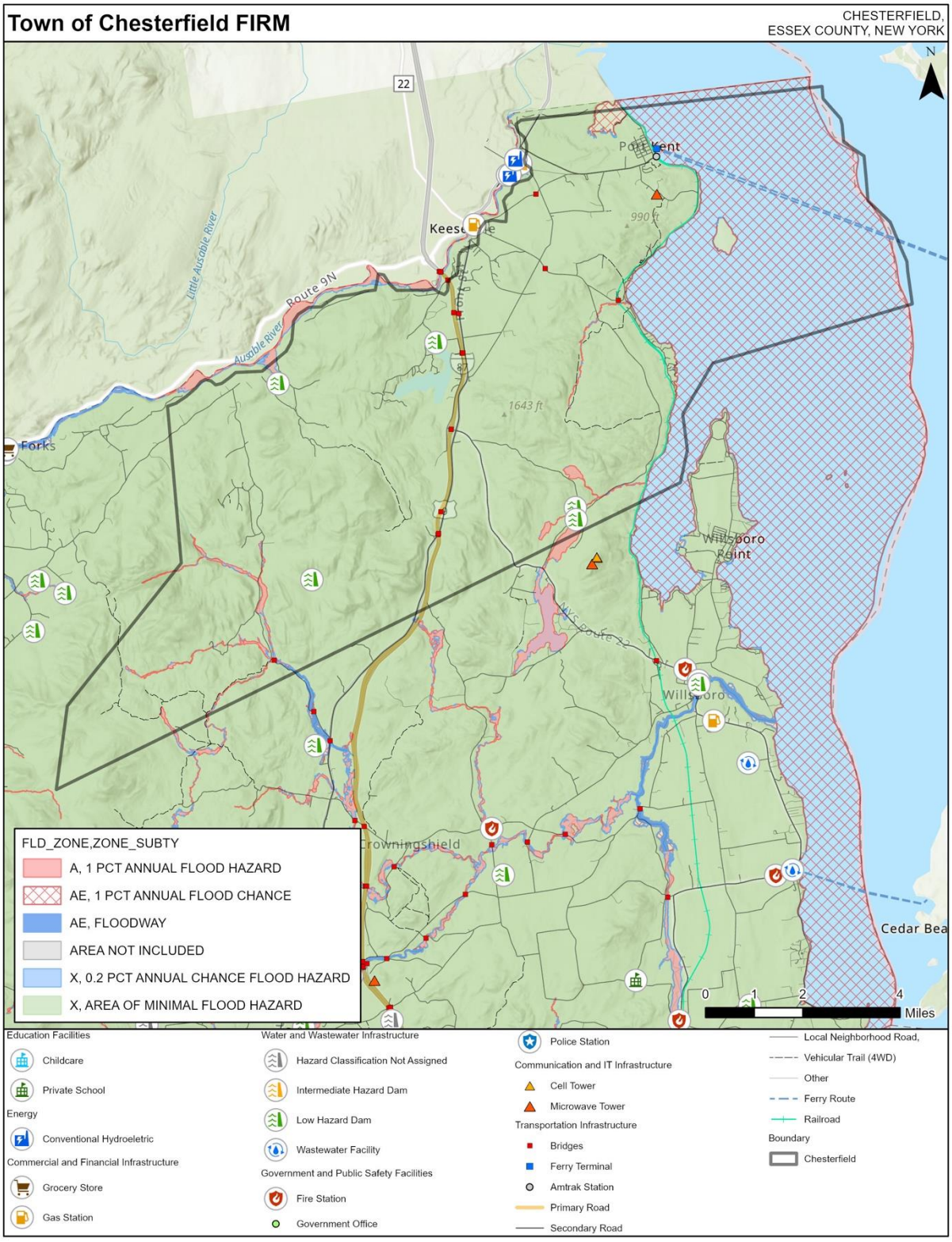


Figure 49. FIRM: Town of Chesterfield

Potential Loss

Potential loss was calculated for Chesterfield. The Essex County Real Property website was used to obtain data for all parcels. Data was manipulated to determine the value of property in each of the nine class codes. The data was totaled for value in each class code. The property impacted from the hazard event was calculated to be 10% of the total in the class code. The potential loss from the impact from hazard events was calculated to be 10% of the value of the properties in each class code.

The Essex County Real Property Tax Services website has nine class codes for real property:

- 100 Agriculture
- 200 Residential
- 300 Vacant Lands
- 400 Commercial
- 500 Recreation and Entertainment
- 600 Community
- 700 Industrial
- 800 Public Services
- 900 Forest, Conservation Lands and Parks

Table 117. Potential Loss: Town of Chesterfield

Class Code	Number of Structures	Structure Values	Number of Structures Impacted	Potential Loss
100	12	$2,863,100	1	$286,310
200	1,203	$248,652,450	120	$24,865,245
300	552	$19,988,290	55	$1,998,829
400	64	$13,191,800	6	$1,319,180
500	12	$4,697,500	1	$4,697,500
600	17	$6,051,200	1	$605,120
700	2	$1,941,700	0	$194,170
800	59	$19,118,262	5	$1,911,826
900	233	$33,573,000	23	$3,357,300

Mitigation Strategy

The mitigation strategy outlined in the 2019 plan was reviewed to assess the completion status of proposed projects. As part of the 2025 plan update, new mitigation projects were identified and are presented in the table below.

During the plan update, projects were prioritized based on their impact and necessity. Priority levels are categorized as High, Medium, or Low. Generally, high priority projects focus on ensuring that towns and villages remain fully operational during disasters. Medium and low priority projects strive to enhance municipal functions and directly benefit residents. Project implementation will depend on available funding, political support, and other influencing factors, with any project being pursued as resources become available.

The cost of proposed mitigation projects has been determined and included in the table below, while others have estimated cost projections. Mitigation project costs are ranked as High, Medium, or Low, reflecting their financial impact and resource requirements.

Table 118. Mitigation Strategies: Town of Chesterfield

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
1. Corlear Bay Road	1,2,4,5	Replace culvert with open bridge	Flood	Town Hwy Dept	$1.5M	10 years	EC DPW	Low	Structure & infrastructure
2. Added new culvert 120' 2' Poly culvert	1,2,4,5		Flood	Town Hwy Dept	$7,100	Complete	ES PDW	Complete	Structure & infrastructure
3. Generator Town Hall Town Hwy Dept.	1,2,4,5	Purchase generator for town hall & town Hwy Dept.	All	Town Hwy Dept	$25K	1 year	FEMA Town Budgets	High	Structure & infrastructure
4. Hidden Creek Project	1,2,4,5	Replace culverts under town that creek flows in culverts	All	Town Hwy Dept	$10M	1-20 years Year 1-5 Obtain funding Year 6-10 Replace culverts under town	NYS DOS	High	Structure & infrastructure
5. River St.	1,2,4,5	Culvert on River St. needs to be replaced	Flood	Town Hwy Dept	Low	1-5 years	EC DPW	High	Structure & infrastructure
6. Port Kent Community Center generator	1,2,4,5	Obtain generator for facility	All	Town Hwy Dept	$25K	1 year	Town budget	High	Structure & infrastructure

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
7. Tree trimming in town	1,2,4	Tree trimming needs to be done around town (state inmates have done it in the past)	All	Town Hwy Dept	Low	1-5 years	Town budget	Medium	Structure & infrastructure
8. Replace culvert w/open bottom bridge–Realign stream to not affect 1 remaining house–Build up to higher level	1,2,4,5		Floods		High	1-5 years	EC DPW	High	Structure & infrastructure
9. Purchase flood damaged structures after disasters on Beach St.	1,2,4,5	Purchase flooded homes	Floods	Town, county	Medium	After floods	FEMA, HMGP or PDM	High	Structure & infrastructure
10. Earthquake Impact Reduction	3	Conduct training for code officers and update municipal plans to reflect new seismic standards.	Earthquake	Town, county	Medium	1-5 years	FEMA, HMGP	Low	Training & Awareness

Chesterfield will continue to implement project and programs to reduce disaster effects impacting the town.

Annex B: Town of Crown Point

Profile

The Town of Crown Point lies in the southeastern part of Essex County, bordered by Moriah to the north, the Towns of North Hudson and Schroon to the west, Ticonderoga to the south, and Lake Champlain to the east. According to the 2020 US Census, the population is estimated at approximately 2,119. The town is characterized by a complex network of roads linking its three small hamlets: Ironville to the west, Crown Point Center, and the main commercial area, Crown Point, located just a mile from Lake Champlain.

Crown Point spans 79 square miles including 16 named ponds, three major brooks or creeks, several unnamed tributaries, and expansive marsh areas. The western part of town remains largely undeveloped and forested, while most residential development is concentrated in the lower elevation areas in the eastern half of town near Lake Champlain.

Key resources in Crown Point include town facilities like the Fire Hall/Community Center, Crown Point Central School, and the Highway Department. The town is home to several local businesses: the Penfield Homestead Museum, the State Historic Site at the Crown Point Forts, and the Essex County Fish Hatchery located on Putt's Creek.

State Route 22/9N runs north–south through the eastern part of town, as does the Canadian Pacific Rail line, carrying both freight and passenger trains daily. In the northeast corner, State Route 903 provides access to the Crown Point Bridge, connecting the town to Vermont. This bridge is a vital access route for the region, and in times of emergency, Crown Point shares resources and collaborates with Addison County, Vermont, for mutual aid.

Table 119. Table of Facts: Town of Crown Point

Fact	Description
Land Area	79 sq. miles/50,218.2 acres
Incorporated Village(s)	None
Hamlets	Crown Point & Ironville
Population Census	2,119 (2020 Census)
Governance	Town
Total Assessed Valuation	$2,862,920
Highest Elevation	Hail Mt.–2,624'
Largest Lake	Lake Champlain–eastern border & Penfield Pond
River(s)	Putnam (Putt's) Creek
Dams	1
Bridges	8 County Road
Interstate Highway	None
State Routes	22, 185 & 903

DRAFT

Fact	Description
County Roads	2, 7, 45, 46, 47, 48 & 50
Land Agriculture Use	5,216 acres
Land Classified Industrial	None
Land Classified Residential, as Hamlet	410 acres
Hospital/Medical Facility	None
Fire & Rescue	Crown Point Fire District
Schools	Crown Point Central
Railroads	CP Rail north/south
Passenger Trains/Day	Amtrak 68 & 69–2/day
Freight Trains/Day	approximately 5/day
Ferry Dock(s)	None
Interstate Bridge	Crown Point to Chimney Point, VT
Largest Employer	Out of town
Law Enforcement	NYSP & County Sheriff
Correctional Facility	None
Power Utility Provider(s)	Niagara Mohawk
Water Supply Source(s)	Wells
Emergency Shelters	Firehouse, Town Hall, Methodist Church, Station 2 at Ironville, & Visitors Center at the Forts.
Critical Facilities	Firehouses–CP & Ironville & Town Hall, Water Plant

Notable Updates

Recent hazard mitigation actions in Crown Point include efforts to address infrastructure vulnerabilities, particularly those impacted by flooding and related issues. Some of these initiatives include:

- Drainage Improvements. The Middle Road drainage issue is currently under investigation in collaboration with FEMA and the County Engineer. A pending report will outline recommended solutions to address the problem and ensure effective mitigation measures are implemented.
- Infrastructure Upgrades. A proposal to replace the Stoney Lonesome Road 4–foot culvert with a 16–foot box culvert was discussed, reflecting a focus on reducing flood risks. FEMA and DEC are engaged in planning this project (estimated cost: $160,000) with additional tree removal required for implementation.
- Wastewater Improvements. Significant progress is underway on the town's wastewater system, including pump station upgrades and the installation of a UV treatment system to enhance

resilience against environmental challenges. A sand filtration system is being evaluated for its cost–effectiveness and sustainability.

- Water Management Projects. The Water Meter Project was awarded to Everett Prescott, emphasizing water resource management and efficiency.
- Climate Resilience Funding. The town has received NYSERDA grant funding to improve energy efficiency in public facilities, including installing a heat pump in the Town Hall, aligning with broader sustainability and climate mitigation strategies.

Planning Process

The town initially took part in a Hazard Mitigation Survey, followed by an in-person Stakeholder Hazard Mitigation Introduction Meeting. Subsequently, the Town Supervisor received a copy of the town's section of the county plan for review and revisions. The Town Supervisor participated in county-level meetings related to the plan and attended a final mitigation strategy meeting.

Capability Assessment

Crown Point has several planning mechanisms in place supporting hazard resilience and community development. These include a comprehensive emergency management plan, continuity of operations plan, disaster recovery plan, floodplain regulations, town comprehensive plan, stormwater management plan, historic preservation plan, farmland preservation plan, and building and fire codes. The town follows the Essex County Economic Development Plan for economic initiatives. Together, these regulations help ensure that new development is resistant to hazards and aligned with sustainable growth objectives.

Table 120. Planning Documents: Town of Crown Point

Town of Crown Point Planning Documents
Comprehensive Emergency Management Plan (2018)
Continuity of Operations Plan
Disaster Recovery Plan
Floodplain Regulations
Stormwater Management Regulations
Farmland Preservation Plan
Town Comprehensive Plan
Historic Preservation Plan
Building Codes
Fire Codes

This hazard mitigation plan should be integrated into other existing plans in Crown Point. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects should be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure

DRAFT

that all enabling legislation to have similar information in those documents. Integration can ensure consistency between enabling legislation.

Crown Point conducted a self–assessment of its municipal capabilities, identifying key resources and partnerships that support town operations. The town relies on the Adirondack Park Agency (APA) for development application approvals and utilizes county assets when necessary. County engineering staff or contracted firms provide engineering support as needed.

The town's emergency manager and floodplain administrator (who also serves as the code officer) oversees emergency preparedness and regulatory compliance. Land surveyors are hired as required, while scientific issues are addressed with assistance from Department of Environmental Conservation (DEC) and APA staff. County resources support GIS mapping, in addition to grant writing and grant assistance.

Crown Point leverages multiple funding sources to implement projects. Community Development Block Grants (CDBGs) were used for new sewer and water extensions, while water and sewer fees fund system maintenance. The town maintains numerous partnering agreements with New York State, Essex County, and neighboring towns and villages to participate in shared service programs.

The town evaluated its educational and outreach capabilities, identifying key programs and initiatives. The fire department conducts school–based education programs, while the local school provides environmental education. Lake Champlain Basin Programs and the Darrin Fresh Water Institute lead Lake Champlain–focused educational efforts.

As part of its assessment, the town ranked various capability areas. Planning and regulatory capabilities received a High ranking, while administrative and technical, financial, and education and outreach efforts were ranked as Moderate.

Critical Facilities

As part of the plan update, the flood vulnerability of critical facilities was assessed. The table below details whether these facilities are located within the 500–year floodplain, their history of past flooding, and any mitigation efforts undertaken to reduce flood risk. Generator capabilities were evaluated to determine whether these facilities could operate without electricity—a common challenge during disaster events.

The fire station is the only critical facility located within the 500–year floodplain and is equipped with a generator for backup power. All other critical facilities—including the police station, critical vehicle and equipment storage facilities, emergency operations center, pumping station, town hall (which also serves as the communication center), medical clinic, private school, Verizon building, and water plant—are outside the 500–year floodplain. Except for the private school, all these facilities have generator backup systems to ensure operational continuity during power outages.

Table 121. Infrastructure in Floodplain: Town of Crown Point

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Fire Station/Critical Vehicle & Equipment storage	No	No	No	Yes

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Town Hall/Emergency Operations Center (Town Hall)	No	No	No	No
Medical Clinic	No	No	No	Yes
Crown Point Central School	No	No	No	Yes
Telephone Company Building	No	No	No	Yes
Water Plant	No	No	No	Yes
Sewer Plant	No	No	No	Yes

National Flood Insurance Plan (NFIP) Summary

Crown Point identified three potential sites for temporary housing in the event of a disaster. Monitor Bay RV Park is a primary option, as it is equipped with power, water, and sewer and offers both paved and unpaved areas, making it well suited for temporary housing units like RVs or mobile homes. Another possible location is a private field, which, despite lacking power, sewer, and water, can still be used for RVs or mobile homes to accommodate displaced residents. The local school (designated as an American Red Cross shelter) can provide temporary housing for those affected by a hazard event. Historically, many displaced residents have also found temporary housing with friends, relatives, or neighbors.

Table 122. Housing for Displaced Residents: Town of Crown Point

Facility	Type of Housing
Monitor Bay Park	RV, mobile homes
Private Land	RV, mobile homes
Crown Point Central Schools	ARC Shelter

The following information concerns flood vulnerable structures in Crown Point. The numbers of actual structures in the flood–vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will determine the actual number of vulnerable structures.

Table 123. Flood Insurance: Town of Crown Point

Policies	2011	2018	2024	Total Amount of Claims
Policies	17	14	14	$7,014
# Repetitive Loss Structures	-	-	-	-

Crown Point will continue to actively manage floodplains to mitigate future flood risks. New development within special flood hazard areas will be carefully reviewed and approved to ensure

DRAFT

compliance with the local floodplain ordinance. As FEMA updates the Flood Insurance Rate Maps (FIRMs), the town will hold meetings with floodplain managers, town supervisors, and village mayors to provide training on the National Flood Insurance Program (NFIP). These meetings will also serve as a forum to discuss compliance requirements and best practices for floodplain management.

Hazard Identification & Ranking

Table 124. Hazard Ranking: Town of Crown Point

Hazard Ranking	Hazards
HIGH	• Floods
MEDIUM	• Droughts • Extreme Temperatures
LOW	• Avalanches • Earthquakes • Hailstorms • High Winds • Hurricanes • Land Subsidence & Expansive Soils • Ice Storms • Landslides • Severe Winter Storms • Wildfires • Rail Events

Hazard Event History

Table 125. Hazard Event History: Town of Crown Point

Hazard	Event	Year	Impact
Flooding	Lake Champlain flood	2011	Severe flooding impacted low–lying areas, causing property damage & road closures.
	Flash flooding	2024	Spring snowmelt & heavy rain damaged infrastructure & homes.
	July flooding	2023	Torrential rain caused flash floods, washing out roads & isolating some areas.
Winter Storms & Cold	Ice storm	1998	Prolonged power outages & significant tree & structural damage.
	February blizzard	2024	Heavy snowfall caused widespread disruptions & power outages.

Hazard	Event	Year	Impact
Severe Thunderstorms	Severe summer storms	2024	Thunderstorms with strong winds & hail led to property damage & outages.
Tornadoes	EF1 tornado	2014	Rare tornado caused localized damage in nearby areas, including Crown Point.
Earthquakes	Adirondack Regional quake	2002	M5.1 earthquake felt, minor structural impacts noted.
Wildfires	Adirondack forest fires	1903	Large–scale fires threatened communities near Crown Point.
	July wildfire threats	2024	Drought conditions increased wildfire risk; minor fires contained quickly.
Transportation	Highway & local road incidents	Recurring	Traffic & rail accidents, sometimes involving hazardous materials, required responses.
Power Outages	February blizzard	2024	Outages caused by heavy snow & ice damaging power lines.
	Summer thunderstorms	2024	High winds & lightning led to outages in residential & commercial areas.
Drought	Prolonged dry conditions	2024	Summer drought stressed local wells & agricultural operations.
Public Health	Lyme disease	Recurring	High tick populations in wooded & grassy areas present ongoing health risks.
	COVID–19 Pandemic	2020+	Public health infrastructure tested during the pandemic, leading to improved systems.

Hazard Analysis

Crown Point faces a wide range of natural and man–made hazards, necessitating proactive planning and mitigation efforts to safeguard the community. Flooding remains a significant challenge, with major events like the 2011 Lake Champlain flood causing extensive property damage and road closures. More recent incidents like the 2023 and 2024 flash floods driven by torrential rain and spring snowmelt, highlighted town vulnerabilities to rising water levels and the need for improved stormwater management and more resilient infrastructure.

Crown Point has experienced severe winter storms that disrupted daily life and infrastructure. The 1998 ice storm caused widespread power outages and significant damage to trees and structures, while the February 2024 blizzard brought heavy snowfall, leading to additional power failures, transportation disruptions, and increased strain on emergency services. Severe thunderstorms like those in the summer of 2024, produced strong winds and hail, further emphasizing the need for a resilient power infrastructure and robust emergency preparedness measures. While tornadoes are rare in the region, the EF1 tornado in 2014 caused localized damage near Crown Point, reinforcing the need for continued vigilance against extreme weather events.

Beyond meteorological hazards, geological and environmental risks pose additional challenges. The 2002 Adirondack M5.1 earthquake resulted in minor structural impacts, highlighting the

DRAFT

presence of regional seismic activity. Wildfire risk remains a concern, with historical events like the large–scale fires of 1903 and the increased wildfire threats during the 2024 drought demonstrating the dangers posed by prolonged dry conditions and changing climate patterns. These conditions not only threaten forested areas but also impact air quality and public health.

Crown Point also faces transportation–related hazards, particularly highway and railway accidents involving hazardous materials. Power outages remain a recurring issue, exacerbated by severe storms in both winter and summer (like those in 2024) which disrupted both residential and commercial operations. The prolonged drought in 2024 placed significant stress on water resources and agricultural operations, emphasizing the growing importance of sustainable water management.

Public health risks continue to affect Crown Point, with Lyme disease cases persisting due to high tick populations in wooded and grassy areas. The COVID–19 pandemic exposed vulnerabilities in public health infrastructure, while also driving improvements in preparedness and response systems.

Given Crown Point's exposure to flooding, severe weather, wildfires, earthquakes, and public health challenges, comprehensive hazard mitigation planning is essential. Strengthening infrastructure resilience, enhancing emergency response capabilities, and educating residents on preventive measures will be critical in reducing risks and improving the community's ability to withstand future hazards.

Hazard Mapping

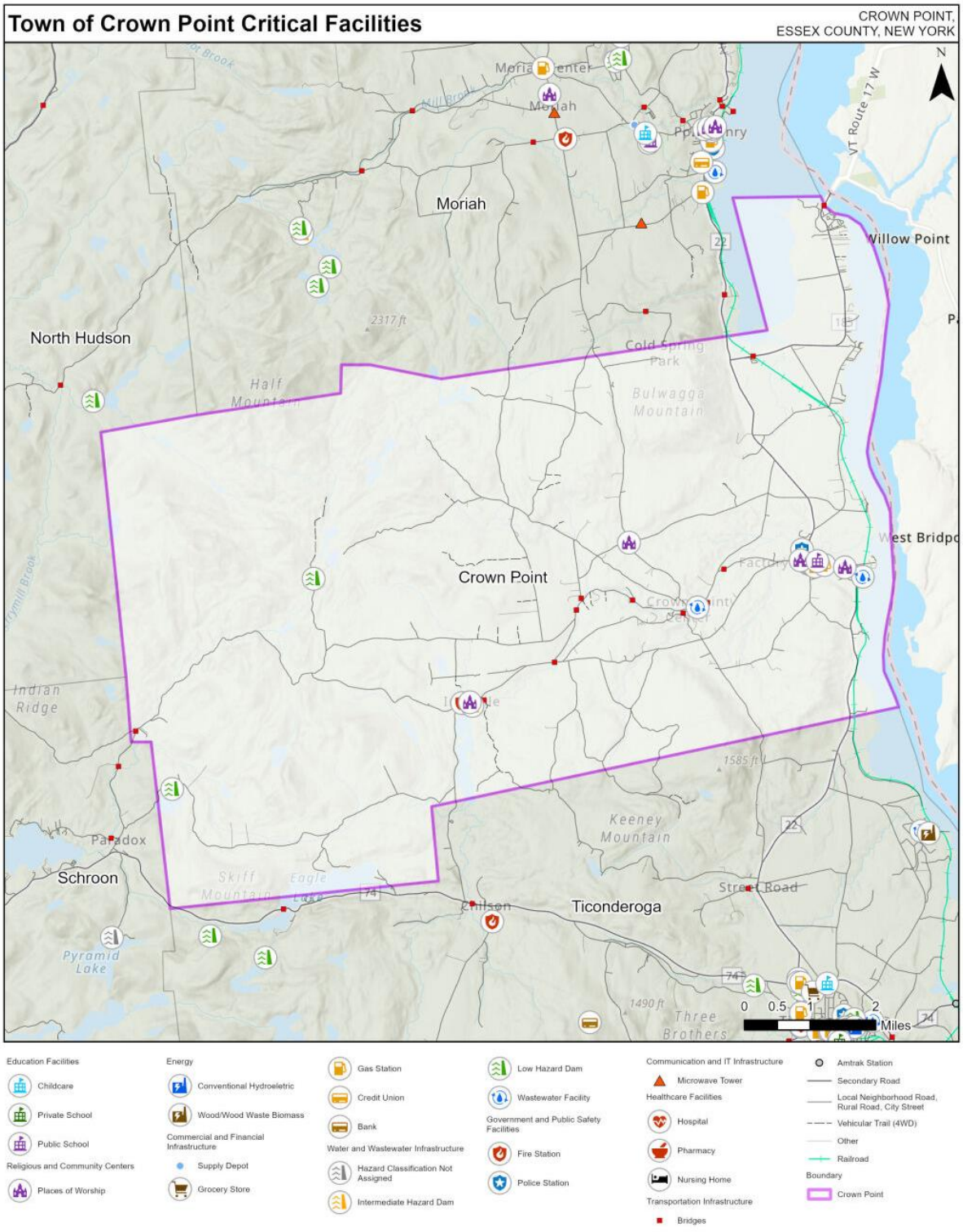


Figure 50. Critical Infrastructure: Town of Crown Point

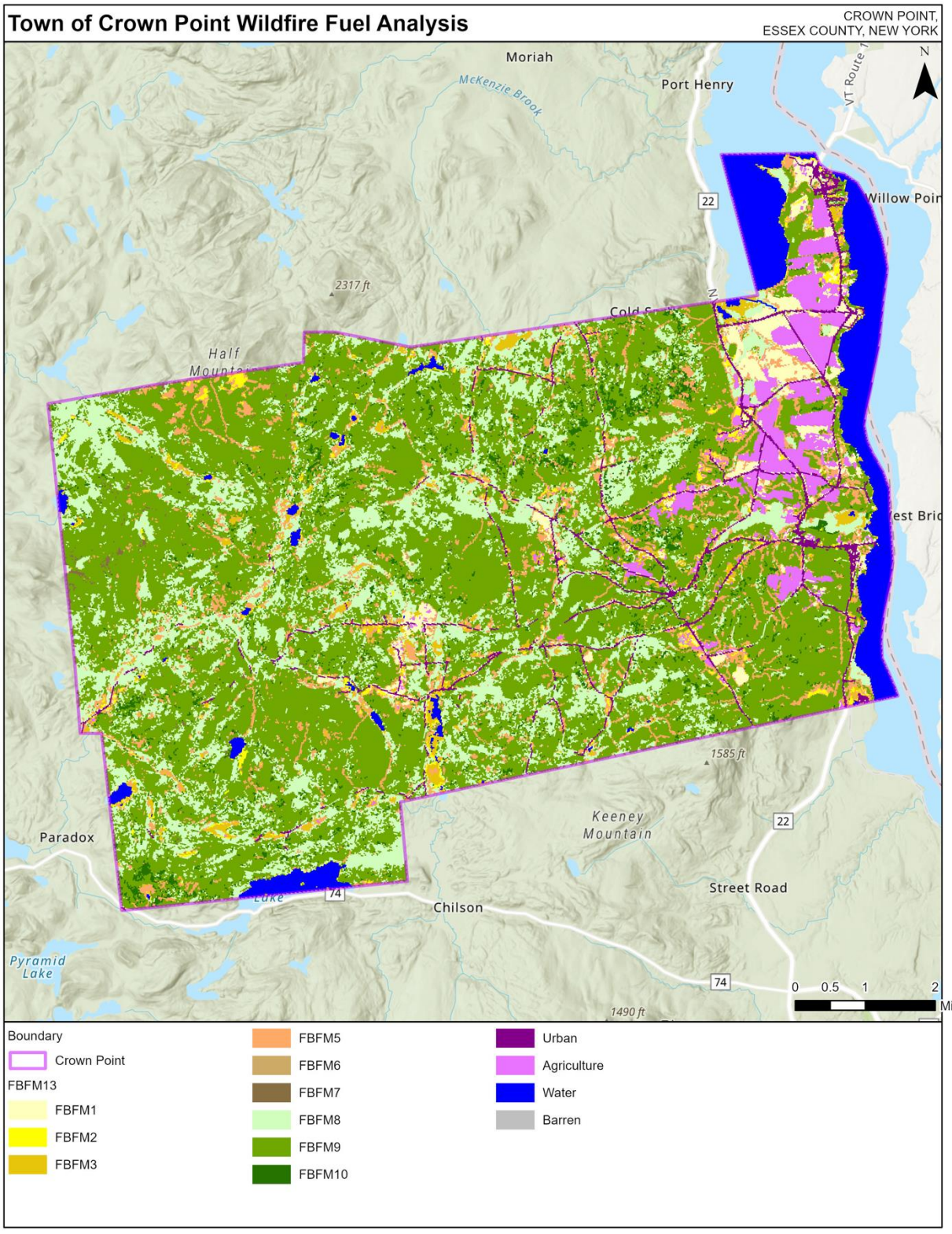


Figure 51. Wildfire Fuel Analysis: Town of Crown Point

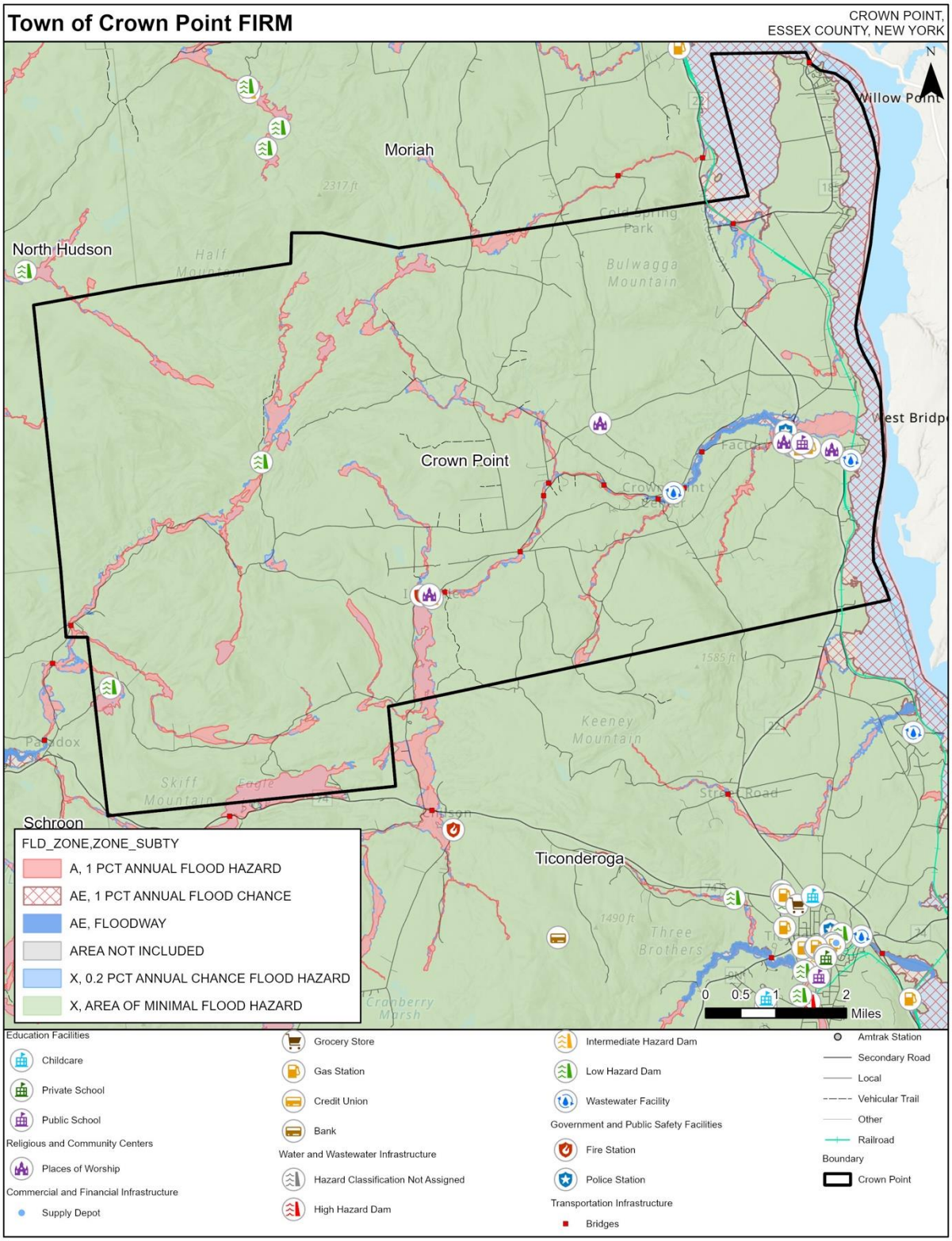


Figure 52. FIRM: Town of Crown Point

Potential Loss

A potential loss assessment was conducted for Crown Point using data from the Essex County Real Property website. Property data for all parcels was analyzed and categorized into nine class codes, with the total property value calculated for each category. To estimate potential losses from hazard events, it was assumed that 10% of the total property value in each class code could be impacted. As a result, the potential financial loss was determined by applying this 10% impact estimate to the total property value within each classification.

The Essex County Real Property Tax Services website has nine class codes for real property:

- 100 Agriculture
- 200 Residential
- 300 Vacant Lands
- 400 Commercial
- 500 Recreation and Entertainment
- 600 Community
- 700 Industrial
- 800 Public Services
- 900 Forest, Conservation Lands and Parks

Table 126. Potential Loss: Town of Crown Point

Class Code	Number of Structures	Structure Values	Number of Structures Impacted	Potential Loss
100	48	$3,485,900	1	$348,590
200	98	$130,558,800	9	$13,055,880
300	490	$15,934,400	49	$1,593,440
400	35	$5,249,240	3	$524,924
500	5	$643,700	0	$64,370
600	32	$8,397,400	3	$839,740
700	6	$1,435,200	0	$143,520
800	36	$18,735,375	3	$1,873,537
900	98	$18,369,132	9	$1,836,913

Mitigation Strategy

The mitigation strategy outlined in the 2019 plan was reviewed to assess the completion status of previously identified projects as part of the 2025 plan update. New mitigation projects were identified, detailed in the table below. During the update process, projects were prioritized based on impact and necessity. Priority levels were categorized as High, Medium, or Low. High priority

projects focus on ensuring that towns and villages remain fully operational during disasters, while Medium and Low priority projects strive to improve municipal functions and directly support residents.

Project implementation will depend on available funding, political support, and other influencing factors. Any project may be pursued as resources become available. The cost of some of these projects has been determined and is included in the table below, while other projects have only estimated cost projections. To better assess financial feasibility, potential implementation costs are categorized as High, Medium, or Low.

Table 127. Mitigation Strategies: Town of Crown Point

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
1. Peasley Road bridge replacement	2,4,5	Replace bridge	Flooding	County PDW, town Hwy dept.	Medium	2 years	Bridge Bank	Medium	Infrastructure projects
2. Skunk Hollow Road bridge	2,4,5	Replace bridge	Flooding	County PDW, town Hwy dept.	Medium	2 years	Bridge Bank	Medium	Infrastructure projects
3. Town Hall generator	2,4,5	Obtain generator for Town Hall	Power loss events	Town supervisor	Low	1 year	Town budget, other grant	High	Infrastructure projects
4. Senior Center Generator	2,4,5	Obtain generator for Senior center	Power loss events	Town supervisor	Low	1 year	Town budgets	Medium	Infrastructure projects
5. Gas station generator	2,4,5	Obtain generator for private gas station	Power loss events	Town supervisor	Low	ASAP	Gas station owner	Medium	#4 implement infrastructure projects
6. Culvert inspection & cleaning	2,4,5	Inspect & clean culverts as needed	Flooding	Town Hwy dept	Low	Continue current efforts	Town budgets	Medium	Infrastructure projects
7. Water supply back up	2,4,5	Obtain back up water supply	Drought	Town supervisor	High, $3M	Year 1-2 Obtain grant	Environmental facility corporation	High	Infrastructure projects

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
		well for town				funds Year 3-5 Obtain back up well			
8. Amy Hill Road	2,4,5	Replace bridge with larger structure	Flooding	County DPW	Medium	Year 1-2 Obtain grant funds Year 3-5 Replace bridge	Bridge NY funds	Medium	Infrastructure projects
9. Hamilton Road bridge	2,4,5	Replace bridge with larger structure	Flooding	County DPW	Medium	Year 1-2 Obtain grant funds Year 3-5 Replace bridge	Bridge NY funds	Medium	Infrastructure projects

Crown Point will continue to implement projects and programs to reduce disaster-related effects impacting the town.

Annex C: Town of Elizabethtown

Profile

The Town of Elizabethtown (the county seat of Essex County) is centrally located along main traffic arteries within the county and spans 82 square miles. It is bordered by the towns of Jay and Lewis to the north, Moriah and North Hudson to the south, Keene to the west, and Westport to the east. The village of Elizabethtown (unincorporated in 1981) is now an integral part of the town.

The town features two business districts, a central school, a hospital, the Essex County government complex, a historic district, and various residences and offices. The Boquet River, including both its tributary and main branch, flows through the area and has historically been prone to flooding during intense storms. Due to the presence of county government offices, Elizabethtown experiences a significant weekday population increase, adding a notable transient workforce.

Beyond the hamlet, the town is surrounded by forested and mountainous terrain with isolated homes scattered throughout the region. Historically known as Pleasant Valley, Elizabethtown serves as a watershed for Giant Mountain (elevation 4,622 feet) and Rocky Peak Ridge (elevation 4,375 feet), along with several smaller peaks. The hamlet of New Russia, located about seven miles upstream along the Boquet River, is a small settlement with clusters of residences along the river's path.

The town's transportation network includes State Routes 9 and 9N, which intersect in what was formerly the village. County and town roads provide additional access throughout the community. In the southeastern corner, Lincoln Pond features a New York State campground and day-use area. The pond was created in 1911 when the Black River was dammed for hydroelectric purposes. The Adirondack Northway (I–87) runs through the southeastern portion of town, with access via Exits 30 and 31.

Elizabethtown is home to several historic sites, including the Hand–Hale Historic District and the former site of Hubbard Hall, which was destroyed by fire in 2011. Both sites are listed on the National Register of Historic Places. Historically, the lumber industry and iron ore processing played a significant role in the town's early economy. By the late 19th century, tourism had become a major economic driver, fueled by the town's scenic beauty, proximity to the Adirondack High Peaks, and access to Lake Champlain.

Table 128. Table of Facts: Town of Elizabethtown

Fact	Description
Land Area	82 sq. miles/51.108.67 acres
Incorporated Village(s)	None
Hamlets	Elizabethtown & New Russia
Population Census	1,163 (2020 Census)
Governance	Town
Total Assessed Valuation	$267,370,436 (2024)

DRAFT

Fact	Description
Highest Elevation	Rocky Peak Ridge–4,029’
Largest Lake	Lincoln Pond
River(s)	Boquet, The Branch & Black
Dams	2
Bridges	2
Interstate Highway	I–87 north/south SE to NE
State Routes	9 & 9N
County Roads	7, 8 & 10
Land Agriculture Use	None
Land Classified Industrial	None
Land Classified Residential, as Hamlet	470.5 acres
Hospital/Medical Facility	UVM Elizabethtown Community Hospital, Health Center & Essex Center
Fire & Rescue	Elizabethtown Fire, Elizabethtown Lewis & Emergency Squad
Schools	Boquet Valley Central
Railroads	None
Passenger Trains/Day	None
Freight Trains/Day	None
Ferry Dock(s)	None
Interstate Bridge	None
Largest Employer	Essex County
Law Enforcement	NYSP & County Sheriff
Power Utility Provider(s)	NYSEG
Water Supply Source(s)	Wells
Emergency Shelters	Boquet Valley Central School, Elizabethtown Volunteer Fire Dept.
Critical Facilities	Fire Department, Hospital, County Complex

Notable Updates

Elizabethtown has recently undertaken several critical initiatives to strengthen hazard resilience and improve public safety. One of the most significant projects is a $6.5 million bond authorization for the reconstruction and resurfacing of various roads. This investment strives to fortify the transportation infrastructure, reducing the impacts of extreme weather events like flooding and heavy snowfall, which frequently damage roadways and disrupt mobility.

In addition to infrastructure improvements, water system upgrades were prioritized to address public health risks and enhance the reliability of drinking water. The town is actively replacing outdated lead service lines, ensuring a safer water supply for residents. Upgrades to the chlorination system are also underway, further enhancing water quality and system reliability. These measures demonstrate Elizabethtown's proactive approach to mitigating risks associated with aging infrastructure.

Emergency preparedness and climate adaptation are also key focus areas of recent efforts. Elizabethtown partnered with FEMA and the DEC to address flooding risks, concentrating on drainage system enhancements and culvert replacements. One notable project is the planned Stoney Lonesome Road culvert upgrade, involving the installation of a larger, more efficient structure to better manage stormwater runoff and reduce flood–related damage. The town is exploring renewable energy initiatives like the Vineyard Solar Project, to enhance energy resilience and lessen dependence on non–renewable resources.

Community engagement remains central to these initiatives. Elizabethtown prioritizes transparent communication through public notices and board meetings, ensuring residents are informed and involved in ongoing projects and hazard mitigation planning. By fostering public participation, the town strengthens community trust and enhances the long–term success of its resilience strategies. Elizabethtown is building a more adaptive, safe, and sustainable community by integrating these initiatives into its hazard mitigation planning. These efforts underscore a forward–thinking approach to protecting residents from climate–related challenges while ensuring long–term resilience and preparedness.

Planning Process

The town initially took part in a Hazard Mitigation Survey, followed by an in-person Stakeholder Hazard Mitigation Introduction Meeting. Subsequently, the Town Supervisor received a copy of the town's section of the county plan for review and revisions. The Town Supervisor participated in county-level meetings related to the plan and attended a final mitigation strategy meeting.

Capability Assessment

Elizabethtown implemented a range of planning mechanisms to support hazard resilience and community development, including an emergency operations plan, comprehensive emergency management plan, continuity of operations plan, floodplain regulations, subdivision regulations, comprehensive land use plan, natural resources protection plan, economic development plan, historic preservation plan, farmland preservation plan, building codes, and fire codes. Collectively, these regulatory measures ensure that new development is both hazard–resistant and aligned with sustainable growth objectives. Through an assessment of its planning capability, the town recognizes that these mechanisms play a critical role in mitigating potential hazards and fostering long–term community resilience.

Table 129. Planning Documents: Town of Elizabethtown

Elizabethtown Planning Documents
Emergency Operations Plan

DRAFT

Elizabethtown Planning Documents
Comprehensive Emergency Management Plan
Continuity of Operations Pan
Floodplain Regulations
Zoning Regulations
Subdivision Regulations
Comprehensive Land Use Plan
Natural Resources Protection Plan
Economic Development Plan
Historic Preservation Plan
Farmland Preservation Plan
Building Codes
Fire Codes

These regulations ensure new development is compliant with these regulations, making these structures less vulnerable to hazards.

To enhance resilience and ensure consistency across municipal planning efforts, Elizabethtown's Hazard Mitigation Plan should be integrated into other existing plans. The town's hazard ranking can be incorporated into the comprehensive emergency management plan, while mitigation projects should be included in capital improvement plans. Much of the hazard mitigation plan can be aligned with the community's comprehensive plans, ensuring that all enabling legislation reflects consistent and up–to–date information. This integration will promote cohesive planning and implementation across multiple municipal frameworks.

Elizabethtown conducted a self–assessment to evaluate its capabilities in hazard mitigation. The town relies on Essex County staff for planning, engineering, and floodplain management expertise. The town code officer also serves as the floodplain administrator, and land surveyors are contracted as needed. Scientific expertise is provided through staff from the Department of Environmental Conservation (DEC) and the Adirondack Park Agency (APA). Essex County staff support the town with grant writing and GIS capabilities.

The town utilizes a variety of funding sources to support mitigation and infrastructure projects. Community Development Block Grants (CDBGs) were used for structural rehabilitation, while drinking water use fees fund the maintenance of the water system. District agreements provide financial support for ambulance, fire services, and other essential needs.

Elizabethtown actively promotes public education and outreach on hazard mitigation and emergency preparedness. The public works department, emergency squads, and public safety officials conduct programs in schools and community venues. Non–governmental organizations (NGOs) like the Boquet River Association, play a key role in education and outreach efforts within the community.

The town ranked its capabilities across multiple categories. Planning and regulatory, administrative and technical, and education and outreach capabilities were assessed as Moderate, while

financial capabilities were ranked as Limited. These findings highlight the need for additional resources and funding to enhance Elizabethtown's overall ability to implement hazard mitigation strategies effectively.

Critical Facilities

Critical facilities flood vulnerability was assessed as the plan was updated. The table below described if these facilities are located in the 500–year floodplain, if the facility has been flooded in the past, and if any kind of mitigation has been completed to reduce the flood potential to these structures. Generator capabilities was also assessed to determine if these facilities could function without electric power, a common issue for critical facilities during disaster events.

Table 130. Critical Infrastructure in Floodplain: Town of Elizabethtown

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Fire Station	Yes	Yes	Yes. (electric above BFE)	Yes
Gas Station	No	No	n/a	n/a
Town Garage	No	No	No	Yes
Town Hall/ Communication Ct.	No	No	No	No
Hospital	No	No	No	Yes
High School	No	No	No	No
Water Chlorination Plant	Yes	No	No	No
NYSEG Substation	No	No	No	No

The fire station is located within the 500–year floodplain, but electrical systems were elevated above the base flood elevation to reduce flood risk. The town highway facility (serving as a critical vehicle storage area) is equipped with a generator to ensure operational continuity during emergencies. The communication center is housed within town hall, while the hospital also has a generator to maintain essential medical services. The local school, which serves as an American Red Cross shelter, provides emergency accommodations for displaced residents. The town has one utility substation, but it lacks a backup generator. The drinking water chlorination plant is also situated in the 500–year floodplain, though it has not experienced flooding to date.

To address temporary housing needs after a disaster, Elizabethtown has identified two potential sites. The town–owned Cobble Hill Golf Course offers both paved and unpaved areas, making it suitable for temporary housing units like RVs or mobile homes. This site is equipped with power and water, providing essential utilities for displaced residents. The school, designated as an

DRAFT

emergency shelter, can be used for temporary housing during hazard events. In previous disasters, many displaced residents have also sought temporary housing with friends, relatives, or neighbors.

Table 131. Housing for Displaced Residents: Town of Elizabethtown

Facility	Type of Housing
Boquet Valley Central School	Emergency shelter
Cobble Hill Golf Course (town–owned)	RV, mobile Homes

National Flood Insurance Plan (NFIP) Summary

The following information concerns flood vulnerable structures in Elizabethtown. The numbers of actual structures in the flood vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will determine the actual number of vulnerable structures.

Table 132: Flood Insurance: Town of Elizabethtown

	2011	2018	2024	Total Amount of Claims
Policies	13	14	14	$273,106
Number of Repetitive Loss Structures	3	3 2 single family 1 other residential	-	-

Elizabethtown will continue to actively manage floodplains to mitigate future flood risks. New development within special flood hazard areas will be carefully reviewed and approved to ensure compliance with the local floodplain ordinance. As FEMA updates the Flood Insurance Rate Maps (FIRMs), the town will hold meetings with floodplain managers, town supervisors, and village mayors to provide training on the National Flood Insurance Program (NFIP). These meetings will also serve as a forum to discuss compliance requirements and best practices for floodplain management.

Hazard Identification & Ranking

Table 133. Hazard Ranking: Town of Elizabethtown

Hazard Ranking	Hazards
HIGH	• Extreme Temperatures • Floods • High Winds • Hurricanes • Severe Winter Storms

Hazard Ranking	Hazards
MEDIUM	• Drought • Hailstorms • Landslides • Wildfires • Ice Storms
LOW	• Avalanches • Earthquakes • Rail Events • Subsidence • Landslides

Hazard Event History

Table 134. Hazard Events: Town of Elizabethtown

Hazard	Event	Year	Impact
Flooding	Lake Champlain flood	2011	Severe flooding affected low–lying areas, causing property damage & road closures.
	July flooding	2023	Heavy rainfall caused flash floods, damaging roads & homes in vulnerable areas.
	Spring flooding	2024	Snowmelt combined with rain led to widespread flash flooding & infrastructure damage.
Winter Storms & Cold	Ice storm	1998	Significant power outages & tree damage disrupted daily life for weeks.
	February blizzard	2024	Over 25 inches of snow caused road closures & power outages, disrupting services.
Severe Thunderstorms	Severe summer storms	2024	Thunderstorms with high winds & hail led to downed trees & power lines.
Tornadoes	Rare tornado	2014	Small tornado caused minimal property damage in nearby areas.
Earthquakes	Adirondack Regional quake	2002	M5.1 earthquake felt in Elizabethtown, causing minor structural impacts.
Wildfires	Adirondack forest fires	1903	Large–scale fires in the region threatened nearby communities, including Elizabethtown.
	July wildfire threats	2024	Drought conditions raised fire risks; minor fires were reported but quickly contained.

DRAFT

Hazard	Event	Year	Impact
Transportation	Local road incidents	Recurring	Accidents & poor road conditions exacerbated by severe weather required frequent repairs.
Power Outages	February blizzard	2024	Widespread outages during winter storms disrupted households & businesses.
	Summer thunderstorms	2024	High winds caused outages, highlighting vulnerabilities in the power grid.
Drought	Prolonged dry conditions	2024	Summer drought strained local wells & affected agricultural production.
Public Health	Lyme disease	Recurring	High tick populations in wooded & grassy areas pose ongoing health risks.
	COVID–19 Pandemic	2020+	Strained public health resources & increased awareness of community health infrastructure.

Hazard Analysis

Elizabethtown faces a wide range of natural and man–made hazards posing significant challenges to community safety and resilience. Among the most pressing threats is flooding, with past events like the 2011 Lake Champlain flood causing extensive damage to low–lying areas and transportation networks. Recently, flash floods in 2023 and 2024—fueled by heavy rainfall and spring snowmelt—led to washed–out roads, property destruction, and infrastructure failures, highlighting the urgent need for improved stormwater management and mitigation measures.

Winter storms and extreme cold events are recurring hazards. The 1998 ice storm caused widespread power outages and tree damage, disrupting daily life for weeks. The February 2024 blizzard, which brought over 25 inches of snow, resulted in road closures, power failures, and major disruptions to public services. Severe thunderstorms in 2024, accompanied by high winds and hail, damaged trees and power lines, further emphasizing the need for resilient infrastructure.

Though less frequent, tornadoes and earthquakes also pose risks. A rare tornado in 2014 caused minor property damage while the 2002 Adirondack Region earthquake (M5.1) led to structural impacts. Wildfires remain a concern, with historical incidents like the 1903 large–scale fires and heightened wildfire threats during the 2024 drought underscoring the importance of proactive fire prevention and emergency response strategies.

Transportation–related hazards, often exacerbated by severe weather events, continue to impact local roads, necessitating ongoing maintenance and repairs. Power outages are another significant vulnerability, with widespread disruptions occurring during both the 2024 blizzard and summer thunderstorms. Prolonged drought conditions in 2024 strained local wells and agricultural production, demonstrating the community's sensitivity to climate variability.

Public health threats are also a concern. Lyme disease remains a recurring risk due to high tick populations in wooded and grassy areas. The COVID–19 pandemic tested local public health infrastructure, revealing the need for enhanced preparedness and resource allocation to better manage future health crises.

Given Elizabethtown's exposure to flooding, severe storms, wildfires, and public health risks, hazard mitigation planning is essential. Investing in resilient infrastructure, strengthening emergency response capabilities, and improving community education will be critical to safeguarding the town and its residents against future hazards.

Hazard Mapping

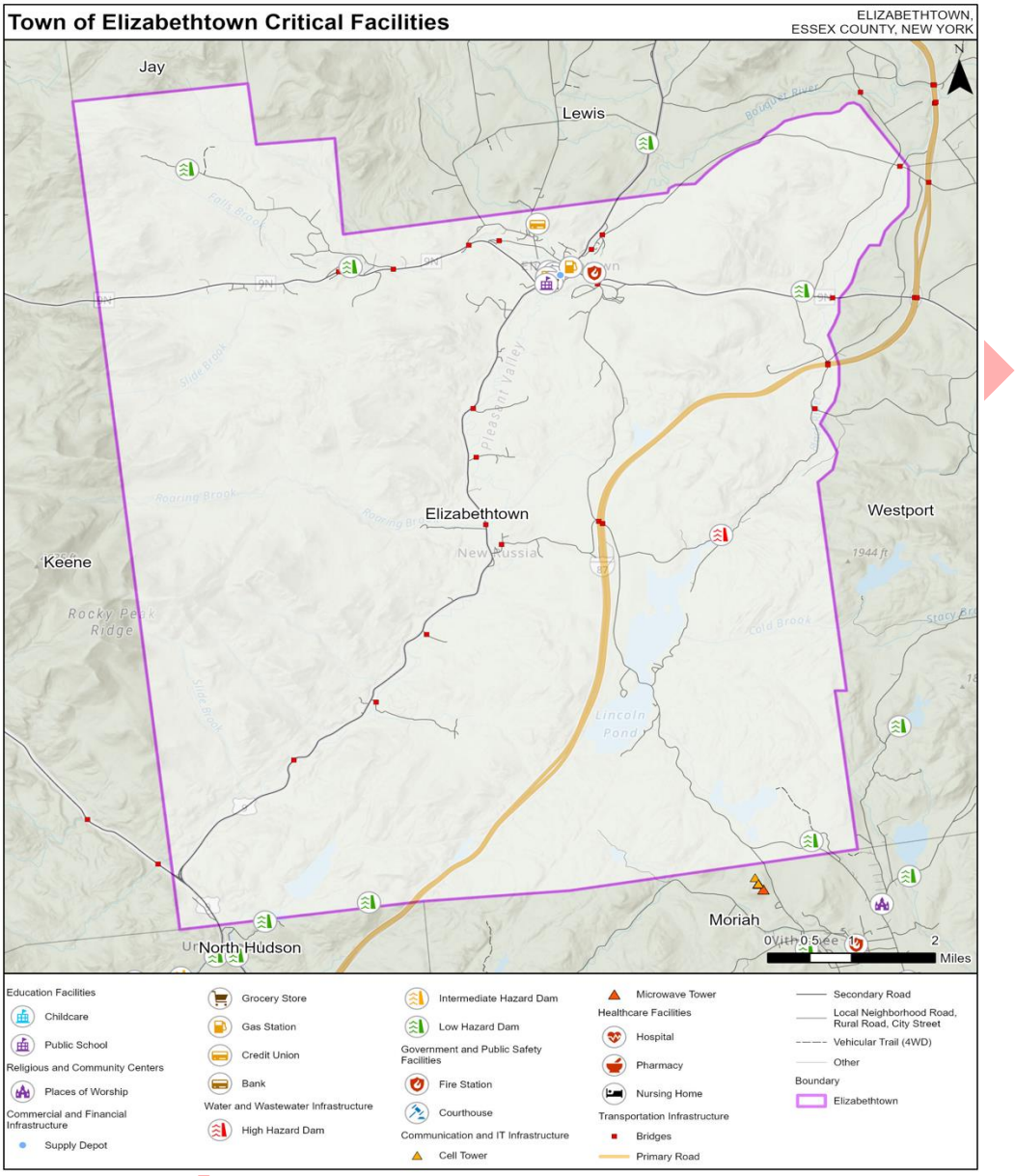


Figure 53. Critical Facilities: Town of Elizabethtown

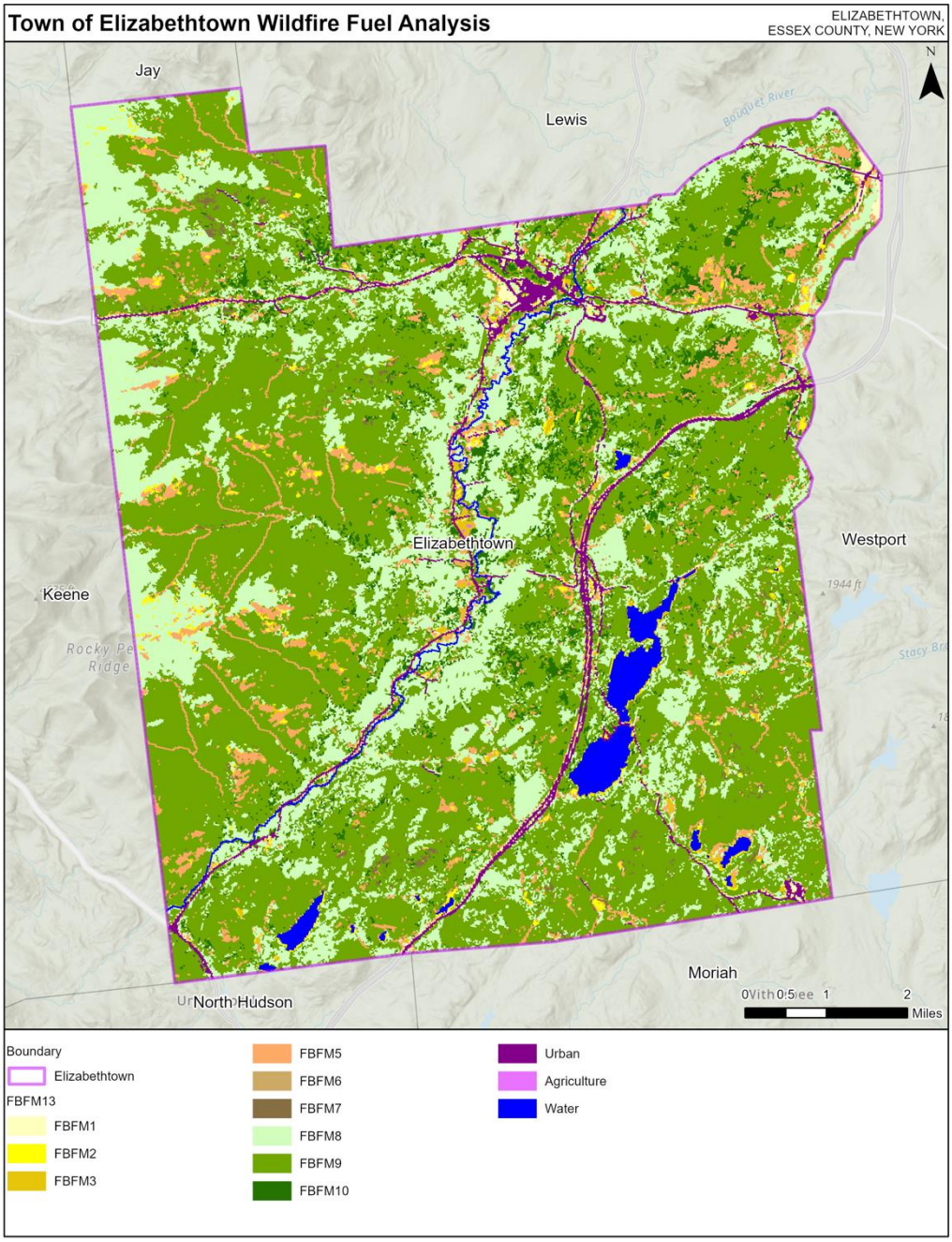


Figure 54. Wildfire Fuel Analysis: Town of Elizabethtown

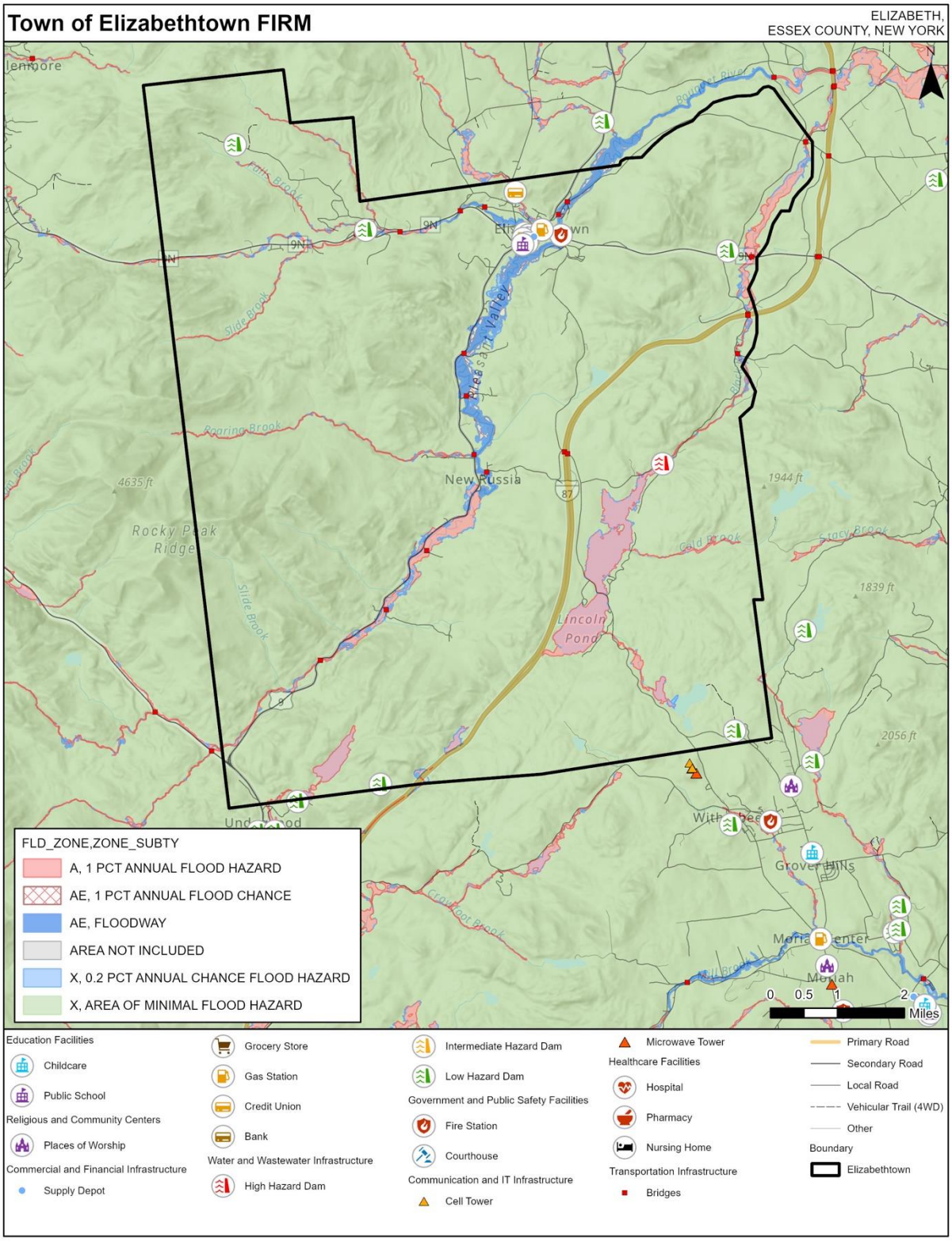


Figure 55. Wildfire Fuel Analysis: Town of Elizabethtown

Potential Loss

A potential loss assessment was conducted for Elizabethtown using data from the Essex County Real Property website. Property data for all parcels was analyzed and categorized into nine class codes, with the total property value calculated for each category. To estimate potential losses from hazard events, it was assumed that 10% of the total property value in each class code could be affected. Based on this assumption, the potential financial loss was determined by applying this 10% impact estimate to the total property value within each classification.

Essex County Real Property Tax Services website has nine class codes for real property:

- 100 Agriculture
- 200 Residential
- 300 Vacant Lands
- 400 Commercial
- 500 Recreation and Entertainment
- 600 Community
- 700 Industrial
- 800 Public Services
- 900 Forest, Conservation Lands and Parks

Table 135. Potential Loss: Town of Elizabethtown

Class Code	Number of Structures	Structure Values	Number of Structures Impacted	Potential Loss
100	1	$132,500	0	$0
200	668	$133,291,900	66	$13,329,190
300	325	$11,677,349	3.2	$1,167,734
400	64	$20,607,700	6.4	$2,060,770
500	4	$1,417,400	0.1	$141,740
600	52	$52,590,100	5.2	$5,259,010
700	2	$501,900	0.2	$50,190
800	37	$10,372,800	0.3	$1,037,280
900	242	$36,778,787	2.4	$3,677,878

Mitigation Strategy

The mitigation strategy from the 2019 plan was reviewed to assess the completion status of previously identified projects. As part of the 2025 plan update, new mitigation projects were identified and are detailed in the table below. During the update process, projects were prioritized based on their importance and impact, categorized as High, Medium, or Low priority. High

priority projects focus on ensuring that towns and villages remain fully operational during disasters, while Medium and Low priority projects strive to improve municipal functions and provide direct benefits to residents. Implementation of these projects will depend on available funding, political support, and other influencing factors, with any project moving forward as resources become available.

Table 136. Mitigation Strategies: Town of Elizabethtown

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
1. NYS Route 9 flood project	2,4,5	Raise roadway in 5 places to eliminate road flooding	Flooding	County NYS DOT	High	1-10 years Year 1-5 Obtain funding Year 6-10 Implement project	NYS DOT	Medium	Structure & infrastructure projects
2. Roaring Brook Road buy out	2,4,5	Acquire homes after flood events	Flooding	County Town Hwy Dept	L/M depending on structure	1-10 years Year 1-5 Obtain funding Year 6-10 Implement project	FEMA HMGP, PDM	Medium	Structure & infrastructure projects
3. Cobble Hill Road replace & upgrade culvert	2	Culvert upgrades	Flooding	County, Town Hwy Dept	Low	1-10 years Year 1-5 Obtain funding Year 6-10 Implement project	County Town Hwy Dept	Medium	Structure & infrastructure projects
4. Simons Hills Road culvert	2,4,5	Culvert upgrades	Flooding	County, Town Hwy Dept	Low	1-10 years Year 1-5	County, Town Hwy Dept	Medium	Structure & infrastructure projects

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
replace-ment & up-grades						Obtain funding Year 6-10 Imple-ment project			
5. Water St. bridge re-placement	2,4,5	Replace bridge	Flooding	County, Town Hwy Dept	High	1-10 years Year 1-5 Obtain funding Year 6-10 Imple-ment project	County Town	Me-dium	Structure & infra-structure projects
6. Hurri-cane Road bridge re-placement	2,4,5	Replace bridge	Flooding	County, Town Why Dept	High	1-10 years Year 1-5 Obtain funding Year 6-10 Imple-ment project	County Town	Me-dium	Structure & infra-structure projects
7. Rope Dell Road bridge replace-ment	2,4,5	Replace bridge	Flooding	County, Town Hwy Dept	High	1-10 years Year 1-5 Obtain funding Year 6-10 Imple-ment project	County Town	Me-dium	Structure & infra-structure projects
8. Foot Bridge Re-placement	2,4,5	Replace foot bridge over waterway	Flooding	County, Town	Medium	1-10 years Year 1-5 Obtain funding	County Town	Me-dium	Structure & infra-structure projects

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
						Year 6-10 Implement project			
9. Ambulance equipment	2,4,5	Purchase enhanced equipment	All	County, Town	$80K	1-5 years	State	Medium	Structure & infrastructure projects
10. Culvert inspection & cleaning	2,4,5	Clean culverts	Flooding	Town	Low	1-5 years	Annual operating budgets	High	Structure & infrastructure projects
11. Fish & Game Club bank project	5	Stabilize banks	Flooding	SWCD	Medium	1-5 years	SWCD	High	Natural resources protection projects
12. Generators	2,4,5	Purchase generators for critical facilities	All	Town	Low	1-5 years	NYS DOS Town budgets	High	Structure & infrastructure projects
13. Earthquake Impact Reduction	3,4,5	Conduct training for code officers and update municipal plans to reflect new seismic standards.	Earthquake	Town	Low	1-5 years	FEMA, Town Budget	Medium	Training & Awareness
14. Roaring Brook Road buy out	2,4,5	Prevent flooding downtown	Flooding	Town Engineering Department	High	1-5 Years	FEMA HMGP, PDM	Medium	Structure & infrastructure projects
15. Elizabethtown Water System	2,4,5	Resiliency of Drinking water	Flooding	Elizabethtown Contracted Engineer	High	1-5 Years	FEMA HMGP, PDM	Medium	Structure & infrastructure projects
16. Simons Hills Road Bridge	2,4,5	Bridge Repair/Replacement	Flooding/Scour	County, Town	High	1-10 years Year	County, Town Hwy	Medium	Structure &

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
				Hwy Dept		1-5 Obtain funding Year 6-10 Implement project	Dept		infrastructure projects
17.. Scriver Road Bridge	2,4,5	Bridge Repair/Replacement	Flooding/Scour	County, Town Hwy Dept	High	1-10 years Year 1-5 Obtain funding Year 6-10 Implement project	County, Town Hwy Dept	Medium	Structure & infrastructure projects
16. Hurricane Road Bridge	2,4,5	Bridge Repair/Replacement	Flooding/Scour	County, Town Hwy Dept	High	1-10 years Year 1-5 Obtain funding Year 6-10 Implement project	County, Town Hwy Dept	Medium	Structure & infrastructure projects

Elizabethtown will continue to implement project and programs to reduce the effects from disasters impacting the town.

Annex D: Town of Essex

Profile

The Town of Essex is located in the northeastern part of Essex County, bordered by Willsboro to the north, Lewis to the west, Westport to the south and Lake Champlain to the east. It encompasses an area of 38 square miles—predominately farmland and residential areas interspersed with forested lands. It includes the hamlet of Whallonsburg in the south and the main hamlet area of Essex to the north, which is on the National Historic Register.

Essex was part of a land grant made to Louis Joseph Robart by King Louis XV of France. The land grant was lost after the British took over the region after 1763. It was an important shipbuilding location and port, but that economy collapsed after 1849 with the beginning of railroad lines in the region. The Essex Village Historic District, Foothills Baptist Church, Essex County Home and Farm, the North–Sprague Farm and the Octagonal Schoolhouse are listed on the National Register of Historic Places.

The Lake Champlain Transportation Company operates a ferry service to Vermont from the hamlet of Essex. Canadian Pacific Rail lines run through the town carrying freight and Amtrak passenger trains. There are a large number of seasonal residents who own property in the town.

Table 137. Table of Facts: Town of Essex

Fact	Description
Land Area	38 sq. miles/23,766.1 acres
Incorporated Village(s)	None
Hamlets	Essex & Whallonsburg
Population Census	621 (2020 Census)/671 (2010 Census)
Governance	Town
Total Assessed Valuation	$223,466,635 million
Highest Elevation	1,230 feet (375 meters)–South Boquet Mtn
Largest Lake	Lake Champlain–Eastern Border
River(s)	Boquet River
Dams	None
Bridges	5 bridges/(maintained 2 state/3 county)
Interstate Highway	I–87 (nearby, not directly through Essex)
State Routes	NY State Route 22
County Roads	County Route 12, 55, 57, 66, 80
Land Agriculture Use	40% of land used for agriculture (dairy farms, crop farming)/11,150 acres
Land Classified Industrial	NONE

DRAFT

Fact	Description
Land Classified Residential, as Hamlet	255 acres/35% residential zoning within hamlet areas
Hospital/Medical Facility	None. Nearest hospital: Elizabethtown Community Hospital (approximately 15 miles away)
Fire & Rescue	Essex Volunteer Fire Department Whallonsburg Volunteer Fire Department (2), Willsboro Essex EMS
Schools	Willsboro Central School/Boquet Valley Central School
Railroads	CP Rail north/south/Amtrak (Adirondack line runs nearby, stops in Westport)
Passenger Trains/Day	1-2 passenger trains/day (Amtrak Adirondack Line)
Freight Trains/Day	1-3 freight trains/day
Ferry Dock(s)	Essex–Charlotte Ferry (to Vermont)–Year–round depending on weather (ice)
Interstate Bridge	Crown Point Bridge (approximately 20 miles from Essex)
Largest Employer	Essex Farm
Law Enforcement	Essex County Sheriff's Office, New York State Police
Correctional Facility	None in the immediate area
Power Utility Provider(s)	New York State Electric & Gas (NYSEG)
Water Supply Source(s)	Lake Champlain
Emergency Shelters	Whallonsburg Grange &Willsboro Central School
Critical Facilities	Both Fire Departments, Town Hall, Essex Ferry Dock,

Notable Updates

Essex has made significant progress in its efforts to improve resilience against hazards and enhance public safety through various infrastructure projects. One of the most critical initiatives is the replacement of the Route 22 bridge in Whallonsburg over the Boquet River. This project will help ensure safe transportation while maintaining accessibility for residents and emergency responders. Detours during construction will direct traffic along Whallons Bay Road and Tyrrell St., reflecting a commitment to minimizing disruptions during infrastructure improvements.

In addressing road safety and accessibility, the town partnered with Essex County to pave Daniels Road, a project aimed at mitigating risks associated with uneven driving surfaces. This effort, funded through CHIPS allocations, enhances mobility and reduces long–term maintenance

challenges. Additional road projects, including the installation of solar–powered radar signs along Route 22, improve traffic safety and support hazard mitigation.

Efforts to protect local water quality were prioritized. The construction of a 42' x 40' salt storage facility, funded largely through a $101,297 NYS DEC WQIP grant, ensures that road salt is stored safely, preventing contamination of the local watershed. Similarly, upgrades to the Essex/Willsboro Transfer Station, including culvert replacements and the construction of a permanent recycling shelter, further demonstrate the town's commitment to environmental stewardship.

Energy resilience has been advanced through the installation of a 16.91 kW solar array on the Whallonsburg Grange Hall. Funded by state and federal grants, this initiative underscores the town's dedication to renewable energy adoption and cost savings. The replacement of an antiquated electrical service panel at the Highway Garage resolved issues affecting critical equipment operations, demonstrating a proactive approach to addressing infrastructure vulnerabilities.

Emergency repairs to the Town Highway Garage roof and replacement of aging heavy equipment fortified the town's capacity to maintain essential services during severe weather events. These projects, including the acquisition of a 2016 Freightliner to replace an aging truck, demonstrate Essex County's long–term planning and commitment to public safety.

By integrating these infrastructure improvements into hazard mitigation planning, Essex is actively addressing risks posed by aging infrastructure, extreme weather, and environmental challenges. Through these efforts, Essex is fostering a safer, more sustainable, and resilient community for its residents.

Planning Process

The town participated in a Hazard Mitigation Introduction Meeting, after which the Town Supervisor received a copy of the town's section of the county plan for review and revision. On October 8, 2024, representatives took part in an interview and meeting to update the town's portion of the county plan. This meeting, attended by the Town Supervisor, provided an opportunity to refine the town's contributions to the plan. The Town Supervisor participated in county-level meetings related to the plan and attended a final mitigation strategy meeting.

Capability Assessment

Essex implemented a range of planning mechanisms to support hazard resilience and community development, including a comprehensive emergency management plan, an emergency operations plan, zoning ordinances, floodplain regulations, a flood management plan, subdivision regulations, a town comprehensive plan, a capital improvement plan, a historic preservation plan, a farmland preservation plan, building codes, and fire codes. The town also adheres to the Essex County Economic Development Plan for economic initiatives. Collectively, these regulatory measures ensure that new development is both hazard–resistant and aligned with sustainable growth objectives. Through an assessment of its planning capability, Essex recognizes that these mechanisms play a critical role in mitigating potential hazards and fostering long–term community resilience.

DRAFT

Table 138. Planning Documents: Town of Essex

Town of Essex Planning Documents
Comprehensive Emergency Management Plan
Emergency Operations Plan
Zoning Ordinance
Floodplain Regulations
Floodplain Management Plan
Subdivision Regulations
Town Comprehensive Plan
Capital Improvement Plan
Historic Preservation Plan
Farmland Preservation Plan
Building Codes
Fire Codes

Essex has a planning board in addition to receiving assistance from the County Planning agency. An engineering firm is used when needed. The Supervisor is also the designated emergency manager for the town. The code enforcement officer also serves as the floodplain administrator. Land surveyors are hired as needed. APA, BRASS and DEC are used for scientific needs and/or regulatory enforcement, Essex utilizes the Essex County Real Property/County GIS department when needed. The county grant writer at the Community planning Board is utilized for grant assistance.

Essex should integrate this hazard mitigation plan into its existing planning frameworks to enhance coordination and effectiveness. The hazard ranking can be incorporated into the comprehensive emergency management plan, while mitigation projects can be included in the capital improvement plan. Much of this document can be integrated into community comprehensive plans, ensuring consistency across enabling legislation and promoting alignment between regulatory measures.

The town has uses various funding sources for projects. Capital improvement funds were used to rehabilitate Town Hall, while Community Development Block Grants (CDBG) have supported housing rehabilitation. Special–purpose taxes fund emergency medical services (EMS), and water and sewer fees are allocated to maintain the town's infrastructure. Essex maintains partnering agreements with Essex County and Willsboro to support collaborative initiatives.

Essex has assessed its education and outreach capabilities, which include ongoing public education efforts through a quarterly newsletter and the town website. The town fosters public–private partnerships with organizations like The Whallonsburg Grange, Willsboro–Essex EMS, and the Belden Noble Memorial Library. Essex Initiatives promotes the town for both commercial and residential purposes, while the fire department conducts educational sessions for school children.

As part of the plan update, Essex evaluated four key capability areas. Planning and regulatory capabilities were ranked as High, while administrative and technical, financial, and education and outreach capabilities were rated as Moderate.

Critical Facilities

Critical facility flood vulnerabilities was assessed as the plan was updated. The table below notes if these facilities are located in the 500–year floodplain, if the facility has been flooded in the past, and if any kind of mitigation has been completed to reduce the flood potential to these structures. Generator capabilities were assessed to determine if these facilities could function without electric power—a common issue for critical facilities during disaster events.

Table 139. Critical Infrastructure in Floodplain: Town of Essex

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Fire Station Whallonsburg	Yes	Yes	No (needs to be relo-cated)	Yes
Fire Station Essex	No	No	No	Yes
Highway Garage –Heavy Vehicle Storage	No	No	No	Yes (not connected)
Town Hall	No	No	No	No (connection present)
Water Treatment Plant	No	No	No	Yes
Wastewater Plant	No	No	No	Yes
Private Preschool	No	No	No	Yes

The fire station in Whallonsburg is located within the 500–year floodplain and should be relo-cated to a less flood–prone area to reduce vulnerability. All other critical infrastructure, including the Essex fire station, Highway Garage, Town Hall, Water Treatment and Wastewater Plant, and the private school, are outside the 500–year floodplain. However, a generator is needed at the Town Hall, and the existing generator at the Highway Garage requires replacement.

For emergency sheltering, the Whallonsburg Grange can serve as a temporary shelter, while the Willsboro school is designated as an American Red Cross shelter and can accommodate residents displaced by a hazard event. Historically, displaced residents have also found temporary housing with friends, relatives, or neighbors.

DRAFT

Table 140. Housing for Displaced Residents: Town of Essex

Facility	Type of Housing
Whallonsburg Grange	Shelter (non–ARC Shelter)
Willsboro School	American Red Cross (ARC) shelter

National Flood Insurance Plan (NFIP) Summary

The following information concerns flood vulnerable structures in Essex. The number of actual structures in the flood vulnerable areas is likely to be larger than the number of insured structures. Once the flood insurance rate maps are updated by GFEMA, these new maps will determine the actual number of vulnerable structures in the floodplain.

Table 141. Flood Insurance: Town of Essex

Policies	2011	2018	2024	Total Amount of Claims
Policies	3	4	4	$17,651
Number of Repetitive Loss Structures	-	-	-	-

Essex will continue to actively manage floodplains to mitigate future flood risks. New development within special flood hazard areas will be carefully reviewed and approved to ensure compliance with the local floodplain ordinance. As FEMA updates the Flood Insurance Rate Maps (FIRMs), the town will hold meetings with floodplain managers, town supervisors, and village mayors to provide training on the National Flood Insurance Program (NFIP). These meetings will also serve as a forum to discuss compliance requirements and best practices for floodplain management.

Floodplain managers from the most vulnerable communities will be encouraged to join the state floodplain manager association to enhance their knowledge and improve their ability to manage flood–prone areas effectively.

Hazard Identification & Ranking

Table 142. Hazard Ranking: Town of Essex

Hazard Ranking	Hazards
HIGH	• Floods • High Winds • Hurricanes • Ice Storms • Severe Winter Storms • Wildfires

Hazard Ranking	Hazards
MEDIUM	• Drought • Earthquakes • Extreme Temperatures • Land Subsidence & Expansive Soils • Rail Events
LOW	• Avalanches • Hailstorms • Landslides

Hazard Event History

Table 143. Hazard Event History: Town of Essex

Hazard	Event	Year	Impact
Flooding	Lake Champlain flood	2011	Record–breaking lake levels caused property damage & disrupted transportation systems.
	Ice storm	1998	Severe ice accumulation led to extended power outages & infrastructure damage.
	Snow	2024	Over 20” of snow caused widespread outages, impassable roads, & economic impacts.
Severe Thunderstorms	Summer storms	Recurring	High winds, hail, & heavy rainfall damaged property & crops.
Earthquakes	Adirondak	2002	M5.1 earthquake caused minor property damage & highlighted seismic risks.
Wildfires	Forest fires	1903	Large–scale forest fires threatened Essex & neighboring communities, requiring significant emergency response.
	Summer fires	2024	Fires fueled by drought conditions, quickly contained by local fire departments.
Transportation	Ferry & road disruptions	Recurring	Storms disrupted ferry services & road access to major destinations.
Power Outages	Ice storm	1998	Extensive outages & structure damage caused by ice accumulation.
	Thunderstorm outages	2024	High winds caused power outages, leaving many without electricity for days.
Drought	Prolonged dry conditions	2024	Stress on water resources, impacting both agriculture a risks.

DRAFT

Hazard	Event	Year	Impact
Public Health	Lyme disease	Recurring	Persistent health risks associated with tick populations & grassy areas.
	COVID–19 Pandemic	2020+	Public health infrastructure was tested.

Hazard Analysis

Essex is exposed to a variety of natural and man–made hazards that significantly impacting infrastructure, the economy, and community resilience. Flooding poses a critical risk, as seen during the 2011 Lake Champlain Flood, which caused record–breaking lake levels, property damage, and transportation disruptions. Severe winter weather like the 1998 ice storm and the heavy snowstorm in 2024, led to prolonged power outages, impassable roads, and considerable economic impacts, emphasizing the need for robust snow removal and power infrastructure.

Severe thunderstorms are a recurring threat, bringing high winds, hail, and heavy rainfall that damage property, crops, and infrastructure. The town faces seismic risks, demonstrated by the 2002 Adirondack earthquake, which caused minor structural damage and raised awareness of potential earthquake vulnerabilities. Wildfires, including large–scale forest fires in 1903 and summer fires fueled by drought conditions in 2024, highlight the increasing risk of fire events, particularly during prolonged dry periods.

Transportation disruptions are another notable hazard, with recurring storms frequently affecting ferry services and road access to major destinations. Power outages are a recurring issue, with the 1998 ice storm and 2024 summer thunderstorms causing extensive electrical disruptions that left many residents without power for days. Drought conditions like those experienced in 2024, strained water resources and impacted agriculture, further demonstrating the need for sustainable water management practices.

Public health challenges like the persistent presence of Lyme disease due to high tick populations, pose ongoing risks to residents and visitors. The COVID–19 Pandemic tested town public health infrastructure, prompting improvements in emergency response and healthcare preparedness.

These hazards underline the importance of comprehensive mitigation planning to strengthen county infrastructure, emergency response systems, and public awareness. Investments in resilient infrastructure, community education, and sustainable resource management will be vital to safeguarding the town against future hazards.

Hazard Mapping

Once flood insurance maps are updated by FEMA, these new maps will help determine the actual number of flood vulnerable structures.

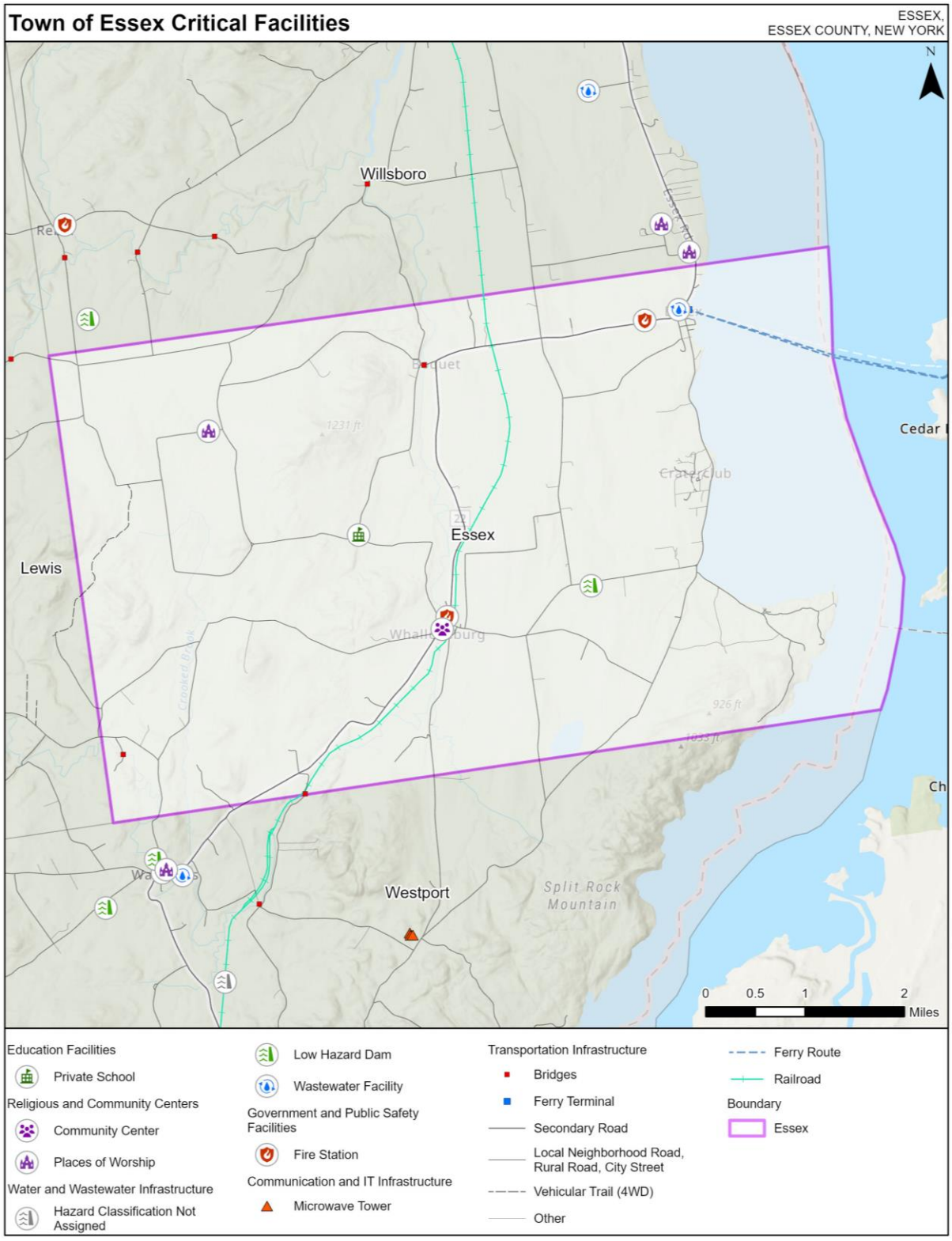


Figure 56. Critical Facilities: Town of Essex

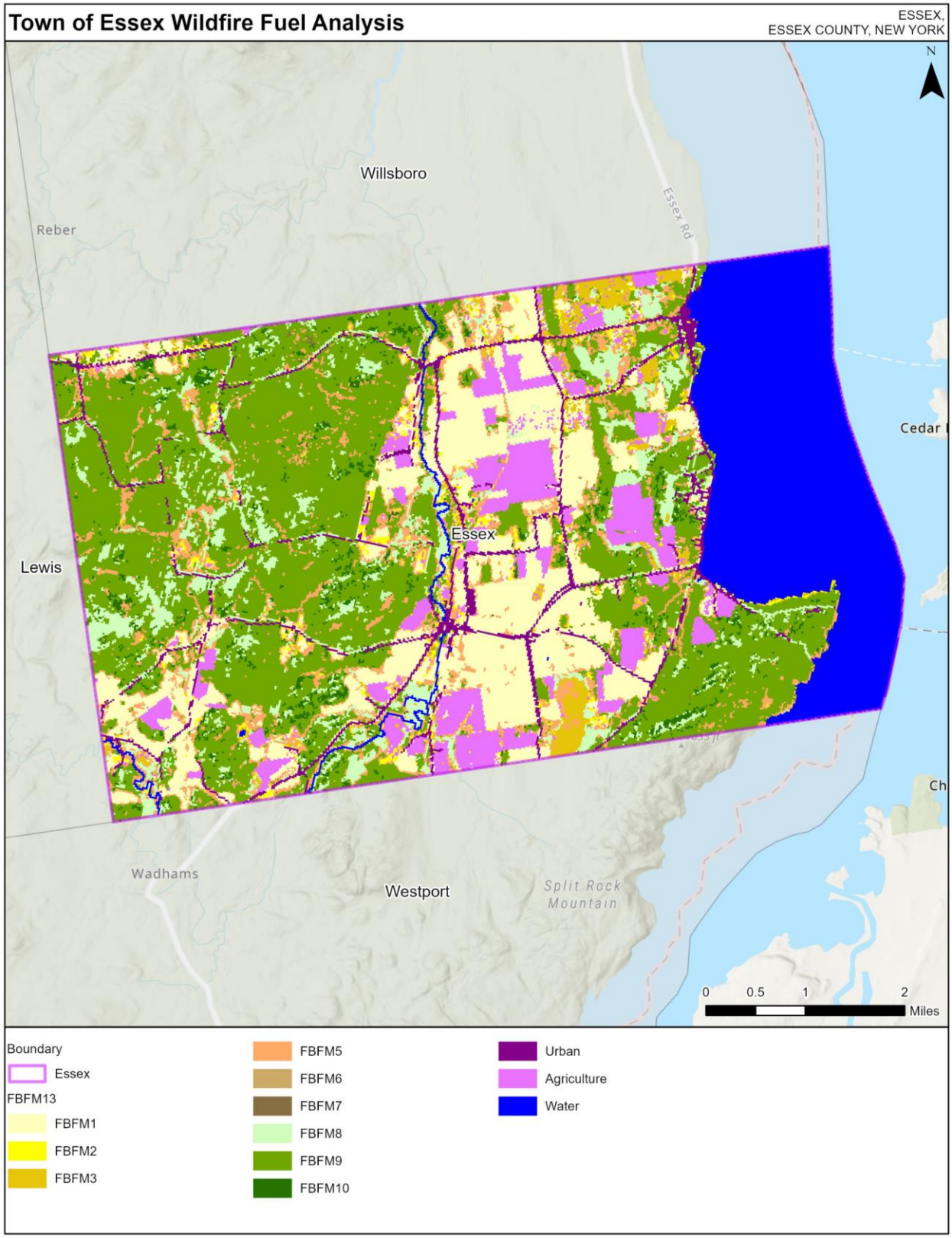


Figure 57. Wildfire Fuel Analysis: Town of Essex

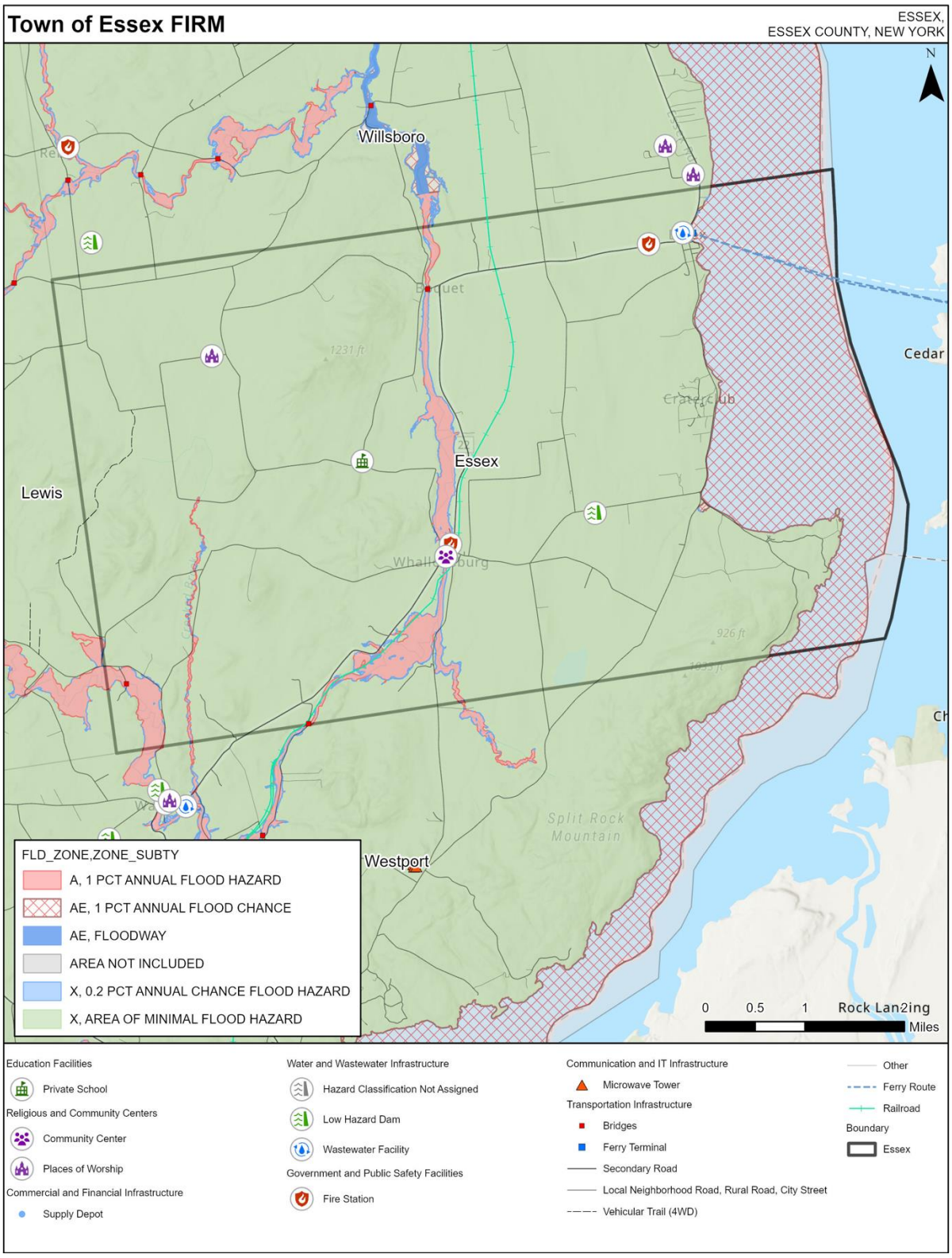


Figure 58. Floodplains: Town of Essex

Potential Loss

Potential loss was calculated for Essex. The Essex County Real Property website was used to obtain data for all parcels. Data was manipulated to determine the value of property in each of the nine class codes. The data was totaled for value in each class code. The property impacted from the hazard event was calculated to be 10% of the total in the class code. The potential loss from the impact from hazard events was calculated to be 10% of the value of the properties in each class code.

Essex County Real Property Tax Services website has nine class codes for real property:

- 100 Agriculture
- 200 Residential
- 300 Vacant Lands
- 400 Commercial
- 500 Recreation and Entertainment
- 600 Community
- 700 Industrial
- 800 Public Services
- 900 Forest, Conservation Lands and Park

Table 144. Potential Loss: Town of Essex

Class Code	Number of Structures	Structure Values	Number of Structures Impacted	Potential Loss
100	74	$16,975,259	7	$1,697,525
200	432	$143,689,060	43	$14,368,906
300	132	$8,674,680	13	$867,468
400	29	$8,972,100	2	$897,210
500	3	$1,344,700	0	$134,470
600	27	$6,252,000	2	$625,200
700	1	$78,400	0	$7,840
800	39	$10,533,292	3	$1,053,329
900	74	$6,866,283	7	$686,628

Mitigation Strategy

Essex conducted a review of the mitigation project outlined in the 2019 plan, with findings summarized in the table below. As part of the 2025 plan update, new mitigation projects were developed and included in the table. As part of the plan update, projects were prioritized based on their significance and impact. Each project is categorized as High, Medium, or Low priority. High

priority projects focus on ensuring that towns and villages remain fully operational during disasters, while Medium and Low priority projects strive to enhance municipal functions and address the needs of residents.

Implementation will proceed as funding becomes available, and any project may move forward as financial resources, political support, and other factors align. The costs of these projects were determined and are included in the table below, while other mitigation projects have estimated costs. The potential implementation costs are ranked as High, Medium, or Low.

Table 145. Mitigation Strategies: Town of Essex

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
1. Sediment catch basin on Cook road	4,5,6	Eliminate flooding on road by installing catch basin	Fires (wildland or structures)	Fire Dept.	Low	2019 (completed)	None, current town budgets	High	Plans & regulations or Infrastructure
2. Upgrade culverts on DPW list	1,2,4	Replace culverts that are undersized in town	All concerns	DPW	Low	2020 (completed)	None, current town budget	High	Infrastructure
3. Install ditches on Cross road	1,2,4	Install roadside ditches	Flooding	DPW	Med	1-5 Years	FEMA, HMPG	Medium	Infrastructure
4. Buy out flood impacted structures on Cook & Leanings Road.	1,2,4,5	Newsletter for ed to public	All	Town	Low	2019 (completed)	Town budgets	High	Infrastructure
5. Fire Station Whallonsburg	2	Relocate outside 500 year floodplain	Flooding	Town Supervisor/ Fire Department	High	1-5 years Assessments/ Planning/Funding 5-10 years relocation	FEMA, HMPG	High	Infrastructure

Essex will continue to implement project and programs to reduce the effects from disasters that impact the town.

Annex E: Town of Jay

Profile

The Town of Jay is located in the north–central portion of Essex County, bordered by the towns of Black Brook and Au Sable to the north, Chesterfield and Lewis to the east, Keene and Elizabethtown to the south, and Wilmington to the west. Jay spans 67 square miles of river bottomland and rolling hills, which rise to the peaks of the Jay Range to the east in Lewis, with the highest elevation reaching 3,623 feet.

The East Branch of the Au Sable River flows through the town, running parallel to State Route 9N and connecting several residential and business areas. The town consists of three hamlets: Upper Jay, Jay, and Au Sable Forks, all located along the river. Au Sable Forks serves as the business and population hub, where the West and East branches of the river converge.

In the past, the town was home to "The Land of Make Believe," a small amusement park developed by Alto Monaco, which operated from 1954 until its closure due to the 1978 flood. State Highway 86 runs westward from Jay to Wilmington, climbing substantially in elevation. Due to its history of severe flooding, ice jams, earthquake damage, and fires, Jay residents are particularly aware of mitigation needs. The town was significantly impacted by Tropical Storm Irene in 2011, but since then, numerous mitigation projects were implemented to prevent future damage. The town actively seeks grants to continue mitigating flood hazards, working towards future protection.

Upgrades to the water system, flood mitigation measures, wildfire education, and ongoing public awareness initiatives demonstrate Jay's proactive approach. The town supervisor, in collaboration with emergency personnel, is heavily involved in these projects, and works closely with the Au Sable Freshwater Center. The Au Sable Freshwater Center plays a key role in securing grants and implementing projects like replacing and upgrading culverts with fish–friendly designs, which has successfully reduced hazards.

Jay is also exploring a potential land swap with the Adirondack Park Agency (APA). The town strives to donate flood–vulnerable areas to the APA in exchange for less vulnerable land that could be developed, increasing the town's future viability.

Table 146. Table of Facts: Town of Jay

Fact	Description
Land Area	67.7 sq. miles/43,779.8 acres
Incorporated Village(s)	None
Hamlets	Jay & Upper Jay
Population Census	2,486 (2020 Census)
Governance	Town
Total Assessed Valuation	$494,478,978
Highest Elevation	Jay Mtn.–3,623'
Largest Lake	None
River(s)	E & W branch of the Au Sable

DRAFT

Fact	Description
Dams	0; 1 dam removed in 2019
Bridges	6 county bridges
Interstate Highway	None
State Routes	9N
County Roads	CR 58, 64, 65, 82, 83, 85
Land Agriculture Use	343.8 acres
Land Classified Industrial	24.3 acres
Land Classified Residential, as Hamlet	9715.66 acres
Hospital/Medical Facility	None–1 medical office provides support
Fire & Rescue	Jay Volunteer Fire Department, Upper Jay Volunteer Fire Department, Au Sable Volunteer Fire, & Au Sable Ambulance Service
Schools	Au Sable Valley Central School District
Railroads	None
Passenger Trains/Day	None
Freight Trains/Day	None
Ferry Dock(s)	None
Interstate Bridge	None
Largest Employer	Out Of Town
Law Enforcement	NYSP & County Sheriff
Correctional Facility	None
Power Utility Provider(s)	NYSEG
Water Supply Source(s)	Private Wells
Emergency Shelters	Jay Community Center, Upper Jay Fire Department
Critical Facilities	Community Center/Town Hall, Fire Stations, Wastewater Treatment Plant, Water Plant (Wells) with Water Tank, Seven Pump Stations with 4 having back up power, Water Plant in Jay, Water tank/Pumping stations Rt. 86 & valley road & another tank in upper Jay, Highway, Stickney Bridge Road power substation, Lumber station in Jay, 1 Gas Station & 1 Grocery Store

Notable Updates

On September 12, 2023, a kickoff meeting was held to initiate a multi-point project to upgrade the three water districts in Jay, with an anticipated completion date in the Fall of 2024. In August, 2023 a proposal was submitted detailing the necessary upgrades, funded by ARPA (American Rescue Plan Act) at no additional cost to district users or taxpayers. Planned projects include a Lead Service Line Inventory required by the Department of Health, a Water Meter Engineering Report required by the Department of Environmental Conservation, and essential upgrades to the Nugent Plant Water System. Additional improvements involve establishing a new 12-inch backup well, hydrology services, and electrical upgrades to include well field control. While the cost of a test well is yet to be finalized, these efforts will position the town to apply for grants that could help offset the costs of these required upgrades.

By February 15, 2024, updates were provided on the progress of each project. For the Water Meter Feasibility Study, four quotes for meters were collected, and preparations for the engineering report were underway. For District Upgrades, a hazardous materials report was completed for the water tank, well site studies identified potential test well locations, and findings on electrical systems were expected soon, with a draft engineering report anticipated by early summer. The Lead Service Line Inventory continued to move forward, with initial survey responses added to a database and tax roll information obtained to support data entry. A second round of mailings was scheduled to be sent by month's end to gather additional responses.

As of July 3, 2024, the draft engineering report for the Water Meter Feasibility Study was on track to be submitted for review by July 12. For District Upgrades, a well siting study was completed and delivered to the Town, though drilling of test wells is on hold until funding becomes available. Recommendations for electrical upgrades were received, and a draft report is in progress. Regarding the Lead Service Line Inventory, responses from a second mailing were reviewed and incorporated into the database. With over half of users yet to respond, a third attempt, involving door-to-door inspections by Jay Water Department, is planned.

The Rome Dam, located on the West Branch of the Au Sable River near Au Sable Forks, New York, was decommissioned and removed in 2018. Originally constructed in 1893 and rebuilt in 1936 to power the J. & J. Rogers Company's pulp mill, the dam had become structurally unsound and posed a potential threat to downstream communities. The decision to remove the dam came as part of an effort to restore natural river flow, improve fish migration, and reduce flood risks for the surrounding area. By decommissioning the dam, environmental agencies and local stakeholders aimed to revitalize the river's natural habitat, enhance recreational opportunities, and allow the ecosystem to return to its original state. The project reflects a broader initiative to prioritize environmental conservation and safety for communities along the Au Sable River.

Planning Process

The town initially took part in a Hazard Mitigation Survey, followed by an in-person Stakeholder Hazard Mitigation Introduction Meeting. Subsequently, the Town Supervisor received a copy of the town's section of the county plan, meeting with contractor on November 6, 2024, to provide town updates. The Town Supervisor participated in county-level meetings related to the plan and attended a final mitigation strategy meeting.

Capability Assessment

Jay implemented a range of planning mechanisms to support hazard resilience and community development, including subdivision planning board reviews, comprehensive plan, sustainability

DRAFT

& energy working program, climatic & geographic design criteria, Au Sable Acres covenants & restrictions, Au Sable Acres architectural requirements, junkyard & junk storage ordinances, and a revitalization plan. Collectively, these regulatory measures ensure that new development is both hazard–resistant and aligned with sustainable growth objectives. Through an assessment of its planning capability, the town recognizes that these mechanisms play a critical role in mitigating potential hazards and fostering long–term community resilience.

Table 147. Planning Documents: Town of Jay

Planning Documents
Subdivision Planning Board Reviews (APA Guidelines)
Comprehensive Plan (Under Revision 2024)
Sustainability & Energy Working Program (Enhanced Star)
Climatic & Geographic Design Criteria
Au Sable Acres Covenants & Restrictions
Au Sable Acres Architectural Requirements
Junkyard & Junk Storage Ordinances
Revitalization Plan–2005/2024

The town assessed its capabilities, identifying key personnel and resources. It has an emergency manager and a floodplain administrator/code enforcement officer. County staff, including those from the North Country Rural Development Division, assist with grant writing, while GIS services, engineering (through contracted services), and County Community Resources (formerly Planning) provide additional support. The Department of Environmental Conservation (DEC) and the Adirondack Park Agency (APA) offer scientific and technical expertise, as well as inspection services. Land surveyors are hired as needed.

Jay should integrate this hazard mitigation plan into its existing planning frameworks to enhance coordination and consistency. The hazard ranking can be incorporated into the comprehensive plan, while mitigation projects can be included in the capital improvement plan. Key elements of this document can be integrated into community comprehensive plans to ensure alignment across enabling legislation and regulatory measures. Such integration will help maintain uniformity and effectiveness in hazard mitigation efforts.

The town utilizes various funding sources for its projects. Community Development Block Grants (CDBG) support housing rehabilitation and upgrades to water and sewer systems, while water and sewer fees are used for system maintenance. Partnering agreements with the county provide fire assistance and other essential services. Pump station upgrades were funded by USAID, while sewer expansion received funding from the USDA. Mitigation efforts following Hurricane Irene were supported by multiple federal and state agencies.

The town evaluated education and outreach efforts, noting the presence of unofficial “river spotters” who monitor river conditions. The Au Sable Freshwater Center conducts educational programs focused on the Au Sable River, playing a crucial role in implementing mitigation projects.

Jay also conducted a self-assessment of capabilities across four key areas. The town ranked its planning and regulatory, as well as administrative and technical capabilities, as Moderate. Financial capabilities were assessed as High, while education and outreach efforts were ranked as Limited.

Critical Facilities

The flood vulnerability of critical facilities was assessed as the plan was updated. The table below outlines those facilities located in the 500-year floodplain, if the facility has been flooded in the past, and if any kind of mitigation was completed to reduce the flood potential to these structures. Generator capabilities were also assessed to determine if these facilities could function without electric power—a common issue for critical facilities during disaster events.

The Upper Jay Fire Station was relocated to Valley Road/Au Sable Fork and is no longer within the 500-year floodplain. The Jay Volunteer Fire Station remains in the 500-year floodplain, with ongoing updates to floodplain data. The Au Sable Volunteer Fire Station is outside the floodplain and has not experienced flooding. Critical vehicles and equipment storage areas are located within the 500-year floodplain Although these areas lack permanent mitigation, equipment is moved before anticipated flood events. The Emergency Operations Center (Town Hall) is in the 500-year floodplain, with heating and electric systems elevated above the Base Flood Elevation (BFE). The Medical Clinic is also within the floodplain and has a generator, though it requires elevation or relocation for improved mitigation. The Elementary School, located in the 500-year floodplain, is equipped with a generator. The water plant is above the 500-year flood height, with the lowest floor above the BFE, and also has a generator. The sewer lagoon and sewer pump station, both situated in the floodplain, have generators and the sewer lagoon is protected by a constructed berm. A berm is recommended for the pump station for added protection. The utility station is outside the floodplain and has not been impacted by flooding. The Federal Insurance Rate Map (FIRM) is currently undergoing updates, with assessments based on historic FIRM data.

Table 148. Critical Infrastructure in Floodplain: Town of Jay

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Jay Fire Department	Yes	No	Floodplain being updated	Yes
Au Sable Forks Fire Station	No	Yes (Moved since)	Yes	Yes
Au Sable Forks Volunteer Ambulance Service	No	No	n/a	Yes
Highway Garage Critical vehicles & equipment storage	Yes	Yes	No (equipment moved before floods)	No
Emergency Operations Center	Yes	Yes	Heating & electric above BFE	Yes

DRAFT

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
(Town Hall)				
Au Sable Forks Health Center	Yes	Yes	No (elevate structure or move to other location)	Yes
Au Sable Forks Elementary School	Yes	No	Yes	Elementary School
Water Plant	Yes	Yes	Yes (lowest floor above BFE)	Yes
Town of Jay, Au Sable Forks Water Treatment Plant Sewer Lagoon	Yes	Yes	Yes (construct berm around facility)	Yes
Town of Jay, Nugent Water Treatment Plant - Sewer Pump Station	Yes	Yes	No (construct berm around facility)	Yes
Town of Jay Wastewater Facility	No	No	No	Yes
Utility Station	No	No	No	Yes

The town has identified two areas that can be used for temporary housing needs after a disaster. The Upper Jay Fire Department and Town Hall would be used, if and when needed. This area includes both paved and unpaved spaces that could be used for temporary housing units like RVs or mobile homes. Power and water are onsite. The Upper Jay Fire Department is designated as the American Red Cross shelter and can be used for temporary housing of resident displaced by a hazard event. Displaced residents obtained temporary housing with friends, relatives or neighbors in the past.

Table 149. Housing for Displaced Residents: Town of Jay

Facility	Type of Housing
Upper Jay Fire Department	American Red Cross shelter
Jay Highway Garage	RV, mobile homes

National Flood Insurance Plan (NFIP) Summary

The following information concerns flood vulnerable structures in Jay. The numbers of actual structures in flood vulnerable areas is most likely larger than the number of insured structures. The number of current structures is currently unclear, as FIRM maps were still being updated during plan development.

Table 150. Flood Insurance: Town of Jay

Policies	2011	2018	2024	Total Amount of Claims
Policies	38	31	29	$3,130,983
Number of Repetitive Loss Structures	8	15 Single family (11) Nonresidential (1) 2-4 Family (1) Condominium (2)	43 buyouts after Hurricane Irene	-

Jay will continue to actively manage floodplains to mitigate future flood risks. New development within special flood hazard areas will be carefully reviewed and approved to ensure compliance with the local floodplain ordinance. As FEMA updates the Flood Insurance Rate Maps (FIRMs), the town will hold meetings with floodplain managers, town supervisors, and village mayors to provide training on the National Flood Insurance Program (NFIP). These meetings will also serve as a forum to discuss compliance requirements and best practices for floodplain management.

Hazard Identification & Ranking

Table 151. Hazard Ranking: Town of Jay

Hazard Ranking	Hazards
HIGH	• Floods • High Winds
MEDIUM	• Earthquakes • Extreme Temperatures • Hailstorms • Landslides • Severe Winter Storms & Ice Storms
LOW	• Avalanches • Hurricanes • Land Subsidence • Wildfires (air quality)

DRAFT

Hazard Event History

Table 152. Hazard Events History: Town of Jay

Hazard	Event	Year	Impact
Flooding	Au Sable River floods	2011	Devastating floods caused by Tropical Storm Irene damaged homes, roads, & bridges, displacing residents.
	Spring floods	2024	Heavy snowmelt & rain led to significant erosion & infrastructure damage.
Winter Storms & Cold	Ice storm	1998	Severe ice accumulation caused prolonged power outages & damaged critical infrastructure.
	February blizzard	2024	Heavy snowfall disrupted travel & caused power outages across the town.
Severe Thunderstorms	Summer thunderstorms	Recurring	High winds, hail, & localized flooding caused property & crop damage.
Earthquakes	Adirondack regional quake	2002	M5.1 earthquake caused minor structural damage & raised awareness of regional seismic risks.
Wildfires	Forest fires	1903	Large–scale fires in the Adirondacks posed threats to the town & nearby communities.
	Summer fires	2024	Drought conditions led to small wildfires, which were quickly contained.
Transportation	Road & bridge disruptions	Recurring	Flooding & severe storms damaged key routes, including bridges over the Au Sable River.
Power Outages	Ice storm	1998	Power outages lasted weeks, disrupting daily life & emergency services.
	Thunderstorm outages	2024	Severe storms caused downed power lines, leaving residents without electricity for days.
Drought	Prolonged dry periods	2024	Water shortages impacted agriculture and increased wildfire risks.
Public Health	Lyme disease	Recurring	The town continues to face health risks from high tick populations.
	COVID–19 Pandemic	2020+	The pandemic tested local healthcare and emergency preparedness systems, leading to improvements.

Hazard Analysis

Jay faces numerous natural and man–made hazards posing significant challenges to infrastructure, community safety, and economy. Flooding has been a recurring issue, with the 2011 Au Sable

River floods caused by Tropical Storm Irene resulting in severe damage to homes, roads, and bridges, and displacing residents. The 2024 spring floods, driven by heavy snowmelt and rainfall, caused significant erosion and infrastructure damage, highlighting the need for resilient flood management systems.

Winter storms like the 1998 ice storm and the February 2024 blizzard, had lasting impacts on the town. The ice storm caused prolonged power outages and critical infrastructure damage, while the 2024 blizzard disrupted travel and caused further power outages across the region. Severe thunderstorms are another recurring hazard, bringing high winds, hail, and localized flooding that have consistently damaged property and crops.

Jay also faces geological and environmental risks, as seen with the 2002 Adirondack Region earthquake, which caused minor structural damage but raised awareness of seismic vulnerabilities. Wildfires, including the large–scale fires of 1903 and small fires in 2024 fueled by drought conditions, continue to pose a threat, particularly during prolonged dry periods. Transportation infrastructure like roads and bridges, is frequently affected by flooding and severe storms, especially routes over the Au Sable River, necessitating constant repairs and upgrades.

Power outages are a significant concern, with extended disruptions during events like the 1998 ice storm and 2024 thunderstorms, which left residents without electricity for days. Drought conditions in 2024 exacerbated water shortages, impacted agriculture, and increased wildfire risks, demonstrating the town's sensitivity to changing climate conditions.

Public health challenges, including Lyme disease from high tick populations, persist as a risk to residents. The COVID–19 Pandemic further tested the town's healthcare and emergency preparedness systems, prompting improvements in response capabilities and community resilience.

These hazards underscore the need for proactive mitigation strategies in Jay. Strengthening flood defenses, improving power infrastructure, enhancing emergency preparedness, and increasing public awareness will be critical to minimizing future risks and ensuring the safety and well–being of town residents.

DRAFT

Hazard Mapping

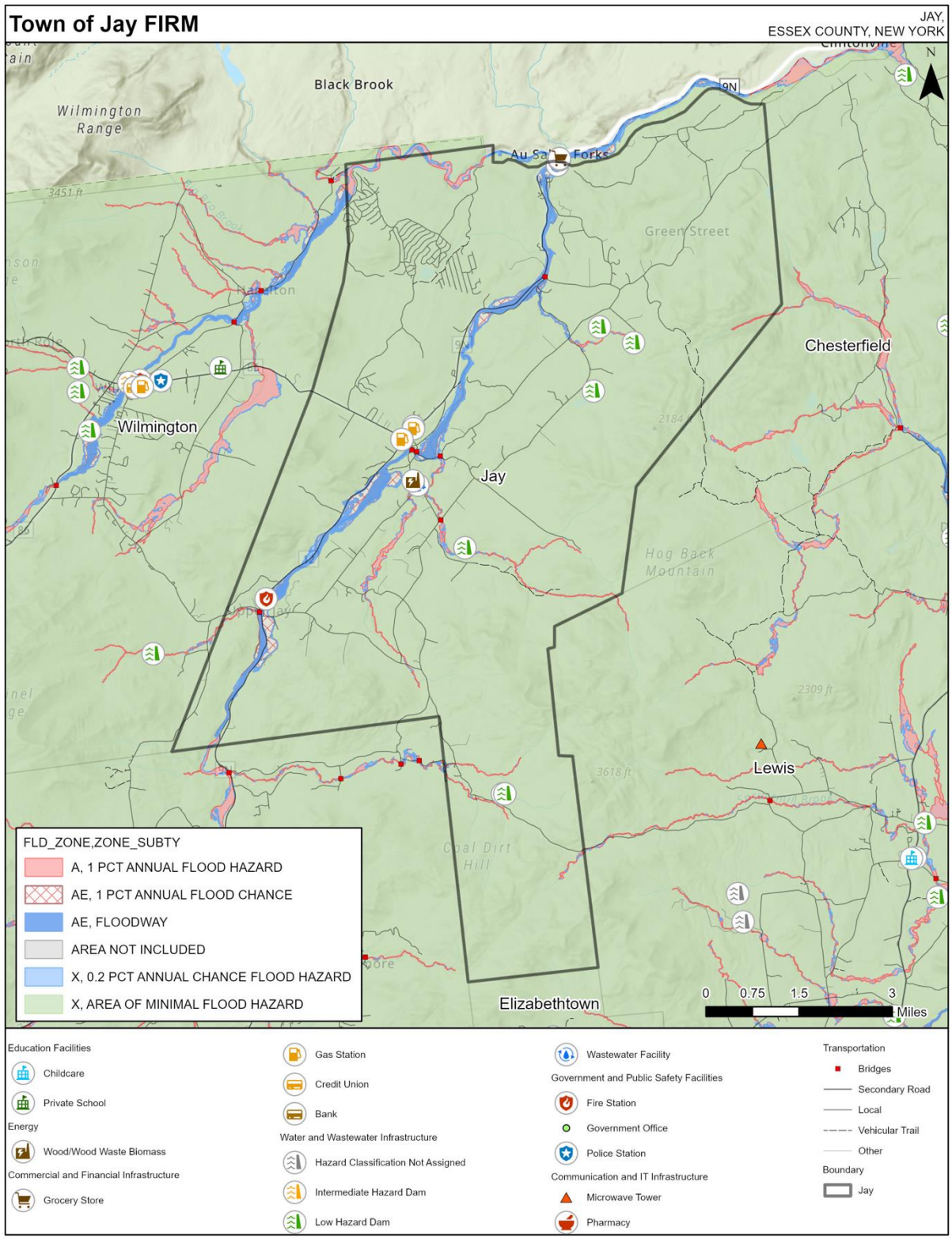


Figure 59. FlRM: Town of Jay

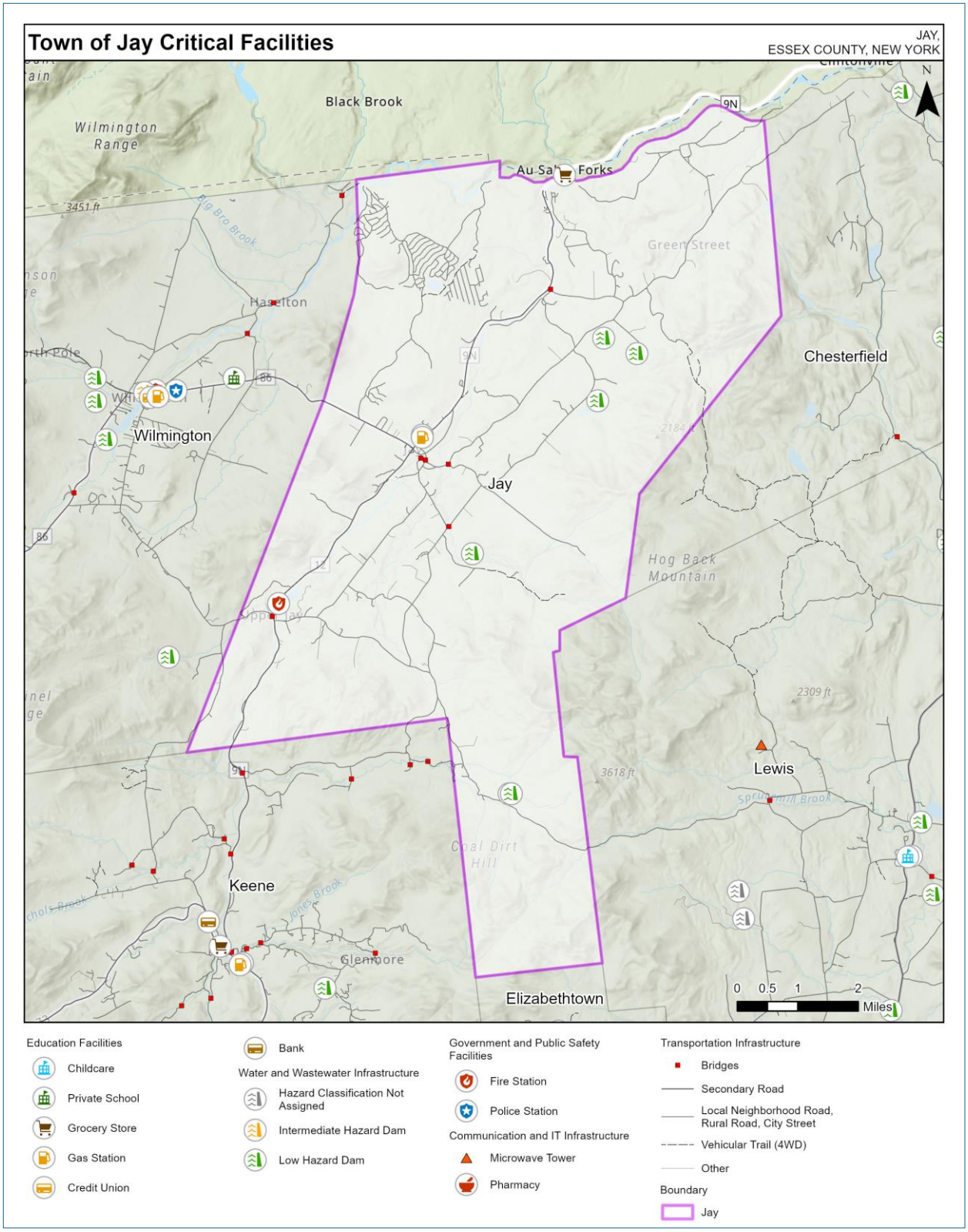


Figure 60. Critical Facilities: Town of Jay

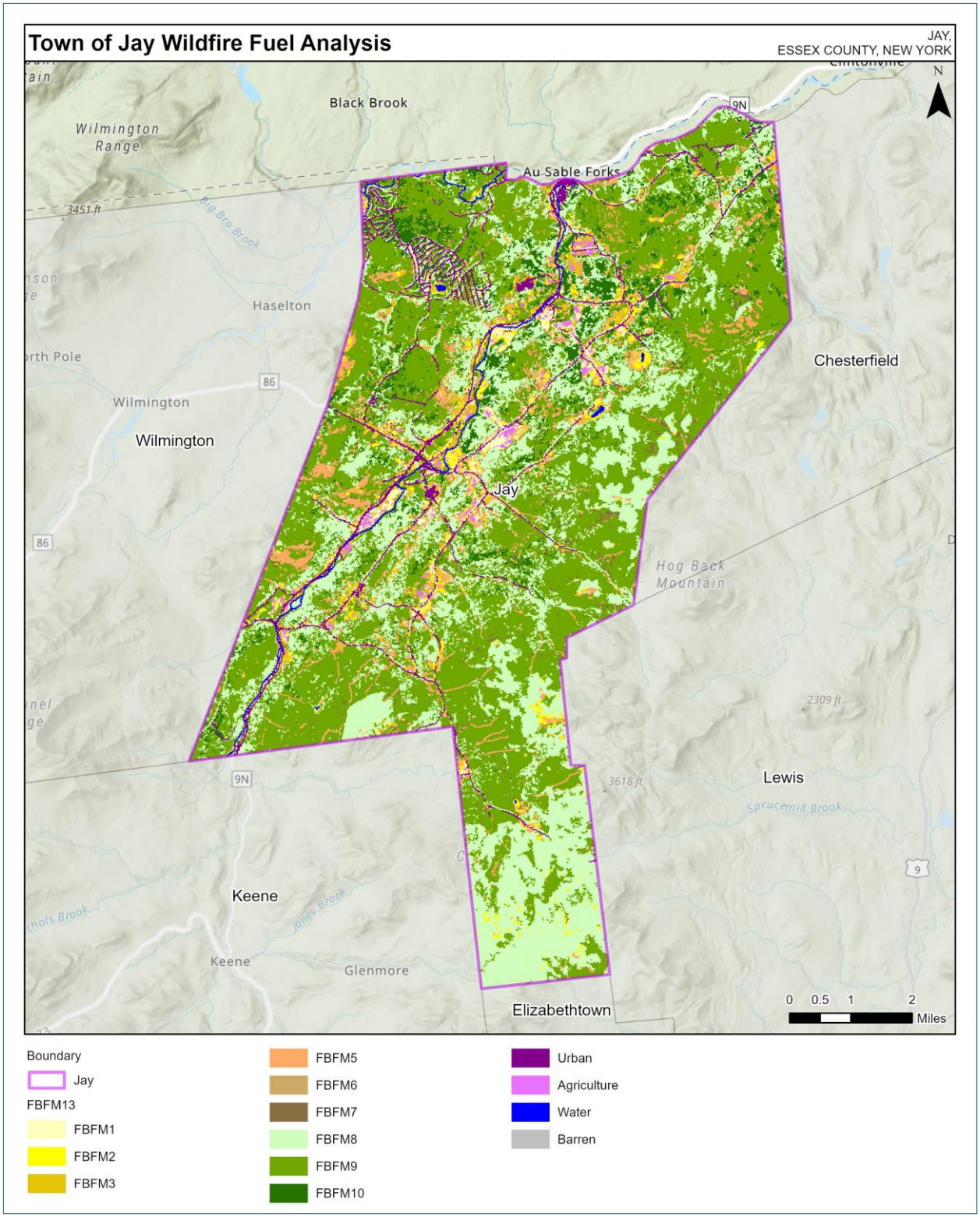


Figure 61. Wildfire Fuel Analysis: Town of Jay

Potential Loss

Jay conducted a potential loss assessment using data from the Essex County Real Property website. Property data for all parcels was analyzed and categorized into nine class codes, with total

property values calculated for each category. To estimate potential losses from a hazard event, it was assumed that 10% of the properties in each class code would be affected. Accordingly, the potential financial loss was calculated as 10% of the total property value within each class code.

Essex County Real Property Tax Services website has nine class codes for real property:

- 100 Agriculture
- 200 Residential
- 300 Vacant Lands
- 400 Commercial
- 500 Recreation and Entertainment
- 600 Community
- 700 Industrial
- 800 Public Services
- 900 Forest, Conservation Lands and Parks

Table 153. Potential Loss: Town of Jay

Class Code	Number of Structures	Structure Values	Number of Structures Impacted	Potential Loss
100	3	$1,261,900	0	$126,190
200	1430	$422,378,962	136.80	$42,237,896
300	999	$40,178,200	758.12	$4,017,820
400	49	$9,131,400	4.60	$913,140
500	9	$875,800	0.70	$87,580
600	25	$12,055,828	2.40	$1,205,582
700	1	$72,600	0.10	$7,260
800	26	$9,874,079	1.10	$987,407
900	166	$32,012,353	1.70	$3,201,235

Mitigation Strategy

The mitigation strategy included in the 2019 plan was reviewed to determine if the project(s) were completed. New mitigation projects were identified for the 2025 plan update. These new projects are included in the table below.

Project prioritization occurred as the plan was updated. These projects list the priority as High, Medium, and Low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and Low projects are to improve other functions of towns and villages and address actual residents of these municipalities.

DRAFT

Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

The cost of proposed mitigation projects has been determined and included in the table below. Other mitigation projects have estimated the costs of these projects. The potential cost to implement mitigation projects are ranked as High, Medium, and Low cost.

Table 154. Mitigation Strategies: Town of Jay

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
1. Au Sable River Ice Jam study (2 areas reengineered)	3,5	Solve ice jam issues	Flooding	DOS, ACOE	~ $200K	1-10 years Year 1-5 Obtain funding Year 6-10 Implement project Underway	DOS, ACOE	High	Infrastructure
2. Springfield Road Project	1, 2, 4,5	Minimize flooding on roadway	Flooding	Town Hwy Dept.	~$100K	1-5 years Underway	DOT–Engineering for Construction	Medium	
3. Update & adopt CEMP	1,4,6	Disaster preparedness	All	Town Supervisor	$10K	1-3 years	Annual operating budget, Emergency Management Performance Grant (EMPG)	Medium	Plans & regulations
4. Lead Service Line Inventory	1	Collecting data on lead service lines to comply with public Health standards	Public Health	Department of Health	$10.6K	1-5 Years Underway – Initial survey, ongoing with inspections planned	ARPA	Medium	Plans & regulations

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
5. Feasibility Study Water Meters	1,2,4,5	Compliance/Evaluating feasibility of water meter installation, gathering quotes for meters & billing software	Climate Change	Town Supervisor	$22.8K	1-3 years Underway – Draft report expected by July 12, 2024	ARPA	Medium	Infrastructure
6. Au Sable Drive Culvert -	2,4,5	Install larger culvert	Flooding	Au Sable Fresh Water Center	~$50K	1-3 years Underway	FEMA HMGP, CDBG	Medium	Infrastructure
7. Water Improvement Updates to Jay Well/Pump Nugent Plant	2,4,5	Infrastructure improvements to the Nugent water plant to meet health regulations	Public Safety Flooding	Town Supervisor/DPW	$160K	1-5 years Expected completion by fall 2024	ARPA	High	Infrastructure
8. Stormwater management plan update	4	Use N Elba SWM plan as template for Jay	Floods	Town Supervisor	~$25K	1-3 years Planned	Annual operating budget, CDBG, HMGP	Medium	Plans & regulations
9. Develop capital improvement plan	4	Develop long–term capital improvement plan	All	Town Supervisor	~$30K	1-5 years Planned	NYS DOS Grant, Local Government Efficiency Grant (LGEG)	Medium	Plans & regulations
10. Nugent Plant Flooding /Sediment Build Up–Correction	I	The brook near the Nugent Water Treatment Plant was damaged during Hurricane Irene,	Flooding	Town Supervisor/DPW	~$100K	1-3 Years New	NYS Environmental Facilities Corporation (EFC) Grants, NYS Department of Environmental	Medium	Infrastructures

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
		leading to sediment buildup and flooding near the water tank. Mitigation efforts will focus on restoring proper water flow and reducing flood risks.					Conservation (DEC) Water Quality Improvement Program (WQIP)		
11. Grove Road Culvert	2,4,5	Install larger culvert	Flooding	Town Supervisor/DPW	~$50K	1-3 years Planned	HMGP, CDBG	Medium	Infrastructure
12. Hazeltine Road Culvert	2,4,5	Install larger culvert	Flooding	Town Supervisor/DPW	~$50K	1-3 years Planned	HMGP, CDBG	Medium	Infrastructure
13. River road Bank Stabilization	2,4,5	Stabilize riverbank along road to prevent further ground loss	Flooding	Town Supervisor/DPW	~$100K	1-5 years Planned	FEMA, HMGP	Medium	Infrastructure
14. Back-up Well	2,4,5	Drilling a new backup well to ensure water supply resilience	Flooding Resiliency	Town Supervisor/DPW	~$250K	1-5 years Planned	ARPA, Drinking Water State Revolving Fund (DWSRF)	High	Infrastructure
15. Town Wide Culvert Assessment	2,4,5	Conduct an assessment of culverts throughout the Town of Jay to identify and prioritize replacements or upgrades to mitigate	Flooding	Town Supervisor	New Project-Medium	1-5 years	FEMA, HMGP	High	Infrastructure

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
		flooding and infrastructure damage.							
16. Generator	1,2,4,5	Upgrade existing power system with a propane generator and automatic transfer switch to ensure continuous operation during emergencies.	All	Town Supervisor	New Project-Low	1-5 years	FEMA, HMGP	Med	Infrastructure
17. Shalderake Road Bridge	1,2,4	Lengthen the existing bridge to allow better water and ice flow, reducing bottlenecks that lead to flooding in nearby residential areas.	Flooding, Ice Jam	Town Supervisor	New Project-HIgh	1-5 years	NYS Department of Transportation (NYSDOT) BRIDGE NY Program, NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants, US DOT Bridge Investment Program	Medium	Infrastructure
18. Earthquake Impact Reduction	2,3	Conduct training for code officers and update	Earthquake	Town Supervisor	New Project-Low	1-5 years	FEMA, HMGP		Plans & regulations

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
		municipal plans to reflect new seismic standards.							
19. Water System	2,4	Resiliency of Drinking Water	Flooding	Tow of Jay, Essex County	New Project-Medium	1-5 years	NYS Environmental Facilities Corporation (EFC) Grants, NYS Department of Environmental Conservation (DEC) Water Quality Improvement Program (WQIP)	High	Infrastructure
20. Emergency Power Upgrade	1,2,4,5	Upgrade existing power system with a propane generator and automatic transfer switch to ensure continuous operation during emergencies.	All	Town Supervisor	New Project-Medium	1-5 Years	FEMA PA, FEMA BRIC, NY DHSES Communications Resiliency Grants	Medium	Infrastructure and Resilience
21. Jay Fire Department	2	Relocate outside of 500-year floodplain	Flooding	Town Supervisor/Fire	New Project - High	1-5 years assessment & studies 5-10 years build	FEMA PA, FEMA BRIC, NY DHSES Communications Resiliency Grants	Low	Infrastructure and Resilience
22. Water Treatment Plant Sewer		Mitigation for flooding – build	Flooding	Town Supervisor/DEC/DPW	New Project - Medium	1-5 years	FEMA PA, FEMA BRIC, NY DHSES	Low	Infrastructure

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
Lagoon – AuSable Forks		berms around infrastructure to protect from flooding				assessment & studies 5-10 years build	Communications Resiliency Grants		and Resilience
23. Nugent Water Treatment Plant Sewer Pump		Mitigation for flooding – build berms around infrastructure to protect from flooding	Flooding	Town Supervisor/DEC/DPW	New Project - Medium	1-5 years assessment & studies 5-10 years build	FEMA PA, FEMA BRIC, NY DHSES Communications Resiliency Grants	Low	Infrastructure and Resilience
24. Emergency Operations Center		Mitigation for flooding – relocate to protect from flooding	Flooding	Town Supervisor/DEC/DPW	New Project - Medium	1-5 years assessment & studies 5-10 years build	FEMA PA, FEMA BRIC, NY DHSES Communications Resiliency Grants	Low	Infrastructure and Resilience

The Town of Jay will continue to implement projects and programs to reduce the effects from disasters impacting the town.

DRAFT

Annex F: Town of Keene

Profile

The Town of Keene, centrally situated in Essex County, spans 38 square miles and encompasses several of the state's highest mountains along with thousands of acres of wilderness. The population is primarily concentrated in the hamlets of Keene Valley and Keene, situated along the banks of the flood–prone Au Sable River, with additional isolated residential pockets on the slopes above the river.

Two thoroughfares—State Routes 73 and 9N—funnel traffic to nearby Lake Placid, the Olympic Village, and its year–round sports center. Historically the area attracted artists, authors, and philosophers who came for the summer months and stayed in guesthouses and hotels. That tradition continues today in the presence of the Au Sable Club, a private club located in St. Hubert's in the southern part of town. The Club offers support to the town, sharing assets in emergencies. Like many towns in the area, the summer population swells, but Keene attracts visitors year–round with excellent recreational opportunities. Many former summer visitors have become permanent residents, shown by a 15% increase in population from the 1980 to the 2010 US Census.

Steep mountains surround the town, with most commercial activity concentrated along the two main roads following the Au Sable River. The river frequently experiences flooding, posing a risk to residents, particularly when evacuation becomes necessary. Keene encompasses 15 of the 46 High Peaks including Mount Marcy—New York's highest mountain—and the entirety of the Great Range. The town also contains the Au Sable Lakes, serving as the river's source. Numerous High Peaks trailheads are located within Keene, as well as the Johns Brook Lodge of the Adirondack Mountain Club. The Hurricane Mountain Fire Observation Station and Walton Bridge are listed on the National Register of Historic Places.

Climate Resiliency

The town's culvert infrastructure faces significant challenges due to steep roads and proximity to parallel streams and rivers. Managing and maintaining these roads has become a year–round effort, further complicated by increased flooding and extreme weather events. In recent years, the rising frequency and intensity of storms led to issues like holes in roads, road erosion, and washed–out culverts—all requiring prompt attention. For example, during the most recent winter storm, a culvert failure resulted in the complete loss of a road section. This incident underscores the town's need for resilient infrastructure and well–informed engineering solutions.

The town's response to these events includes upgrading from smaller culverts (like 6–foot culverts) to more substantial structures like a 78–foot bridge, funded through the Culvert NY program. This project is currently in its second year of planning, with the bridge set to be installed by the summer of 2025. In addition to culvert upgrades, the August 9, 2024, destruction of a bridge further demonstrated the need for pre–disaster planning and grant funding to restore critical infrastructure. Keene secured grant funding to restore the bridge, with future projects in line to address other vulnerable sites through FEMA funding and Pre–Disaster Mitigation programs.

The Long–term Road and Culvert Resiliency Plan 2024 identifies several key locations in need of attention, including the Morrison Road Bridge, which has already been designated as a FEMA project. Other sites like Cemetery Road, Irish Hill Road, and O'Toole Road, continue to face

challenges related to bank stabilization and culvert management. These ongoing issues underscore the critical need for sustained efforts in climate resiliency and infrastructure upgrades.

Table 155. Town of Keen Table of Facts

Fact	Description
Land Area	156.1 sq. miles (404 km²)
Incorporated Village(s)	None
Hamlets	Keene, Keene Valley
Population Census	1,083 (2020 Census)/1,105 (2010 Census)
Governance	Town
Total Assessed Valuation	Approx. $587 million (2023)
Highest Elevation	Mount Marcy, 5,344' (1,629 m)
Largest Lake	Chapel Pond/Upper Au Sable Lake
River(s)	East Branch Au Sable River, Au Sable, Johns Brook, Spruce Hill Brook & Cascade Brook. Multiple other streams & tributaries.
Dams	Au Sable Lake Dam (privately owned)
Bridges	CR–13 Bridge (blew out 18 months ago), Town Rd/Styles Brook Rd (blew out Aug 9, 1 owned by county)
Interstate Highway	None (closest I–87, "Northway")
State Routes	NY–73, NY–9N
County Roads	Essex County Roads 13, 40, 51, 52, & 69
Land Agriculture Use	Limited agriculture, primarily conservation & forest land
Land Classified Industrial	Minimal (no significant industrial areas)
Land Classified Residential, as Hamlet	Primarily residential, concentrated in Keene & Keene Valley (777.6 acres)
Hospital/Medical Facility	Keene Health Center & Keene Valley Neighborhood House. Closest major facility is Elizabethtown Community Hospital
Fire & Rescue	Keene Volunteer Fire Department & Keene Valley Volunteer Fire Department, each with their own EMS
Schools	Keene Central School (K-12)
Railroads	None (no active railroads)
Passenger Trains/Day	None (Amtrak service nearby in Westport or Plattsburgh)

DRAFT

Fact	Description
Freight Trains/Day	None (no active freight service)
Ferry Dock(s)	None (closest ferry service is in Essex, NY)
Interstate Bridge	None
Largest Employer	Keene Central School & local tourism–based businesses
Law Enforcement	Essex County Sheriff's Office, New York State Police coverage
Correctional Facility	None
Power Utility Provider(s)	NYSEG/National Grid
Water Supply Source(s)	Local wells (town & private), East Branch Au Sable River (municipal water)
Emergency Shelters	No official locations (use Keene Valley FD; has most amenities for sheltering)
Critical Facilities	Fire departments, school, & town offices (4)

Notable Updates

Keene was severely impacted by Tropical Storm Irene in 2011. Many structures were damaged as the floodwater flowed through town. The town was temporality isolated during and after the events due to road damage. The Au Sable Watershed Association was active in assisting Keene after Irene. New York State provided funding for completion of a post–storm document called NY Rising Community Reconstruction Plan for the Towns of Jay and Keene. This document developed mitigation projects directly related to Irene's impact to Keene. Mitigation has been implemented after this devastating storm in Keene.

Following Tropical Storm Irene (2011), Keene faced several significant developments, particularly in disaster recovery, infrastructure improvement, and tourism management. After the destruction caused by Irene, Keene undertook major recovery efforts including rebuilding critical infrastructure like bridges and roads. The town's vulnerability to heavy rainstorms was highlighted again during the 2019 Halloween storm, which caused further flooding, damaging some of the same bridges and roads that were rebuilt after Irene. This underscores the ongoing need for resilient infrastructure and flood mitigation measures.

In July 2024, Keene was severely impacted by the remnants of Tropical Depression Six, which brought a series of four powerful storms to the area. These storms washed out two bridges and a large culvert, causing significant damage to town infrastructure. The power outage lasted 3-5 days, adding to challenges faced by the community. In response to the damage, Keene has been working closely with NYSEG to enhance town resiliency by moving over a quarter mile of power lines underground. This proactive step addresses vulnerabilities from wind damage, heavy snow loads, and flooding–related scouring, ensuring a more stable and reliable power supply in the face of future storms. These efforts, along with ongoing infrastructure upgrades, reflect the town's commitment to improving its capacity to handle the increasing frequency and intensity of extreme weather events.

In the years following Irene, tourism has become a major economic driver for Keene, especially given its proximity to the Adirondack High Peaks. While increased tourism boosted the local economy, particularly for outdoor recreation businesses, it also presented challenges. Overcrowding, parking issues, and strains on the environment are pressing concerns, especially during peak hiking seasons. In response, the town and local agencies implemented measures like parking regulations, shuttle services, and a reservation system for hiking at the Adirondack Mountain Reserve to manage the influx of visitors, reducing environmental impacts.

Climate resilience efforts are a priority for Keene. Local groups and state agencies collaborate on projects aimed at restoring natural habitats, stabilizing riverbanks, and improving drainage systems to mitigate future storm effects. These initiatives are part of a broader focus on preparing for the increasing climate change risks. Keene has become a model for other small towns in terms of resilient community planning and disaster preparedness.

Keene faces a housing crisis, a common issue in tourist–heavy areas. Property prices have surged, and the rise of short–term rental properties makes it difficult for local residents and workers to afford housing. This sparked ongoing discussions about how to manage housing affordability while balancing the needs of the tourism–driven economy. The town is considering zoning changes and regulations to address the challenges posed by the influx of short–term rentals.

Environmental conservation remains a core value for Keene, especially given its location in the Adirondack Park. Local organizations, in partnership with state agencies, work together to preserve natural areas, implement trail maintenance programs, and promote sustainable tourism. These efforts strive to protect the town's natural resources while ensuring tourism remains a sustainable economic driver.

The COVID–19 Pandemic (2020) also affected Keene, temporarily disrupting the local economy. Outdoor recreation saw a resurgence later in the year as people sought safe, outdoor activities during the pandemic. This led to an increase in visitors, further straining local infrastructure and natural resources, but also helping local businesses recover from the initial economic hit.

Keene has is working to rebuild and improve town infrastructure since Irene, while facing new challenges from increased tourism and climate risks. The town focuses on sustainable development, flood resilience, and housing solutions as it continues to evolve in the wake of these significant events.

Planning Process

The town initially took part in a Hazard Mitigation Survey, followed by an in-person Stakeholder Hazard Mitigation Introduction Meeting. Subsequently, the Town Supervisor received a copy of the town's section of the county plan for review and revisions, meeting with the contractor on October 4, 2024, to update its portion of the county plan. The Town Supervisor participated in county-level meetings related to the plan and attended a final mitigation strategy meeting.

Capability Assessment

Keene has the following planning mechanisms in place to ensure new development is hazard resistant. The town has an emergency operations plan, evacuation plan, continuity of operations plan, floodplain regulations, subdivision regulations, and a town strategic plan.

DRAFT

Table 156. Town of Keene Planning Documents

Planning Documents
Emergency Operations Plan (FD for Keene/Keene Valley)
Evacuation Plan
Continuity of Operations Plan (under development–Water Operations)
Floodplain Regulations (State Park Agency)
Subdivision Regulations (no zoning but site plan review–working to overhaul)
Town Strategic Plan (June 2021)

Keene conducted a capabilities analysis, identifying key areas of reliance. The town depends on county staff for planning and engineering support, while the code enforcement officer serves as the floodplain administrator. The Department of Environmental Conservation (DEC) and the Adirondack Park Agency (APA) provide scientific expertise and guidance. County staff assist with Geographic Information System (GIS) services and grant writing.

This hazard mitigation plan should be integrated into Keene's existing plans to further enhance resilience. The hazard ranking can be incorporated into the comprehensive emergency management plan, while mitigation projects can be included in the capital improvement plan. Much of this document can be incorporated into community comprehensive plans. Such integration helps ensure enabling legislation remains consistent across these documents, aligning with broader community planning efforts.

Keene uses a variety of funding opportunities to implement projects and plans. CDBG funds were used for flood recovery efforts. Special purpose taxes are used for the water district. Water and sewer fees are used to maintain existing systems. Partnering agreements and intergovernmental agreements are used for fire, EMS district, and shared highway services.

Keene assessed education and outreach efforts to enhance community engagement and preparedness. The town uses the Comprehensive Emergency Management Plan (CEMP) to coordinate efforts with Essex County and neighboring towns. Local citizen groups and nongovernmental organizations, focused on environmental issues, play an active role in Keene. The Au Sable River Watershed Association, a key partner, led numerous mitigation projects since Hurricane Irene. The town also supports sustainability initiatives through the Keene Clean Energy Committee, promoting environmental responsibility by installing portable restrooms at public access points, educating residents and visitors on the "Leave No Trace" ethic, and conducting regular water quality testing.

Keene ranked four categories of abilities. Planning and regulatory capabilities were ranked High. Administrative and technical capabilities, and education and outreach capabilities were ranked as Moderate. Keene's financial capabilities were ranked as Limited likely because the town has more mitigation projects than available funding to support them.

Critical Facilities

The flood vulnerability of critical facilities was assessed as the plan was updated. The table below describes if these facilities are located in the 500–year floodplain, if the facility has been flooded in the past, and if any kind of mitigation was completed to reduce the flood potential of these structures. Generator capabilities were also assessed to determine if these facilities could function without electric power—a common issue for critical facilities during disaster events.

Keene Valley Fire Station has a generator and was relocated out of the 500–year floodplain. The fire station in Keene is located in the floodplain, however this facility has a generator. The Highway Garage has a generator and is used as the communications center, emergency operation center, and critical vehicle equipment storage. The Keene clinic is located in the 500–year floodplain. It was not reported if this facility possesses a generator. Keene Central School is still in the 500–year floodplain, but Little Peaks Preschool has relocated out of the floodplain. Both of these facilities possess a generator. One water plant is protected from the 500–year flood. An additional water plant is proposed, but not yet constructed.

Table 157. Town of Keene Critical Infrastructure

Critical Facility	500–Year Floodplain	Past Flooding	Mitigated	Generator
Keene Valley Fire Station	No	Not in new location	Yes (relocated out of floodplain)	Yes
Keene Fire Station	Yes	Yes	No (needs to be relocated)	Yes
Highway Garage EOC Communication Center	No	No	No	Yes
Keene Clinic	Yes	Yes	No (flood proofing needed)	Unknown
Keene Central School	Yes	Yes	No (needs to be moved or flood–proofed)	Yes
Little Peaks Preschool	Yes	Yes	Relocated	No
Verizon Station	Yes	Yes	No	Yes
Keene Water Plant	Yes	No	Yes	Yes

DRAFT

Critical Facility	500–Year Floodplain	Past Flooding	Mitigated	Generator
Keene Valley Water Plant #2	Not constructed yet, still in planning stages	N/A	Yes (will be constructed to minimize flood damage)	

The Keene drinking water and sewer treatment plants are both located in the 500–year floodplain. Water plant #1 in Keene is protected to the 500–year flood height. Water plant #2 in Keene Valley is in the planning stages to mitigate damage from the 500–year flood. The Verizon substation is located in the 500–year floodplain and has a generator.

Keene identified two areas for use as temporary housing units after a hazard event. The Town identified the Polo Field at the Bark Eater and Keene Valley Fire Department. Power and water are available onsite.

Table 158. Housing for Displaced Residents: Town of Keene Shelter

Facility	Housing Type
Polo Field at the Bark Eater	RV, mobile homes
Keene Valley Fire Department	Infrastructure Building

National Flood Insurance Plan (NFIP) Summary

The following information concerns flood vulnerable structures in Keene. The number of actual structures in flood–vulnerable areas is likely larger than the number of insured structures. Once flood insurance maps are updated by FEMA, these new maps will help determine the actual number of flood vulnerable structures.

Table 159. Town of Keene Flood Insurance

Policies	2011	2018	2024	Total Amount of Claims
Policies	27	33	33	$922,335
# Repetitive Loss Structures	2	3 (single family structures)	-	-

The number of structures with flood insurance policies increased following the impact of Tropical Storm Irene. The storm also led to a rise in repetitive loss structures due to flooding. As part of the recovery efforts, three structures were included in the buyout program after the storm.

Keene will continue actively managing floodplains to mitigate future risks. The town will review and approve new development in special flood hazard areas to ensure compliance with the local floodplain ordinance. As FEMA updates Flood Insurance Rate Maps (FIRM), floodplain managers,

town supervisors, and village mayors will participate in National Flood Insurance Program training sessions. These meetings will address compliance requirements. To strengthen flood management efforts, floodplain managers from the most vulnerable communities will be encouraged to join the New York State Floodplain and Stormwater Managers Association (NYSFSMA), enhancing their knowledge and expertise. Given Keene's status as one of the most flood–prone communities in Essex County, maintaining strict floodplain management remains essential.

Hazard Identification & Ranking

Table 160. Hazard Ranking: Town of Keene

Hazard Ranking	Hazard Description
HIGH	• Floods (erosion, high–intensity stormwater run–off) • High Winds • Land Subsidence • Severe Winter Storms
MEDIUM	• Extreme Temperatures • Hailstorms • Ice Storms • Landslides • Hurricanes
LOW	• Avalanches • Drought • Earthquakes • Wildfires • Rail Events

Hazard Event History

Table 161. Hazard Events: Town of Keene

Hazard	Event	Year	Impact on Keene
Flooding	Au Sable River floods	2011	Tropical Storm Irene caused severe flooding, washing out bridges (e.g., Johns Brook Bridge) & roads, displacing residents, & destroying homes.
	Spring floods	2024	Heavy snowmelt & rain caused river overflow, damaging infrastructure, including smaller bridges & culverts along local roads.
Winter Storms & Cold	Ice storm	1998	Keene experienced multi–week power outages, tree damage, & blocked roads from fallen ice–laden trees.

DRAFT

Hazard	Event	Year	Impact on Keene
	February blizzard	2024	Over 20 inches of snow disrupted access to mountain passes & local roads, straining emergency services.
Severe Thunderstorms	Summer thunderstorms	Recurring	High winds & hail damaged roofs, downed trees, & caused temporary power outages.
Earthquakes	Adirondack regional quake	2002	M5.1 earthquake caused minor structural damage to older buildings in Keene Valley & led to temporary road closures for inspections.
Wildfires	1903 forest fires	1903	Wildfires in the Adirondack region threatened forested areas near Keene, requiring evacuation efforts.
	Summer fires	2024	Small fires in High Peaks Wilderness near Keene were fueled by drought conditions but were contained quickly.
Transportation	Bridge & road damage	Recurring	Flooding & storms repeatedly damaged bridges like the Route 73 crossing & key trail access roads.
Power Outages	Ice storm	1998	Long–term outages affected residents, emergency services, & communication systems.
	Thunderstorm outages	Recurring	Summer storms downed lines in remote areas, leaving residents in hamlets like Keene Valley without power for days.
Drought	Prolonged dry conditions	2024	Local wells ran low, risk of wildfires increased in forested areas, particularly near trailheads.
Public Health	Lyme disease	Recurring	High prevalence of tick–borne diseases due to extensive hiking trails & wooded areas attracting outdoor activity.
	COVID–19 Pandemic	2020+	Stress on local clinics & emergency response during the pandemic revealed gaps in public health readiness.

Hazard Analysis

Keene faces significant vulnerability to natural hazards due to its location in the Adirondack High Peaks region, impacting town infrastructure, the community, and its economy. Flooding remains a major threat, as demonstrated by the 2011 Au Sable River floods caused by Tropical Storm Irene. This event washed out key bridges, including the Johns Brook Bridge, damaged roads, displaced residents, and destroyed homes. The 2024 spring floods further underscored the town's vulnerabilities, as heavy snowmelt and rainfall caused river overflows, infrastructure damage, and destruction of smaller bridges and culverts along local roads.

Winter storms pose recurring challenges. The 1998 ice storm resulted in multi–week power outages, severe tree damage, and blocked roads, while the February 2024 blizzard brought more than 20 inches of snow, disrupting access to mountain passes and straining emergency services. Severe summer thunderstorms also pose persistent risks, causing property damage, downed trees, and temporary power outages.

Keene is exposed to geological and environmental hazards, including earthquakes and wildfires. The 2002 M5.1 Adirondack Region earthquake caused minor structural damage to older buildings in Keene Valley, leading to temporary road closures for inspections. Wildfires (like the 1903 Adirondack forest fires and smaller fires near the High Peaks Wilderness in 2024) pose an increased risk during drought conditions, particularly in forested and trailhead areas.

Transportation infrastructure faces ongoing challenges from flooding and storms with repeated damage to critical bridges like the Route 73 crossing and key trail access roads. Power outages are a persistent issue, with prolonged disruptions during the 1998 ice storm and recurring outages caused by summer thunderstorms in remote areas like Keene Valley.

Drought conditions like those experienced in 2024, stressed local water supplies, with wells running low and wildfire risks increasing in forested areas. Public health remains an ongoing concern, with a high prevalence of Lyme disease due to the town's extensive wooded areas and popular hiking trails. The COVID–19 Pandemic further tested Keene's healthcare and emergency response systems, exposing gaps in public health readiness and emergency preparedness.

These hazards emphasize the need for robust mitigation strategies, including infrastructure resilience, improved emergency response capabilities, and public health preparedness. Addressing these vulnerabilities is critical to ensuring community safety and sustainability.

DRAFT

Hazard Mapping

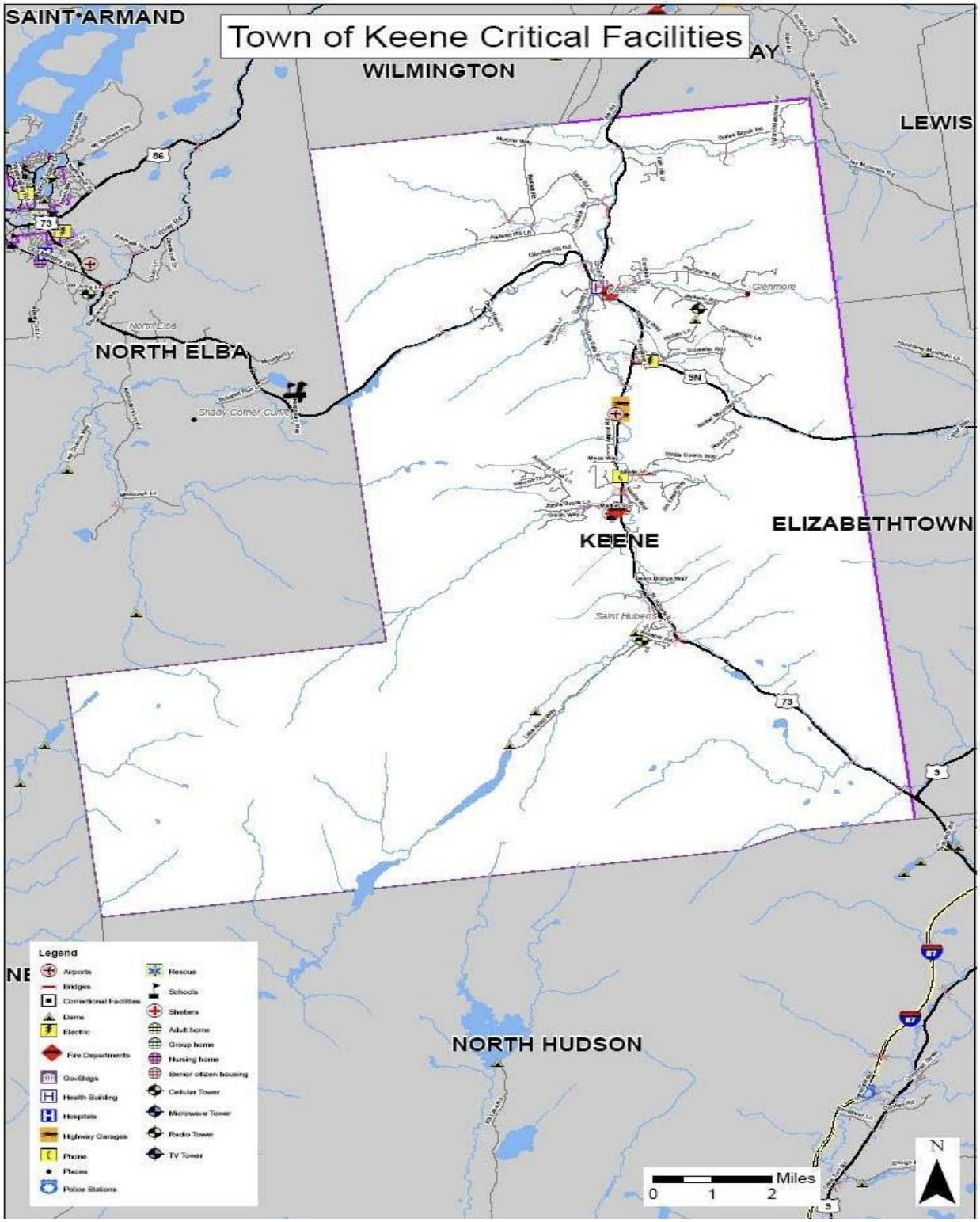


Figure 62. Critical Facilities: Town of Keene

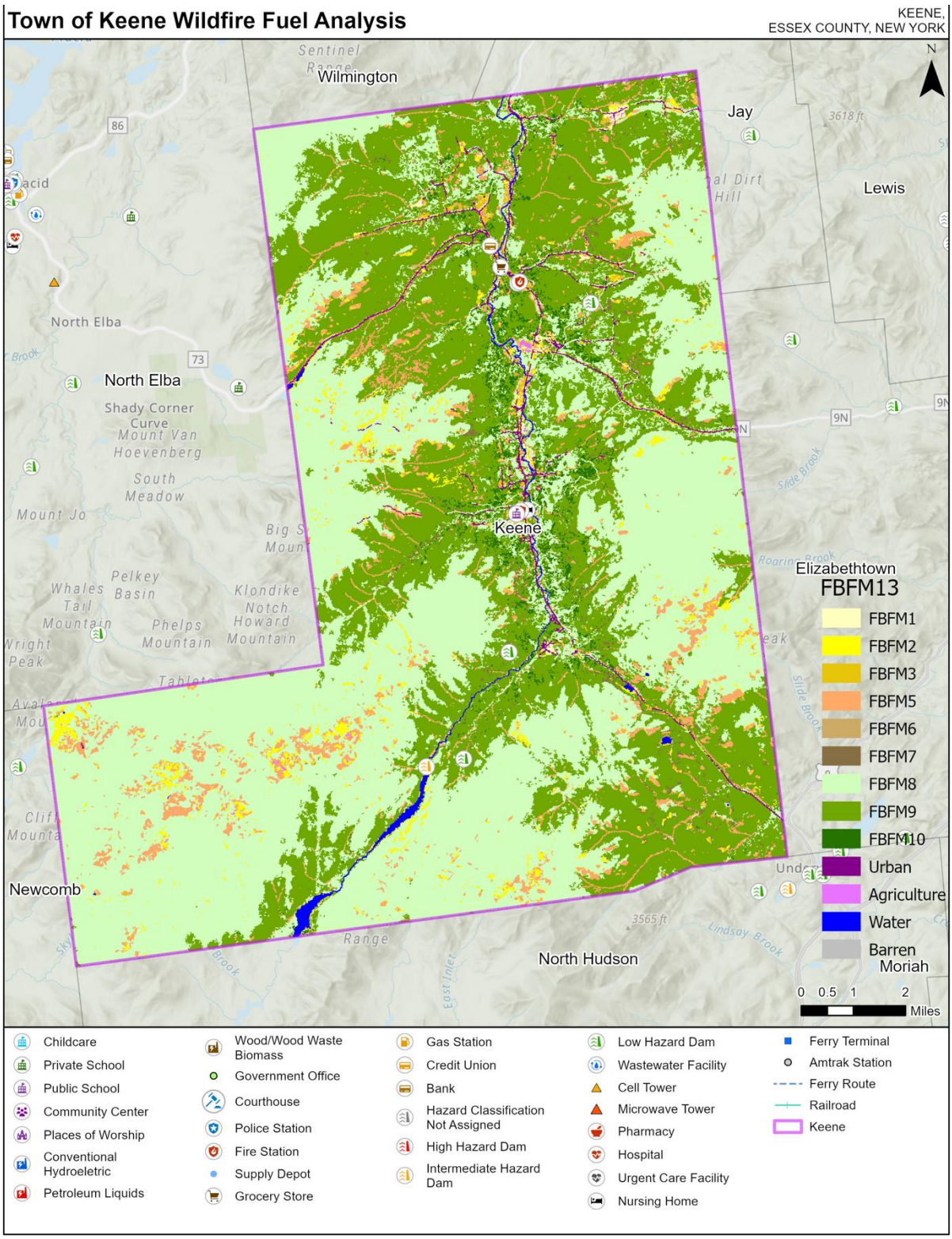


Figure 63. Wildfire Fuel Analysis: Town of Keene

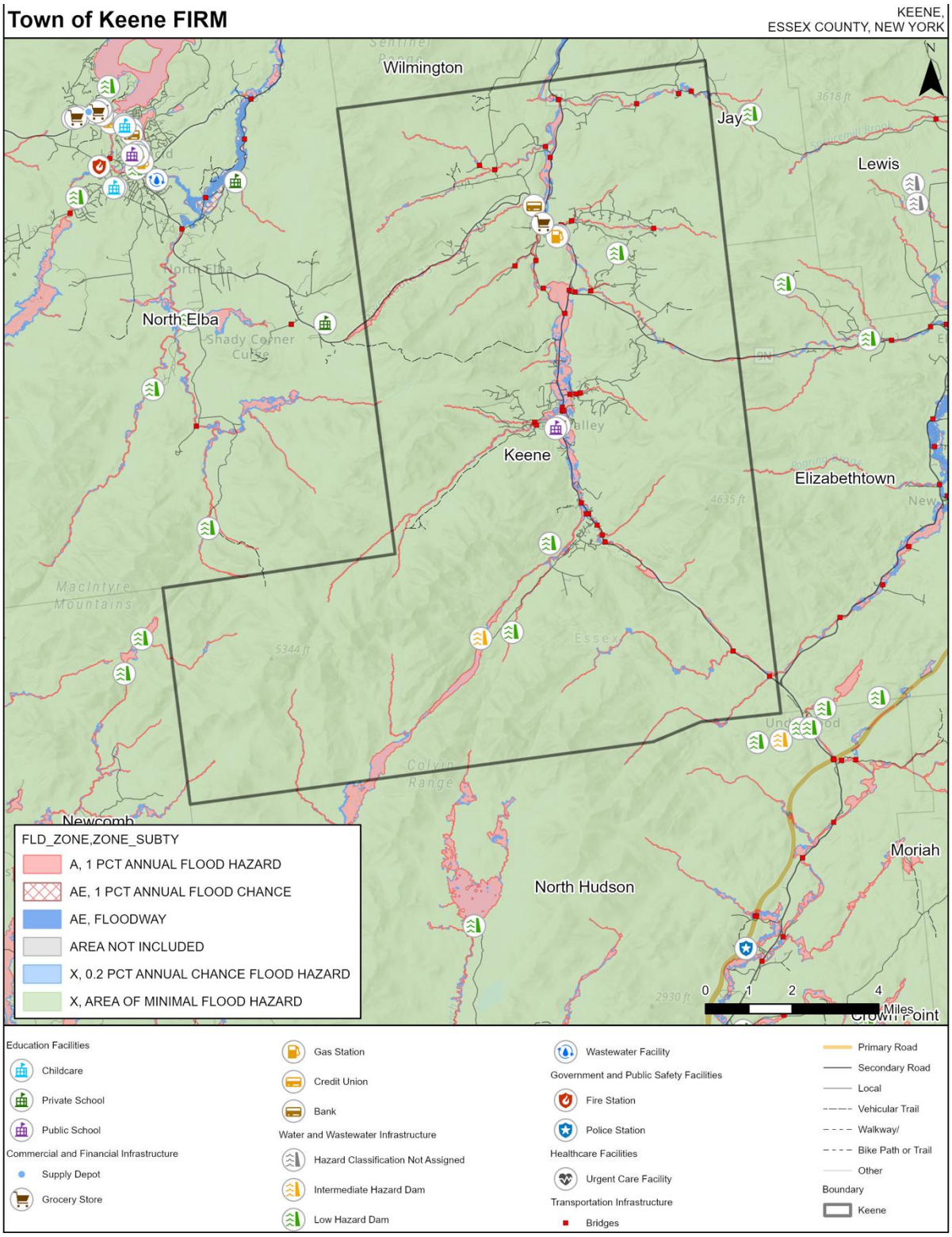


Figure 64. Floodplains: Town of Keene

Potential Loss

Keene's potential loss was calculated using data from the Essex County Real Property website, which provided parcel information for each jurisdiction. The data was analyzed to determine the

number and value of structures within each of the nine class codes. The total number of structures and their corresponding values were then aggregated by class. To estimate potential losses from a hazard event, calculations assumed that 10 percent of all structures in the jurisdiction would be affected. Potential financial loss was estimated at 10 percent of the total value of structures in each class code.

Essex County Real Property Tax Services classifies real property into nine property class codes:

- 100 Agriculture
- 200 Residential
- 300 Vacant Lands
- 400 Commercial
- 500 Recreation and Entertainment
- 600 Community
- 700 Industrial
- 800 Public Services
- 900 Forest, Conservation Lands and Parks

Table 162. Town of Keene Potential Loss

Class Code	Number of Structures	Structure Values	Number of Structures Impacted	Potential Loss
100	0	0		
200	994	$363,020,640	99	$36,302,064
300	542	$47,133,707	54	$4,713,370
400	42	$15,532,400	4	$1,553,240
500	9	$12,093,901	1	$1,209,390
600	25	$22,342,400	2	$2,234,240
700	2	$394,900	1	$3,949
800	22	$5, 998,914	2	$599,891
900	250	$119,579,849	2	$11,957,984

Mitigation Strategy

The mitigation strategy outlined in the 2019 plan was reviewed to assess project status and completion. New mitigation projects were identified for inclusion in the 2025 plan update. These projects are detailed in the table below. As part of the plan update, projects were prioritized as High, Medium, or Low. High priority projects focus on ensuring that towns and villages remain

DRAFT

fully functional during disasters. Medium and Low priority projects strive to improve municipal operations and address the needs of residents. Project implementation depends on available funding. Any project may move forward as funding, political support, and other necessary factors align.

Estimated costs for proposed mitigation projects were determined and included in the table below. Costs were categorized as High, Medium, or Low, depending on the financial resources required for implementation.

Table 163. Mitigation Strategies: Town of Keene

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
1. Halls Falls Road Washout	2,4,5	Raise road height: Hulls Falls Road Eliminate road washout, possible road closure	Floods	Town Supervisor/Board Town Hwy Dept County DPW	$90K	Complete Spring 2018	Town FEMA	Medium	Structure & Infrastructure
2. Town Culvert Replacement	2,4,5	Replaced & upgraded culverts throughout town	Floods	Town Supervisor/Board Town Hwy Dept County DPW	Varies by culvert	Completed	Town, FEMA	High	Structure & Infrastructure projects
3. Residential Homes – Acquire 3 private homes & property cleared of all development	2,4	Buyout, Mitigation risk to residents	Floods	County DES Town	Varies by structure	Completed	FEMA HMGP OR PDM	High	Structure & Infrastructure projects
4. Gulf Brook Phase I	2,4,5	Stream restoration, mitigate flooding in	Flooding	GOSR	High	Completed 2013	GOSR	High	Natural resources protection projects

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
		down-town Keene							
5. Gulf Brook Phase 2 & 3	2,4,5	Stream restora-tion, Mit-igate flooding in down-town Keene	Flooding	GOSR	High	Phase 2 starting now 1-10 years to complete	GOSR	High	Natural re-sources protec-tion pro-jects
6. Bridge replace-ments	2,4,5	Replace, widen, & raise bridges, protect transpor-tation & reduce flooding damage	Flooding	Town Super-visor/Board Town Hwy Dept County DPW	High	1-5 years	GOSR, EC DPW	Me-dium	2 Struc-ture & Infra-struc-ture
7. Rural Roads Active Manage-ment Program	2,4,5	Stream work & stabiliza-tion pro-ject	Floods	Town Super-visor/Board Town Hwy Dept County DPW	Funded by FEMA & Gover-nor's Of-fice	In-pro-cess	FEMA, NYS	High	Infra-struc-ture & Natural resource protec-tion pro-ject
8. Beed Brook Flood Mitiga-tion	2,4,5	Stream work & stabiliza-tion pro-ject	Floods	Town Super-visor/Board Town Hwy Dept County DPW	Funded by FEMA & Gover-nor's Of-fice	In-pro-cess	FEMA, NYS	Me-dium	Struc-ture & infra-struc-ture, natural re-sources project
9. John Brook Mitiga-tion Pro-ject	2,4,5	Restora-tion of second-ary chan-nel in creek	Floods	Town Super-visor/Board Town Hwy Dept County DPW	Funded by FEMA & Gover-nor's Of-fice	In-pro-cess	FEMA, NYS	Me-dium	Struc-ture & infra-struc-ture, natural re-sources project

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
10. Bridge Replacement	2, 4 & 6	Widen bridge, raise, reduce floods to homes	Floods	Town Supervisor/Board Town Hwy Dept County DPW	FEMA, Governor's Office	Completed (1-5 years)	GOSR, EC DPW	Medium	Structure & Infrastructure
11. DEC Smart Growth Project	3,4,5		Floods	Town Supervisor/Board	DEC	In-progress	NYS	High	Structure & Infrastructure, natural resources project
12. Buy out structures impacted by previous/future floods on 9N or route 73	2,3,4	Purchase structures impacted by floods & other hazards	Flooding	Town Supervisor/ Board/County	Medium	1-5 years	FEMA HMGP	High	Structure & Infrastructure
13. Gulf Book Restoration Project	2,4,5	Expand Gulf Brook to increase capacity	Flooding	Town Au Sable River Watershed Assn	$1M	1-5 years	NYS GOSR	High	Natural resource protection project
14. Keen Master Plan	2,4,5	Update town master plan	All	Town Supervisor	$100K	1-5 years	NYS DOS	High	Plans & regulations
15. Implements Best Management Projects in Town	2,3,4,5	BMP for debris removal, bank stabilization	Flooding	Town Au Sable River Watershed Assn	Medium	1-10 years Year 1-5 Obtain funding Year 6-10 Implement project	NYS DOS	High	Natural resource protection project
16. East Branch	2,4,5	Study entire	Flooding	Town	High	1-10 years	NYS GOSR	High	Natural resource

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
Au Sable River Whole System Project		creek for flood solutions		Au Sable River Watershed Assn		Year 1-5 Obtain funding Year 6-10 Implement project			protection project
17. Obtain LIDAR for Keene	2	LIDAR for use in grant & other projects	All	Town Supervisor	High	1-5 years	NYS GOSR, FEMA	High	Plans & Regulations
18. Town Hall Generator	1,2,4,5	Obtain generator for Town Hall	All	Town Supervisor	Medium	1-5 years	NYS GOSR, FEMA	High	Structure & Infrastructure Project
19. Parking Lot 1	2,4,5	Correct Parking Lot – Garden Keene Valley from Erosion Impact	Erosion	DPW Engineering	High	1-5 years	NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants, US DOT Bridge Investment Program	Medium	Structure & Infrastructure Project
20. Road 1	2,4,5	Correct Garden Road Keene Valley from Erosion Impact	Erosion	DPW Engineering	High	1-5 years	NYS Empire State Development (ESD) Infrastructure Grants, BRIC,	Medium	Structure & Infrastructure Project

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
							FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants, US DOT Bridge Investment Program		
21. Point Park	2,4,5	Correct Laight Hall Lane Keene Valley from Erosion Flooding	Flooding/Erosion	DPW Engineering	High	1-5 years	NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants, US DOT Bridge Investment Program	Medium	Structure & Infrastructure Project
22. Whitney Park	2,4,5	Correct Rt 73 Keene Valley (just past the rock) from Erosion Flooding	Flooding/Erosion	DPW Engineering	High	1-5 years	NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA	Medium	Structure & Infrastructure Project

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
							Rural Development Water Grants, US DOT Bridge Investment Program		
23. The Beach	2,4,5	Correct Rt 73 Keene from Erosion Flooding	Flooding/Erosion	DPW Engineering	High	1-5 years	NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants, US DOT Bridge Investment Program	Medium	Structure & Infrastructure Project
24. The Holt House	2,4,5	Correct Rt 73 Keene from Flooding	Flooding	DPW Engineering	High	1-5 years	NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants,	Medium	Structure & Infrastructure Project

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
							US DOT Bridge Investment Program		
25. Laight Hall Road	2,4,5	Flooding of bridge due to scour	Flooding	DPW Engineering	High	1-5 years	NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants, US DOT Bridge Investment Program	Medium	Structure & Infrastructure Project
26. CEMP	3,4,5	Development of a comprehensive emergency management plan (CEMP	All	Town Supervisor	Low	1-5 years	FEMA HMPG	Low	Plans & Regulations
27. Back-Up Well	2,4	Back Up Well for secondary source of water	Flooding	DPW Engineering	High	Completed 2019	FEMA HMPG, NYS	High	Structure & Infrastructure Project

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
27. Morrison Road Bridge	2,4,5	Flooding of bridge due to scour	Flooding/Erosion (Scour)	DPW Engineering	1.5 Million High	New Project -1-5 Years	NYS Department of Transportation (NYSDOT) BRIDGE NY Program, NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants, US DOT Bridge Investment Program	Medium	Structure & Infrastructure Project
Keene Fire Station	2	Plan relocation outside of 500-year flood plain	Flooding	Town Supervisor/ Board/ Fire	TBD – High	New Project – Year 1-5 Planning Year 5-10 Complete	NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants,	Low	

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
Keene Water Plant	2	Build Berm or other-wise mitigate flooding risk	Flooding	Town Super-visor/ Board	TBD -Med	New Pro-ject – Year 1-5 Planning Year 5-10 Complete	NYS Em-pire State Develop-ment (ESD) In-frastruc-ture Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Ru-ral Devel-opment Water Grants	Low	

Keene will continue actively implementing projects and programs to mitigate the hazard impacts. Flooding remains a persistent challenge due to the Au Sable River flowing through its boundaries. To reduce vulnerability, the town must enforce floodplain ordinances, ensuring that new development is constructed to withstand flood events. Strict adherence to building codes will help minimize damage from wind–related hazards. Wildfire mitigation efforts will continue through existing fire suppression programs led by the Department of Environmental Conservation (DEC).

Annex G: Town of Lewis

Profile

The Town of Lewis covers approximately 84 square miles with population estimated at around 1,300 as of recent estimates. Named after Morgan Lewis, a former governor of New York, the town is rich in both history and natural beauty.

Geographically, the western part of Lewis is dominated by mountains exceeding elevations in excess of 2,000 feet, creating a rugged and rural landscape. As you move eastward, the terrain transitions into a central plain, gradually sloping toward the Champlain Valley. Town waterways drain into the Boquet River to the east and southeast, and northward into Trout Pond Brook and the Au Sable River.

The town supports several small businesses, though many residents commute to facilities in Lewis or nearby Elizabethtown for employment. For healthcare services and larger commercial needs, residents frequently travel to Elizabethtown or other neighboring communities. Lewis benefits from convenient transportation access, with two major north–south routes—Interstate 87 (I-87) and State Route 9—providing easy connections to surrounding towns and counties.

Historically, iron mining played a crucial role in the local economy, with communities like Stowersville and Deerhead serving iron production hubs. The town holds historical significance with the First Congregational Church and Cemetery, added to the National Register of Historic Places in 2005. A notable figure in Lewis' history is Inez Milholland Boissevain, a leading suffragist, labor lawyer, and World War I correspondent. A summer resident of Lewis, she is buried in the town's cemetery. Her family's property now houses the Meadowmount School of Music, a prestigious institution that trains aspiring musicians.

Table 164. Table of Facts: Town of Lewis

Fact	Description
Land Area	84 sq. miles/54,542.7 acres
Incorporated Village(s)	None
Hamlets	Lewis Village, Stowersville, & Deerhead
Population Census	1,180 (2020)/1300 (actual)
Governance	Town
Total Assessed Valuation	$221,397,669
Highest Elevation	Saddleback Mountain
Largest Lake	NONE
River(s)	Boquet, N. Branch Boquet, Black Brook & Spruce Mill Brook
Dams	None (2 waiting for DEC to remove)
Bridges	9 Bridges (locations)

DRAFT

Fact	Description
Interstate Highway	I–87 (Northway) passes through, with access at Exit 32/southeastern edge of town.
State Routes	NY Route 9
County Roads	County Route 10, 12, 14 & 53
Land Classified Industrial/Logging	703.6 acres
Land Classified Residential, as Hamlet	104.3 acres
Hospital/Medical Facility	Nearest hospital: Elizabethtown Community Hospital
Fire & Rescue	Volunteer Fire Department, Lewis Fire Department, Elizabethtown Lewis EMS
Schools	Boquet Valley School District
Railroads	None
Passenger Trains/Day	None
Freight Trains/Day	None
Ferry Dock(s)	None
Interstate Bridge	None
Largest Employer	Essex County/ACAP
Law Enforcement	NYSP & Essex County Sheriff's Department
Correctional Facility	Essex County Correctional Center
Power Utility Provider(s)	New York State Electric & Gas (NYSEG)
Water Supply Source(s)	Town & Private Groundwater wells & local sources.
Emergency Shelters	Firehouse
Critical Facilities	Firehouse, Water Source (Ground Wells)

Notable Updates

Lewis has implemented several initiatives to strengthen its resilience against both natural and man–made hazards, prioritizing infrastructure, emergency preparedness, and climate adaptation. Key improvements include repair and upgrade of essential bridges and roads to minimize flooding and heavy rainfall damage. The town replaced undersized culverts to improve water flow management during extreme weather events, reducing the risk of localized flooding.

Flood mitigation measures were prioritized, including upgrades to drainage systems to manage spring snowmelt and intense rainstorm runoff. The town enhances floodplain management practices by revising zoning and land use policies to restrict development in high-risk areas, particularly near water bodies. These measures help minimize property damage while protecting residents in vulnerable zones.

In terms of emergency preparedness, Lewis is allocating more resources for storm response, ensuring roads are quickly cleared and accessible during winter storms. To address frequent power outages, the town is investing in backup generators for critical facilities to maintain essential services during prolonged disruptions.

Climate adaptation strategies are being implemented to address evolving risks like wildfires and droughts. The town is strengthening local firefighting capabilities and introducing water conservation measures to ensure adequate resources during prolonged dry conditions. These actions are designed to mitigate growing threats posed by climate change, protecting Lewis' natural and man–made environments.

Community engagement is another key focus for Lewis. Public awareness campaigns are being developed to educate residents about emergency preparedness and response plans for severe weather and public health risks. Regular community meetings provide updates on hazard mitigation projects and progress, fostering community transparency and collaboration.

Together, these updates reflect Lewis' commitment to building a safer and more resilient community. These proactive measures address current vulnerabilities while laying the groundwork for long–term sustainability and preparedness.

Planning Process

The town initially took part in a Hazard Mitigation Survey, followed by an in-person Stakeholder Hazard Mitigation Introduction Meeting. Subsequently, the Town Supervisor received a copy of the town's section of the county plan for review and revisions, meeting with the contractor on October 7, 2024, to update its portion of the county plan. The Town Supervisor participated in county-level meetings related to the plan and attended a final mitigation strategy meeting.

Capability Assessment

Lewis conducted a capability assessment as part of the 2025 plan update. Lewis has a town comprehensive plan (reviewed annually), floodplain regulations, a comprehensive emergency management plan, building codes, and fire codes. The APA approves planning proposals outside Lewis. Collectively, these regulatory measures ensure that new development is both hazard–resistant and aligned with sustainable growth objectives. Through an assessment of its planning capability, the town recognizes that these mechanisms play a critical role in mitigating potential hazards and fostering long–term community resilience.

Table 165. Planning Documents: Town of Lewis

Planning Documents
Town Comprehensive Plan
Floodplain Regulations
Comprehensive Emergency Management Plan
Building Codes
Fire Codes

DRAFT

Lewis evaluated administrative and technical capabilities, identifying key areas where it relies on support from Essex County agencies. Community Resources provides assistance with planning, while the Department of Public Works offers engineering expertise. The Department of Emergency Services supports emergency management efforts, and Real Property assists with GIS services. Community Resources also aids in grant writing. These county agencies and staff play a crucial role in supplementing Lewis's local resources.

This hazard mitigation plan should be integrated into other existing plans in Lewis. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration helps ensure all enabling legislation to have similar information in those documents. Integration can ensure consistency between enabling legislation.

Lewis assessed financial capabilities, identifying key funding sources like Community Development Block Grants, water fees, general tax revenues, and partnering agreements to supplement town resources for various projects.

Education and outreach capabilities was also assessed. In 2024, Lewis participated in disaster preparedness training for town staff in collaboration with the county. The town used articles on its website for public outreach to engage residents. Lewis also collaborated with the Adirondack Community Action Program, a private partnership focused on risk reduction projects and programs.

The town ranked its capabilities in four key areas. Planning and regulatory, financial, and administrative/technical capabilities were rated High, primarily due to the town's ability to leverage county agency support. Without this assistance, staffing and financial limitations would result in lower rankings. Education and outreach capabilities were ranked Moderate, reflecting room for further development in community engagement efforts.

Critical Facilities

Flood vulnerabilities to critical facilities were assessed as the plan was updated. The table below describes if these facilities are located in the 500–year floodplain, if the facility has been flooded in the past, and if any kind of mitigation was completed to reduce the flood potential of these structures. Generator capabilities were also assessed to determine if these facilities could function without electric power—a common issue for critical facilities during disaster events.

Table 166. Critical Infrastructure in Floodplain: Town of Lewis

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Emergency Operations Center	No	No	No	Yes
Power Substation	No	No	No	Yes
Communication Center	No	No	No	Yes

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Day Care Center	No	No	No	No
Drinking Water Plant	No	No	No	Yes

No critical facilities in Lewis are located in the 500–year floodplain. The police station, emergency operations center, power substation and communication center have generators for backup power. The day care center, drinking water plant and wastewater plant do not have generators.

Lewis designated four locations for use as temporary housing sites following a disaster: Town Highway Department land, Fire Department land, Lewis Fish and Gun Club land, and the IMERYS Minerals property. Two of these sites are public while two are private land areas. All sites have power and water. Lewis has one ARC Shelter in town (Lewis Fire Department).

Table 167. Housing for Displaced Residents: Town of Lewis

Facility	Type of Housing
Lewis Fire Department	ARC Shelter (small)

National Flood Insurance Plan (NFIP) Summary

The following information pertains to flood–vulnerable structures in Lewis. The actual number of structures in flood–prone areas is likely higher than the number of insured properties. Once FEMA updates the Flood Insurance Rate Maps (FIRMs), the new maps will provide a more accurate count of structures located within the floodplain.

Table 168. Flood Insurance: Town of Lewis

Policies	2011	2018	2024	Total Amount of Claims
Policies	2	1	1	$81,086
Number of Repetitive Loss Structures	0	0	-	-

Lewis will continue to actively manage floodplains to mitigate future flood risks. New development within special flood hazard areas will be carefully reviewed and approved to ensure compliance with the local floodplain ordinance. As FEMA updates the Flood Insurance Rate Maps (FIRMs), the town will hold meetings with floodplain managers, town supervisors, and village mayors to provide training on the National Flood Insurance Program (NFIP). These meetings will also serve as a forum to discuss compliance requirements and best practices for floodplain management. Floodplain managers from the most vulnerable communities will be encouraged to join

DRAFT

the New York State Floodplain and Stormwater Managers Association (NYSFSMA) to enhance expertise in managing flood–prone areas.

Hazard Identification & Ranking

Table 169. Hazard Ranking: Town of Lewis

Hazard Ranking	Hazards
HIGH	• High Winds • Winter Storms • (Rain) Storms
MEDIUM	• Drought • Earthquakes • Floods • Ice Storms
LOW	• Avalanches • Extreme Temperatures • Hailstorms • Hurricanes • Land Subsidence & Expansive Soils • Landslides • Wildfires • Rail Events

Hazard Event History

Table 170. Hazard Events: Town of Lewis

Hazard	Event	Year	Impact on Lewis
Flooding	Heavy rain floods	2011	Significant road & culvert damage occurred along key routes like Route 9 & local access roads. Low–lying areas experienced inundation, impacting farms & homes.
	Spring floods	2024	Snowmelt combined with heavy rainfall caused erosion & localized flooding, straining stormwater systems.
Winter Storms & Cold	Ice storm	1998	Prolonged power outages left Lewis residents without electricity for weeks, disrupting heating & communication systems. Roads were blocked by fallen trees & ice.
	February blizzard	2024	Heavy snowfall hindered transportation, requiring emergency services to assist stranded vehicles & clear critical roadways.

Hazard	Event	Year	Impact on Lewis
Severe Thunderstorms	Summer thunderstorms	Recurring	High winds & lightning caused tree damage, downed power lines, & temporary outages.
Earthquakes	Adirondack regional quake	2002	Minor tremors caused structural inspections for older buildings, though no significant damage was reported.
Wildfires	Forest fires	1903	Nearby wildfires posed a threat to rural & forested parts of Lewis, requiring monitoring & community alerts.
	Summer fires	2024	Small brush fires fueled by drought conditions were contained quickly by local fire services.
Transportation	Road & culvert damage	Recurring	Frequent flooding damaged smaller culverts, creating issues for farm–to–market roads & access to hamlets.
Power Outages	Ice storm	1998	Long–term outages caused reliance on emergency generators & disrupted services for weeks.
	Thunderstorm outages	Recurring	Summer storms caused outages in rural areas due to fallen trees & damaged power infrastructure.
Drought	Prolonged dry conditions	2024	Water shortages stressed private wells & agricultural operations, raising wildfire risks.
Public Health	Lyme disease	Recurring	High tick populations in the rural & wooded landscape led to increased cases of tick–borne diseases.
	COVID–19 Pandemic	2020+	Local healthcare resources were stretched thin, & emergency planning improved to address future pandemics.

Hazard Analysis

Lewis faces ongoing severe weather, flooding, winter storm, and power outage risks. The town's rural setting heightens infrastructure resilience and emergency response challenges, making mitigation efforts—like road improvements, stormwater management, and public health preparedness—critical for community safety. In July 2024, the town sustained severe impacts from the remnants of Tropical Depression Six, which brought heavy rainfall and strong winds to the area. The storm caused significant damage to roadways, culverts, and a key bridge, with total repair and restoration costs estimated at $738,000. Efforts are currently underway to secure funding and implement recovery measures, ensuring infrastructure is rebuilt to better withstand future extreme weather events.

Severe winter storms are a recurring hazard, with heavy snowfall, blizzards, and ice storms leading to hazardous road conditions, power outages, and disruptions to daily life. Flooding is another significant risk, with spring thaws and heavy rains often cause local rivers and streams to

DRAFT

overflow, resulting in damage to property and infrastructure, as well as risks to residents. Lewis experienced major regional events like Hurricane Irene in 2011, which caused widespread flooding, road closures, power outages, and property damage throughout Essex County. While specific impacts on Lewis are not well documented, the storm underscored the regional vulnerability to hurricanes and tropical systems.

The 1998 ice storm (one of the most severe in recent history) brought widespread power outages, downed trees, and damaged power lines to much of upstate New York including Essex County. These historical events reflect broader weather patterns affecting upstate New York, highlighting the importance of preparation and mitigation efforts. Lewis continues to prioritize measures that enhance resilience and reduce the impacts of natural disasters, working toward a safer and more sustainable future for the community.

Hazard Mapping

Once FEMA updates Flood Insurance Rate Maps (FIRMs), these maps will provide a more accurate assessment of the number of flood–vulnerable structures.

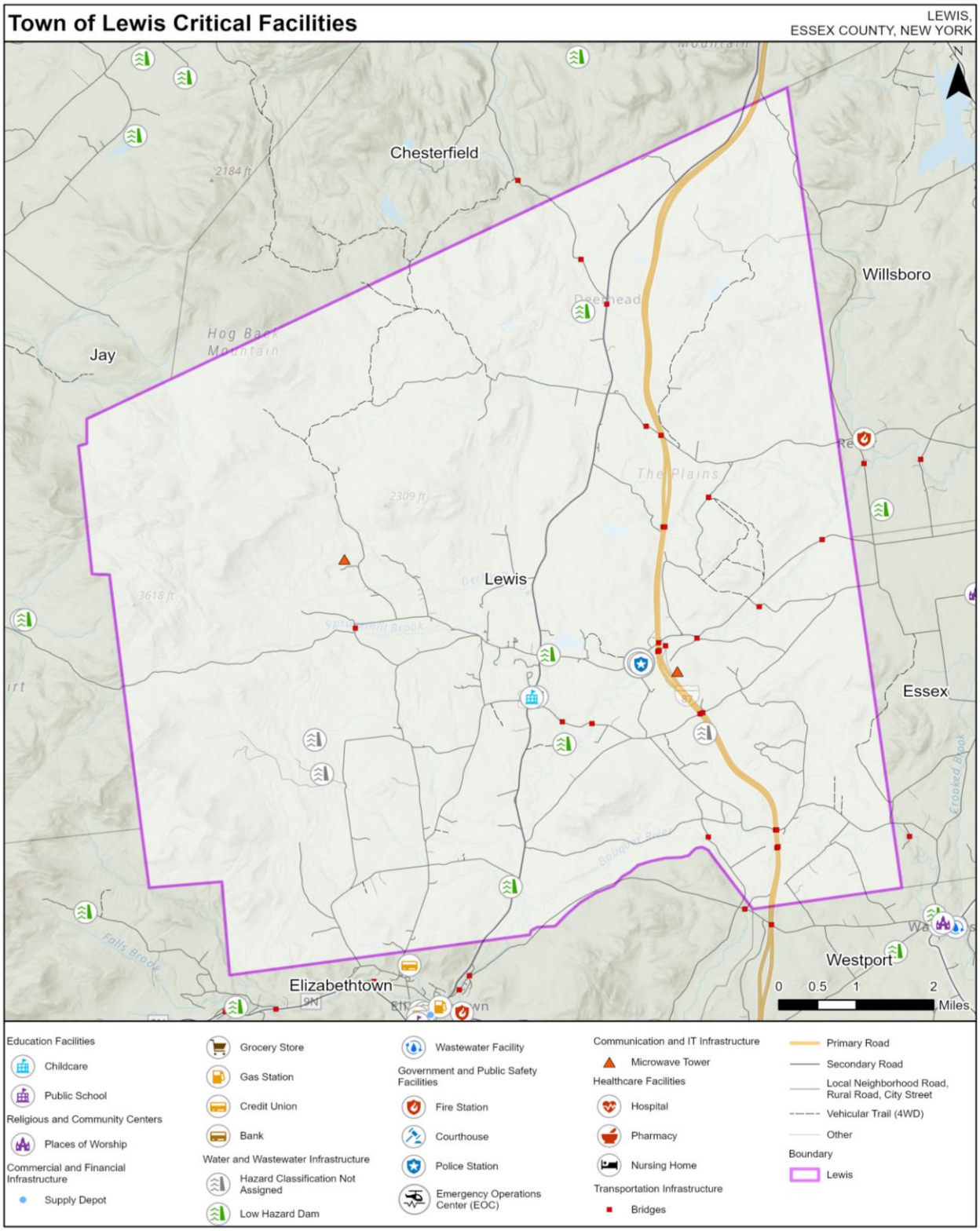


Figure 65. Critical Facilities: Town of Lewis

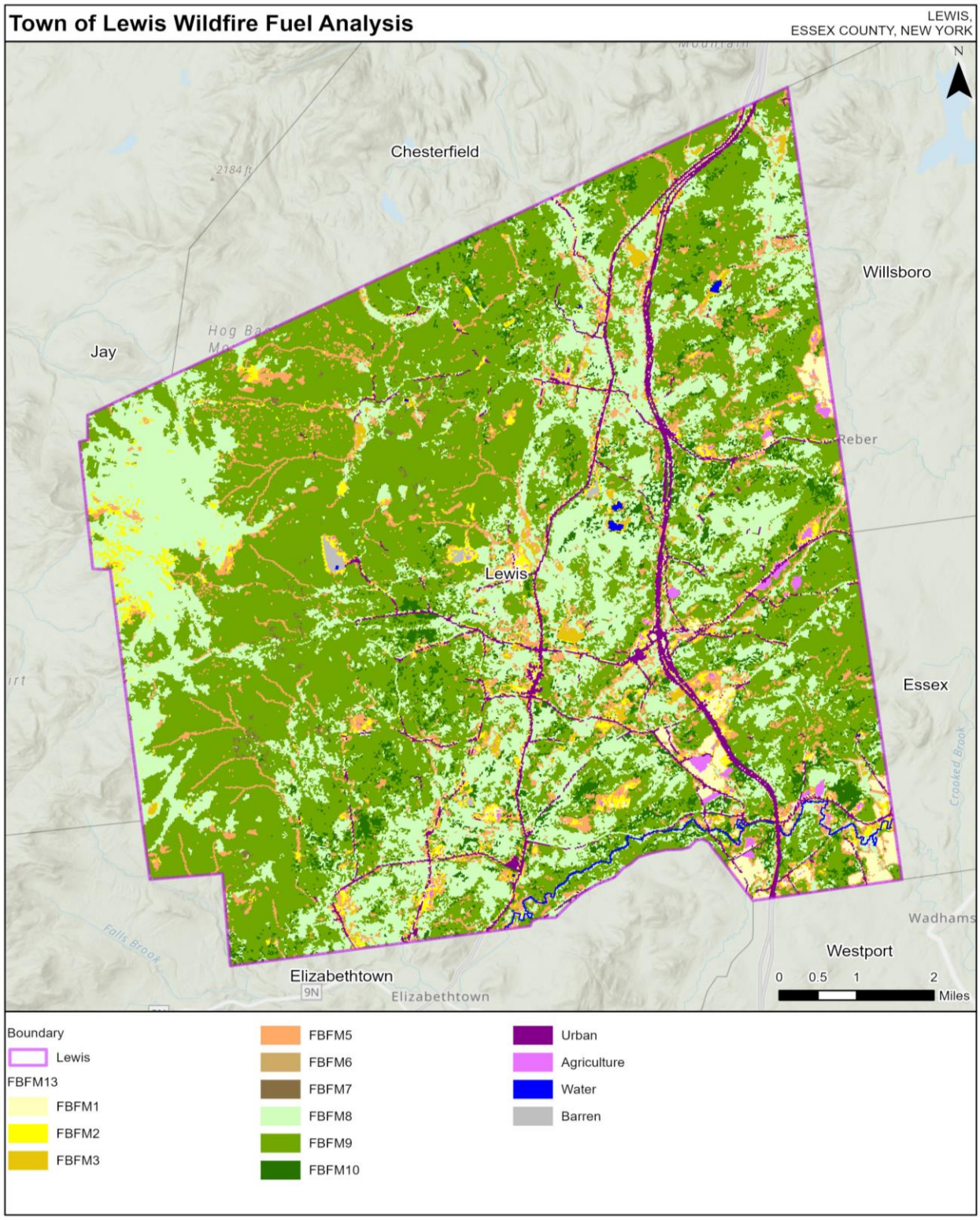


Figure 66. Wildfire Fuel Analysis: Town of Lewis

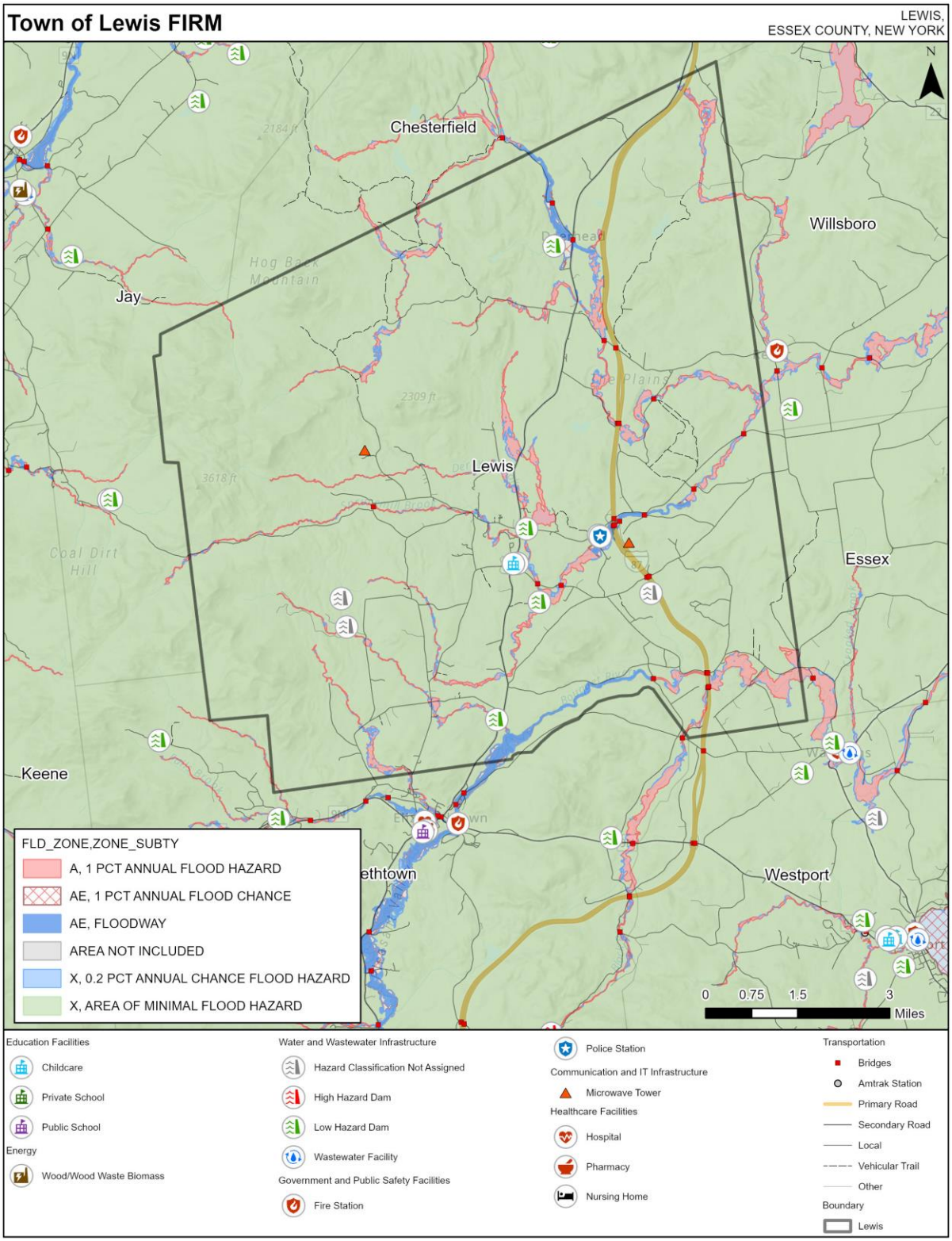


Figure 67. FIRM: Town of Lewis

Potential Loss

Potential loss was calculated for Lewis using data from the Essex County Real Property website, which provided parcel information. The data was analyzed to determine the value of properties within each of the nine class codes, then totaled for each category. To estimate potential losses from a hazard event, calculations assumed 10% of the total properties in each class code would be affected. Similarly, the financial impact was estimated as 10% of the total property value within each class code.

The Essex County Real Property Tax Services website categorizes real property into nine class codes:

- 100 Agriculture
- 200 Residential
- 300 Vacant Lands
- 400 Commercial
- 500 Recreation and Entertainment
- 600 Community
- 700 Industrial
- 800 Public Services
- 900 Forest, Conservation Lands and Parks

Table 171. Potential Loss: Town of Lewis

Class Code	Number of Structures	Structure Values	Number of Structures Impacted	Potential Loss
100	7	$459,000	0	$45,900
200	578	$111,774,000	57	$11,177,400
300	326	$12,801,774	32	$1,280,177
400	17	$3,265,600	1	$326,560
500	4	$321,500	0	$32,150
600	18	$41,945,500	1	$4,194,550
700	7	$5,498,800	0	$549,880
800	31	$18,265,143	3	$1,826,514
900	210	$26,114,771	21	$2,611,477

Mitigation Strategy

The mitigation project outlined in the 2019 plan was reviewed to determine its completion status, and new mitigation projects were identified for inclusion in the 2025 plan update. These updated projects are detailed in the table below. As part of the plan update, projects were prioritized into

High, Medium, and Low categories based on their significance and impact. High priority projects focus on ensuring towns and villages remain fully functional during disasters, while Medium and Low priority projects strive to enhance municipal operations to address community needs. Project implementation will depend on available funding, political support, and other influencing factors, with any project potentially moving forward as resources become available.

The costs of proposed mitigation projects were assessed and categorized accordingly. Some projects include specific cost estimates, while others are ranked as High, Medium, or Low cost based on expected financial requirements. The table below provides further details on these assessments.

Table 172. Mitigation Strategies: Town of Lewis

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
1. Replace culverts on DPW list.	2,4,5	Replace culverts that are undersized using PDW data for specific culverts	Floods	Town Hwy Dept	Low	1-5 years	Town, County DPW	Medium	Structure & infrastructure projects
2. Continue proper maintenance of culverts	2,4,5	Clean culverts & maintain culvert system	Floods	Town Hwy Dept	Low	1-5 years & ongoing	Town budgets	High	Structure & infrastructure
3. Agricultura Drainage Improvements	2,4,5	Improve agricultural resilience to flooding	Floods	Essex County Soil and water	$150,000/ Medium	New Project/ 1-5 years	USDA, Agricultural Grants	Medium	Structure & infrastructure
4. Public Safety Bldg Water Issues	2,4	Improve water reliability by installing water system as a backup to provide clean	Flooding	DPW Engineering	$400, 000, Medium	New Project/ 1-5 years	Essex County, NYS Environmental Facilities Corporation (EFC) Grants, NYS Department of Environmental	High	Structure & infrastructure

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
		drinking water					Conservation (DEC) Water Quality Improvement Program (WQIP)		
5. Town of Lewis Water System	2,4	Resiliency of Drinking water	Flooding	Town Supervisor/ DPW Engineers	New Project/High	1-5 years	NYS Environmental Facilities Corporation (EFC) Grants, NYS Department of Environmental Conservation (DEC) Water Quality Improvement Program (WQIP)	Medium	Structure & infrastructure
6. Crowning Shield Road Bridge	2,4,5	Correct, repair damage due to Flooding of bridge due to scour	Flooding/Erosion (Scour)	DPW Engineers	New Project/High	Ongoing/1-5 years	NYS Department of Transportation (NYSDOT) BRIDGE NY Program, NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development	Medium	Structure & infrastructure

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
							Water Grants, US DOT Bridge Investment Program		

Lewis will continue actively implementing projects and programs to mitigate the hazard impacts. The floodplain ordinance will remain in effect to ensure all new construction is designed to resist flood damage. Building codes will continue to be enforced to minimize structural damage from wind–related events. The town will also maintain fire suppression programs, led by the Department of Environmental Conservation (DEC), to support ongoing wildfire mitigation efforts.

DRAFT

Annex H: Town of Minerva

Profile

The Town of Minerva is a picturesque rural community known for its natural beauty and tranquil environment located in the heart of the Adirondack Mountains in Essex County. Established in 1817, the town is steeped in history with a legacy deeply connected to its scenic landscape and resource–based heritage. Minerva is a haven for outdoor enthusiasts, offering pristine forests, sparkling waterways, and abundant recreational opportunities that make it a cherished destination for visitors and a peaceful home for residents.

Geographically, Minerva spans approximately 164 square miles of rugged terrain, dense forests, and waterways, including the Hudson and Boreas Rivers. Situated in the southern part of Essex County, the town is surrounded by neighboring communities like Newcomb and North Creek. Its elevation ranges from 1,200 feet to over 3,000 feet in the nearby High Peaks region, creating a dynamic environment perfect for hiking, snowshoeing, and other outdoor activities. Minerva experiences a humid continental climate, with cold, snowy winters and mild summers, making it a seasonal hub for tourism.

Minerva is home to a small, close–knit population of approximately 800 residents. The community reflects the Adirondack spirit of neighborly support and camaraderie. Historically, the local economy was rooted in forestry, mining, and agriculture, but has since transitioned toward tourism and outdoor recreation. Local businesses including lodges, cafes, and craft shops, cater to visitors exploring Minerva's scenic offerings like Minerva Lake and Beach, a favorite spot for swimming, fishing, and kayaking.

The town is governed by a Town Board led by a Supervisor, focusing primarily on providing essential services like public works, fire protection, and emergency services. Recent efforts emphasized infrastructure improvements to address hazards like flooding and severe winter storms. Education in Minerva is provided by the Minerva Central School District, offering K-12 education in a small, community–oriented setting. The district emphasizes outdoor and experiential learning, fostering a strong connection to the local environment.

Community life in Minerva is vibrant, with residents actively participating in events and festivals celebrating the town's heritage and culture. The Minerva Historical Society plays a crucial role in preserving the town's rich history, while annual events like craft fairs and farmers' markets bring residents and visitors together to share in its unique charm.

Like many rural Adirondack communities, Minerva faces challenges like population decline, economic diversification, and infrastructure maintenance. It holds opportunities to enhance its appeal through ecotourism, recreational development, and attracting remote workers seeking a serene and scenic lifestyle. With its breathtaking natural beauty, strong community ties, and potential for growth, Minerva is a unique blend of history, adventure, and tranquility, making it a special place to visit or call home.

Table 173. Table of Facts: Town of Minerva

Fact	Description
Land Area	158 sq. miles/101,534.6 acres

Fact	Description
Incorporated Village(s)	None
Hamlets	Minerva & Olmstedville
Population Census	773 (2020 Census)
Governance	Town
Total Assessed Valuation	$178,397,330
Highest Elevation	Fishing Brook Mountain–3,550’
Largest Lake	Third Lake
River(s)	Boreas, Hudson, Minerva & Trout Brook
Dams	7
Bridges	9 County Road
Interstate Highway	None
State Routes	28N
County Roads	2, 24, 34 & 37
Land Agriculture Use	156.18 acres
Land Classified Industrial	None
Land Classified Residential, as Hamlet	582.8 acres
Hospital/Medical Facility	None
Fire & Rescue	Minerva Volunteer Fire & Rescue
Schools	Minerva Central
Railroads	Delaware & Hudson(discontinued)
Passenger Trains/Day	None
Freight Trains/Day	None
Ferry Dock(s)	None
Interstate Bridge	None
Largest Employer	Minerva Central School
Law Enforcement	NYSP & County Sheriff
Correctional Facility	None
Power Utility Provider(s)	National Grid
Water Supply Source(s)	Town Water System & private wells
Emergency Shelters	Minerva Central School

Notable Updates

Minerva actively addresses key hazards through targeted projects and updates to community infrastructure and services. Recent efforts focus on mitigating flooding risks, enhancing public

DRAFT

safety, and preparing for climate–related challenges. Flood management and infrastructure improvements were prioritized. The town actively replaces and maintains culverts to mitigate erosion and improve stormwater flow during heavy rainfall and spring snowmelt. Significant progress was made in town water system upgrades, addressing issues like service line leaks to ensure better water management. Efforts to remove invasive species like milfoil from Minerva Lake improve waterway health while reducing flood risks caused by clogs.

The town invests considerably in emergency preparedness and public safety. Improvements at the firehouse, including the installation of emergency fuel storage, bolster resilience against power outages. Funding allocations for the Minerva Volunteer Fire and Rescue service further demonstrate Minerva's commitment to supporting first responders and improving building maintenance.

Minerva actively addresses climate adaptation and sustainability challenges by exploring strategies to enhance resilience. Discussions are underway regarding water conservation measures and storage system improvements to mitigate the effects of potential dry conditions. The town pursues energy efficiency initiatives including grant applications for LED lighting installations, to reduce environmental impact and lower long–term costs.

Community engagement remains a cornerstone of Minerva's hazard mitigation strategy. Public hearings and regular updates about budget allocations and project progress encourage transparency and resident involvement in planning processes. Specialized staffing appointments like deputy clerks and tax collectors, also enhance operational efficiency during emergencies.

These proactive measures highlight Minerva's commitment to reducing risks from flooding, severe weather, and climate–related challenges. By addressing infrastructure vulnerabilities, enhancing emergency services, and pursuing sustainable practices, the town is building resilience for current and future hazards.

Planning Process

The town initially took part in a Hazard Mitigation Survey, followed by an in-person Stakeholder Hazard Mitigation Introduction Meeting. Subsequently, the Town Supervisor received a copy of the town's section of the county plan for review and revisions and updated its portion of the county plan. The Town Supervisor participated in county-level meetings related to the plan and attended a final mitigation strategy meeting.

Capability Assessment

As part of the 2025 plan update, Minerva conducted a capability assessment to evaluate its planning and regulatory framework. The town maintains a comprehensive plan (reviewed annually) with several chapters addressing natural resource management. The town also enforces building and fire codes to help ensure safety and resilience. Planning proposals outside the hamlet areas require approval from the Adirondack Park Agency (APA). Many town documents address emergency preparedness, and zoning ordinances are actively enforced to support sustainable development as outlined in the table below:

Table 174. Planning Documents: Town of Minerva

Planning Documents
Town Comprehensive Plan
Floodplain regulations
Fire Codes
Building Codes
Comprehensive Emergency Management Plan
Zoning Codes
Emergency Operation Plans
Disaster Recovery Plan
Continuity of Operations Plan
Subdivision Regulations
Open Space Management Plan
Stormwater Management Plan
Natural Resource Protection Plan
Capital Improvement Plan
Economic Development Plan
Historic Preservation Plan

Minerva conducted an administrative and technical capabilities assessment, identifying key areas where it relies on support from Essex County agencies. The town collaborates with Community Resources for planning assistance and the Essex County Department of Public Works for engineering expertise. Private firms are contracted (for specific projects) to provide surveying and engineering services. The Department of Emergency Services assists with emergency management, while Real Property supports GIS services. Community Resources provides grant writing assistance. These county agencies and staff play a crucial role in supplementing Minerva's local resources.

This hazard mitigation plan update should be integrated into Minerva's existing plans to enhance coordination and resilience. The hazard ranking can be incorporated into the comprehensive emergency management plan, while mitigation projects can be included in the capital improvement plan. Much of this document aligns with community comprehensive plans, ensuring enabling legislation remains consistent across all relevant policies. Minerva assessed its financial capability, identifying key funding sources that support town projects. The town has utilized Community Development Block Grants, water and sewer fees, general tax revenues, and partnering agreements to supplement local resources for a variety of initiatives.

Minerva assessed its education and outreach capabilities, focusing on efforts to enhance community preparedness. The town conducted disaster preparedness training for its staff and uses articles on the town website to inform and engage residents.

DRAFT

As part of its overall capability assessment, Minerva evaluated four key areas. Planning and regulatory, financial, and administrative/technical capabilities were ranked High, largely due to the support received from county agencies and staff. Without this assistance, staffing and financial constraints would result in lower rankings. Education and outreach capabilities were rated Moderate, indicating room for further development in community engagement and awareness efforts.

Critical Facilities

Flood vulnerabilities to critical facilities were assessed as the plan was updated. The table below describes if these facilities are located in the 500–year floodplain, if the facility has been flooded in the past, and if any kind of mitigation was completed to reduce the flood potential of these structures. Generator capabilities were also assessed to determine if these facilities could function without electric power—a common issue for critical facilities during disaster events.

Table 175. Critical Infrastructure in Floodplain: Town of Minerva

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Town Hall • Emergency Operations Center • Communication Center	No	No	No	Yes
Critical vehicle equipment storage facilities	No	No	No	Yes
Fire Station #1	No	No	No	Yes
Fire Station #2	No	No	No	Yes
Drinking Water plant	No	No	No	Yes

No facilities are currently located within the 500–year floodplain. The Emergency Operations Center (EOC), Town Hall (which also serves as the communication center), and the drinking water plant are equipped with backup generators for emergency power.

The town designated the Town Beach Area as a temporary housing site following a disaster, as it can accommodate RVs for camping. Minerva has one American Red Cross (ARC) Shelter, located at Minerva Central School.

Table 176. Housing for Displaced Residents: Town of Minerva

Facility	Type of Housing
Town Beach	RV, mobile homes

National Flood Insurance Plan (NFIP) Summary

The following information pertains to flood–vulnerable structures in Minerva. The actual number of structures at risk is likely higher than the number currently covered by flood insurance. Once FEMA updates Flood Insurance Rate Maps (FIRMs), revised maps will provide a more accurate count of structures located within flood–prone areas.

Table 177. Flood Insurance: Town of Minerva

Policies	2011	2018	2024	Total Amount of Claims
Policies	2	4	4	$6,418
Number of Repetitive Loss Structures	-	-	-	-

Minerva will continue to actively manage floodplains to mitigate future flood risks. New development within special flood hazard areas will be carefully reviewed and approved to ensure compliance with the local floodplain ordinance. As FEMA updates the Flood Insurance Rate Maps (FIRMs), the town will hold meetings with floodplain managers, town supervisors, and village mayors to provide training on the National Flood Insurance Program (NFIP). These meetings will also serve as a forum to discuss compliance requirements and best practices for floodplain management.

Hazard Identification & Ranking

Table 178. Hazard Ranking: Town of Minerva

Hazard Ranking	Hazards
HIGH	• No High hazards
MEDIUM	• High Winds
LOW	• Avalanches • Drought • Earthquakes • Extreme Temperatures • Floods • Hailstorms • Hurricanes • Land Subsidence & Expansive Soils • Ice Storms • Landslides • Severe Winter Storms • Wildfires • Rail Events

DRAFT

Hazard Event History

Table 179. Hazard Events: Town of Minerva

Hazard	Event	Year	Impact on Minerva
Flooding	Heavy rain floods	2011	Localized flooding caused washouts on smaller roads, including sections of Route 28N, impacting connectivity & emergency response.
	Spring floods	2024	Snowmelt combined with heavy rain damaged culverts & eroded streambanks, affecting nearby residential areas.
Winter Storms & Cold	Ice storm	1998	Prolonged power outages disrupted heating & daily life; roads blocked by fallen ice–laden trees delayed emergency services.
	February blizzard	2024	Heavy snowfall hindered access to remote areas & caused temporary closures of local roads.
Severe Thunderstorms	Summer thunderstorms	Recurring	Frequent high winds & lightning strikes caused damage to trees, roofs, & power infrastructure.
Earthquakes	Adirondack regional quake	2002	Tremors were felt in Minerva, though no significant damage was reported in the town itself.
Wildfires	Forest fires	1903	Large–scale Adirondack fires threatened forested areas near Minerva, requiring regional response efforts.
	Summer fires	2024	Small wildfires near forested areas were quickly controlled but raised concerns about increasing drought risks.
Transportation	Road & culvert damage	Recurring	Flooding & storms repeatedly damaged rural roads, isolating some neighborhoods temporarily.
Power Outages	Ice storm	1998	Extended outages forced reliance on backup power sources & disrupted local businesses.
	Thunderstorm outages	Recurring	Power lines damaged by fallen trees during severe storms caused recurring outages in remote parts of town.
Drought	Prolonged dry conditions	2024	Private wells & local water sources faced low levels, increasing wildfire risks in nearby forests.
Public Health	Lyme disease	Recurring	Increased tick populations due to Minerva's wooded environment continue to pose a public health risk.
	COVID–19 Pandemic	2020+	Local emergency preparedness was tested, leading to improvements in healthcare & communication systems.

Hazard Analysis

Minerva is susceptible to a variety of natural hazards repeatedly impacting infrastructure, community, and public safety. Flooding remains a significant challenge, with heavy rain floods in 2011 causing washouts on smaller roads including sections of Route 28N, which disrupted connectivity and emergency response. In 2024, spring floods driven by snowmelt and heavy rain damaged culverts, eroded streambanks, and affected nearby residential areas—underscoring town vulnerabilities to extreme weather and its impact on transportation infrastructure.

Winter storms are another recurring threat. The 1998 ice storm caused prolonged power outages, disrupted heating systems, and blocked roads with fallen, ice–laden trees delaying emergency services. Similarly, the February 2024 blizzard brought heavy snowfall, hindering access to remote areas, temporarily closing local roads, further highlighting the need for robust snow removal and emergency response systems.

Severe thunderstorms occur frequently, bringing high winds and lightning strikes that damage trees, roofs, and power infrastructure. The 2002 Adirondack Region earthquake caused tremors felt in Minerva, although no significant damage was reported. Wildfires like the large–scale forest fires of 1903 and smaller summer fires in 2024, continue to pose risks to the town's forested areas, particularly during drought conditions. These events emphasize the growing concerns about increasing regional drought risks.

Transportation remains a critical concern, with flooding and storms frequently damaging rural roads and culverts, temporarily isolating neighborhoods, and complicating emergency response. Power outages (a consistent issue) caused by events like the 1998 ice storm and recurring thunderstorms, leave remote areas without electricity for prolonged periods, forcing reliance on backup power sources.

The 2024 drought placed significant strain on private wells and local water sources, increasing wildfire risks, impacting the town's water supply. Public health challenges like Lyme disease, remain a concern due to the high tick populations in local wooded areas. The COVID–19 pandemic tested emergency preparedness, prompting improvements in Minerva's healthcare infrastructure and communication systems.

These hazards highlight the importance of Minerva's ongoing mitigation efforts. Resilient infrastructure investments, enhanced emergency response capabilities, and public education on health and safety risks are critical to reducing future hazards impacts and ensuring community well–being.

Hazard Mapping

Once FEMA updates Flood Insurance Rate Maps (FIRMs), revised maps will provide a more accurate count of flood–vulnerable structures.

DRAFT

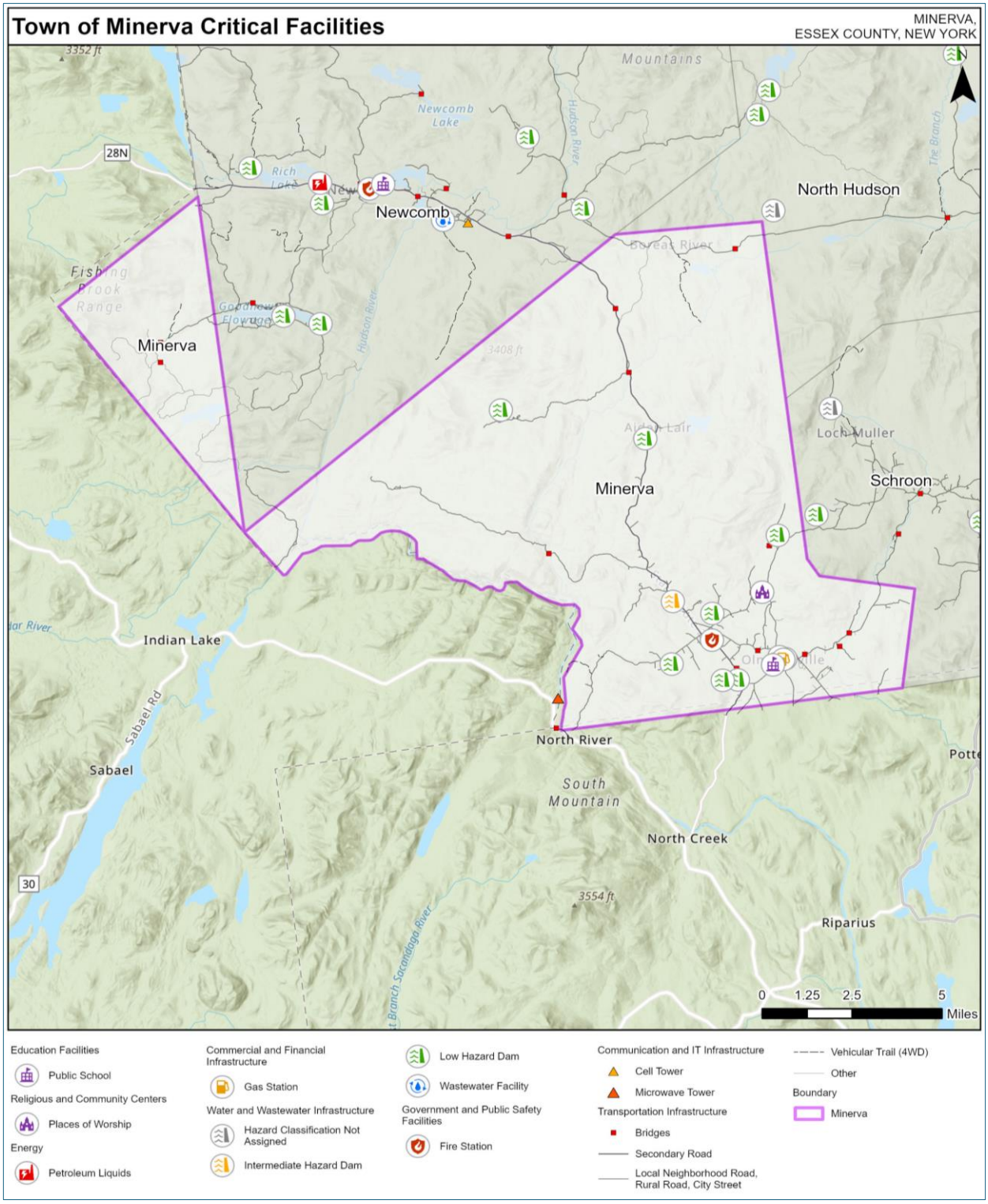


Figure 68. Critical Facilities: Town of Minerva

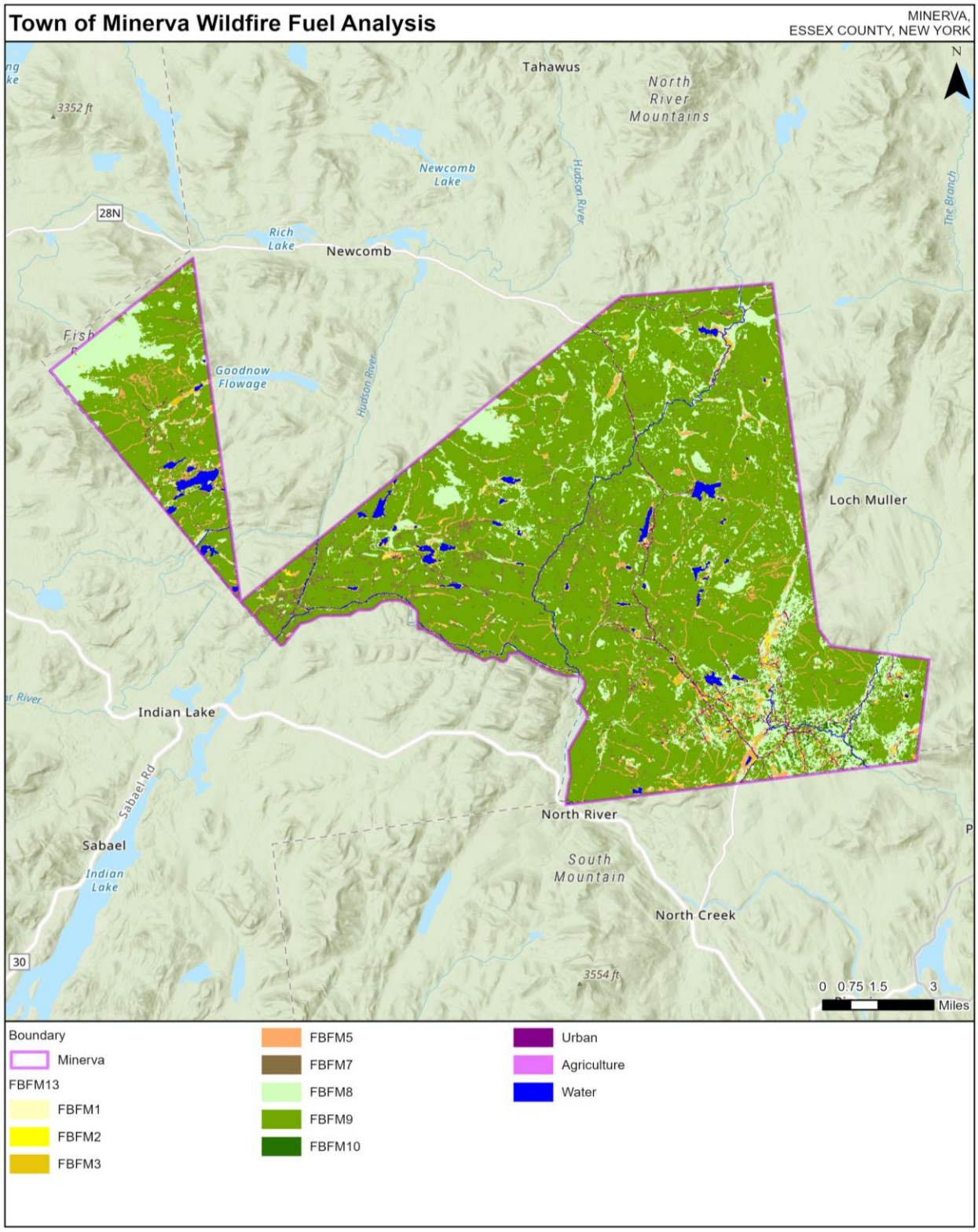


Figure 69. Wildfire Fuel Analysis: Town of Minerva

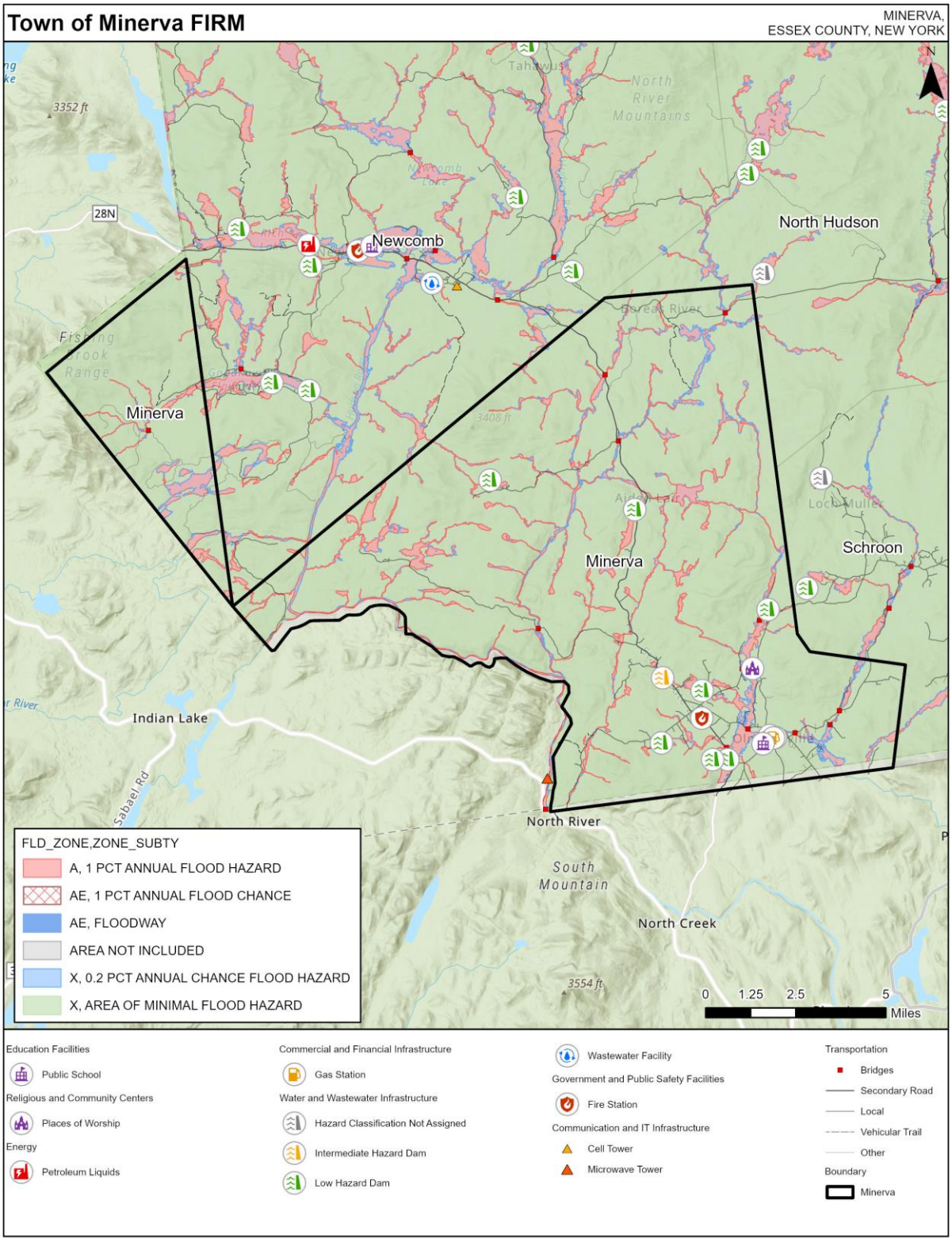


Figure 70. FIRM: Town of Minerva

Potential Loss

The potential loss for Minerva was calculated using data from the Essex County Real Property website, which provided parcel information. The data was analyzed to determine the value of properties within each of the nine class codes and then totaled for each category. To estimate potential losses from a hazard event, calculations assumed that 10% of the total properties in each class code would be affected. Similarly, the financial impact was estimated as 10% of the total property value within each class code.

The Essex County Real Property Tax Services website categorizes real property into nine class codes:

- 100 Agriculture
- 200 Residential
- 300 Vacant Lands
- 400 Commercial
- 500 Recreation and Entertainment
- 600 Community
- 700 Industrial
- 800 Public Services
- 900 Forest, Conservation Lands and Parks

Table 180. Potential Loss: Town of Minerva

Class Code	Number of Structures	Structure Values	Number of Structures Impacted	Potential Loss
100	2	$243,271	0	$24,327
200	634	$102,454,500	63	$10,245,450
300	347	$14,366,200	34	$1,436,620
400	15	$4,732,800	15	$473,280
500	4	$2,790,740	0	$279,074
600	16	$9,911,900	1	$991,190
700	1	$227,800	0	$22,780
800	42	$6,342,642	4	$634,264
900	370	$238,517,642	37	$23,851,764

Mitigation Strategy

The mitigation strategy from the 2019 plan was reviewed to assess project status and determine whether any projects had been completed. New mitigation projects were identified for inclusion in the 2025 plan update and are detailed in the table below. As part of the plan update, project

DRAFT

prioritization was conducted, categorizing projects as High, Medium, or Low priority. High priority projects focus on ensuring communities remain fully functional during disasters, while Medium and Low priority projects enhance municipal operations and address community needs. Project implementation depends on available funding, political support, and other influencing factors, with any project eligible for advancement as these elements align.

The cost of proposed mitigation projects was assessed and detailed in the table below. Some projects include specific cost estimates, while others are ranked as High, Medium, or Low cost based on anticipated financial requirements.

Table 181. Mitigation Strategies: Town of Minerva

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
1. Replace culverts on 14th road	2,4,5	Replace culverts that are undersized	Floods	Town Supervisor/DPW	Low	1-5 years	Town County DPW	Medium	Structure & infrastructure projects
2. Continue proper maintenance of culverts	2,4,5	Clean culverts & maintain culvert system	Floods	Town Supervisor/DPW	Low	1-5 years (ongoing)	Town budgets	High	Structure & infrastructure.
3. Replace undersized culverts using county list for specific culverts.	2,4,5	Replace undersized culverts	Floods	Town Supervisor/DPW	Low	1-5 years (ongoing)	NYS Department of Transportation (NYSDOT) BRIDGE NY Program, NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants,	High	Structure & infrastructure

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
							US DOT Bridge Investment Program		
4. Facebook for Residents	1,3	Use Facebook for education & outreach efforts to residents	All	Town Supervisor	Low	1-5 years	Annual operating budgets	High	Education & outreach projects.
5. Ditch the roads	2,4,5	Install roadside ditched on dirt roads for stormwater	Floods	Town Supervisor/DPW	Low	1-5 years	SWCD	High	Structure & infrastructure
6. Town dam	2,4,5	Repair town dam that needs maintenance	Floods	Town Supervisor	Medium	2019-2020	ACOE, DEC	High	Structure & infrastructure

Minerva will continue to actively implement projects and programs to reduce potential disaster-related effects impacting the town.

DRAFT

Annex I: Town of Moriah

Profile

The Town of Moriah, located in eastern Essex County, includes the Hamlet of Port Henry. The Village of Port Henry was officially dissolved in March 2017, with its areas now fully incorporated into Moriah.

Moriah is bordered by Lake Champlain to the east, Westport and Elizabethtown to the north, North Hudson to the west, and Crown Point to the south. Port Henry is centrally located along the eastern lakeshore. The town and hamlet have significant frontage on Lake Champlain, attracting visitors year–round—ice fishing in the winter and swimming and boating in the summer. The western part of Moriah features forested areas, small ponds, and streams draining higher elevations. The town hosts the annual Champ Fest, drawing tourists to celebrate Champ, the mythical lake creature of Lake Champlain.

The hamlets of Moriah Center, Moriah Corners, Mineville, and Witherbee are situated in the north–central part of town and were once thriving mining centers until the mid–1960s. The Canadian Pacific Rail line runs north–south through the eastern portion of Moriah. The town's transportation network includes State Routes 9N and 22, along with several town and county roads connecting small residential clusters and the four hamlets. South of Port Henry, Route 9N and 22 intersect with Route 903, leading to Crown Point Bridge—a vital link to Vermont.

Moriah's history is deeply rooted in iron mining, which significantly boosted the local economy. From 1824 to 1971, the town was a hub for iron discovery, mining, and smelting, with products transported from Port Henry via Lake Champlain. Today, the Iron Center Museum in Port Henry preserves and interprets this industrial heritage.

Table 182. Table of Facts: Town of Moriah

Fact	Description
Land Area	73 sq. miles/46,556 acres
Hamlets	Mineville, Witherbee, Moriah Center & Port Henry
Population Census	4716 (2020 Census)
Governance	Town & Village
Total Assessed Valuation	$242,010,504
Highest Elevation	Bald Peak–2,030'
Largest Lake	Lake Champlain of eastern border & Bartlett Pond
River(s)	Mill Brook, Mckenzie Brook
Dams	9
Bridges	8 County Road
Interstate Highway	None
State Routes	9N & 22
County Roads	4, 6, 7, 42, 54 & 70

Fact	Description
Land Agriculture Use	None
Land Classified Industrial	427.9 acres
Land Classified Residential, as Hamlet	2,094.9 acres
Hospital/Medical Facility	Moriah Health Center
Fire & Rescue	Town of Moriah Ambulance, Port Henry Fire, Moriah Fire, Mineville/Witherbee Fire
Schools	Moriah Central
Railroads	CP Rail north/south
Passenger Trains/Day	Amtrak 68 & 69 2/day
Freight Trains/Day	Approx. 5/day
Ferry Dock(s)	None
Interstate Bridge	None
Largest Employer	ARC
Law Enforcement	NYSP, County Sheriff & Moriah PD
Correctional Facility	None
Power Utility Provider(s)	National Grid
Water Supply Source(s)	Mill Brook & Bartlett Pond–Fisher Hill Mine for Moriah Shock Incarceration & private wells
Emergency Shelters	Moriah Central School
Critical Facilities	

Notable Updates

Moriah made significant strides in updating its hazard mitigation strategies, focusing on infrastructure improvements, community resilience, and resource management. These updates address vulnerabilities related to flooding, emergency preparedness, and climate adaptation, while enhancing long–term sustainability and quality of life for community residents.

Infrastructure upgrades are a priority, with key projects like the replacement of the Golf Course Way box culvert, funded in part by FEMA. This critical improvement addresses recurring flooding issues, strengthening road resilience. Ongoing sewer system upgrades and district consolidations ensure better management and cost–efficiency for essential services.

Emergency services and public safety have also seen considerable attention. Moriah is actively exploring the creation of an Emergency Medical Services (EMS) tax district to support its financially strained ambulance squad. Investments in new equipment and potential facility upgrades are being considered to improve response times and enhance service coverage.

Moriah strategically utilizes federal COVID–19 recovery funds for projects enhancing public spaces and bolstering economic recovery. Renovations at the Champ RV Park Beach House and

DRAFT

the purchase of new equipment for town services highlight these efforts, attracting tourism and support local businesses.

Housing and community development initiatives are a key focus, with the town pursuing grants like the Community Development Block Grant (CDBG). These funds are used to assist low– to moderate–income families with home rehabilitation, improving housing safety and accessibility for vulnerable populations.

Environmental and climate adaptation measures are also prioritized. Moriah implemented programs to manage invasive species in local lakes and forests, addressing environmental risks exacerbated by climate change. Infrastructure upgrades funded through state and federal programs complement these efforts, supporting sustainable development and resilience to climate–related hazards.

Community engagement remains central to Moriah's planning process. Regular public hearings and town board meetings help ensure transparency, fostering active community participation. By incorporating community feedback, the town aligns mitigation projects with public needs and priorities, building trust and ensuring relevance to mitigation strategies.

Through these strategic investments and robust planning efforts, Moriah addresses critical hazards while enhancing resilience and preparedness. These updates reflect town commitments to protecting residents, ensuring a sustainable and safe future for the community.

Planning Process

The town initially took part in a Hazard Mitigation Survey, followed by an in-person Stakeholder Hazard Mitigation Introduction Meeting. Subsequently, the Town Supervisor received a copy of the town's section of the county plan for review and revisions and updated its portion of the county plan. The Town Supervisor participated in county-level meetings related to the plan and attended a final mitigation strategy meeting.

Capability Assessment

As part of the 2025 plan update, Moriah conducted a capability assessment to evaluate its regulatory measures addressing hazard vulnerability. The town has multiple key regulations in place, including a Comprehensive Emergency Management Plan (CEMP), incorporating a Continuity of Government plan, as well as floodplain regulations, subdivision regulations, a comprehensive land use plan, stormwater management plan, and an economic development plan. Moriah also enforces a historic preservation plan, farmland preservation plan, building codes, and fire codes. These regulations help ensure new development is designed to minimize damage from hazard events.

Table 183. Planning Documents: Town of Moriah

Planning Documents
Comprehensive Emergency Management Plan (CEMP) (2008)
Continuity of Government Plan (located in the CEMP) (2008)

Planning Documents
Floodplain Regulations (1997)
Subdivision Regulations (1997)
Comprehensive Land Use Plan (2008)
Stormwater Management Plan (2008)
Economic Development Plan (1997)
Historic Preservation Plan (1997)
Farmland Preservation Plan (1997)
Building Code (1997)
Fire Codes (2008)

The town relies on county agency staff for support as needed, utilizing community resources, county engineers, and Geographic Information System (GIS) services to supplement local staff. The Town Supervisor serves as the Emergency Manager during disasters, while the Building Inspector functions as the Floodplain Administrator. The Department of Environmental Conservation (DEC) and the Adirondack Park Agency (APA) provides scientific expertise and guidance. Moriah has begun developing its own GIS system to enhance local mapping and planning capabilities.

This hazard mitigation plan should be integrated into Moriah's existing planning frameworks to enhance coordination and resilience. The hazard ranking can be incorporated into the comprehensive emergency management plan (CEMP), while mitigation projects can be included in the capital improvement plan. Key elements of this plan align with community comprehensive plans, ensuring enabling legislation remains consistent across all relevant documents. This integration helps maintain policy and regulation uniformity, strengthening hazard preparedness and response efforts

The town's financial capability was assessed, highlighting key funding sources for infrastructure and operations. Capital improvement funds were allocated for water and sewer projects, campground construction, shoreline erosion control, and building reconstruction. Community Development Block Grants (CDBG) were utilized to support water and sewer improvements. To sustain operations, water and sewer fees are used for maintenance, operations, and debt service. The town relies on partnership agreements and intergovernmental collaborations with Essex County, neighboring towns, local schools, fire districts, and New York State to support daily operations and disaster response efforts.

Education and outreach efforts were also evaluated. The fire department conducts educational programs in schools, while the town website serves as a resource for resident information. Several organizations including National Grid, the American Red Cross, the Salvation Army, and private contractors contribute to disaster–related programs. The Essex County Soil and Water Conservation District and Lake Champlain Basin Program provide educational resources to residents on Lake Champlain–related environmental issues.

DRAFT

Moriah conducted a self–assessment across four key categories. Planning and regulatory capabilities were ranked as Limited, while administrative and technical capabilities, along with education and outreach efforts, were rated as Moderate. Town financial capabilities received a High ranking.

Critical Facilities

Moriah assessed the flood vulnerability of critical facilities as part of the plan update. The table below details whether these facilities are located in the 500–year floodplain, have experienced past flooding, and have undergone mitigation measures to reduce flood risk. Generator capabilities were evaluated to determine if these facilities can operate during power outages—a common challenge for critical infrastructure during disasters.

The police station, town highway garage, and the four fire stations in Mineville, Withersbee, Moriah, and Port Henry are not located in the 500–year floodplain. However, the police station and Port Henry Fire Station require backup generators for emergency power. In contrast, Moriah's Town Hall and fire station are both located within the 500–year floodplain.

There are three power stations in Moriah, none of which are located in the 500–year floodplain. The health center is also outside the floodplain and has a backup generator. However, the school is located within the 500–year floodplain but is equipped with a generator for emergency power. These critical facilities play a vital role in disaster operations, making flood mitigation and power backup essential for maintaining community resilience.

Table 184. Infrastructure in Floodplain: Town of Moriah

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Police Station	No	No	No	No
Highway Garage	No	No	No	Yes
Mineville Fire Station	No	No	No	Yes
Withersbee Fire Station	No	No	No	Yes
Moriah Fire Station	No	No	No	Yes
Port Henry Fire Station	No	No	No	No
Moriah Town Hall	No	No	No	Yes
Moriah Fire Station	No	No	No	No
3 Power Stations	No	No	No	Unknown
Health Center	No	No	No	Yes
Moriah Central School	Yes	No	No (need to floodproof)	Yes

Moriah identified two areas for temporary housing needs after a disaster. The old landfill (lacks power and water) and the Mineville Industrial Park (has power and water) will be used if and when needed. This area contains paved and unpaved areas that could be used for temporary housing units like RVs or mobile homes. The Moriah Central School and Dillon Education Center are designated as American Red Cross Shelters and can be used for temporary housing of residents displaced by a hazard event. In the past, displaced residents obtained temporary housing with friends, relatives or neighbors.

Table 185. Housing for Displaced Residents: Town of Moriah

Facility	Type of Housing
Old Landfill	RV, mobile Homes
Mineville Industrial Park	RV, mobile homes
Moriah Central School	American Red Cross (ARC) Shelter
Dillon Education Center, Mineville	ARC Shelter

National Flood Insurance Plan (NFIP) Summary

The following information concerns flood vulnerable structures in Moriah. The numbers of actual structures in the flood vulnerable areas is likely larger than the number of insured structures. Once FEMA updates Flood Insurance Rate Maps (FIRMs), revised maps will provide a more accurate assessment of the actual number of flood–vulnerable structures.

Table 186. Flood Insurance: Town of Moriah

Policies	2011	2018	2024	Total Amount of Claims
Policies	5	2	2	0
Number of Repetitive Loss Structures	-	-	-	-

Moriah will continue to actively manage floodplains to mitigate future flood risks. New development within special flood hazard areas will be carefully reviewed and approved to ensure compliance with the local floodplain ordinance. As FEMA updates the Flood Insurance Rate Maps (FIRMs), the town will hold meetings with floodplain managers, town supervisors, and village mayors to provide training on the National Flood Insurance Program (NFIP). These meetings will also serve as a forum to discuss compliance requirements and best practices for floodplain management.

Hazard Identification & Ranking

Table 187. Hazard Ranking: Town of Moriah

DRAFT

Hazard Ranking	Hazards
HIGH	• Floods • High Winds • Severe Winter Storms • Rail Events
MEDIUM	• Drought • Hailstorms • Ice Storms
LOW	• Avalanches • Earthquakes • Hurricanes • Land Subsidence & Expansive Soils • Landslides • Wildfires

Hazard Event History

Table 188. Hazard Events: Town of Moriah

Hazard	Event	Year	Impact on Moriah
Flooding	Lake Champlain flood	2011	Record–breaking water levels caused significant damage to waterfront properties, roads, & culverts near Bulwagga Bay & Port Henry.
	Spring floods	2024	Snowmelt & heavy rain led to localized flooding, impacting infrastructure & farmland along low–lying areas.
Winter Storms & Cold	Ice storm	1998	Widespread power outages disrupted daily life, with severe tree damage affecting road access & utility lines.
	February blizzard	2024	Over 20 inches of snow caused road closures & hindered emergency services, especially in hilly areas.
Severe Thunderstorms	Summer thunderstorms	Recurring	High winds & hail damaged buildings, downed trees, & caused power outages.
Earthquakes	Adirondack regional quake	2002	Minor tremors felt in Moriah, though no significant damage was reported.
Wildfires	Adirondack forest fires	1903	Large–scale fires in nearby forests posed risks to rural areas & required regional responses.
	Summer fires	2024	Small brush fires, fueled by drought, were quickly contained near forested areas.

Hazard	Event	Year	Impact on Moriah
Transportation	Road & culvert damage	Recurring	Seasonal flooding & winter storms caused significant wear & damage to town roads, particularly rural & mountain routes.
Power Outages	Ice storm	1998	Multi–week outages forced reliance on emergency generators, particularly in remote parts of town.
	Thunderstorm outages	Recurring	Summer storms regularly disrupted power in residential areas due to tree & utility pole damage.
Drought	Prolonged dry conditions	2024	Water shortages impacted local agriculture & raised wildfire risks near forested & rural areas.
Public Health	Lyme disease	Recurring	High prevalence of tick–borne diseases due to the town's wooded & rural environment.
	COVID–19 Pandemic	2020+	Local healthcare services were stretched, leading to improvements in emergency preparedness & response.

Hazard Analysis

Moriah faces a diverse range of natural and man–made hazards regularly impacting the town's infrastructure, community, and economy. Flooding poses a significant risk, as demonstrated by the 2011 Lake Champlain flood, which caused record–breaking water levels severely damaging waterfront properties, roads, and culverts near Bulwagga Bay and Port Henry. Spring floods (2024) caused by snowmelt and heavy rain led to localized flooding, affecting infrastructure and farmland in low–lying areas. This event highlighted the need for resilient flood management systems.

Winter storms are another major hazard, with the 1998 ice storm resulting in widespread power outages, tree damage, and disrupted road access. Similarly, the February 2024 blizzard brought over 20 inches of snow, leading to road closures and hindering emergency services, particularly in hilly and remote areas. Regularly occurring severe thunderstorms bring high winds and hail that damage buildings, down trees, and disrupt power, underscoring the importance of reliable utility infrastructure.

Geological and environmental hazards present risks to Moriah, requiring ongoing mitigation efforts. The 2002 Adirondack Region earthquake caused minor tremors, although no significant damage was reported. Wildfires, including the large–scale forest fires of 1903 and smaller summer fires in 2024, posed to rural and forested areas, particularly during drought conditions, highlighting the need for proactive fire prevention strategies. Power outages are a persistent issue, with multi–week disruptions during the 1998 ice storm and recurring outages caused by summer thunderstorms. These outages force reliance on emergency generators, particularly in more remote parts of town. Prolonged dry conditions like those experienced in 2024, strained water resources, impacted local agriculture, increasing wildfire risks in rural and forested areas.

DRAFT

Public health challenges are ongoing in Moriah, with a high prevalence of Lyme disease due to the town's wooded and rural environment. The COVID–19 Pandemic further stressed local healthcare services, prompting improvements in emergency preparedness and response capabilities. These hazards underscore the importance of robust mitigation strategies in Moriah. Investments in resilient infrastructure, emergency response systems, and public education are critical to reducing risks and protecting the community from future hazards.

Hazard Mapping

Once FEMA updates the Flood Insurance Rate Maps (FIRMs), the revised maps will provide a more accurate assessment of the actual number of flood–vulnerable structures.

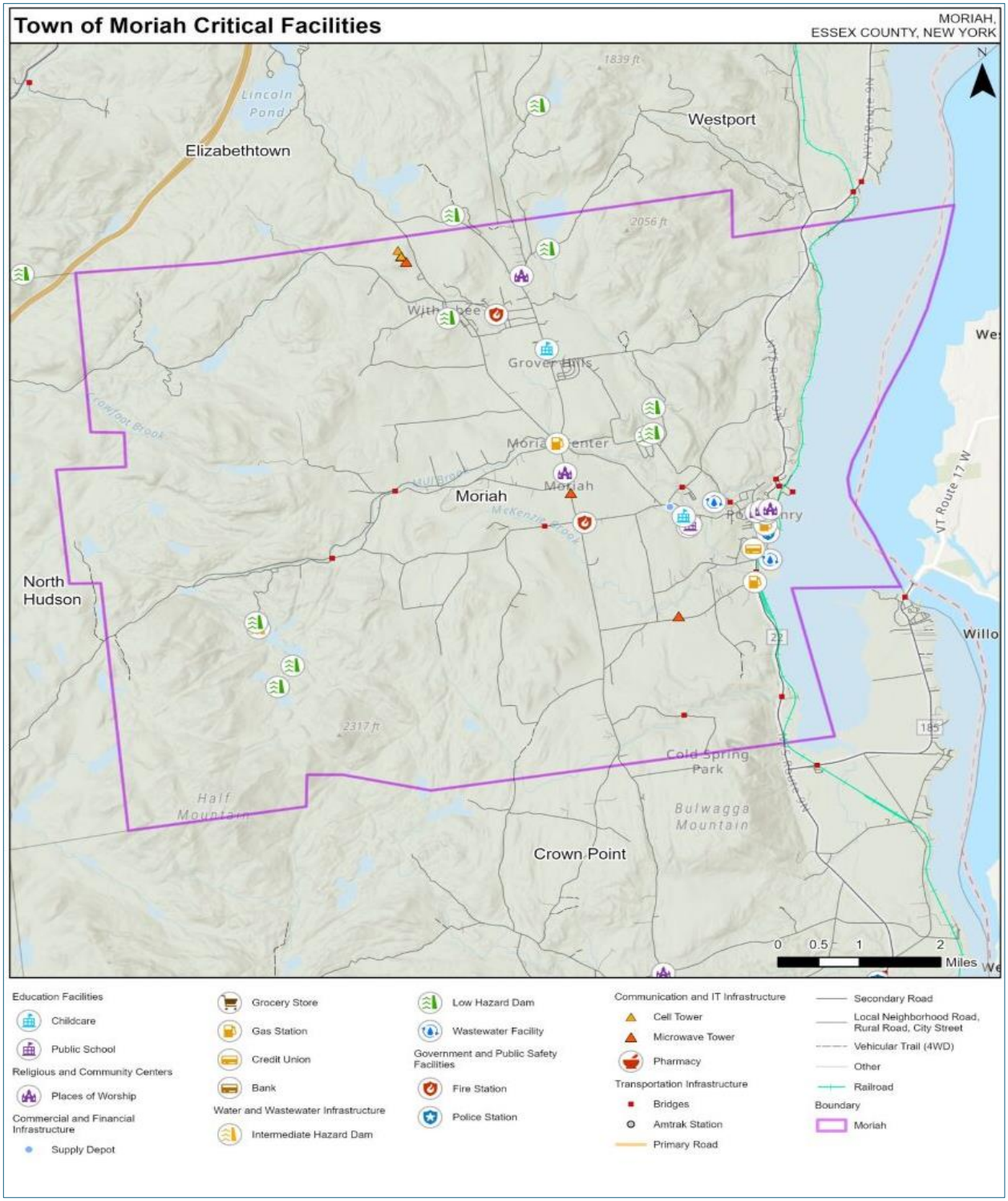


Figure 71. Critical Facilities: Town of Moriah

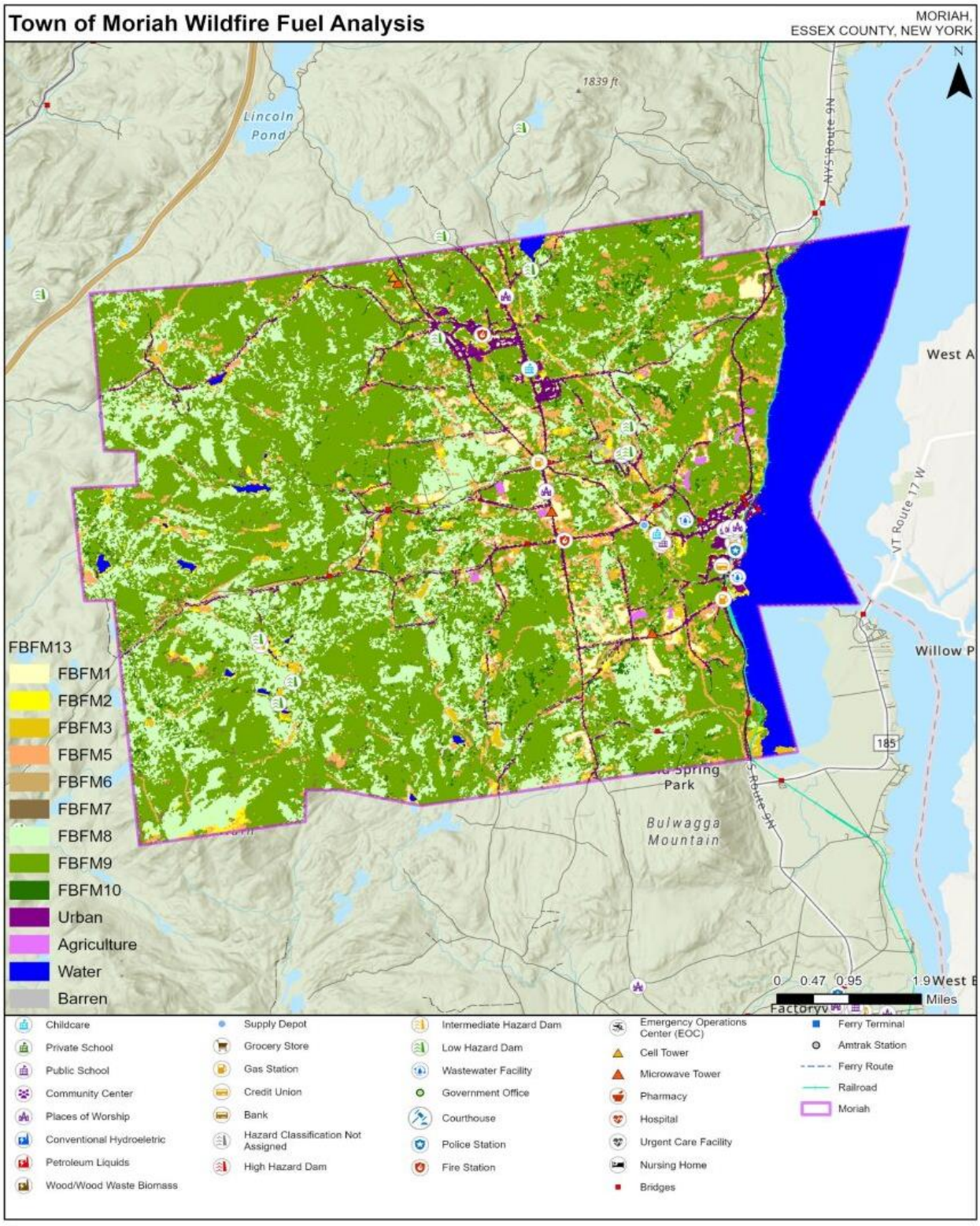


Figure 72. Wildfire Fuel Analysis: Town of Moriah

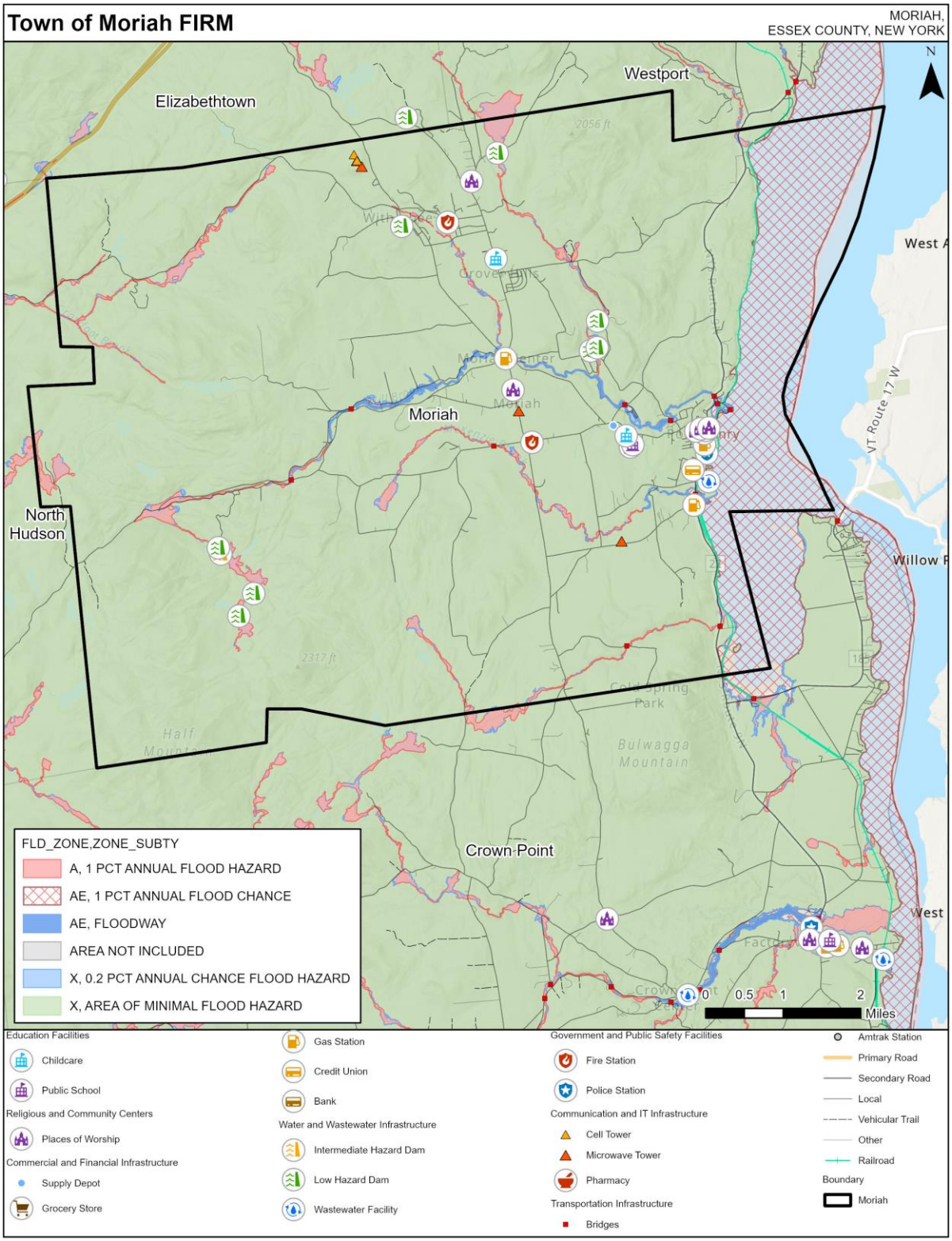


Figure 73. FIRM: Town of Moriah

Potential Loss

A potential loss assessment was conducted for Moriah using data from the Essex County Real Property website. Information for all parcels was analyzed to determine the number and value of structures within each of the nine class codes. The total number of structures and their cumulative value were then calculated for each classification. To estimate potential losses from a hazard event, it was assumed 10% of all structures within the jurisdiction would be affected. Similarly, the financial impact was estimated as 10% of the total property value for each class code.

The Essex County Real Property Tax Services website categorizes real property into nine class codes:

- 100 Agriculture
- 200 Residential
- 300 Vacant Lands
- 400 Commercial
- 500 Recreation and Entertainment
- 600 Community
- 700 Industrial
- 800 Public Services
- 900 Forest, Conservation Lands and Parks

Table 189. Potential Loss: Town of Moriah

Class Code	Number of Structures	Structure Values	Number of Structures Impacted	Potential Loss
100	16	$2,044,710	1	$204,471
200	1978	$187,889,338	19	$18,788,933
300	572	$16,214,353	6	$1,621,435
400	94	$18,516,974	9	$1,851,697
500	12	$6,194,500	1	$619,450
600	44	$54,191,600	4	$5,419,160
700	20	$4,850,700	2	$485,070
800	64	$24,537,778	6	$2,453,777
900	124	$15,964,603	12	$1,596,460

Mitigation Strategy

Moriah's mitigation strategy outlined in the 2019 plan was reviewed to assess the status of previously identified projects to assess whether they were completed. New mitigation projects were identified for inclusion in the 2025 plan update, as detailed in the table below. Projects were

prioritized as High, Medium, or Low based on their importance and impact. High priority projects focus on ensuring that towns and villages remain fully functional during disasters, while Medium and Low priority projects enhance municipal operations and address community needs. Mitigation project implementation will depend on available funding, political support, and other influencing factors. Any project may move forward as these elements align.

Proposed mitigation project costs were estimated and included in the table below. While some projects have specific cost estimates, others were categorized as High, Medium, or Low cost based on projected financial requirements.

Table 190. Mitigation Strategies: Town of Moriah

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
1. Fisk Road culvert replacement	2,4,5	Replace CMP with concrete block structure	Flooding	Town Hwy Dept	$500K	1-5 years	NYS Department of Transportation (NYSDOT) BRIDGE NY Program, NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants, US DOT Bridge Investment Program	Medium	Structure & infrastructure
2. Edgemont Road culvert	2,4,5	Increase size of culvert	Flooding	Town Hwy Dept	$150K	1-5 years	NYS Department of Transportation (NYSDOT)	Medium	Structure & infrastructure

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
							BRIDGE NY Program, NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants, US DOT Bridge Investment Program		
3. Chipmunk St. culvert	2,4,5	Upsize culvert	Flooding	Town Hwy Dept	$100K	1-5 years	NYS Department of Transportation (NYSDOT) BRIDGE NY Program, NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development	Medium	Structure & infrastructure

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
							Water Grants, US DOT Bridge Investment Program		
4. Crowe Foot Pond Road	2,4,5	Upgrade culvert & install ditches	Flooding	Town Hwy Dept	$100K	1-5 years	C NYS Department of Transportation (NYSDOT) BRIDGE NY Program, NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants, US DOT Bridge Investment Program ounty Town	Medium	Structure & infrastructure
5. Chenney street bank stabilization	2,4,5	Install rip rap or plant stabilization for eroded bank	Flooding	SWCD, Town Supervisor	M	1-10 years Years 1-5 Obtain funds Year 6-10	SWCD	High	Natural system protection

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
						Imple-ment project			
6. Town Dam	2,4,5	Repair town owned dam	Dam Failure	DEC Town Su-pervisor	$100K	1-5 years	DEC SWCD	High	Structure & infra-structure
7. Titus Road Pump Station	2,4,5	Install floodwall to protect from floods	Flood-ing	Town Su-pervisor DEC	M	1-10 years Years 1-5 Obtain funds Year 6-10 Imple-ment project	NYS De-partment of Trans-portation (NYSDOT) BRIDGE NY Pro-gram, NYS Em-pire State Develop-ment (ESD) In-frastruc-ture Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Ru-ral Devel-opment Water Grants, US DOT Bridge In-vestment Program	High	Structure & infra-structure
8. Tarbo Hill Pump Station	2,4,5	Install floodwall to protect from floods	Flood-ing	DEC Town Su-pervisor	M	1-10 years Years 1-5 Obtain funds Year 6-10 Imple-ment project	NYS De-partment of Trans-portation (NYSDOT) BRIDGE NY Pro-gram, NYS Em-pire State Develop-ment	High	Structure & infra-structure

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
							(ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants, US DOT Bridge Investment Program		
9. Port Henry Dock Lane pump station	2,4,5	Install floodwall to protect from floods	Flooding	DEC Town Supervisor	M	1-10 years Years 1-5 Obtain funds Year 6-10 Implement project	FEMA, NYS DOS	High	Structure & infrastructure
10.Dock Lane Bridges	2,4,5	Elevate road & install drainage	Flooding	County Town Hwy Dept	$1M	1-10 years Years 1-5 Obtain funds Year 6-10 Implement project	NYS Department of Transportation (NYSDOT) BRIDGE NY Program, NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP,	Medium	Structure & infrastructure

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
							FEMA FMA, USDA Rural Development Water Grants, US DOT Bridge Investment Program		
11. Lakeside Homes	2,4,5	Buy out flooded structures	Flooding	County DES, Town	L/M depending on each structure	1-5 Years After flood events	FEMA HMGP, PDM	High	Structure & infrastructure
12. N Main St., 9N & RTE 22 & other areas of Moriah	2,4,5	Buy out flooded structures	Flooding	County DES, town	L/M depending on each structure	1-5 years After flood events	NYS Department of Transportation (NYSDOT) BRIDGE NY Program, NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants, US DOT Bridge Investment Program	High	Structure & infrastructure

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
13. Port Henry Fire District #3	2,4,5	Build new fire-house current one is dilapi-dated	All	Town Su-pervisor	$1M	1-5 years	FEMA Fire assistant grants, towns	High	Structure & infra-structure
14. Engine Pond Road	2,4,5	Infrastructure repairs – annual flooding and road closure/ Major Travel Route	Flood-ing	Town Su-pervisor/ DPW Engi-neering	High	Ongo-ing/1-5 years	NYS De-partment of Trans-portation (NYSDOT) BRIDGE NY Pro-gram, NYS Em-pire State Develop-ment (ESD) In-frastruc-ture Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Ru-ral Devel-opment Water Grants, US DOT Bridge In-vestment Program	Me-dium	Structure & infra-structure
15. Moriah Central School	2	Relocate from 500-year flood-plain or other-wise mitigate	Flood-ing	Town Su-pervi-sor/School Board	High	New Project	NYS De-partment of Trans-portation (NYSDOT) BRIDGE NY Pro-gram, NYS Em-pire State Develop-ment (ESD) In-frastruc-ture	Low	Structure & Infra-structure

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
							Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants		

Moriah will continue to actively implement projects and programs to reduce the disaster–related effects impacting the town.

Annex J: Town of Newcomb

Profile

The Town of Newcomb is the largest in the largest in the county in terms of area (224 square miles). It is bordered on the north by Franklin County and North Elba, on the west by Hamilton County and Minerva, on the south by Minerva and on the east by North Hudson and Keene. The town includes vast tracts of wilderness, the upper Hudson River, lakes and streams, and three peaks over or near 4,000 feet in elevation.

A significant portion of town land is preserved as state–owned land, including one of the two Adirondack Visitors' Interpretive Centers, which is situated along the shores of Lake Harris. Newcomb has a long history of summer recreational use, with numerous Adirondack camps dating back to the 19th century. Camp Santanoni (a key historic site) is located along the trail to Newcomb Lake, north of town center. The former mining community of Tahawus sits along County Route 25, approximately 10 miles northeast of town. Originally established as an iron ore mining site, Tahawus later became a center for titanium extraction during World War II. Mining operations ceased in the 1980s, and today the area primarily serves as an access point for trailheads used for hiking and winter recreation.

Theodore Roosevelt was informed of the impending death of President William McKinley in September 1901 while hunting and hiking in Newcomb. Camp Santorini and the Mount Adams Fire Observation Station (located atop Mount Adams) are listed on the National Register of Historic Places.

Table 191. Table of Facts: Town of Newcomb

Fact	Description
Land Area	224 sq. miles/143,892.9 acres
Incorporated Village(s)	None
Hamlets	Newcomb & Winebrook
Population Census	418 (2020 Census)
Governance	Town
Total Assessed Valuation	$447,572,496
Highest Elevation	Santanoni Mtn. 4,621'
Largest Lake	Newcomb Lake
River(s)	Hudson & Opalecsent
Dams	14
Bridges	4 County Road
Interstate Highway	None
State Routes	28N
County Roads	2, & 25
Land Agriculture Use	None

DRAFT

Fact	Description
Land Classified Industrial	3,437.6 acres
Land Classified Residential, as Hamlet	1,463.3 acres
Hospital/Medical Facility	Newcomb Health Center
Fire & Rescue	Newcomb Fire & Rescue
Schools	Newcomb Central
Railroads	Discontinued
Passenger Trains/Day	None
Freight Trains/Day	None
Ferry Dock(s)	None
Interstate Bridge	None
Largest Employer	Out of town
Law Enforcement	NYSP & County Sheriff
Correctional Facility	None
Power Utility Provider(s)	NYSEG
Water Supply Source(s)	Town & Private wells
Emergency Shelters	Newcomb Central School–Town Community Center 5005 State Route 28N

Notable Updates

Newcomb's Hazard Mitigation Plan (HMP) encompasses a wide range of activities aimed at reducing risk and enhancing community resilience. Central to these efforts is the integration of the comprehensive plan with updated zoning and site plan regulations, ensuring alignment with regional planning objectives and compliance with guidance from Essex County and the Adirondack Park Agency. The town actively pursues grant funding to support critical infrastructure and sustainability projects like food scrap recycling initiatives, housing developments, and public utility upgrades. Leveraging CARES Act funds, the town implemented programs to assist low–income residents with utility and fuel payments, addressing immediate community needs.

Environmental sustainability and infrastructure resilience are prioritized through projects like composting facility development to reduce waste and produce organic material. Plans for installing EV charging stations and upgrading water and sewer systems further underscore the commitment to sustainable infrastructure. Community engagement is a cornerstone of the HMP, with efforts to involve residents in sustainability initiatives, including composting education and roadside cleanup events. Communication through social media and newsletters promotes community awareness encouraging participation.

Newcomb collaborates extensively with state and regional entities like the Department of Environmental Conservation (DEC) and NYSERDA to secure easements for snowmobile trails and provide energy efficiency training for personnel. These partnerships, along with proactive use of federal and state grants, increase Newcomb's capacity to address current and future hazards.

Collectively, these initiatives reflect a comprehensive approach to hazard mitigation, integrating environmental stewardship, infrastructure modernization, and community resilience into a cohesive strategy.

Planning Process

The town initially took part in a Hazard Mitigation Survey, followed by an in-person Stakeholder Hazard Mitigation Introduction Meeting. Subsequently, the Town Supervisor received a copy of the town's section of the county plan for review and revision. The Town Supervisor participated in county-level meetings related to the plan and attended a final mitigation strategy meeting.

Capability Assessment

Newcomb conducted a capability assessment as part of the plan update to evaluate regulatory and planning mechanisms. The town enforces an array of key policies including a zoning ordinance, floodplain ordinance, comprehensive plan, stormwater management plan, economic development plan for special projects, historic preservation plan, building codes, and fire codes. These regulations ensure that new development is designed to withstand potential hazards, enhancing the town's overall resilience.

Table 192. Planning Documents: Town of Newcomb

Planning Documents
Zoning Ordinance (2017)
Floodplain Ordinance (2017)
Town Comprehensive Plan (2017)
Subdivision Regulations (2008)
Stormwater Management Plan (undetermined)
Economic Development Plan (undetermined)
Historic Preservation Plan (1995)
Building Codes (2023)
Fire Codes (2023
Comprehensive Emergency Management Plan (2018)

This hazard mitigation plan should be integrated into Newcomb's existing planning frameworks to enhance coordination and resilience. The hazard ranking can be incorporated into the Comprehensive emergency management plan (CEMP), while mitigation projects can be included in the capital improvement plan. Key elements of this plan align with community comprehensive plans, ensuring that enabling legislation remains consistent across all relevant documents. This integration will help maintain uniformity in policies and regulations, strengthening the town's overall hazard preparedness and response efforts.

The town uses a variety of funding sources to implement programs and projects. Capital improvement funds were used for water and sewer projects. CDBG funds were used for Main Street Renewal projects and water and sewer fees are used to maintain systems. Partnering and

DRAFT

intergovernmental agreements exist with other Essex County towns and county agencies. Newcomb uses public and private initiatives to conduct hazard–related education with the fire department conducting education programs at schools.

Newcomb evaluated four key areas as part of itself–assessment. The town ranked its planning and regulatory capabilities and administrative and technical capabilities as Moderate, while financial capabilities and education and outreach efforts were rated High. The town also assessed the flood vulnerability of critical facilities during the plan update. The table below details whether these facilities are located in the 500-year floodplain, have experienced past flooding, and have undergone mitigation measures to reduce flood risk. Newcomb evaluated generator capabilities to determine if these facilities can operate during power outages—a common challenge for critical infrastructure during disasters.

Critical Facilities

Critical facilities were assessed as the plan was updated. Newcomb has a fire station, rescue squad, utility and power substations, town-owned medical facility, central school, private utility companies (Frontier, NYSEG, SLIC for fiber internet), and water and sewer plants. Generator capabilities were not assessed.

Table 193. Critical Infrastructure in Floodplain: Town of Newcomb

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Fire Station (Shelter)	No	No	No	Yes
Rescue Squad	No	No	No	Yes
Utility Substation	No	No	No	Yes
Power Substation	No	No	No	Yes
Medical Facility	No	No	No	Yes
Town Garage & Town Offices	No	No	No	Yes
Community Center (Shelter)	No	No	No	Yes
Newcomb Central School (Shelter)	No	No	No	Yes
Private Utilities	No	No	No	Yes
Water Plant	No	No	No	Yes
Sewer Plant	Yes	No	No (needs berm around facility)	Yes

The town identified three areas for use for temporary housing after a disaster. In the past, displaced residents obtained temporary housing with friends, relatives or neighbors.

Table 194. Housing for Displaced Residents: Town of Newcomb

Facility	Type of Housing
Town Beach Parking Lot	RV, mobile homes
Industrial Triangle	RV, mobile homes
Newcomb School field	RV, mobile homes
Newcomb Central School	ARC Shelter
Newcomb Fire Hall	ARC Shelter
Newcomb Community Center	ARC Shelter

National Flood Insurance Plan (NFIP) Summary

The following information concerns flood vulnerable structures in Lewis. The numbers of actual structures in flood–vulnerable areas is likely larger than the number of insured structures. Once FEMA updates the Flood Insurance Rate Maps (FIRMs), revised maps will provide a more accurate count of vulnerable structures.

Table 195. Flood Insurance: Town of Newcomb

Policies	2011	2018	2024	Total Amount of Claims
Policies	7	11	11	$210,146
Number of Repetitive Loss Structures	2	3 single family homes	-	-

Newcomb will continue to actively manage floodplains to mitigate future flood risks. New development within special flood hazard areas will be carefully reviewed and approved to ensure compliance with the local floodplain ordinance. As FEMA updates the Flood Insurance Rate Maps (FIRMs), the town will hold meetings with floodplain managers, town supervisors, and village mayors to provide training on the National Flood Insurance Program (NFIP). These meetings will also serve as a forum to discuss compliance requirements and best practices for floodplain management.

Hazard Identification & Ranking

Table 196. Hazard Ranking: Town of Newcomb

Hazard Ranking	Hazards
HIGH	• Extreme Temperatures

DRAFT

Hazard Ranking	Hazards
	• High Winds • Severe Winter Storms
MEDIUM	• Droughts • Earthquakes • Hailstorms • Ice Storms • Wildfires
LOW	• Avalanches • Floods • Landslides • Rail Events

Hazard Event History

Table 197. Hazard Events: Town of Newcomb

Hazard	Event	Year	Impact on Newcomb
Flooding	Heavy rain floods	2011	Flooded and damaged low–lying areas, washed out smaller roads, & disrupted access to the Adirondack Park interior.
	Spring floods	2024	Snowmelt combined with rain caused erosion along riverbanks & impacted critical infrastructure like bridges & culverts.
Winter Storms & Cold	Ice storm	1998	Power outages lasting weeks caused significant disruption, with blocked roads slowing recovery efforts.
	February blizzard	2024	Heavy snowfall disrupted travel along Route 28N & created hazardous conditions for residents.
Severe Thunderstorms	Summer thunderstorms	Recurring	High winds & lightning damaged trees & power lines, causing temporary outages in remote areas.
Earthquakes	Adirondack regional quake	2002	Minor tremors felt in Newcomb; no structural damage reported but raised awareness of seismic risks.
Wildfires	Forest fires	1903	Large–scale fires in nearby wilderness areas posed a threat to Newcomb's forested surroundings & wildlife habitats.
	Summer fires	2024	Small brush fires near trailheads were quickly contained but highlighted increasing drought–related risks.

Hazard	Event	Year	Impact on Newcomb
Transportation	Road & bridge damage	Recurring	Seasonal flooding & winter storms caused recurring damage to remote access roads & bridges, affecting travel to the High Peaks region.
Power Outages	Ice storm	1998	Extended outages disrupted daily life & emergency services, especially in isolated parts of town.
	Thunderstorm outages	Recurring	Severe storms caused power outages in rural areas, with trees frequently falling on utility lines.
Drought	Prolonged dry conditions	2024	Water shortages stressed private wells & increased wildfire risks in nearby forested areas.
Public Health	Lyme disease	Recurring	High tick populations in wooded areas remain a concern for residents & visitors.
	COVID–19 Pandemic	2020+	Highlighted gaps in emergency response capabilities, leading to long–term planning improvements.

Hazard Analysis

Newcomb faces a variety of natural and man–made hazards impacting the town's rural infrastructure, environment, and public safety. Flooding poses a recurring challenge, with heavy rain floods in 2011 damaging low–lying areas, washing out smaller roads, and disrupting access to the Adirondack Park interior. Similarly, the 2024 spring floods, driven by snowmelt and heavy rainfall, caused erosion along riverbanks and affected critical infrastructure, including bridges and culverts, underscoring the need for robust flood management systems.

Winter storms remain a significant threat as evidenced by the 1998 ice storm, which caused prolonged power outages, delaying recovery efforts due to blocked roads. The February 2024 blizzard compounded these challenges, with heavy snowfall creating hazardous conditions and disrupting travel along key routes like Route 28N. Severe thunderstorms are another recurring hazard, bringing high winds and lightning that damage trees and power lines, resulting in temporary outages, particularly in remote areas.

Geological and environmental risks are present in Newcomb. The 2002 Adirondack Region earthquake caused minor tremors, raising awareness of seismic risks, although no structural damage was reported. Wildfires, including the large–scale forest fires of 1903 and smaller fires in 2024, highlight the increasing risks associated with drought conditions in forested and trailhead areas. Transportation infrastructure frequently suffers damage from seasonal flooding and winter storms, with remote access roads and bridges repeatedly affected, hindering travel to the High Peaks region.

Power outages (a consistent issue) were caused by events like the 1998 ice storm and recurring summer thunderstorms. Outages disrupt daily life and emergency services, especially in isolated

DRAFT

parts of town. Drought conditions in 2024 further stressed private wells and increased wildfire risks, adding to the town's climate–related challenges.

Public health concerns also persist, with high tick populations in wooded areas contributing to recurring cases of Lyme disease. The COVID–19 Pandemic exposed gaps in emergency response capabilities, prompting long–term improvements in planning and preparedness.

Newcomb's exposure to flooding, severe weather, wildfires, and public health challenges underscores the importance of ongoing mitigation strategies. Investments in resilient infrastructure, enhanced emergency response systems, and proactive environmental management will be critical in reducing risks and ensuring the safety of residents and visitors.

Hazard Mapping

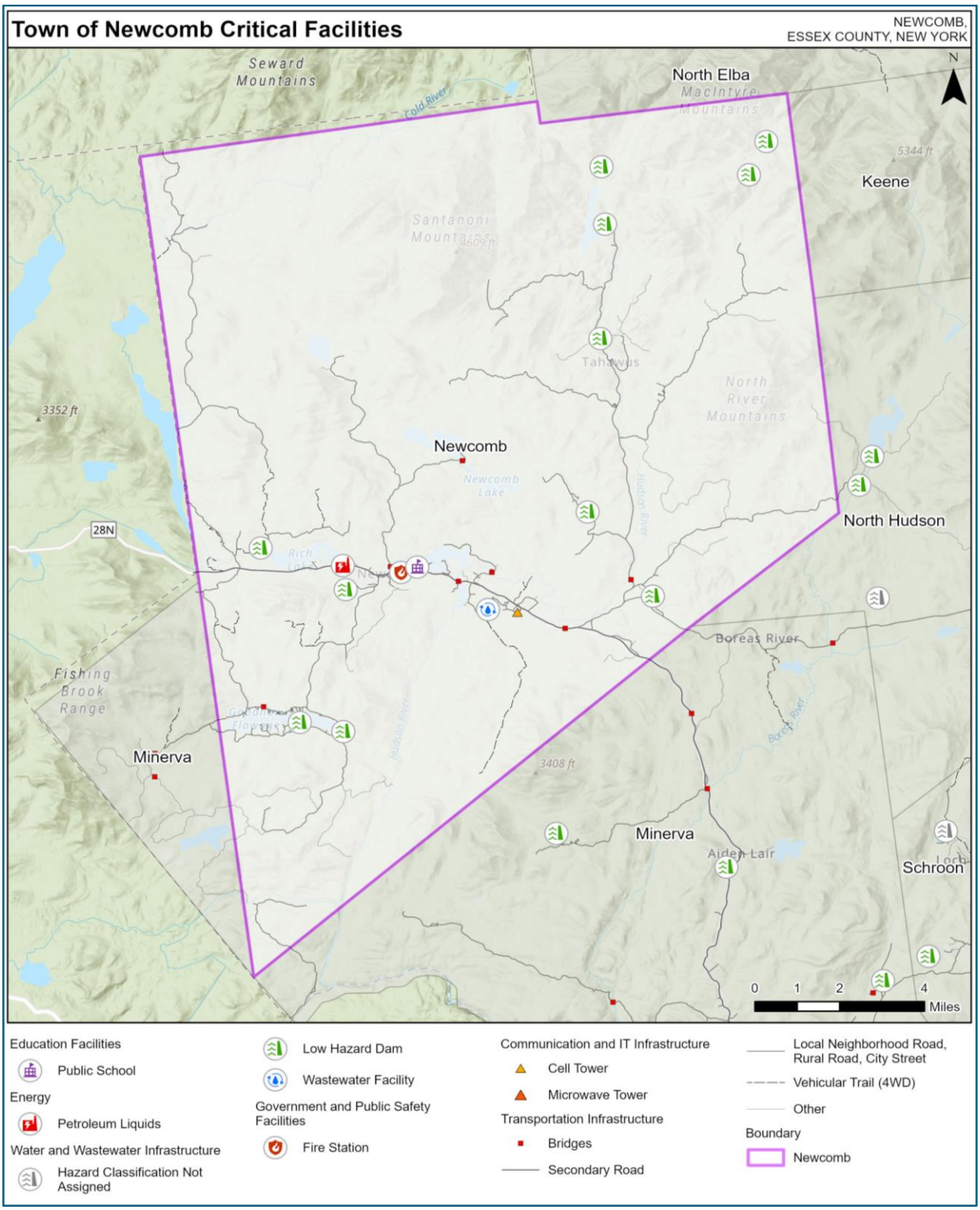


Figure 74. Critical Facilities: Town of Newcomb

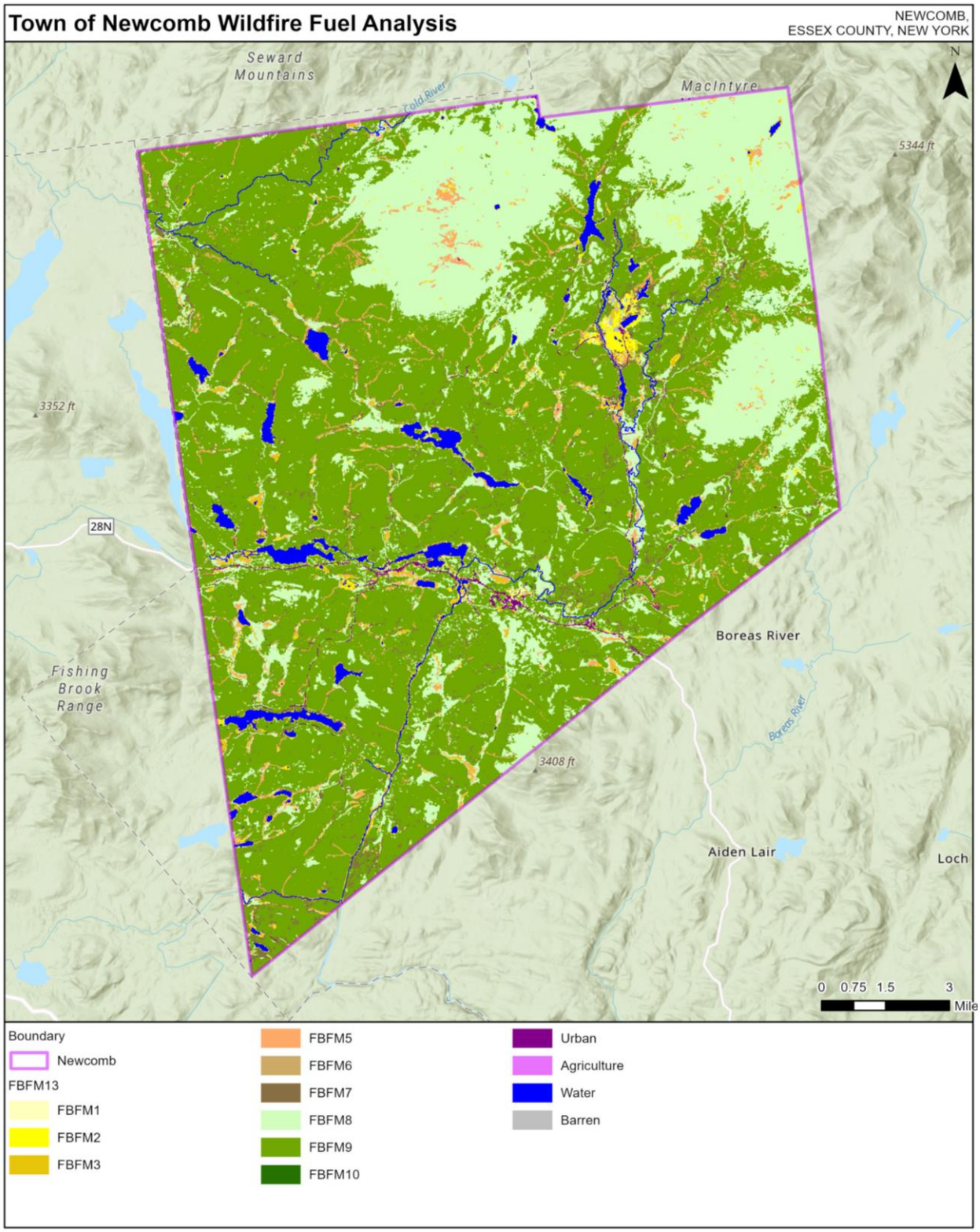


Figure 75. Wildfire Fuel Analysis: Town of Newcomb

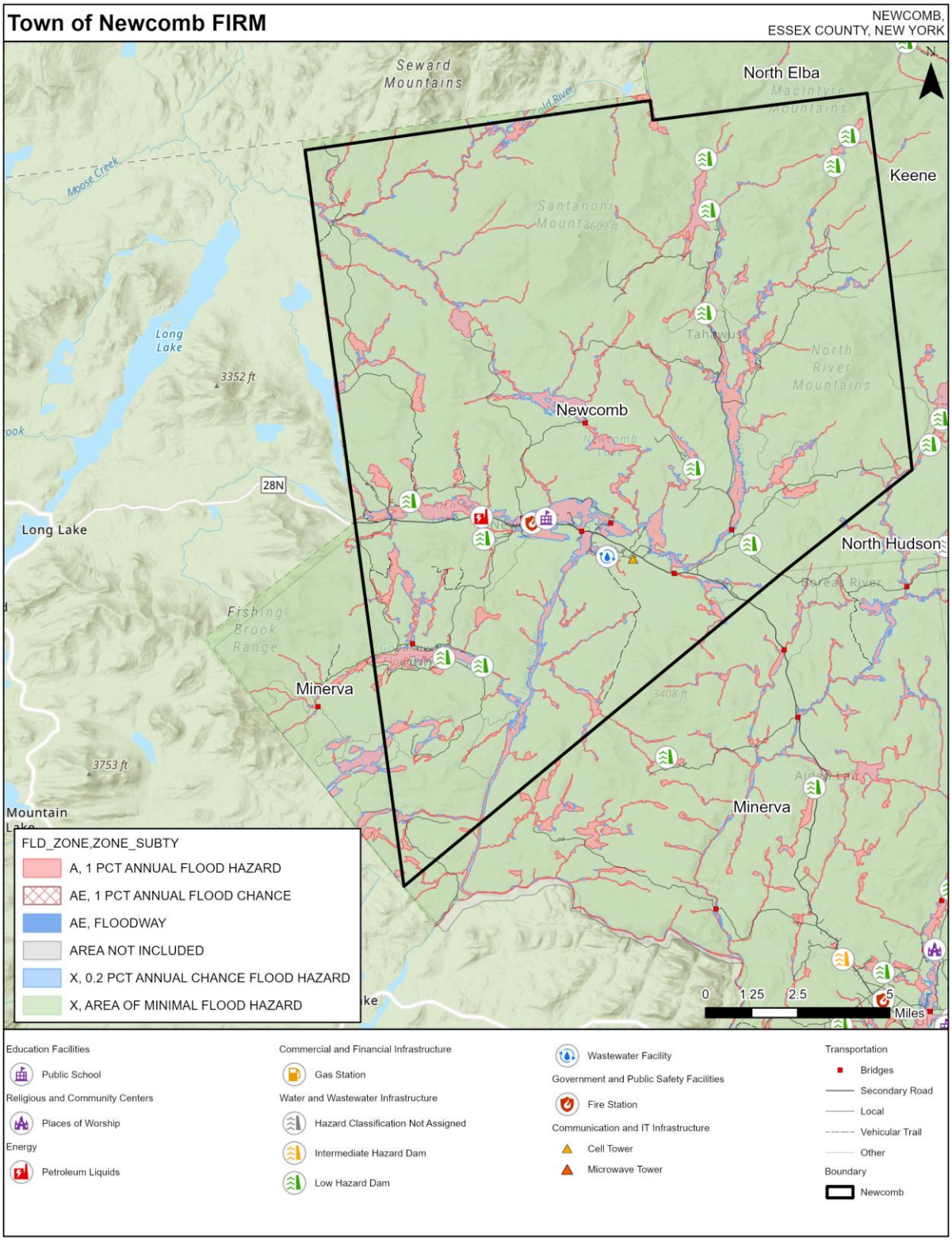


Figure 76. FIRM: Town of Newcomb

Potential Loss

A potential loss assessment was conducted for Lewis using data from the Essex County Real Property website. Parcel data was analyzed to determine the number and value of structures within each of the nine class codes. The total number of structures and their corresponding values were then calculated for each classification. To estimate the potential impact of a hazard event, it was assumed that 10% of all structures within the jurisdiction would be affected. Similarly, the financial loss was projected as 10% of the total property value within each class code.

The Essex County Real Property Tax Services website categorizes real property into nine class codes:

- 100 Agriculture
- 200 Residential
- 300 Vacant Lands
- 400 Commercial
- 500 Recreation and Entertainment
- 600 Community
- 700 Industrial
- 800 Public Services
- 900 Forest, Conservation Lands and Parks

Table 198. Potential Loss: Town of Newcomb

Class Code	Number of Structures	Structure Values	Number of Structures Impacted	Potential Loss
100	0	$0	0	$0
200	612	$136,890,895	61	$13,689,089
300	125	$10,149,100	12	$1,014,910
400	6	$1,496,400	0	$149,640
500	4	$2,248,900	0	$22,4890
600	29	$28,416,800	2	$2,841,680
700	1	$398,000	1	$39,800
800	18	$10,461,583	2	$1,046,158
900	254	$413,603,680	25	$41,360,368

Mitigation Strategy

The mitigation strategy included in the 2019 plan was reviewed to determine if the project(s) were completed. New mitigation projects were identified for the 2025 plan update. These new projects are included in the table below. Project prioritization occurred as the plan was updated.

These projects list priorities of High, Medium, or Low priority. Generally speaking, high priority projects are those enabling towns and villages to be fully functional during times of disaster. Medium and Low projects improve other town and village functions, addressing actual residents of these municipalities. Project implementation occurs as funding is obtained. Any project can be implemented as funding, political will, and other aspects are addressed and opportunities align.

Proposed mitigation project costs were determined and included in the table below. Other mitigation projects estimated the costs of these projects. The potential cost to implement mitigation projects are ranked as High, Medium, and Low cost based on projected financial requirements.

Table 199. Mitigation Strategies: Town of Newcomb

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
1. Educate residents & visitors on what to do before, during & after disasters	3	Brochures in public places for education purposes	All	Town Supervisor	Low	1-5 years	Annual budgets	Medium	Education & Outreach
2. Sewer Plant	2	Build a berm surrounding to prevent flooding	Flood	Town Supervisor	Med	1-5 years (New Project)	NYS Department of Transportation (NYSDOT) BRIDGE NY Program, NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants	Medium	Infrastructure

DRAFT

Newcomb will continue to actively implement projects and programs to reduce disaster–related effects from impacting the town.

Annex K: Town of North Elba

Profile

The Town of North Elba spans 155 square miles and is situated in the northwestern part of Essex County. It is bordered to the north by the towns of St. Armand and Wilmington, to the west by Franklin County, to the south by the towns of Keene and Newcomb, and to the east by Keene and Wilmington.

The town is surrounded by high mountains, with several river systems and lakes serving as natural drainage outlets. The West Branch of the Au Sable River, renowned for trophy trout fishing, originates in the southern mountains and flows northeast into the neighboring town of Wilmington. The Chubb River begins on the slopes of Street Mountain (elevation 4,216 feet) and runs through North Elba, contributing to the town's extensive water network.

The climate of the region features long, cold winters with considerable snowfall and comparatively short summers. Precipitation averages 38 inches throughout the year with temperatures ranging from -20° to 100° Fahrenheit.

Development is concentrated in and between villages, and along the two major routes (State Highways 73 and 86) leading in and out of town. In the hamlet of Ray Brook, on the route from Lake Placid to Saranac Lake, there are NYSDEC regional headquarters, NYS Police barracks, the Adirondack Park Agency (APA), a medium security Federal Prison housing 1,100 inmates and a New York State Correctional Facility housing approximately l275 inmates. There is an excellent level of cooperation between the town and these facilities, with agreements in place for sharing resources in times of need.

In 1932 and again in 1980, Lake Placid hosted the Winter Olympics. Several Olympic venues are located in North Elba. It has since become a major venue and training center for winter sports and, in recent years, for various outdoor competitions throughout the year. While this has been a boon for the local economy, it also increases vulnerabilities to several hazards. Unlike most other towns in the county, North Elba/Lake Placid regularly host events drawing over 10,000 people. The various venues are owned by the town but operated by the Olympic Regional Development Authority. ORDA personnel work well with town emergency service staff to coordinate training and drills and are on call in the event of an emergency. North Elba has a CEMP and has worked closely with ECOES to ensure the safety of residents and visitors alike.

Table 200. Table of Facts: Town of North Elba

Fact	Description
Land Area	156.4 sq. miles
Incorporated Village(s)	Town
Hamlets	Ray Brook
Population Census	7,618 (2022 Census)
Governance	Town
Total Assessed Valuation	$4,262,219,702
Highest Elevation	Algonquin 5114'

DRAFT

Fact	Description
Largest Lake	Lake Placid
River(s)	W. Branch of the Au Sable & Chubb
Dams	1
Bridges	4 County Road
Interstate Highway	None
State Routes	73 & 86
County Roads	21, 23, 26, 31, 32
Land Agriculture Use	Maple sugar, cattle, pigs, sheep, horses
Land Classified Industrial	None
Land Classified Residential, as Hamlet	Ray Brook, NY
Hospital/Medical Facility	Adirondack Health in Lake Placid (Health Center) and Saranac Lake, Elderwood (nursing home), Mountain Medical (urgicare)
Fire & Rescue	Lake Placid Fire, Lake Placid EMS and Saranac Lake Fire and Saranac Lake EMS
Schools	North County Community College, 3 private schools, Lake Placid, & Saranac Lake Central School Districts
Railroads	Adirondack Rail Trail
Passenger Trains/Day	None
Freight Trains/Day	None
Ferry Dock(s)	None
Interstate Bridge	None
Largest Employer	Olympic Regional Development Authority (ORDA)
Law Enforcement	NYSP, County Sheriff, Lake Placid, & Saranac Lake Police Depts.
Correctional Facility	Adirondack Correctional Facility–Ray Brook Federal Correctional Institution–Ray Rook
Power Utility Provider(s)	NYSEG, National Grid& Lake Placid Village Municipal Electric Department
Water Supply Source(s)	Lake Placid (lake), municipal wells, private wells
Emergency Shelters	High School
Critical Facilities	Adirondack Health in Lake Placid & Saranac Lake

Notable Updates

North Elba undertook several initiatives to address flooding risks, climate and environmental hazards, and public safety concerns. Efforts to mitigate flooding include grant–funded projects like the Waterfront Revitalization initiative (to manage sediment levels in the Au Sable River). Upgrades to the town water and sewer systems were also discussed as a means to improve resilience against potential flooding impacts. The town focuses on environmental sustainability, with improvements to trail systems like Craig Wood addressing erosion and ensuring long–term usability. Monitoring of the Adirondack Landfill revealed minimal gas emissions, reducing environmental hazards and supporting ongoing sustainability efforts.

Winter storm management remains a priority for North Elba, particularly during high traffic periods like the Eclipse, which stressed the need for robust operational planning and infrastructure readiness. Enhancements to recreational facilities like upgrades to the Olympic Ski Jumps and Horse Show Grounds, incorporate measures to improve winter resilience. Public health and safety were also emphasized, including the adoption of a chest compression system for ambulances, enhancing emergency response capabilities. The lingering impacts of the COVID–19 Pandemic underscore the importance of continued investments in public safety infrastructure.

In terms of utilities and energy, updates to the Benefit Sewer and Water Districts reflect proactive steps to accommodate future demands. Discussions also touched on alternative energy solutions as part of the broader hazard mitigation strategy. The town's commitment to balancing tourism growth with community safety was evident in discussions with stakeholders like ROOST. These collaborations manage increased traffic during major events while maintaining a focus on hazard mitigation.

Community engagement remains a cornerstone of North Elba's hazard mitigation efforts. Regular workshops and public hearings provide platforms for residents and stakeholders to discuss strategies and improvements, ensuring transparency and inclusivity in planning. These initiatives collectively demonstrate North Elba's proactive approach to building resilience against a variety of hazards, safeguarding the community for the future.

Planning Process

The town initially took part in a Hazard Mitigation Survey, followed by an in-person Stakeholder Hazard Mitigation Introduction Meeting. Subsequently, the Town Supervisor received a copy of the town's section of the county plan for review and revisions to update its portion of the county plan. The Town Supervisor participated in county-level meetings related to the plan and attended a final mitigation strategy meeting.

Capability Assessment

North Elba implemented a range of planning mechanisms to support hazard resilience and community development, including comprehensive emergency management plan, emergency operations plan, disaster recovery plan, continuity of operations plan, floodplain regulations, zoning regulations, subdivision regulations, land use codes, stormwater management plan, capital improvement plan, economic development plan (roost), historic preservation plan, building codes, and fire codes. Collectively, these regulatory measures ensure that new development is both hazard–resistant and aligned with sustainable growth objectives. Through an assessment of its

DRAFT

planning capability, the town recognizes that these mechanisms play a critical role in mitigating potential hazards and fostering long–term community resilience.

Table 201. Planning Documents: Town of North Elba

Planning Documents
Comprehensive Emergency Management Plan
Emergency Operations Plan
Disaster Recovery Plan
Continuity of Operations Plan
Floodplain Regulations
Zoning Regulations
Subdivision Regulations
Land Use Codes
Stormwater Management Plan
Capital Improvement Plan
Economic Development Plan (ROOST)
Historic Preservation Plan
Building Codes
Fire Codes

North Elba conducted a self–assessment of capabilities, evaluating key resources and support systems. The town employs a planner and contracts engineering firms as needed. An emergency manager oversees hazard event response, while the code officer also serves as the floodplain administrator. Land surveyors are hired on an as–needed basis, and the Adirondack Park Agency (APA) and the Department of Environmental Conservation (DEC) provide scientific expertise when required. The town utilizes the county GIS system as needed, and Essex County assists with grant writing efforts.

This hazard mitigation plan should be integrated into North Elba's existing planning frameworks to enhance coordination and resilience. The hazard ranking can be incorporated into the comprehensive emergency management plan (CEMP), while mitigation projects can be included in the capital improvement plan. Key elements of this plan align with community comprehensive plans, ensuring that enabling legislation contains consistent information across all relevant documents. This integration will help maintain uniformity in policies and regulations, strengthening the town's overall hazard preparedness and response efforts.

Capital improvement funds were used in the past as well as Community Development Block Grants (CDBG) to improve the town. North Elba has numerous inter–governmental and partnering agreements with surrounding towns and the Essex County. Water and sewer fees are used to maintain the currents systems.

Education and outreach efforts were also evaluated as part of the assessment. The town delivers fire and school safety programs using popular social media platforms like X (formerly Twitter) and Facebook to communicate important information to residents and tourists. North Elba conducted a self–assessment across four key areas. Planning and regulatory capabilities, along with administrative and technical capabilities, were rated High, while financial capabilities and education and outreach efforts were assessed as Moderate.

Critical Facilities

Flood vulnerabilities to critical facilities were assessed as the plan was updated. The table below describes if these facilities are located in the 500–year floodplain, if the facility has been flooded in the past, and if any kind of mitigation was completed to reduce the flood potential of these structures. Generator capabilities were also assessed to determine if these facilities could function without electric power—a common issue for critical facilities during disaster events.

Table 202. Critical Infrastructure in Floodplain: Town of North Elba

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Police Station	No	No	No	Yes
Fire Station	No	No	No	Yes
Emergency Operations Center	No	No	No	Yes
Communication Center	No	No	No	Yes
Hospital	No	No	No	Yes
Nursing Home	No	No	No	Yes
Elementary School	No	No	No	Yes
Middle School & High School	No	No	No	Yes
Water Plant	No	No	No	Unknown
Sewer Plant	No	No	No	Unknown

The town identified three areas for temporary housing needs after a disaster. The Horse Grounds, Firehouse Snow Field, State Camp Site in Ray Brook, and the High School (designated American Red Cross Shelter) can each be used for RV or mobile homes, with water and electric onsite.

DRAFT

Table 203. Housing for Displaced Residents: Town of North Elba

Facility	Housing Type
Horse Grounds	RV, mobile homes
Firehouse Snow Field	RV, mobile homes
State Campground Ray Brook	RV, mobile homes
High School	ARC Shelter

National Flood Insurance Plan (NFIP) Summary

The following information concerns flood vulnerable structures in North Elba. The numbers of actual structures in flood–vulnerable areas is likely larger than the number of insured structures. Once FEMA updates the Flood Insurance Rate Maps (FIRMs), revised maps will provide a more accurate count of vulnerable structures.

Table 204. Flood Insurance: Town of North Elba

Policies	2011	2018	2024	Total Amount of Claims
Policies	7	9	16	$205,800
Number of Repetitive Loss Structures	0	1 (single family home)	-	-

North Elba will continue to actively manage floodplains to mitigate future flood risks. New development within special flood hazard areas will be carefully reviewed and approved to ensure compliance with the local floodplain ordinance. As FEMA updates the Flood Insurance Rate Maps (FIRMs), the town will hold meetings with floodplain managers, town supervisors, and village mayors to provide training on the National Flood Insurance Program (NFIP). These meetings will also serve as a forum to discuss compliance requirements and best practices for floodplain management.

Hazard Identification & Ranking

Table 205. Hazard Ranking: Town of North Elba

Hazard Ranking	Hazards
HIGH	• High Winds
MEDIUM	• Floods • Severe Winter Storms
LOW	• Drought • Earthquakes • Extreme Temperatures

Hazard Ranking	Hazards
	• Hailstorms • Hurricanes • Land Subsidence & Expansive Soils • Ice Storms • Landslides Wildfires

Hazard Event History

Table 206. Hazard Events: Town of North Elba

Hazard	Event	Year	Impact
Flooding	Hurricane Irene	2011	Severe flooding caused by Hurricane Irene led to road closures & infrastructure damage in North Elba.
Winter Storms & Cold	Ice storm	1998	Prolonged power outages, tree damage, & hazardous road conditions due to freezing rain.
Severe Thunderstorms	Severe summer storms	2023	High winds & hail caused roof damage, downed trees, & localized power outages.
Public Health	COVID–19 Pandemic	2020+	Business closures, remote schooling, & increased healthcare demands strained local resources.

Hazard Analysis

North Elba faces a range of hazards due to its location in the Adirondack region, impacting infrastructure, public safety, and economic stability. Flooding remains a significant threat, as demonstrated by Hurricane Irene in 2011, which caused extensive infrastructure damage and business disruptions. Seasonal flooding from the Au Sable River continues to affect the area. Winter storms and extreme cold pose additional challenges, with events like the 1998 Ice Storm and severe snowstorms frequently causing power outages, hazardous road conditions, and increased demands on public resources. Severe thunderstorms like those in 2023, bring high winds, downed trees, and power outages, resulting in localized damage. Public health challenges, notably the COVID–19 pandemic beginning in 2020, strained healthcare systems and disrupted the local economy.

Though less frequent, drought and wildfires risks have stressed water resources, increasing the likelihood of brush fires under dry conditions. While earthquakes are rare, minor seismic activity (like the 2002 Adirondack Region earthquake) has occurred with minimal damage. These hazards collectively impact North Elba's critical infrastructure, public services, and economic resilience, underscoring the need for continued mitigation and preparedness efforts.

DRAFT

Hazard Mapping

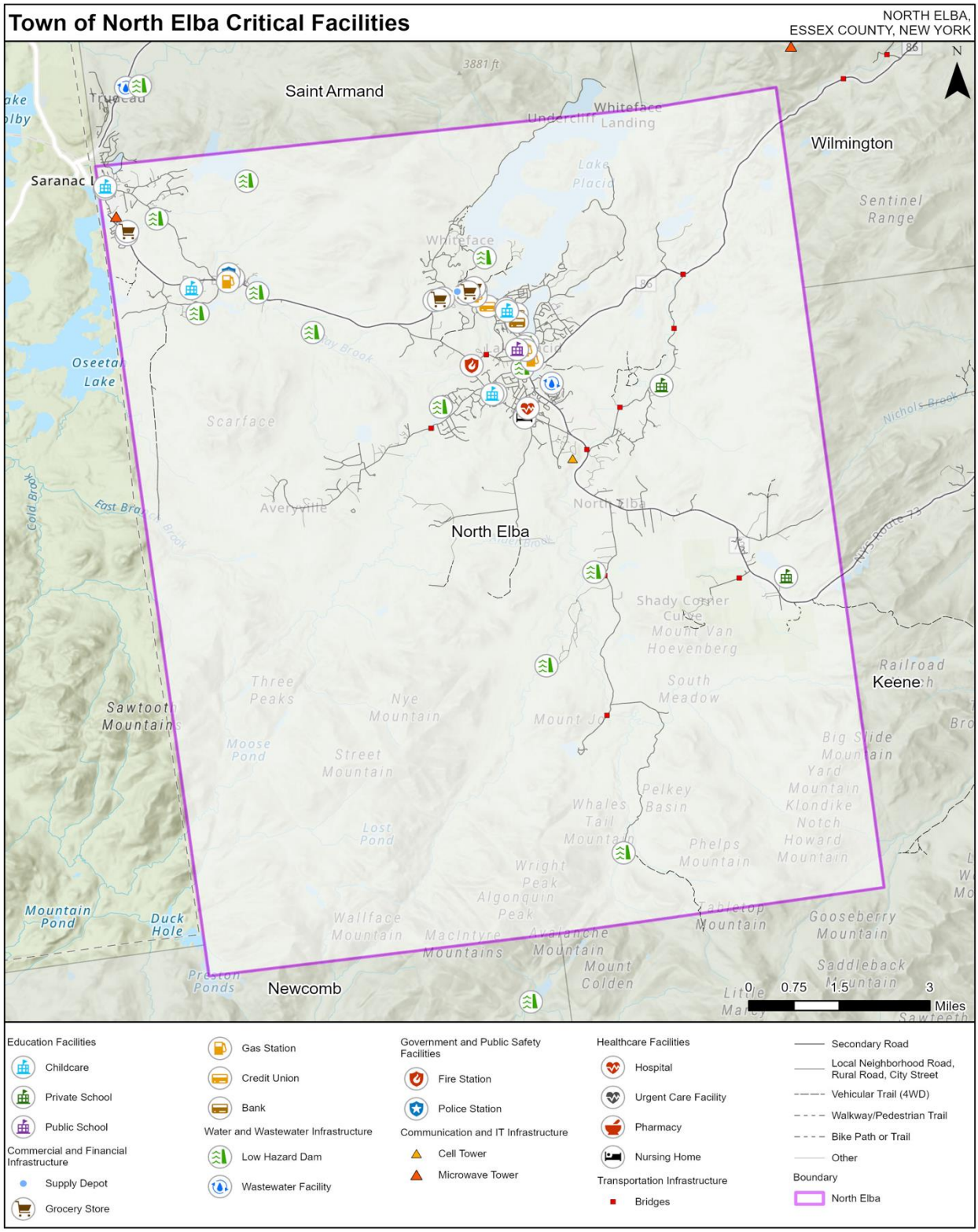


Figure 77. Critical Facilities: Town of North Elba

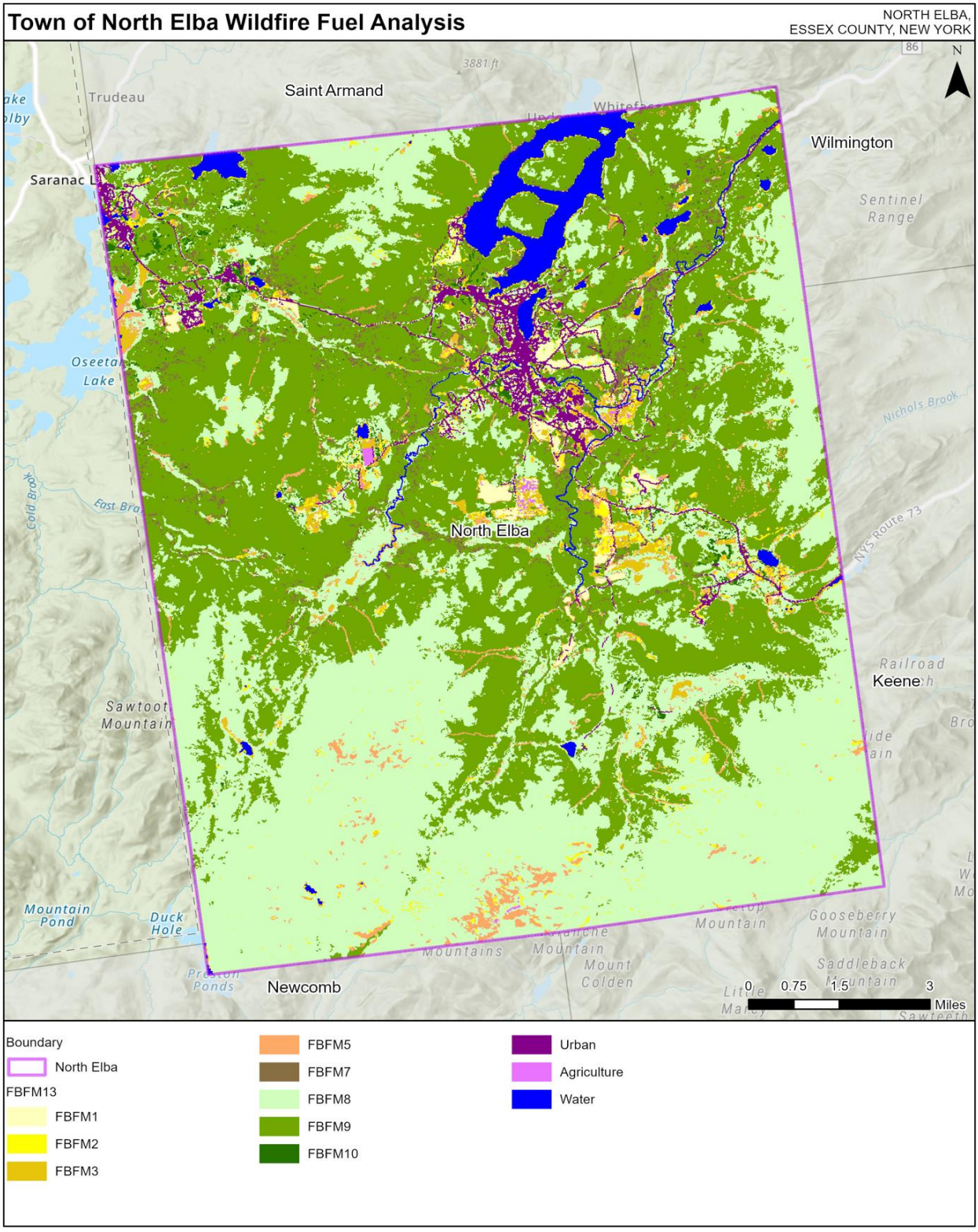


Figure 78. Wildfire Fuel Analysis: Town of North Elba

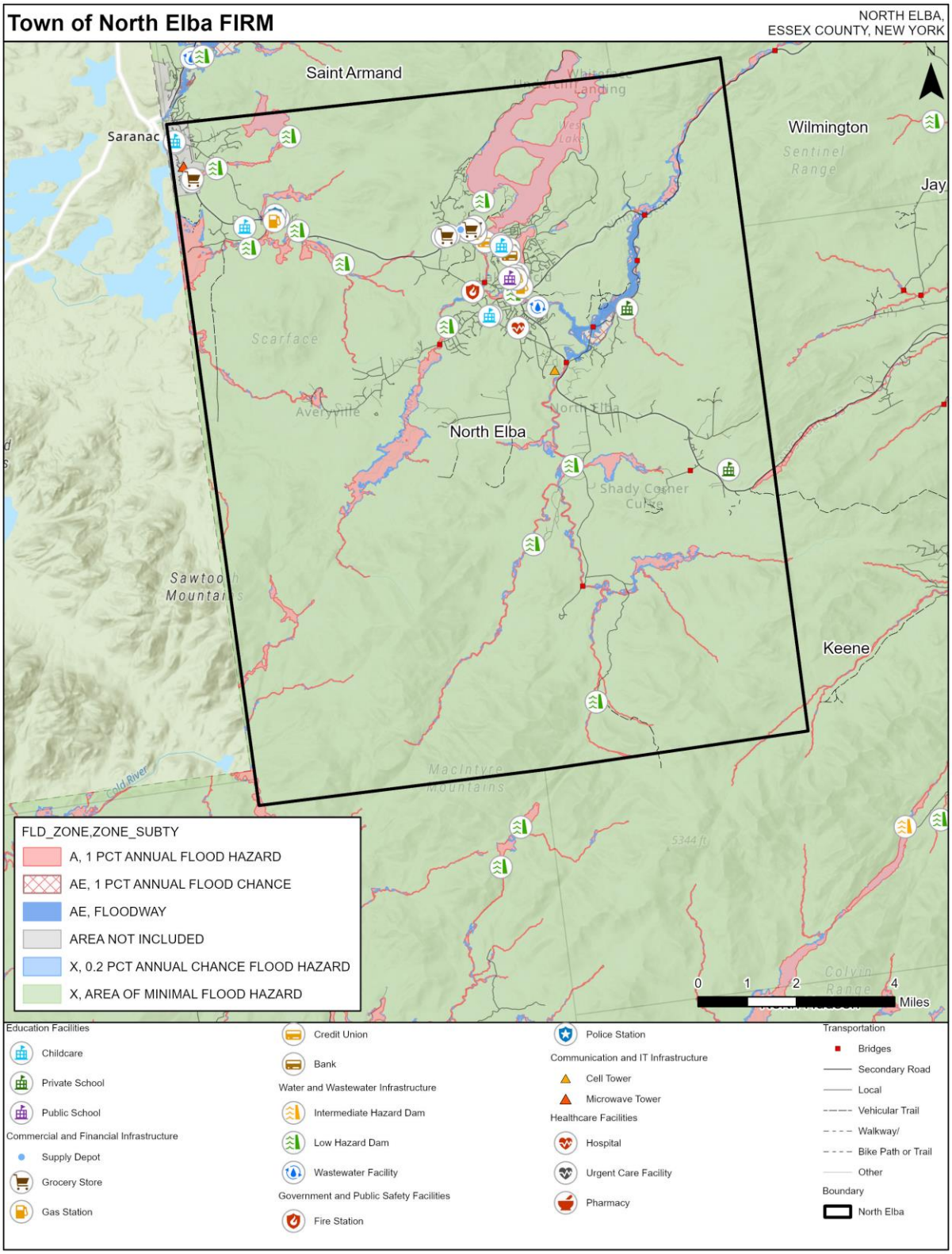


Figure 79. FIRM: Town of North Elba

Potential Loss

A potential loss assessment was conducted for North Elba using data from the Essex County Real Property website. Parcel data was analyzed to determine the number and value of structures within each of the nine class codes. The total number of structures and their corresponding values were then calculated for each classification. To estimate potential losses from a hazard event, it was assumed that 10% of all structures within the jurisdiction would be affected. The financial loss was projected as 10% of the total property value within each class code.

The Essex County Real Property Tax Services website categorizes real property into nine class codes:

- 100 Agriculture
- 200 Residential
- 300 Vacant Lands
- 400 Commercial
- 500 Recreation and Entertainment
- 600 Community
- 700 Industrial
- 800 Public Services
- 900 Forest, Conservation Lands and Parks

Table 207. Potential Loss: Town of North Elba

Class Code	Number of Structures	Structure Values	Number of Structures Impacted	Potential Loss
100	13	$7,932,100	1	$739,210
200	3,347	$2,468,195,115	3	$246,819,512
300	1,124	$187,010,576	112	$18,701,058
400	355	$403,717,632	35	$40,913,709
500	55	$409,137,090	5	$39,374,542
600	78	$492,188,900	8	$49,218,890
700	6	$8,202,300	0	$820,230
800	83	$83,342,570	8	$8,334,257
900	390	$202,493,419	39	$20,249,342

Mitigation Strategy

The mitigation strategy included in the 2019 plan was reviewed to determine if the project(s) were completed. New mitigation projects were identified for the 2025 plan update. These new projects are included in the table below. Prioritization of projects occurred as the plan was

updated. These projects list priorities of High, Medium, or Low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and Low priority projects improve other functions of towns and villages, addressing actual community residents. Project implementation will occur as funding is obtained. Any project can be implemented as funding, political will, and other aspects are addressed and opportunities align.

Proposed mitigation project costs were determined and included in the table below, along with estimated costs for projects in which exact costs are unknown. The potential cost to implement mitigation projects were ranked as High, Medium, or Low cost based on projected financial requirements.

Table 208. Mitigation Strategies: Town of North Elba

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
1. North Elba Salt Shed	2,4,5	Construct new salt shed to eliminate salt entering into Mirror & Placid lakes	Water Quality issues	Town DPW Dept	Medium	1-5 years	DOS	High	Structure & infrastructure
2. Develop education efforts for tourists	1, 3	Use brochures to educate tourists on hazards	All	Town Supervisor	Low	Year 1	Town budgets	Medium	Education & outreach
3. Health Care Center expansion	2,4	Requires stormwater solutions to reduce flooding from expansion of health care center	Flooding	Town Planning Board Town Code Officer	Low	As center expands	Town budgets	High	Structure & infrastructure projects
4. Bridge maintenance	2,4,5	Remove debris from bridges	Flooding	Town Hwy Dept.	Low	Year 1	Town budgets & staff	Medium	Infrastructure

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
5. River Road lake Placid	2,4,5	Infra-structure repairs – annual flooding and road closure	Flooding	Town Super-visor/ DPW Engineering	Varied	Ongo-ing/1-5 years	NYS De-partment of Trans-portation (NYSDOT) BRIDGE NY Pro-gram, NYS Em-pire State Develop-ment (ESD) In-frastruc-ture Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Ru-ral Devel-opment Water Grants, US DOT Bridge In-vestment Program	Me-dium	Infra-structure
6. River Street Bridge Lake Placid	2,4,5	Infra-structure repairs – annual flooding and road closure	Flood-ing/Ero-sion (Scour)	Town Super-visor/ DPW Engineering	1.5 Mil-lion	Initial Plan-ning/Ob-servation	NYS De-partment of Trans-portation (NYSDOT) BRIDGE NY Pro-gram, NYS Em-pire State Develop-ment (ESD) In-frastruc-ture Grants, BRIC, FEMA HMGP,	Me-dium	Infra-structure

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
							FEMA FMA, USDA Rural Development Water Grants, US DOT Bridge Investment Program		

North Elba will continue to actively implement project and programs to reduce the effects from disasters impacting the town.

Annex L: Town of North Hudson

Profile

The Town of North Hudson takes its name from its proximity to the northern end of the Hudson River. The town is home to two branches of the Schroon River, a south–flowing tributary of the Hudson. By the late 19th century, tourism became the dominant industry, particularly in areas like Underwood and Elk Lake. North Hudson was also known for Frontier Town, a Wild West–themed family attraction that operated from 1952 to 1998. The park's closure had a significant economic impact on the town, and like many other small Adirondack communities, North Hudson has faced economic challenges in the years since.

In recent years, efforts were made to revitalize the area. Governor Cuomo announced a significant state investment to create a new Gateway Complex on the grounds of the former Frontier Town property. This investment, totaling nearly $32 million, includes the development of the Frontier Town Complex as part of the Exit 29 Gateway Project, which began construction in April 2018. Local government representatives and state officials gathered to celebrate the ribbon–cutting of the first phase of this new complex, which features a campground, equestrian facilities, and a day–use area. Neighboring lands will also be used for additional camping and recreational opportunities. Future phases will include expanded camping and equestrian facilities, as well as commercial ventures like the newly established Paradox Brewery. Town leaders hope that this project will not only create new private sector jobs but also serve as a hub for access to newly acquired forest preserve lands like The Boreas Ponds and Essex Chain of Lakes, supporting economic development and job creation for North Hudson and surrounding communities.

With a population of 207 (according to the 2020 US Census), North Hudson is the smallest town in Essex County by population, but the second largest in area—spanning 190 square miles. It is bordered by the towns of Keene and Elizabethtown to the north, Moriah and Crown Point to the east, Schroon to the south, and Minerva and Newcomb to the west. North Hudson encompasses vast wilderness areas with mountainous terrain, including the Dix Range, where peaks exceed 4,000 feet in elevation, as well as numerous lakes and streams. The Schroon River, which drains the area, has experienced past flooding including a significant ice jam event in 1955.

North Hudson's population is concentrated along two major roads: US Route 9 (north–south) and County Route 2 (east–west), with Interstate Route 87 running parallel to both the river and Route 9. Close proximity to major transportation routes increases community vulnerabilities to transportation and hazardous materials incidents. Recent mitigation efforts include flood prevention roadwork by County DPW in a frequently flooded residential area known as Pepper Hollow. While the town has a large elderly population increasing their vulnerability to certain hazards, emergency personnel are well–trained and attentive to residents needing special assistance.

Table 209. Table of Facts: Town of North Hudson

Fact	Description
Land Area	190 sq. miles/122,114.2 acres
Incorporated Village(s)	None
Hamlets	None

DRAFT

Fact	Description
Population Census	207 (2020 Census)
Governance	Town
Total Assessed Valuation	$132,567,796 (conducting revaluation currently)
Highest Elevation	Dix Mountain–4,842’
Largest Lake	Elk Lake
River(s)	Boreas & Schroon
Dams	1 Palmer Dam (6 on private property)
Bridges	8 on County Roads
Interstate Highway	I–87 SSW to NE
State Routes	9
County Roads	2, 4, & 6
Land Agriculture Use	None
Land Classified Industrial	None
Land Classified Residential	207 acres
Hospital/Medical Facility	None
Fire & Rescue	North Hudson Volunteer Fire, Schroon Lake EMS
Schools	Schroon Lake Central–Schroon
Railroads	None
Passenger Trains/Day	None
Freight Trains/Day	None
Ferry Dock(s)	None
Interstate Bridge	4 on 87
Largest Employer	Paradox Brewery
Law Enforcement	NYSP & County Sheriff
Correctional Facility	None
Power Utility Provider(s)	National Grid
Water Supply Source(s)	Private wells
Emergency Shelters	Fire Station
Critical Facilities	Fire Station, Town Hall, Court House, Fuel Station (Sunoco)

Notable Updates

Recent developments in North Hudson highlight ongoing efforts infrastructure improvement and preparation for future growth. A notable update includes a property line survey conducted in the Town Park area, ensuring clear boundaries and aiding in future planning for park facilities. This survey is part of a broader initiative to revitalize town spaces, enhancing community resources. As North Hudson invests in projects like the new Frontier Town Complex and continues planning for additional recreational and commercial opportunities, these initiatives lay the groundwork for sustainable growth and economic revitalization, supporting the town's long-term vision.

Planning Process

The town initially took part in a Hazard Mitigation Survey, followed by an in-person Stakeholder Hazard Mitigation Introduction Meeting. Subsequently, the Town Supervisor received a copy of the town's section of the county plan for review and revision to update its portion of the county plan. The Town Supervisor participated in county-level meetings related to the plan and attended a final mitigation strategy meeting.

Capability Assessment

North Hudson is actively working on various planning documents to enhance community preparedness and regulatory standards. Currently, the town is collaborating with the county to develop an emergency operation plan. It does not yet have an emergency management plan, floodplain ordinance, or town comprehensive plan in place. Zoning ordinances and building codes are enforced, with the Building Code Officer overseeing building codes and inspections, while fire codes are jointly managed by the Building Code Officer and the Fire Chief. Subdivision regulations are also in effect, administered through the Planning Board, which coordinates with zoning, codes, and health departments. These planning efforts demonstrate North Hudson's commitment to structured development and safety, despite some gaps in comprehensive planning documents.

Table 210. Planning Documents: Town of North Hudson

Planning Documents
Emergency Operation Plan (working on with county)
Floodplain Ordinance: No
Comprehensive Emergency Management Plan: No
Zoning Ordinance: Yes
Subdivision Regulations (through Planning Board, Zoning, & Codes/Health
Town Comprehensive Plan: No
Building Codes: Yes, Building Code Officer
Fire Codes (Building Code & Fire Chief Conducts Inspections

DRAFT

North Hudson completed a self–assessment of capabilities as the plan was updated in 2025. The town has an emergency manager designated, and a code enforcement officer. It uses county staff for planning matters, engineering assistance, GIS and grant writing (Community Resources). The town contracts with land surveyors and engineers when needed.

CDBG (HUD) funds were used in the past for municipal water wells. The town has intergovernmental agreements with county agencies for snow and ice removal and an MOU with other towns for fire suppression and other shared resources and services.

The self–assessment included an evaluation of capabilities across key areas. Planning and regulatory capabilities, along with administrative and technical capabilities, were ranked as Moderate. Financial capabilities and education and outreach efforts received a Moderate ranking. The town website is used for public outreach (currently undergoing revision to enhance effectiveness).

Critical Facilities

Flood vulnerabilities of critical facilities were assessed as part of the plan update. The table below details whether these facilities are located in the 500–year floodplain, have experienced past flooding, and have undergone mitigation efforts to reduce flood risk. Generator capabilities were evaluated to determine if these facilities can operate during power outages—a common challenge for critical infrastructure during disasters. The fire station and emergency operations center were also assessed, found not to be located within the 500–year floodplain.

Table 211. Infrastructure in Floodplain: Town of North Hudson

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Fire Station	No	No	No	Yes (connected to other critical facilities)
Center/Town Hall (Emergency Operations)	No	No	No	Yes (connected to other critical facilities)
Highway Dept Garage (Equipment Storage Facility)	No	No	n/a	Yes (connected to other critical facilities)

North Hudson identified two areas that could be used for temporary housing units. One is the Fire Station parking lot, while the other identified as the Highway Wonderview. This is privately owned land but can be used when needed (no power or water). The Fire Station was previously designated as American Red Cross (ARC) Shelter though does not maintain this designation. In the past, displaced residents obtained temporary housing with friends, relatives or neighbors.

Table 212. Housing for Displaced Residents: Town of North Hudson

Facility	Type of Housing
Fire Department parking lot (no power/water)	RV, mobile homes
Wonderview (private lands)	RV, mobile homes
Schroon Lake Firehouse	Shelter

National Flood Insurance Plan (NFIP) Summary

The following information concerns flood vulnerable structures in Lewis. The numbers of actual structures in flood–vulnerable areas is likely larger than the number of insured structures. Once FEMA updates the Flood Insurance Rate Maps (FIRMs), revised maps will provide a more accurate count of vulnerable structures.

Table 213. Flood Insurance: Town of North Hudson

Policies	2011	2018	2024	Total Amount of Claims
Policies	1	3	3	$36,802
Number of Repetitive Loss Structures	-	-	-	-

North Hudson will continue to actively manage floodplains to mitigate future flood risks. New development within special flood hazard areas will be carefully reviewed and approved to ensure compliance with the local floodplain ordinance. As FEMA updates the Flood Insurance Rate Maps (FIRMs), the town will hold meetings with floodplain managers, town supervisors, and village mayors to provide training on the National Flood Insurance Program (NFIP). These meetings will also serve as a forum to discuss compliance requirements and best practices for floodplain management.

Hazard Identification & Ranking

Table 214. Hazard Ranking: Town of North Hudson

Hazard Ranking	Hazards
HIGH	• Wind Events • Ice Storms
MEDIUM	• Earthquakes • Extreme Temperatures • Hurricanes • Landslides • Winter Storms • Wildfires • Floods

DRAFT

Hazard Ranking	Hazards
LOW	• Avalanches • Hailstorms • Landslides & Expansive Soils • Drought

Hazard Event History

Table 215. Hazard Events: Town of North Hudson

Hazard	Event	Year	Impact
Flooding	Hurricane Irene	2011	Heavy rainfall led to significant flooding, causing road closures & infrastructure damage in the region.
	December flooding	2023	Heavy rainstorms & rapid snowmelt caused flooding, closing roads like Elk Lake Road & impacting transportation.
	July Northeastern U.S. floods	2023	Torrential rains resulted in flash flooding, affecting transportation routes & local properties.
Winter Storms & Cold	Ice storm	1998	Severe ice accumulation caused widespread power outages, tree damage, & hazardous travel conditions.
Severe Thunderstorms	Severe summer storms	2023	High winds & heavy rains led to downed trees & power lines, resulting in power outages & road blockages.
Public Health	COVID–19 Pandemic	2020+	The global pandemic led to health crises, economic disruptions, & implementation of public health measures in the community.

Hazard Analysis

North Hudson faces a range of natural and public health hazards that have significantly affected its infrastructure, community, and economy. Flooding remains a persistent threat, as demonstrated by Hurricane Irene in 2011, which brought heavy rainfall, widespread road closures, and infrastructure damage. In 2023, torrential rains from the July Northeastern U.S. floods and December rainstorms, combined with rapid snowmelt, triggered flash flooding. These events closed key transportation routes like Elk Lake Road, and caused damage to local properties, underscoring the urgent need for enhanced stormwater management and flood mitigation measures.

Winter storms, including the 1998 ice storm, also severely impacted the town. The storm caused widespread power outages, significant tree damage, and hazardous travel conditions, emphasizing the need for resilient power and transportation infrastructure. Severe thunderstorms like those in the summer of 2023, brought high winds and heavy rainfall, leading to downed trees and power lines, road blockages, and temporary power outages.

Public health challenges have tested town resilience. The COVID–19 Pandemic—beginning in 2020—brought health crises, economic disruptions, and the implementation of public health measures. This highlighted gaps in healthcare infrastructure and emergency preparedness, prompting long–term planning and improvements to ensure better community readiness for future crises.

North Hudson's exposure to flooding, severe storms, winter weather, and public health risks demonstrates the importance of comprehensive hazard mitigation planning. Strengthening infrastructure, improving emergency response capabilities, and fostering community preparedness are essential to mitigating future risks and ensuring the safety and sustainability.

DRAFT

Hazard Mapping

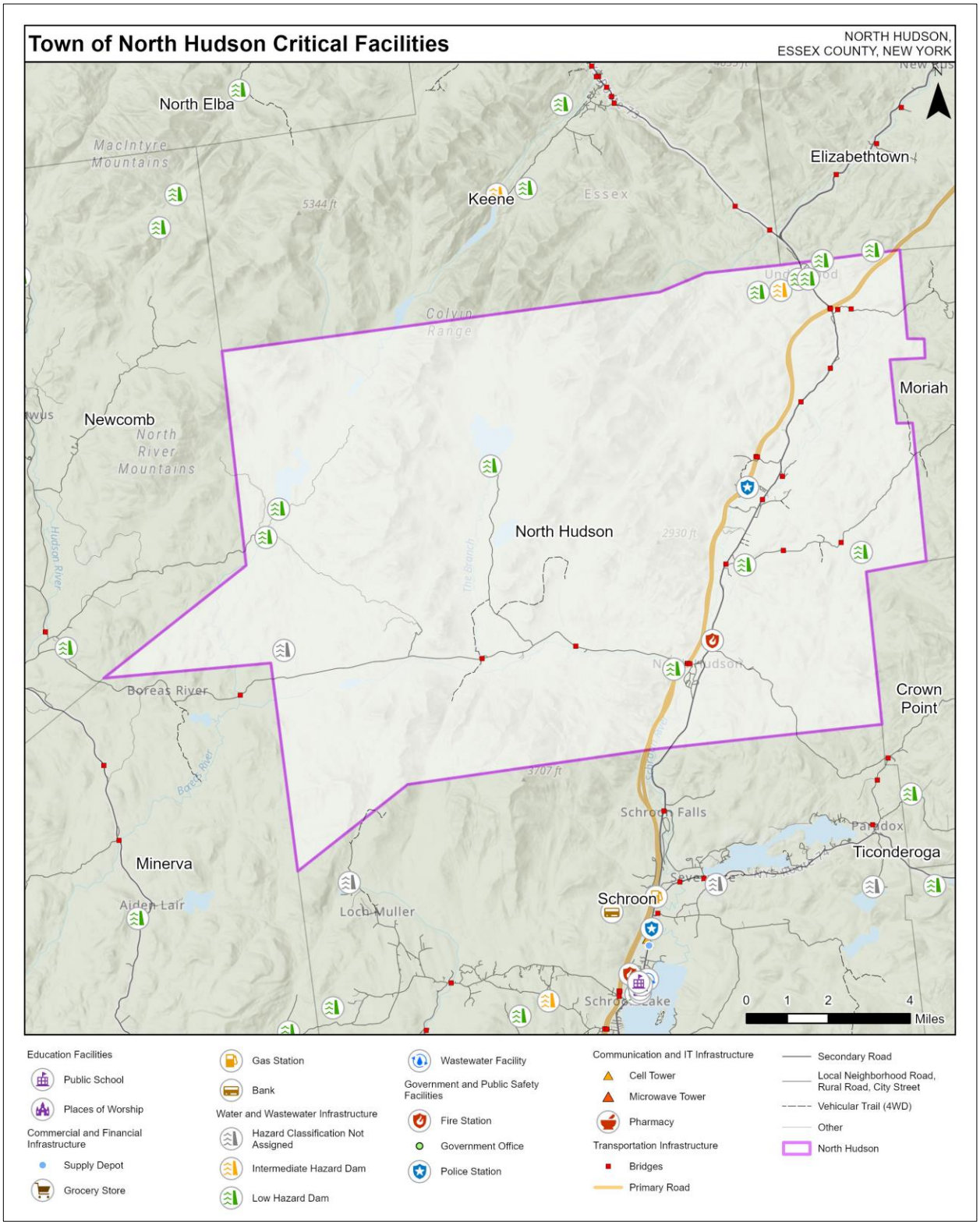


Figure 80. Critical Facilities: Town of North Hudson

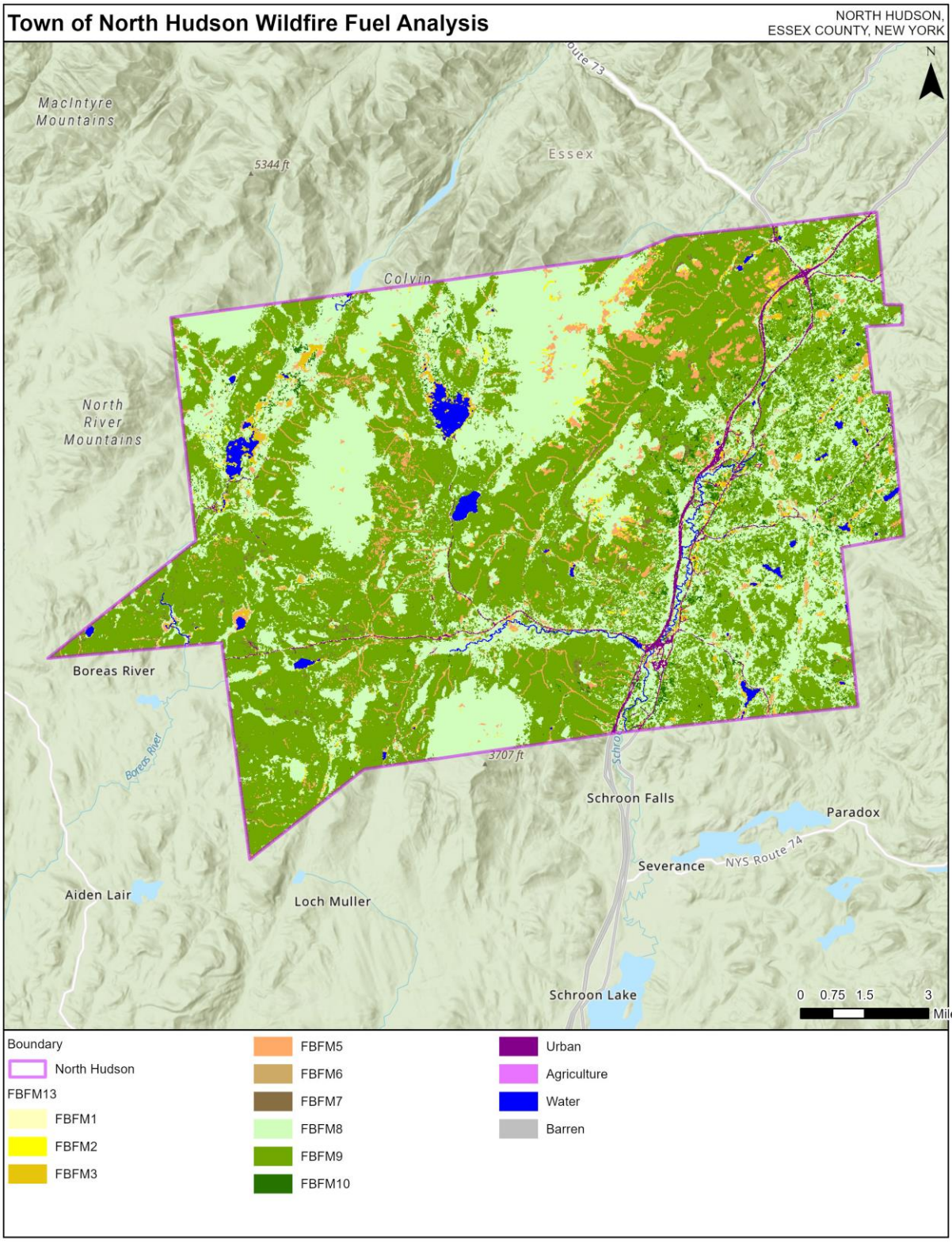


Figure 81. Wildfire Fuel Analysis: Town of North Hudson

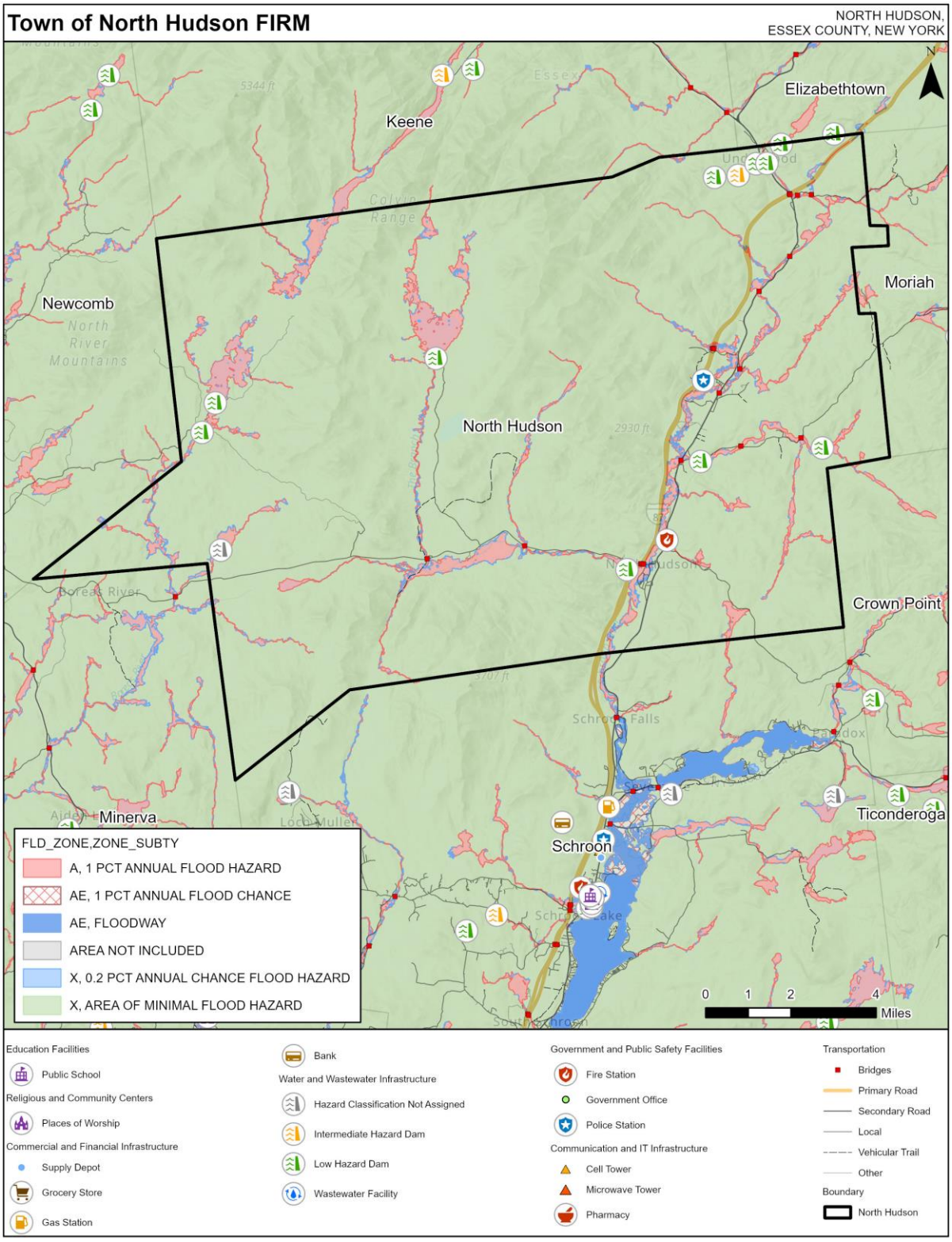


Figure 82. FIRM: Town of North Hudson

Potential Loss

A potential loss assessment was conducted for North Hudson using data from the Essex County Real Property website. Parcel data was analyzed to determine the value of properties within each of the nine class codes, and the total property value for each classification was calculated. To estimate the potential impact of a hazard event, it was assumed that 10% of all properties within each class code would be affected. Similarly, the financial loss was projected as 10% of the total property value within each class code.

The Essex County Real Property Tax Services website categorizes real property into nine class codes:

- 100 Agriculture
- 200 Residential
- 300 Vacant Lands
- 400 Commercial
- 500 Recreation and Entertainment
- 600 Community
- 700 Industrial
- 800 Public Services
- 900 Forest, Conservation Lands and Parks

Table 216. Potential Loss: Town of North Hudson

Class Code	Number of Structures	Structure Values	Number of Structures Impacted	Potential Loss
100	0	$0	0	$0
200	275	$40,540,800	27	$4,054,080
300	165	$3,086,890	16	$308,689
400	8	$3,998,400	0	$399,840
500	4	$1,785,200	0	$178,520
600	13	$2,045,200	1	$204,520
700	4	$3,025,100	0	$302,510
800	24	$6,090,584	2	$609,058
900	365	$99,039,661	36	$9,903,966

Mitigation Strategy

The mitigation strategy included in the 2019 plan was reviewed to determine if the project(s) were completed. No new mitigation projects were identified for the 2025 plan update. Ongoing projects are included in the table below, with prioritization of projects occurred as the plan was

DRAFT

updated. These projects list priorities of High, Medium, or Low. Generally speaking, High priority projects are those enabling towns and villages to be fully functional during times of disasters. Medium and Low priority projects improve other town functions, addressing actual community residents. Project implementation will occur as funding is obtained. Any project can be implemented as funding, political will, and other aspects are addressed and opportunities align.

The cost of proposed mitigation projects was determined and included in the table below while other projects include an estimated cost. Potential costs to implement mitigation projects were ranked as High, Medium, or Low cost.

The table below includes the determined costs for proposed mitigation projects, or the estimated cost rated as High, Medium, or Low.

Table 217. Mitigation Strategies: Town of North Hudson

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
1. Study solution to slope failure on Schroon River	5	Stabilize failing riverbank	Flooding	Towns (N. Hudson & Schroon)	High	1-5 years	FEMA, ACOE, DEC	High	Natural resource protection (ongoing) Sandy slope–river impact looking for a solution

North Hudson will continue to actively implement projects and programs to reduce the effects from disasters impacting the town.

Annex M: Town of St. Armand

Profile

The Town of St. Armand was first settled around 1829, with early industry centered on lumber production. As the area's timber resources were depleted, farming became the dominant economic activity. By the late 19th century, the town became a center for tuberculosis (TB) sanatoriums, with Dr. Edward Trudeau establishing one of the first in 1884 near the village of Saranac Lake.

St. Armand spans 57 square miles in the northwest corner of Essex County, bordered by Saranac Lake and Harrietstown to the west, North Elba to the south, Franklin to the north, and Wilmington to the east. The population is primarily concentrated in the Village of Saranac Lake and the hamlet of Bloomingdale—both situated near the dynamic Saranac River. In the town's southwestern region, mountainous terrain forms a watershed for numerous streams and ponds, contributing to frequent flooding.

Table 218. Table of Facts: Town of St. Armand

Fact	Description
Land Area	57 sq. miles/36,587.8 acres
Incorporated Village(s)	Portion of Saranac Lake (208 acres)
Hamlets	Bloomingdale
Population Census	1446 (2020 Census)
Governance	Town & Village of Saranac Lake
Total Assessed Valuation	$106,760,121 portion in Saranac Lake
Highest Elevation	Moose Mtn.–3,921'
Largest Lake	Franklin Falls Pond
River(s)	Saranac
Dams	None
Bridges	4
Interstate Highway	None
State Routes	NYS RT 3
County Roads	CR 72, 18, 81, 20
Land Agriculture Use	2 parcels
Land Classified Industrial	2 properties
Land Classified Residential, as Hamlet	342.5 acres
Hospital/Medical Facility	None
Fire & Rescue	Saranac Lake
Schools	Bloomingdale Elementary School

DRAFT

Fact	Description
Railroads	None
Passenger Trains/Day	None
Freight Trains/Day	None
Ferry Dock(s)	None
Interstate Bridge	None
Largest Employer	Town of St. Armand
Law Enforcement	NYSP & County Sheriff
Correctional Facility	None
Power Utility Provider(s)	National Grid
Water Supply Source(s)	Town & private Wells
Emergency Shelters	Firehouse
Critical Facilities	Town Hall, Bloomingdale

Notable Updates

St. Armand faces a variety of hazards including extreme weather events, infrastructure vulnerabilities, and public health concerns. Flooding remains a major risk, with recurrent events—like those in 2023—causing extensive damage to roads and public properties. To mitigate these risks, the town actively manages water resources and drainage systems. Winter storms, including heavy snowfall and ice accumulation in early 2024, create challenges for transportation and power infrastructure. In response, the Highway Department implemented preparedness measures like snow removal and regular equipment maintenance.

Growing climate change impacts are evident in the increased frequency and intensity of extreme weather events. Events include heavy rainstorms that exacerbate flooding and warming–related effects on aging infrastructure. The town faces public health challenges, as demonstrated by the COVID–19 Pandemic, and ongoing issues with water quality and unsafe structures like those identified on Union Lane in 2024.

The town prioritized critical actions and projects to address these hazards. Flood mitigation efforts, including upgrades to drainage and stormwater systems, are underway to minimize the impact of future flood events. Winter preparedness was strengthened with the maintenance and replacement of snow removal equipment. St. Armand is addressing wastewater treatment compliance issues, working to meet DEC requirements for seasonal disinfection with the support of state grants and local funds. Public health and safety remain a focus, with initiatives to address unsafe structures and community health systems.

Planning Process

The town initially took part in a Hazard Mitigation Survey, followed by an in-person Stakeholder Hazard Mitigation Introduction Meeting. Subsequently, the Town Supervisor received a copy of the town's section of the county plan for review and revision to update its portion of the county

plan. The Town Supervisor participated in county-level meetings related to the plan and attended a final mitigation strategy meeting.

Capability Assessment

St. Armand implemented a range of planning mechanisms to support hazard resilience and community development, including floodplain ordinance, emergency operations plan, comprehensive emergency management plan, drinking water plan, emergency response plan, building codes, and fire codes. The town's emergency operations plan, originally adopted in 2013, is currently being updated. The APA helps with planning matters. Collectively, these regulatory measures ensure that new development is both hazard–resistant and aligned with sustainable growth objectives. Through an assessment of its planning capability, the town recognizes that these mechanisms play a critical role in mitigating potential hazards and fostering long–term community resilience.

Table 219. Planning Documents: Town of St. Armand

Planning Documents
Floodplain Ordinance (2006)
Emergency Operations Plan (2013)
Comprehensive Emergency Management Plan (2024)
Drinking Water Plan (2013)
Emergency Response Plan (2013)
Building Code (2006)
Fire Code (2006)

This hazard mitigation plan should be integrated into St. Armand's existing planning documents to ensure consistency and alignment. The hazard ranking can be incorporated into the comprehensive emergency management plan, while mitigation projects may be included in the capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will help ensure all enabling legislation contains consistent and relevant information.

An assessment of administrative and technical capabilities was conducted. The town employs a code enforcement officer responsible for approving new developments, ensuring compliance with local laws. St. Armand relies on Essex County agencies for support for planning and grant writing, emergency management, floodplain management, land surveying, scientific expertise, GIS services, and Public Works (PDW) for road–related issues. The town has used Community Development Block Grants (CDBG) to upgrade the wastewater treatment facility.

Four key areas were evaluated as part of the self–assessment. Planning and regulatory capabilities, education and outreach, and administrative and regulatory capacities were all ranked as Limited, while financial capability was assessed as Moderate.

DRAFT

Critical Facilities

Flood vulnerabilities of critical facilities were assessed as part of the plan update. The table below details whether these facilities are located within the 500–year floodplain, have experienced past flooding, and have undergone any mitigation measures to reduce flood risk. Generator capabilities were evaluated to determine whether these facilities can operate without electric power—a common challenge for critical infrastructure during disasters.

An assessment of critical facilities was conducted. The drinking water and wastewater plants may be located within the 500–year floodplain and are equipped with generators for backup power. The fire station and emergency operations center are outside the 500–year floodplain and also have generators. While the school is not within the floodplain, town officials are uncertain whether it has a generator.

Table 220. Infrastructure in Floodplain: Town of St. Armand

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Drinking Water Plant	No	No	No	Yes
Wastewater Plant	Yes	No	No (needs berm around plant)	Yes
Fire Station	No	No	No	Yes
Emergency Operations Center	No	No	No	Yes
School	No	No	No	Unknown

The Town Ball Field was identified for temporary housing use after a disaster. This site lacks power, water, and sewer. The elementary school is an ARC–designated shelter.

Table 221. Housing for Displaced Residents: Town of St. Armand

Facility	Type of Housing
Town Ball Field	RV, mobile homes
Bloomingdale Elementary School	ARC Shelter

National Flood Insurance Plan (NFIP) Summary

The following information pertains to flood–vulnerable structures in St. Armand. The actual number of structures in flood–prone areas is likely higher than the number of insured properties. Once FEMA updates the Flood Insurance Rate Maps (FIRMs), revised maps will provide a more accurate count of vulnerable structures.

Table 222. Flood Insurance: Town of St. Armand

Policies	2011	2018	2024	Total Amount of Claims
Policies	3	3	20	$10,248
Number of Repetitive Loss Structures	-	-	-	-

St. Armand will continue to actively manage floodplains to mitigate future flood risks. New development within special flood hazard areas will be carefully reviewed and approved to ensure compliance with the local floodplain ordinance. As FEMA updates the Flood Insurance Rate Maps (FIRMs), the town will hold meetings with floodplain managers, town supervisors, and village mayors to provide training on the National Flood Insurance Program (NFIP). These meetings will also serve as a forum to discuss compliance requirements and best practices for floodplain management.

Hazard Identification & Ranking

Table 223. Hazard Ranking: Town of St. Armand

Hazard Ranking	Hazard
HIGH	• Drought • Extreme Temperatures • Hailstorms • High Winds • Ice Storms • Severe Winter Storms • Wildfires
MEDIUM	• Earthquakes • Flooding
LOW	• Avalanches • Hurricanes • Land Subsidence & Expansive Soils • Landslides • Rail events

Table 224 Hazard Events: Town of St. Armand

Hazard	Event	Year	Impact
Windstorm	The Great Blowdown	1950	Devastating hurricane–force windstorm caused extensive forest damage, uprooting trees & impacting the Moose Pond area.
Flooding	Hurricane Irene	2011	Heavy rainfall led to significant flooding, causing road closures & infrastructure damage in the region.

DRAFT

Hazard	Event	Year	Impact
	July flooding	2023	Severe rainstorms caused flooding, damaging infrastructure & resulting in road closures across Essex County.
	December flooding	2023	Prolonged rainfall led to widespread flooding, prompting a state of emergency in Essex County.
Winter Storms & Cold	Ice storm	1998	Severe ice accumulation caused widespread power outages, tree damage, & hazardous travel conditions (NWS).
Public Health	COVID–19 Pandemic	2020+	Global pandemic led to health crises, economic disruptions, & implementation of community public health measures.

Hazard Analysis

St. Armand faces a range of hazards including natural disasters and public health challenges, significantly affecting the community and town infrastructure over time. Windstorms are a persistent concern, with "The Great Blowdown" of 1950 causing severe forest damage, uprooting trees, and heavily impacting the Moose Pond area. This event underscored the vulnerability of forested regions to hurricane–force winds.

Flooding poses a recurring threat, with Hurricane Irene in 2011 bringing heavy rainfall that led to significant flooding, road closures, and infrastructure damage throughout the region. The town experienced two major flooding events in 2023: the July rainstorms and December prolonged rainfall. These floods caused widespread infrastructure damage, prompted road closures across Essex County and even led to a state of emergency, demonstrating the increasing frequency and intensity of flood events.

Winter storms have also had a significant impact on St. Armand, most notably the 1998 ice storm. This severe event led to widespread power outages, extensive tree damage, and dangerous travel conditions, highlighting the importance of resilient power infrastructure and robust emergency preparedness for extreme weather events.

Public health challenges have also been significant, with the COVID–19 Pandemic beginning in 2020, placing immense strain on local health resources, disrupting the economy, necessitating extensive public health measures. This global crisis revealed weaknesses in healthcare infrastructure and underscored the need for strong emergency response systems.

St. Armand's exposure to windstorms, flooding, winter storms, and public health crises highlights the need for comprehensive hazard mitigation strategies. Investments in resilient infrastructure, enhanced stormwater management, and improved public health preparedness are essential to safeguarding the community and reducing the impact of future hazards.

Hazard Mapping

Once FEMA updates the Flood Insurance Rate Maps (FIRMs), these will provide a more accurate assessment of the number of flood–vulnerable structures.

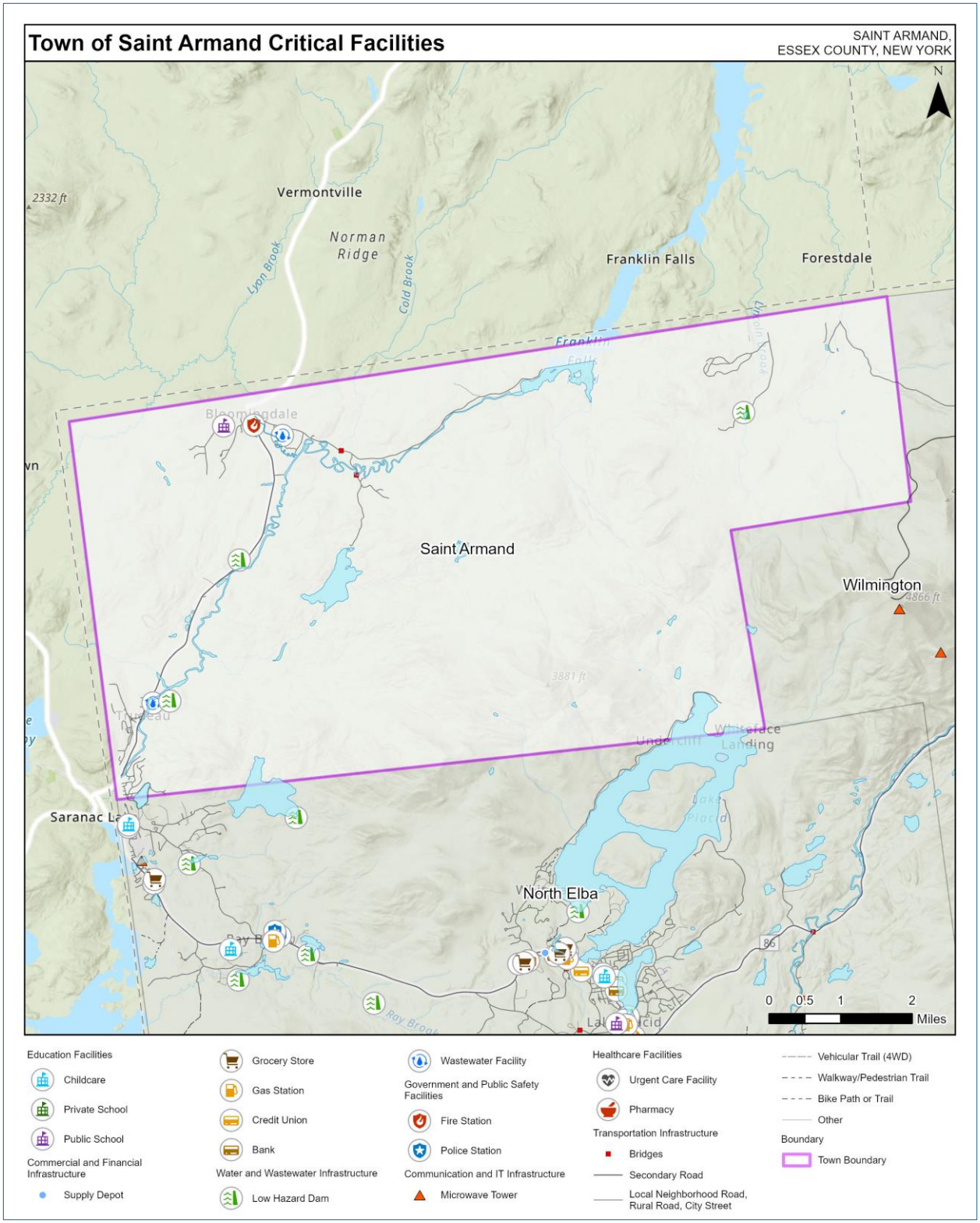


Figure 83. Critical Facilities: Town of St. Armand

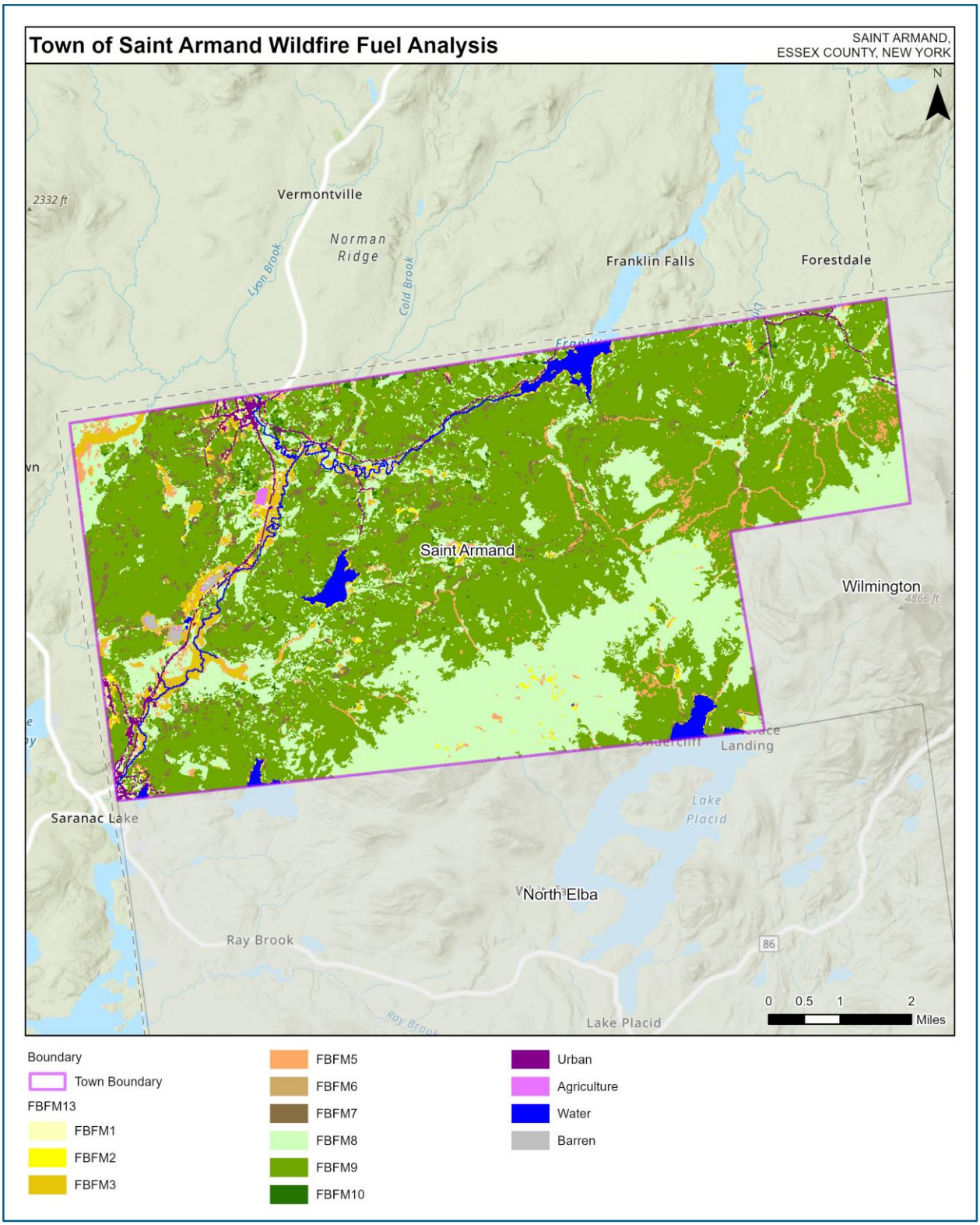


Figure 84. Wildfire Fuel Analysis: Town of St. Armand

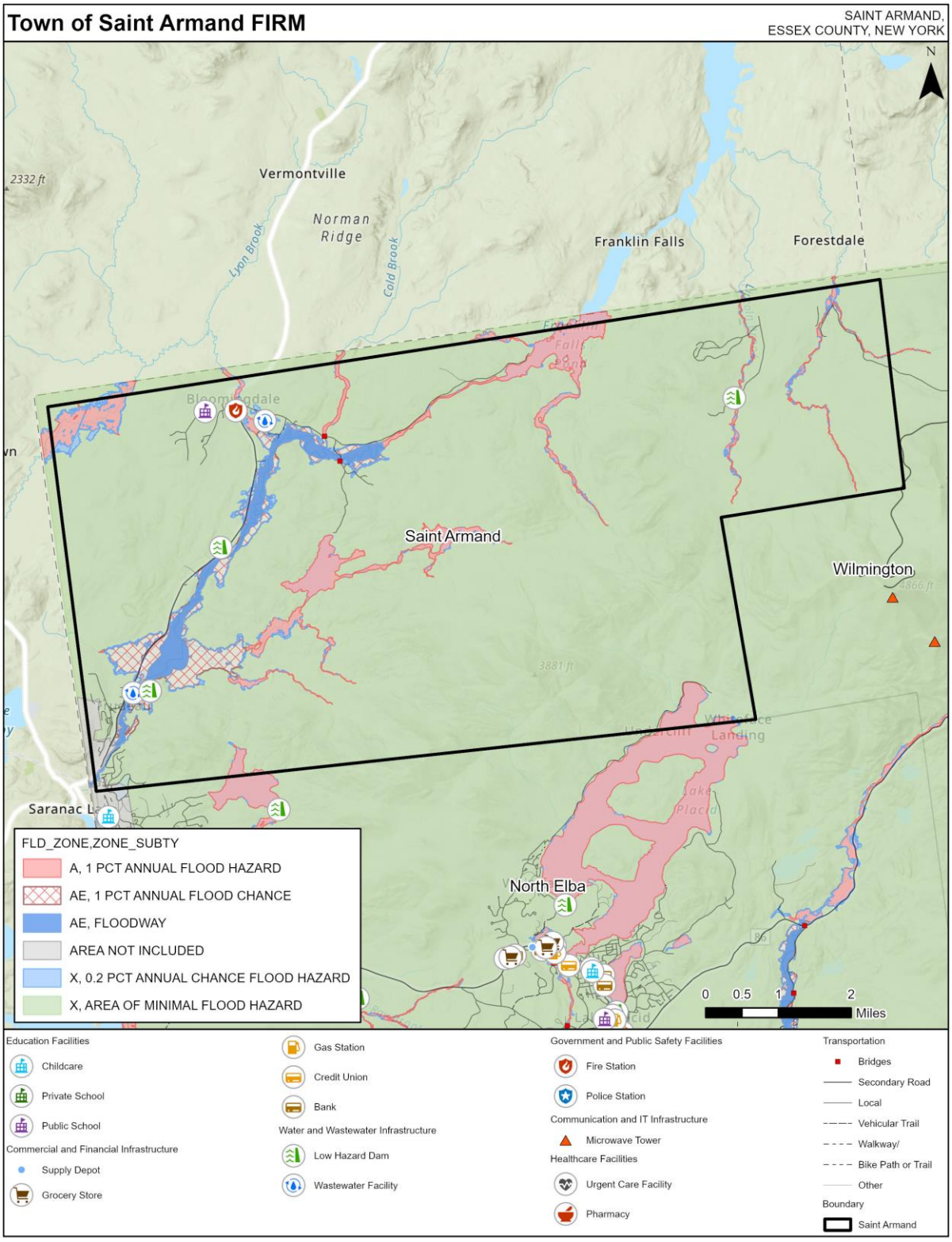


Figure 85. FIRM: Town of St. Armand

Potential Loss

Potential loss for St. Armand was calculated using data obtained from the Essex County Real Property website. Property values were analyzed for all parcels, then categorized into nine class codes. Total property value for each class code was determined, and potential losses were estimated under the assumption that 10% of properties in each class code would be impacted by a hazard event. Projected loss was then calculated as 10% of the total property value within each class code.

The Essex County Real Property Tax Services website designates real property into nine class codes:

- 100 Agriculture
- 200 Residential
- 300 Vacant Lands
- 400 Commercial
- 500 Recreation and Entertainment
- 600 Community
- 700 Industrial
- 800 Public Services
- 900 Forest, Conservation Lands and Parks

Table 225. Potential Loss: Town of St. Armand

Class Code	Number of Structures	Structure Values	Number of Structures Impacted	Potential Loss
100	1	$96,100	0	$9,610
200	596	$133,653,750	59	$13,365,375
300	341	$11,582,350	33	$1,158,235
400	36	$14,219,800	3	$1,421,980
500	3	$1,233,800	0	$123,380
600	13	$5,571,300	1	$557,130
700	5	$1,777,000	0	$177,700
800	338	$23,814,643	33	$2,381,464
900	221	$43,327,040	22	$4,332,704

Mitigation Strategy

St. Armand's mitigation strategy outlined in the 2019 plan was reviewed to assess the completion status of proposed projects. New mitigation projects were identified for inclusion in the 2025 plan update. These projects (listed in the table below) were prioritized as High, Medium, or Low

during the plan update process. High priority projects are those essential for ensuring towns and villages remain fully functional during disasters, while Medium and Low priority projects focus on improving municipal operations and addressing resident needs. Project implementation will proceed as funding becomes available, though any project may advance when financial resources, political will, and other factors align.

Proposed mitigation project costs were determined and included in the table below. For other mitigation projects, estimated costs are provided and categorized as High, Medium, or Low cost based on projected financial requirements.

Table 226. Mitigation Strategies: Town of St. Armand

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
1. Union Lane culvert	2,4,5	Replace 15" culvert	Flooding	Town Hwy Dept	$15K	1-5 years	County DPW Town budget	High	Structure and infrastructure
2. Mill Lane culvert	2,4,5	Replace 15" culvert	Flooding	Town Hwy Dept	$15K	1-5 years	County DPW Town budget	High	Structure and infrastructure
3. School St. Culvert	2,4,5	Replace 15" culvert	Flooding	Town Hwy Dept	$15K	1-5 years	County DPW Town budget	High	Structure and infrastructure
4. Forest Hill Avenue culvert	2,4,5	Replace 15" culvert	Flooding	Town Hwy Dept	$15K	1-5 years	County DPW Town budget	High	Structure and infrastructure
5. Main St. culvert	2,4,5	Replace 15" culvert	Flooding	Town Hwy Dept	$15K	1-5 years	County DPW Town budget	High	Structure and infrastructure
6. Goodspeed Road culvert	2,4,5	Replace 15" culvert	Flooding	Town Hwy Dept	$15K	1-5 years	County DPW Town budget	High	Structure and infrastructure
7. Vine St. Culvert	2,4,5	Replace 15" culvert	Flooding	Town Hwy Dept.	$15K	1-5 years	FEMA Town budget	High	Structure and infrastructure
8. Roosevelt St. Culvert	2,4,5	Replace 18" culvert	Flooding	Town Hwy Dept.	$20K	1-5 years	FEMA Town budget	High	Structure and infrastructure

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
9. River Road Bloomingdale	2,4,5	Infrastructure repairs – Repair failed culver with sheet pile 3-sided structure	Flooding/ Road washout	Town Supervisor/ DPW Engineering	TBD – Initial Planning	Ongoing/1-5 years	NYS Department of Transportation (NYSDOT) BRIDGE NY Program, NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants, US DOT Bridge Investment Program	Medium	Infrastructure
10. Moose Pond Bridge	1,2,4,5	Repairs and staging area for Equipment for resident evacuation	Flooding	Town Supervisor/ DPW Engineering	TBD – Initial Planning	Ongoing/1-5 years	NYS Department of Transportation (NYSDOT) BRIDGE NY Program, NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP,	Medium	Infrastructure

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
							FEMA FMA, USDA Rural Development Water Grants, US DOT Bridge Investment Program		
11. Wastewater Plant	2	Build berm around to prevent flooding or otherwise mitigation.	Flooding	Town Supervisor/Board	Med	1-5 years Planning 5-10 years completion	NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants	Medium	Infrastructure

St. Armand will continue to actively implement projects and programs to reduce the disaster-related effects impacting the town.

DRAFT

Annex N: Town of Schroon

Profile

The Town of Schroon is located in the southern part of Essex County, bordered by Minerva to the west, North Hudson to the north, Crown Point and Ticonderoga to the east, and the Warren County towns of Hague, Horicon and Chester to the south. The town spans 142 square miles. Topography is mountainous, with Hoffman Mountain being the tallest at 3,693 feet in elevation in the Blue Ridge Range in the northwestern part of town. The lowest elevation (810 feet) exists on the shores of Schroon Lake.

Schroon Lake is home to the Seagle Music Colony during the summer and features attractions like the Schroon–North Hudson Historical Museum, Natural Stone Bridge & Caves, and a 9–hole golf course on Hoffman Road. Each September, hundreds of runners compete in the Adirondack Marathon, concluding in downtown Schroon Lake, with roads around the lake forming an almost perfect 26.4–mile course. The town maintains public docks in the village, providing boaters with convenient access to local shops and restaurants. Schroon offers two free municipal boat launches, and New York State operates public campsites on both Schroon Lake and Paradox Lake. There are many ponds and lakes—the two largest being Schroon Lake at 6.5 square miles and Paradox Lake at 1.3 square miles. Flooding can occur in any season but is most common in late winter and early spring when melting snow combines with rainfall, increasing runoff. Ice jams pose a threat to bridges throughout the town.

Schroon is traversed by Interstate 87 and U.S. Route 9 running north–south, while New York State Route 74 extends east–west, connecting to a network of smaller town roads. The population is primarily concentrated along Route 9 near the lakeshore and hamlet area, which includes a small commercial district and residential neighborhoods. Seasonal residences are scattered throughout the town, particularly along the Schroon River and various ponds and lakes.

In recent years, Schroon implemented several mitigation measures including the installation of a new public water system, wastewater treatment improvements, and a storm drain system. The town is currently engaged in a cooperative dam repair project with neighboring towns in Warren County.

Table 227. Table of Facts: Town of Schroon

Fact	Description
Land Area	142 sq. miles/91,523.3 acres
Incorporated Village(s)	None
Hamlets	Schroon Lake, Severance & Paradox
Population Census	1,880 (2020 Census)
Governance	Town
Total Assessed Valuation	$318,461,040
Highest Elevation	Hoffman Mt.–3,693’
Largest Lake	Schroon Lake (northern ⅔ in Town)

Fact	Description
River(s)	Trout Brook & Mill Brook, Schroon, Paradox
Dams	8
Bridges	7 County Road
Interstate Highway	I–87 north/south
State Routes	9 & 74
County Roads	24, 34 & 67
Land Agriculture Use	None
Land Classified Industrial	None
Land Classified Residential, as Hamlet	1812.5 acres
Hospital/Medical Facility	Schroon Lake Health Center
Fire & Rescue	Schroon Lake Fire &-Schroon Lake EMS
Schools	Schroon Lake Central
Railroads	None
Passenger Trains/Day	None
Freight Trains/Day	None
Ferry Dock(s)	None
Interstate Bridge	None
Largest Employer	None
Law Enforcement	NYSP & County Sheriff
Correctional Facility	None
Power Utility Provider(s)	National Grid
Water Supply Source(s)	Aquifer as of 2002
Emergency Shelters	Fire Department

Notable Updates

Schroon is currently updating its comprehensive plan to address various community needs, including hazard mitigation. The previous master plan (completed in 1977) is being revised to reflect current conditions and future goals.

The updated Comprehensive Plan will provide a framework for realizing the community's vision, addressing key areas like economic development, tourism, housing, climate change, infrastructure, land use, natural resources, recreation, and community services. Public engagement is essential to this process, offering residents, visitors, and business owners opportunities to contribute through online surveys, public workshops, focus group meetings, and digital newsletters.

Schroon is considering hazard mitigation strategies to reduce risks to life and property from potential disasters as part of the planning process, This includes alignment with New York State

DRAFT

hazard mitigation efforts, as outlined by the Division of Homeland Security and Emergency Services (DHSES). The state emphasizes the importance of hazard mitigation planning to break damage and repair cycles in hazardous areas, ensuring mitigation measures are technically feasible, cost–effective, and environmentally sound.

Planning Process

The town initially took part in a Hazard Mitigation Survey, followed by an in-person Stakeholder Hazard Mitigation Introduction Meeting. Subsequently, the Town Supervisor received a copy of the town's section of the county plan for review and revision to update its portion of the county plan. The Town Supervisor participated in county-level meetings related to the plan and attended a final mitigation strategy meeting.

Capability Assessment

Schroon implemented a range of planning mechanisms to support hazard resilience and community development, including emergency operation plan, floodplain regulations, zoning ordinance, subdivision regulations, comprehensive plan, open space management plan, stormwater management plan, natural resource protection plan, economic development plan, building codes, fire codes, and a comprehensive emergency management plan. Collectively, these regulatory measures ensure that new development is both hazard–resistant and aligned with sustainable growth objectives. Through an assessment of its planning capability, the town recognizes that these mechanisms play a critical role in mitigating potential hazards and fostering long–term community resilience.

Table 228. Planning Documents: Town of Schroon

Planning Documents
Emergency Operation Plan
Floodplain Regulations
Zoning Ordinance
Subdivision Regulations
Comprehensive Plan
Open Space Management Plan
Stormwater Management Plan
Natural Resource Protection Plan
Economic Development Plan
Building Codes
Fire Codes
Comprehensive Emergency Management Plan

This hazard mitigation plan should be integrated into Schroon's existing planning documents to ensure consistency and alignment. The hazard ranking can be incorporated into the

comprehensive emergency management plan, while mitigation projects may be included in the capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will help ensure all enabling legislation contains consistent and relevant information across planning documents.

Schroon conducted a self–assessment of its capabilities. The code officer also serves as the floodplain administrator. The town relies on Essex County staff for planning, grant writing, and GIS support. Engineering technical assistance is provided by the county or contracted to a firm as needed with the DEC and APA providing scientific expertise.

The town utilizes various funding sources to implement projects. Community Development Block Grants (CDBGs) support stormwater and sewer initiatives, while water and sewer fees are used for system maintenance. General revenue funds contribute to water and sewer projects. The town collaborates with Essex County and neighboring towns and villages through partnership agreements for fire response, ambulance services, and other essential needs. National Grid operates a tree–trimming program to enhance utility infrastructure resilience.

Schroon conducts a range of education and outreach programs, using Facebook to communicate with residents and visitors, while trained storm spotters monitor severe weather. The local fire company delivers school programs and additional educational initiatives take place within the schools. The Department of Environmental Conservation (DEC) provides ongoing education for residents and visitors and several environmental organizations conduct programs within the community.

Schroon evaluated its capabilities across several categories as part of a self–assessment. Planning and regulatory, administrative and technical, and financial capabilities were ranked High, while education and outreach efforts were rated as Moderate.

Critical Facilities

Flood vulnerabilities of critical facilities were assessed as the plan was updated. The table below describes if these facilities are located in the 500–year floodplain, if the facility has been flooded in the past, and if any kind of mitigation was completed to reduce the flood potential of these structures. Generator capabilities were also assessed to determine if these facilities could function without electric power—a common issue for critical facilities during disaster events.

No critical facilities are located within the 500–year floodplain. The following facilities were designated as critical, each equipped with a backup generator: police station, fire station, critical vehicle storage areas and buildings, emergency operations center, communication center, medical facilities, schools, and drinking water and wastewater treatment plants.

Table 229. Critical Infrastructure in Floodplain: Town of Schroon

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Police Station	No	No	No	Yes
Fire Station	No	No	No	Yes

DRAFT

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Critical vehicle storage areas & buildings	No	No	No	Yes
Emergency Operations Center	No	No	No	Yes
Communication Center	No	No	No	Yes
Medical Facilities	No	No	No	Yes
Schools	No	No	No	Yes
Drinking Water Plant	No	No	No	Yes
Wastewater Plant	No	No	No	Yes

Schroon identified the Schroon School Field as a potential site for temporary housing. This location contains paved and unpaved areas equipped with power and water onsite. Additional sites may be made available if needed. The Schroon Lake Firehouse also serves as an American Red Cross (ARC) Shelter for residents. Displaced individuals found temporary housing with friends, relatives, or neighbors in the past.

Table 230. Housing for Displaced Residents: Town of Schroon

Facility	Type of Housing
Schroon School Field	RV, mobile homes
Schroon Lake Firehouse	ARC Shelter

National Flood Insurance Plan (NFIP) Summary

The following information concerns flood vulnerable structures in Schroon. The numbers of actual structures in flood vulnerable areas is likely larger than the number of insured structures. Once Flood Insurance Rate Maps (FIRMs) are updated by FEMA, new maps will determine the actual number of vulnerable structures.

Table 231. Flood Insurance: Town of Schroon

Policies	2011	2018	2024	Total Amount of Claims
Policies	41	29	29	$269,020

Policies	2011	2018	2024	Total Amount of Claims
Number of Repetitive Loss Structures	0	2 single family homes	-	-

Schroon will continue to actively manage floodplains to mitigate future flood risks. New development within special flood hazard areas will be carefully reviewed and approved to ensure compliance with the local floodplain ordinance. As FEMA updates the Flood Insurance Rate Maps (FIRMs), the town will hold meetings with floodplain managers, town supervisors, and village mayors to provide training on the National Flood Insurance Program (NFIP). These meetings will also serve as a forum to discuss compliance requirements and best practices for floodplain management.

Hazard Identification & Ranking

Table 232. Hazard Ranking: Town of Schroon

Hazard Ranking	Hazards
HIGH	• Floods • High Winds • Ice Storms • Severe Winter Storms
MEDIUM	• Drought • Extreme Temperatures • Hailstorms • Wildfires
LOW	• Earthquakes • Avalanches • Hurricanes • Land Subsidence • Landslides • Rail Events

Hazard Event History

Table 233. Hazard Events: Town of Schroon

Hazard	Event	Year	Impact
Flooding	Hurricane Irene	2011	Extensive flooding caused damage to roads, homes, & infrastructure along Schroon River & surrounding areas.
	July Northeastern	2023	Heavy rainfall caused flash flooding, leading to road closures & damage to culverts & bridges.

DRAFT

Hazard	Event	Year	Impact
	U.S. floods		
Winter Storms & Cold	Ice storm	1998	Severe ice accumulation led to power outages, tree damage, & hazardous travel conditions.
	February blizzard	2024	Over 20 inches of snow disrupted transportation & caused localized power outages in town.
Severe Thunderstorms	Severe summer storms	2023	High winds & heavy rains damaged trees & power lines, resulting in power outages & road blockages.
Wildfires	Adirondack wildfire threats	2024	Drought conditions increased wildfire risks; small brush fires occurred: quickly contained.
Public Health	COVID–19 Pandemic	2020+	Disruptions included business closures, remote schooling, & increased strain on healthcare systems.
	Tick–borne illness spike	Recurring	High Adirondack tick populations contributed to increased cases of Lyme disease & other illnesses.

Hazard Analysis

Schroon is vulnerable to a variety of hazards threatening its infrastructure, environment, and resident well–being. Flooding is one of the most significant risks due to Schroon River proximity. Historical events like Hurricane Irene in 2011 and the July 2023 Northeastern U.S. floods caused extensive damage to homes, roads, and infrastructure—demonstrating the need for robust stormwater management and resilient infrastructure to mitigate future hazard impacts.

Severe winter weather like the 1998 ice storm and February 2024 blizzard poses significant challenges. These events disrupted transportation, caused widespread power outages, creating hazardous travel conditions. Preparing for such events through investment in snow removal equipment and enhanced emergency response measures is essential for minimizing hazard disruptions. Similarly, summer thunderstorms like those in 2023 brought high winds and heavy rainfall, causing tree and power line damage, localized flooding, and road blockages.

Although wildfires are rare, drought conditions in 2024 led to small brush fires that were quickly contained. As climate change intensifies the likelihood of prolonged dry periods, proactive forest management and fire prevention strategies will become increasingly important. Public health challenges are a significant concern for Schroon. The COVID–19 pandemic exposed weaknesses in public health infrastructure, while recurring spikes in tick–borne illnesses like Lyme disease continue to pose persistent health risks. Strengthening public health awareness and infrastructure is essential to addressing these ongoing challenges.

Schroon faces several challenges, including aging infrastructure, limited local resources for rapid recovery, and the growing impacts of climate change. These factors heighten vulnerabilities, especially as extreme weather events become more frequent and severe. However, there are significant opportunities for mitigation. Strengthening stormwater systems, maintaining

riverbanks, and improving drainage can help reduce flood risks. Investing in snow removal equipment and enhancing emergency preparedness will improve the town's ability to manage severe winter weather. Expanding public health programs and the integration climate adaptation strategies into development plans will further enhance resilience.

DRAFT

Hazard Mapping

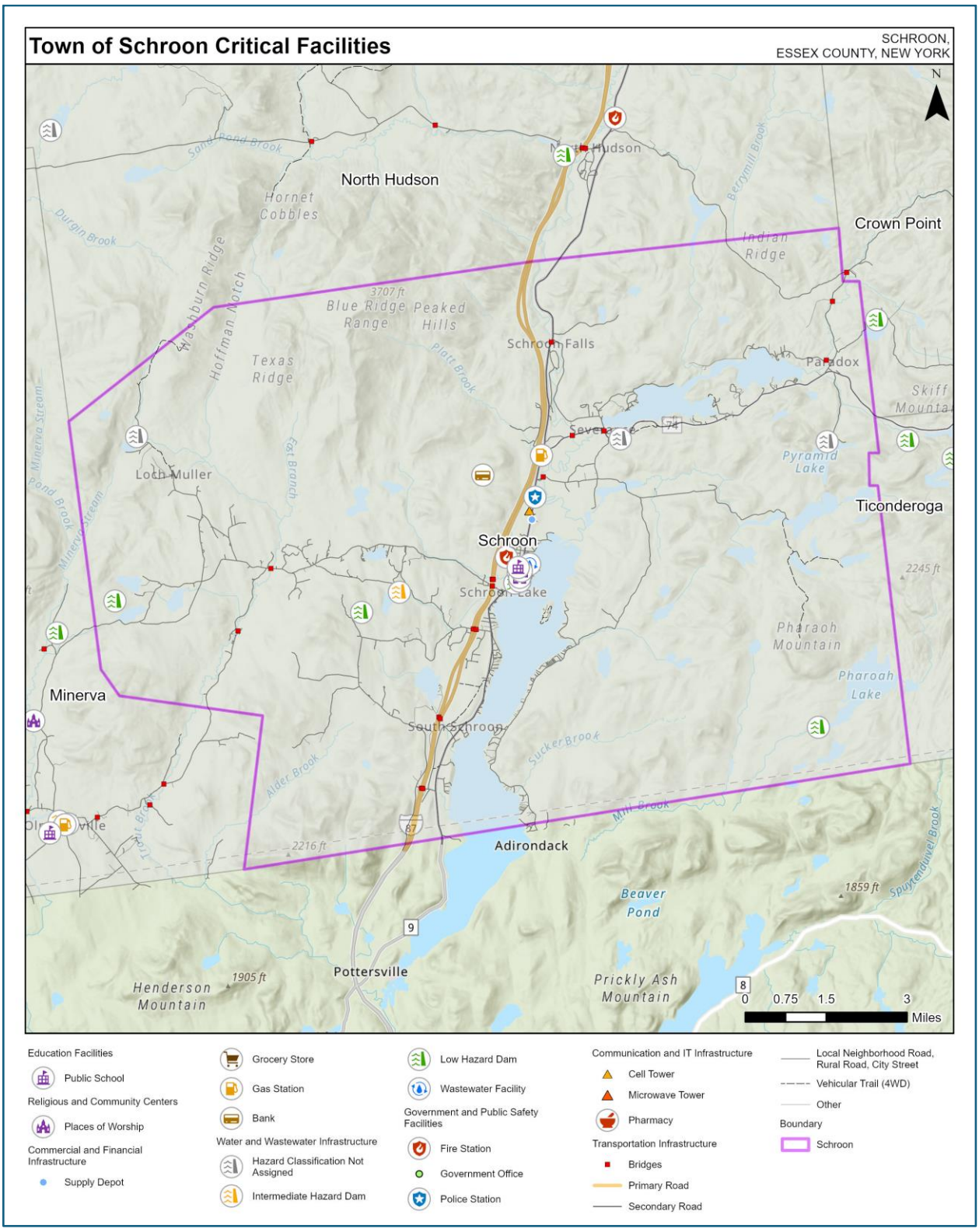


Figure 86. Critical Facilities: Town of Schroon

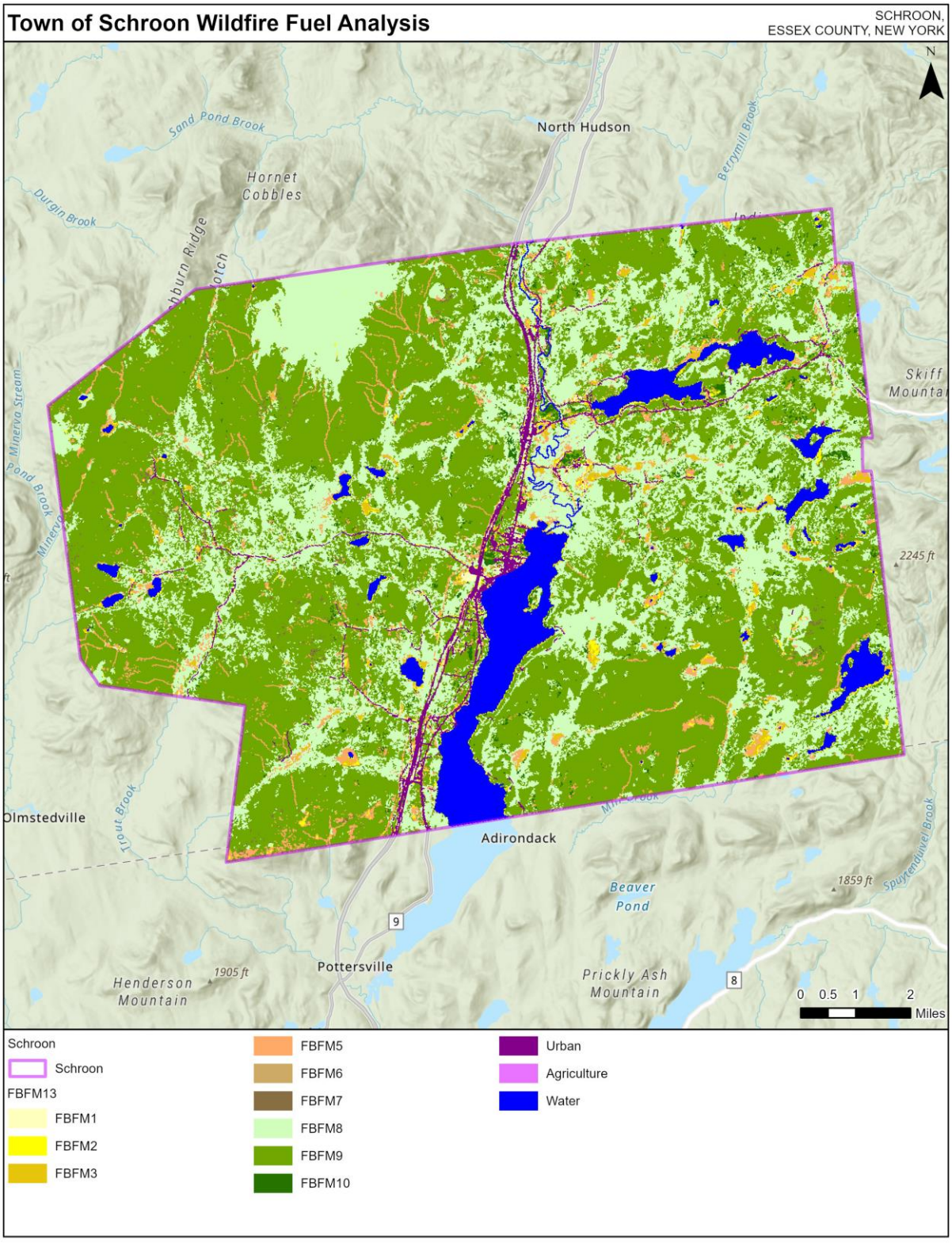


Figure 87. Wildfire Fuel Analysis: Town of Schroon

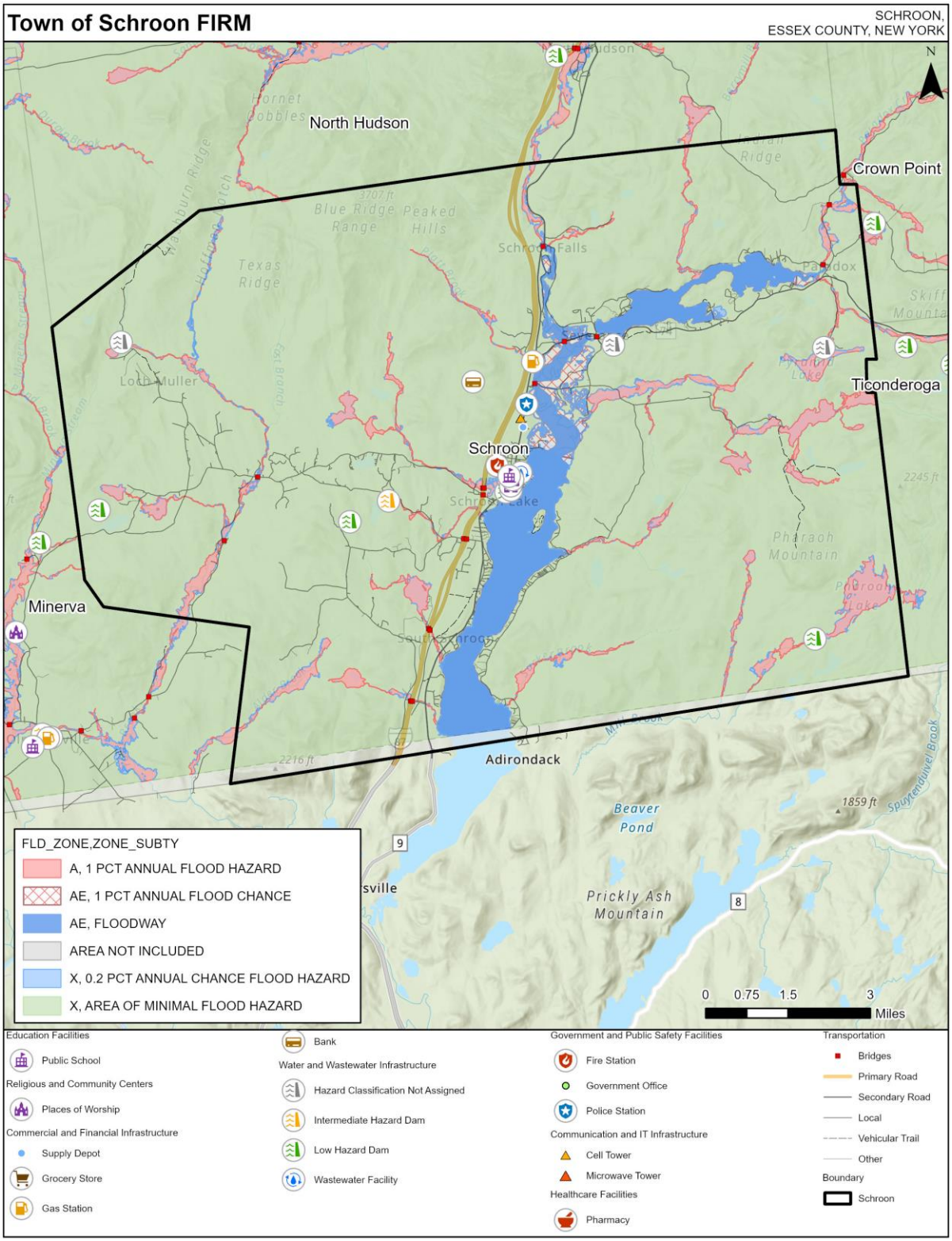


Figure 88. FIRM: Town of Schroon

Potential Loss

Potential loss was calculated using data from the Essex County Real Property website. Property values for all parcels were analyzed and categorized into nine class codes. The total value was determined for each class code, and potential loss was estimated based on the assumption that 10% of properties in each class code would be affected by a hazard event. Projected loss was then calculated as 10% of the total property value within each class code.

The Essex County Real Property Tax Services website classifies real property into the following nine class codes:

- 100 Agriculture
- 200 Residential
- 300 Vacant Lands
- 400 Commercial
- 500 Recreation and Entertainment
- 600 Community
- 700 Industrial
- 800 Public Services
- 900 Forest, Conservation Lands and Parks

Table 234. Potential Loss: Town of Schroon

Class Code	Number of Structures	Structure Values	Number of Structures Impacted	Potential Loss
100	1	$419,800	1	$41,980
200	1965	$868,140,900	200	$86,814,090
300	1,098	$53,639,600	110	$5,363,960
400	106	$35,313,300	10	$3,53,310
500	19	$5,824,700	1	$582,470
600	44	$27,169,700	4	$2,716,970
700	1	$94,100	1	$9,410
800	40	$24,349,100	4	$2,434,910
900	443	$125,748,823	44	$1,257,183

Mitigation Strategy

The mitigation strategy included in the 2019 plan was reviewed to determine if project(s) were completed. New mitigation projects were identified for the 2025 plan update, included in the table below. Prioritization of projects occurred as the plan was updated. Project priority is listed as High, Medium, or Low. Generally speaking, high priority projects are those enabling towns and

villages to be fully functional during times of disasters. Medium and Low priority projects improve other functions of towns and villages, addressing actual community residents. Project implementation will proceed as funding becomes available, though any project may advance when financial resources, political will, and other factors align.

Proposed mitigation project costs were determined and included in the table below. For other mitigation projects, estimated costs are provided and categorized as High, Medium, or Low cost based on projected financial requirements.

Table 235. Mitigation Strategies: Town of Schroon

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
1.Route 74 bridge, raise height to eliminate flooding	2,4,5	Raise bridge	Floods	County PDW	High	1-10 years Year 1-5 Obtain funds Year 5-10 Implement project	NYS DOT EC DPW	Medium	Structure & Infrastructure Project
2. Schroon Riverbank project, slope failure would change river course	4,5	Investigate ways to stabilize 100' bank	Floods	Towns of Schroon & N. Hudson	High	1-10 years	ACOE DEC	High	Natural System Protection
3. Replace culverts	2,4,5	Upgrade culverts that are undersized or failing	Floods	Town Hwy Dept	Low or Medium	1-5 years	Town or county budgets	Medium	Structure & Infrastructure Project
4. Acquire or buy out flooded structures first offering to repetitive	1,2	Buyouts	Floods	County DES Town	L/M depending on structure	1-10 years Year 1-5 Obtain funds Year	FEMA or HMGP	Medium	Structure & Infrastructure Project

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
loss properties						6-10 implement project			
5. Earthquake Impact Reduction	1,2,3,4	Conduct training for code officers and update municipal plans to reflect new seismic standards.	Earthquake	Town Supervisors, Town Code Officers	Variable/ Low	Ongoing 1-5 years	Local Budgets, FEMA Hazard Mitigation Grant Program (HMGP), NY State Division of Homeland Security and Emergency Services (DHSES) Grants	Low	Education, & Training

Schroon will continue to actively implement projects and programs to reduce the hazard–related effects from disasters impacting the Town.

DRAFT

Annex O: Town of Ticonderoga

Profile

The Town of Ticonderoga, the southernmost town in Essex County, derives its name from the Iroquois word tekontaró:ken, meaning “it is at the junction of two waterways.” Spanning 88 square miles in the county’s southeastern corner, Ticonderoga has a population of 4,789 and features frontage on both Lake George and Lake Champlain.

The village area is situated along the outlet of Lake George, known as the La Chute River, which flows into Lake Champlain approximately 3.5 miles downstream. The commercial district and town services are concentrated in the former village, while residential areas are dispersed throughout the town. Baldwin, located on the shore of Lake George, and Chilson and Paradox, along State Route 74 to the west, each have residential communities. The less populated western region features numerous lakes, ponds, and streams, surrounded by small mountains reaching elevations of approximately 500 feet.

The town’s population increases during the summer as tourists and seasonal residents take advantage of lakeshores and outdoor recreational opportunities. Several annual events draw additional visitors, temporarily raising the town’s exposure to certain hazards. The Town Supervisor, emergency personnel, and police department work collaboratively to enhance public safety to mitigate these risks.

Ticonderoga’s resources include schools, a thriving business community, historic sites, a medical facility, and recreational areas. It has a rich history as the site of battles and military maneuvers during both the French and Indian War and the American Revolutionary War. Originally built by the French as Fort Carillon in the 1750s, Fort Ticonderoga marked a strategic portage between Lake George and Lake Champlain. Today, the fort serves as a major tourist attraction featuring American Revolutionary War reenactments and various programs offered by the National Park Service. Ticonderoga offers a variety of tourist attractions beyond its historic sites. One unique destination is the Star Trek Original Series Set Tour, a museum featuring meticulously recreated sets from the classic television series. The museum has attracted visits from cast members of the original show, its spinoffs, and films.

Among Ticonderoga’s historic landmarks is the H.G. Burleigh House, originally built in 1894 and owned by U.S. Congressman Henry G. Burleigh. It has been listed on the National Register of Historic Places since 1988. Numerous other town sites hold historic significance and are recognized on the National Register of Historic Places including: the Amherst Avenue Historic District, Black Watch Library, Clark House, Community Building, Clayton H. Delano House, Crandall Marine Railway, Ferris House, Fort Ticonderoga, Frazier Bridge, Gilligan and Stevens Block, Hancock House, Lake George Avenue Historic District, Liberty Monument, Silas B. Moore Gristmill, New York State Armory, Pad Factory, Ticonderoga High School, Ticonderoga National Bank, Ticonderoga Pulp and Paper Company Office, and the United States Post Office. These landmarks, along with the town’s rich history and scenic beauty, make Ticonderoga a compelling destination for visitors.

Table 236. Table of Facts: Town of Ticonderoga

Fact	Description
Land Area	~88 sq. miles (228 km²)
Incorporated Village(s)	None
Hamlets	Ticonderoga (main hamlet), Alexandria, Streetroad, Chilson, & Eagle Lake
Population Census	4,789 (2020 Census)
Governance	Town
Total Assessed Valuation	$748 million
Highest Elevation	Mount Defiance (~853 feet above sea level)
Largest Lake	Lake George
River(s)	La Chute River (connects Lake George to Lake Champlain)
Dams	Alexandria A Dam, C Mill Dam, & Lower Falls Dam
Bridges	Route 9N Bridge (over La Chute River), Alexandria Bridge, Tower Avenue Bridge, Trout Brook Bridge, Montcalm Avenue Bridge, & Frazier Bridge
Interstate Highway	Nearest interstate highway is Interstate 87 (I-87), also known as the Adirondack Northway.
State Routes	NY Route 9N, NY Route 74, NY Route 22
County Roads	CR 7, CR, 2 CR 56 (Old Chilson Road), CR 5
Land Agriculture Use	Predominantly agricultural lands used for dairy & crop farming.
Land Classified Industrial	Sylvamo Paper Mill, Industrial Parks, & Zoning
Land Classified Residential, as Hamlet	Residential zoning within the hamlets of Ticonderoga.
Hospital/Medical Facility	(Moses Ludington Hospital)–Ticonderoga Campus of the UV Health Network–Elizabethtown Community Hospital
Fire & Rescue	Ticonderoga Fire Department, Chilson Fire Department, and Ticonderoga EMS and Lamoille Ambulance Service
Schools	Ticonderoga Central School District (Elementary, Middle School & High School)
Railroads	Canadian Pacific Railway passes through town
Passengers/Day	Amtrak Adirondack Line, Ticonderoga Amtrak Station

DRAFT

Fact	Description
Freight Trains/Day	Several freight trains (Canadian Pacific Railway)
Ferry Dock(s)	Fort Ticonderoga Ferry (Shoreham, VT across Lake Champlain) May to October–cable ferry
Interstate Bridge	Not applicable (No interstate highway directly in Ticonderoga)
Largest Employer	Sylvamo Paper Mill
Law Enforcement	Ticonderoga Police Department
Correctional Facility	None
Power Utility Provider(s)	National Grid
Water Supply Source(s)	Gooseneck Pond (currently being phased out); Groundwater Wells (aquifers), Lake George Baldwin Filtration Plant Water Treatment Plant
Emergency Shelters	Ticonderoga High School
Critical Facilities	Ticonderoga Municipal Water Treatment Plant; Ticonderoga Fire Department; Elizabethtown Community Hospital-Ticonderoga Campus; Ticonderoga Police Department; School District buildings; Sylvamo Paper Mill, Ticonderoga Power Substation; La Chute River Dams

Notable Updates

Per the 2020 Census, the population of Ticonderoga is approximately 4,789, reflecting a stable yet slightly declining trend compared to previous years. The town's largest employer, Sylvamo Paper, continues to play a vital role in the local economy, operating a major paper mill that providing significant employment opportunities.

Ticonderoga's infrastructure includes a mix of industrial and transportation assets supporting local businesses and tourism. The Canadian Pacific Railway serves the town's rail connections, while hydroelectric dams along the La Chute River contribute to local energy resources. Ticonderoga Municipal Airport (4B6) provides aviation services, and the Fort Ticonderoga Ferry offers a seasonal transportation link to Vermont, further enhancing regional accessibility.

The water supply is sourced primarily from Street Road groundwater wells and Lake George, with recent infrastructure improvements ensuring a consistent and safe water supply for residents and businesses. For emergency services, Moses Ludington Hospital (now part of the University of Vermont Health Network) remains the primary medical facility, offering community emergency and outpatient care.

Planning Process

The town participated in a Survey, followed by a Hazard Mitigation Assessment Meeting, sent a copy of their portion of the county plan for review and finally participated in an interview/meeting to update the Town portion of the county plan. The meetings occurred on October 4, 2024. Meetings attended by the Town Supervisor.

Capability Assessment

Ticonderoga implemented a range of planning mechanisms to support hazard resilience and community development, including comprehensive emergency management plan, floodplain ordinance, zoning ordinance, subdivision regulations, comprehensive town plan, farmland preservation ordinances, building codes, and fire codes. Collectively, these regulatory measures ensure that new development is both hazard–resistant and aligned with sustainable growth objectives. Through an assessment of its planning capability, the town recognizes that these mechanisms play a critical role in mitigating potential hazards and fostering long–term community resilience.

Table 237. Firehouse Town of Ticonderoga

Town of Ticonderoga Planning Documents
Comprehensive Emergency Management Plan
Floodplain Ordinance
Zoning Ordinance
Subdivision Regulations
Comprehensive Town Plan
Farmland Preservation Ordinances
Building Codes
Fire Codes

Ticonderoga integrated hazard mitigation into its broader planning efforts to enhance resilience against natural disasters. Since updating its hazard mitigation plan in 2019, the town has incorporated mitigation strategies into key documents like the comprehensive emergency management plan, capital improvement plan, and community comprehensive plans. These updates ensure hazard rankings inform emergency management, allocate resources for infrastructure improvements, guiding long–term growth with hazard considerations in mind.

Ticonderoga's administrative framework supports these efforts through key roles ensuring compliance with safety standards, enhancing community resilience. The Planning & Zoning Board, Town Engineer, and Code Enforcement Officer oversee regulatory adherence, while the Town Supervisor coordinates emergency response efforts. The Floodplain Administrator manages development in high-risk areas, mitigating potential hazards. The town benefits from GIS services provided by Essex County and grant writing assistance from the North Country Rural Development Coalition, aiding in planning and securing funding for critical projects. Collaborations with local organizations (like the Ticonderoga Montcalm Street Partnership) further support community development and infrastructure resilience.

DRAFT

Mitigation projects are funded through Capital Improvement Funds, Community Development Block Grants (CDBG), water and sewer fees, and general revenue sources. Programs like as Firewise help reduce wildfire risks, and there is growing interest in joining the StormReady Program to enhance preparedness for severe weather. The town utilizes communication platforms like Everbridge, NY Alert, and social media to keep residents informed during emergencies, while partnerships with organizations like VOAD assist in disaster recovery efforts.

Ticonderoga's planning and administrative capacities reflect strong policies and resources, but financial capabilities and public education were identified as Limited, emphasizing the need for improved funding mechanisms and community outreach. Ticonderoga intends to strengthen community resilience, safeguard critical infrastructure, and better protect residents from future hazards by addressing these gaps and continuing proactive planning.

Critical Facilities

Several critical facilities in Ticonderoga are located within the 500–year floodplain including the fire station, which is equipped with a generator but is currently being rebuilt due to mold infestation. The wastewater treatment plant also lies within the floodplain (has generator) as does the LaChute Hydro and National Grid substations (generator status unknown).

Outside the floodplain, key facilities include the police station, which is equipped with a generator and is in the process of relocating. The town medical facility and drinking water plant both have generators, ensuring operational continuity during power outages. The communication center, critical for emergency response, is confirmed to have a generator. However, the generator status for vehicle and equipment storage facilities and schools remains unknown.

To address these gaps and improve overall resilience, Ticonderoga plans to pursue grants for facility upgrades and enhance public hazard awareness by utilizing social media (Facebook) more effectively. These efforts strengthen preparedness, ensuring critical facilities remain operational during emergencies.

Table 238. Critical Infrastructure in Floodplain: Town of Ticonderoga

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Police Station	No	No	New facility purchased	No
Fire Station	Yes	No	No (new facility needed due to condition of current station)	Yes
Critical Vehicle Storage Areas & Buildings	No	No	No (new facility needed due to condition of current station)	Unknown
Emergency	No	No	No	Yes

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Operations Center				
Communications Center	No	No	No	No
Medical Facilities	No	No	No	Yes
Schools	No	No	No	Unknown
Drinking Water Plant	No	No	No	Yes
Wastewater Plant	Yes	Yes	No (berm needed around facility)	Yes
Utility/Power Stations	Yes	Yes	No (investigate mitigation options)	Most Likely (confirmation needed)
Sylvamo Paper, Tier II Facility	Partial	Yes	Unknown	Not necessarily due to routine operations.

Critical Infrastructure Notes

- Police Station: currently moved outside of the 500–year floodplain.
- Fire Station: located within the 500–year floodplain and have not been mitigated. New facilities are needed due to the condition of the current stations.
- Critical Vehicle Storage Areas and Buildings: not in the floodplain and have not flooded in the past, but a new facility is needed due to the condition of the current one. Generator status is unknown.
- Communication Center: does not have a generator; acquiring one is necessary to ensure functionality during emergencies.
- Wastewater Plant: located in the floodplain and has flooded in the past. A berm is needed around the facility for mitigation.
- Utility/Power Stations: located in the floodplain and have flooded in the past. Mitigation options need to be investigated. Generator status is most likely positive, but confirmation is needed.
- Sylvamo Paper, Tier II Facility: partially located in the floodplain and has flooded in the past. Mitigation status is unknown. A generator is not necessarily due to routine operations.

DRAFT

Ticonderoga identified three locations for temporary housing following a disaster. The Community Building (equipped with a generator) can provide heating and cooling for a limited number of personnel. The Armory, with support from the Red Cross, is another potential shelter location. Lowe's parking lot, Fireman's Field, and Burgoyne Triangle can serve as staging areas for emergency resources. All identified sites have power and water access. Ticonderoga has several American Red Cross (ARC) shelters capable of accommodating both local residents and individuals from neighboring towns. Historically, displaced residents also found temporary housing with friends, relatives, or neighbors.

Table 239. Housing for Displaced Residents: Town of Ticonderoga

Facility	Type of Housing
Lowe's Parking Lot	RV, mobile homes
Fireman's Field	RV, mobile homes
Burgoyne Triangle	RV, mobile homes
Ticonderoga Central School District	ARC Shelter
Ticonderoga Town Armory	ARC Shelter

National Flood Insurance Plan (NFIP) Summary

The following information concerns flood vulnerable structures in Ticonderoga. The numbers of actual structures in flood vulnerable areas is likely larger than the number of insured structures. Once Flood Insurance Rate Maps (FIRMs) are updated by FEMA, these new maps will determine the actual number of vulnerable structures.

Table 240. Flood Insurance: Town of Ticonderoga

Policies	2011	2018	2024	
Policies	17	4	4	$41,614
Number of Repetitive Loss Structures	-	-	-	-

The town will continue to actively manage floodplains to mitigate future flood risks. New development within special flood hazard areas will be carefully reviewed and approved to ensure compliance with the local floodplain ordinance. As FEMA updates the Flood Insurance Rate Maps (FIRMs), meetings will be held with floodplain managers, town supervisors, and village mayors to provide training on the National Flood Insurance Program (NFIP). These meetings will also serve as a forum to discuss compliance requirements and best practices for floodplain management.

Hazard Identification & Ranking

Table 241. Hazard Ranking: Town of Ticonderoga

Hazard Ranking	Comments
HIGH	• Floods • Hailstorms • High Winds • Ice Storms • Rail Events
MEDIUM	• Drought • Extreme Temperatures • Hurricanes • Landslides
LOW	• Avalanches • Earthquakes • Land Subsidence & Expansive Soils • Severe Winter Storms • Wildfires

Hazard Event History

Table 242. Hazard Events: Town of Ticonderoga

Hazard	Event	Year	Impact
Flooding	Hurricane Irene	2011	Significant rainfall caused flooding, damaging roads, homes, & infrastructure in Ticonderoga.
	Spring flooding	2023	Heavy rainfall led to road closures & erosion in low-lying areas of town.
Winter Storms & Cold	Ice storm	1998	Severe ice accumulation resulted in power outages, hazardous travel conditions, & tree damage.
	February blizzard	2014	Heavy snow disrupted transportation & closed schools & businesses across the town.
Severe Thunderstorms	Severe summer storms	2020	High winds & lightning downed trees, causing power outages & minor property damage.
Public Health	COVID-19 Pandemic	2020-2021	The pandemic disrupted public health services, the local economy, and community activities.
	Tick-borne illness spike	Recurring	Increased tick populations led to heightened cases of Lyme disease in the community.

DRAFT

Hazard Analysis

Ticonderoga faces several natural and public health hazards threatening infrastructure, the local economy, and resident well–being. Flooding poses significant risk, as events like Hurricane Irene in 2011 caused widespread damage to roads, homes, and infrastructure. Spring flooding in 2023 led to road closures and erosion, emphasizing the need for effective stormwater management and infrastructure upgrades. Winter storms, including the 1998 ice storm and the 2014 February blizzard, have disrupted transportation, caused power outages, and damaged trees, highlighting the importance of snow removal, tree management, and robust emergency response systems. Severe thunderstorms (like those in 2020) bring high winds and lightning, resulting in downed trees, power outages, and minor property damage, emphasizing the need for resilient power infrastructure and proactive tree maintenance.

Public health challenges continue to pose risks in Ticonderoga, particularly the COVID–19 pandemic, which disrupted health services, the local economy, and community activities from 2020 to 2021. Recurring spikes in tick–borne illnesses like Lyme disease, remain a concern, especially in rural and forested areas.

Beyond public health, the town faces broader challenges including aging infrastructure, limited emergency response resources, and the increasing impacts of climate change—all of which heighten vulnerabilities to flooding and severe weather events. However, there are opportunities for mitigation including upgrading drainage systems, maintaining riverbanks, and enhancing winter storm preparedness through investments in snow removal equipment and emergency response plans. Expanding public health awareness programs for tick prevention and integrating climate adaptation strategies into community planning will further strengthen the town's resilience against these ongoing risks.

Flooding, severe weather, and public health challenges remain Ticonderoga's primary hazards. Addressing these risks requires proactive investments in infrastructure, emergency preparedness, and community education. By implementing mitigation strategies and fostering community engagement, the town can enhance resilience, safeguard residents, and adapt to evolving hazards, ensuring a safer and more sustainable future.

Hazard Mapping

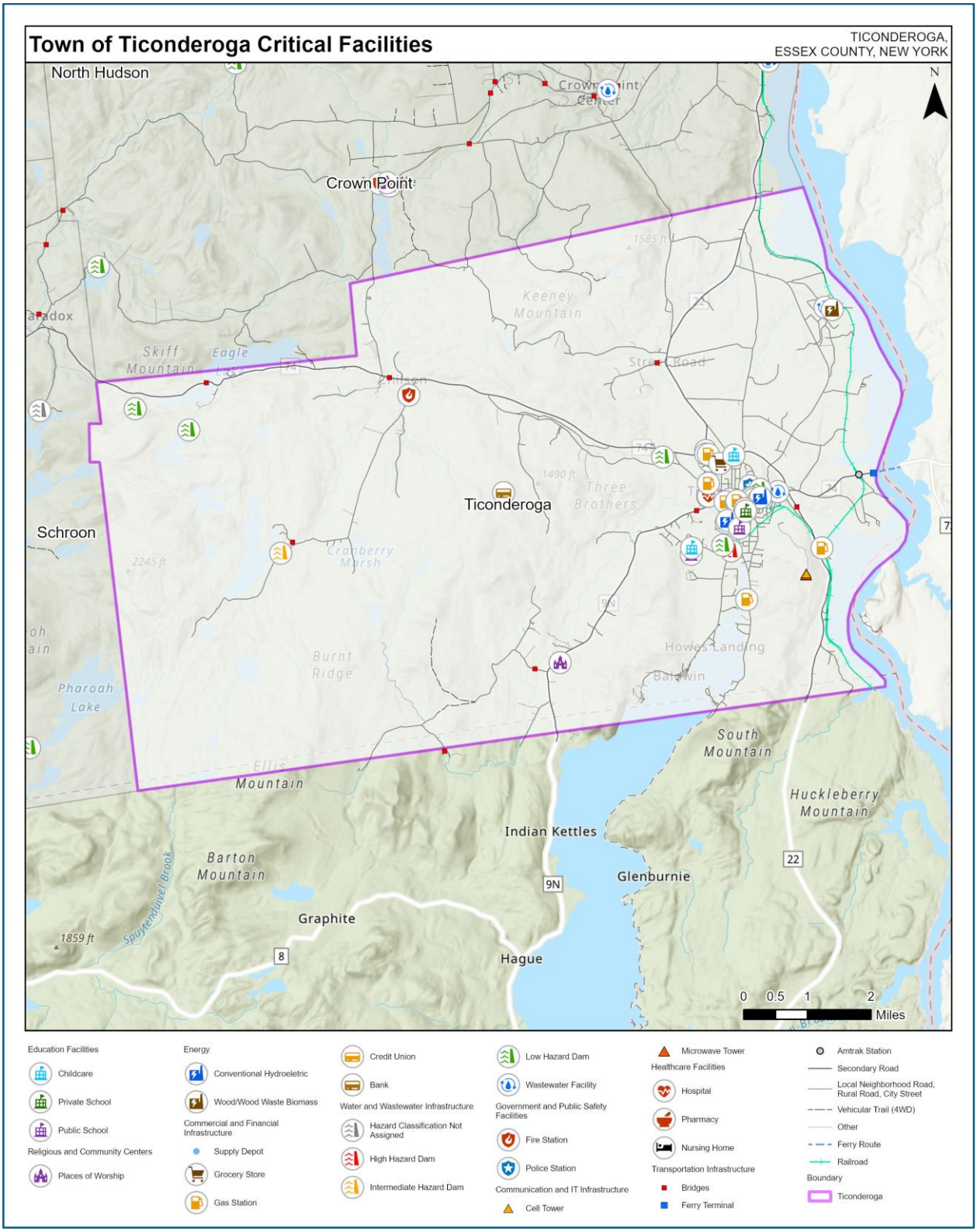


Figure 89. Critical Facilities: Town of Ticonderoga

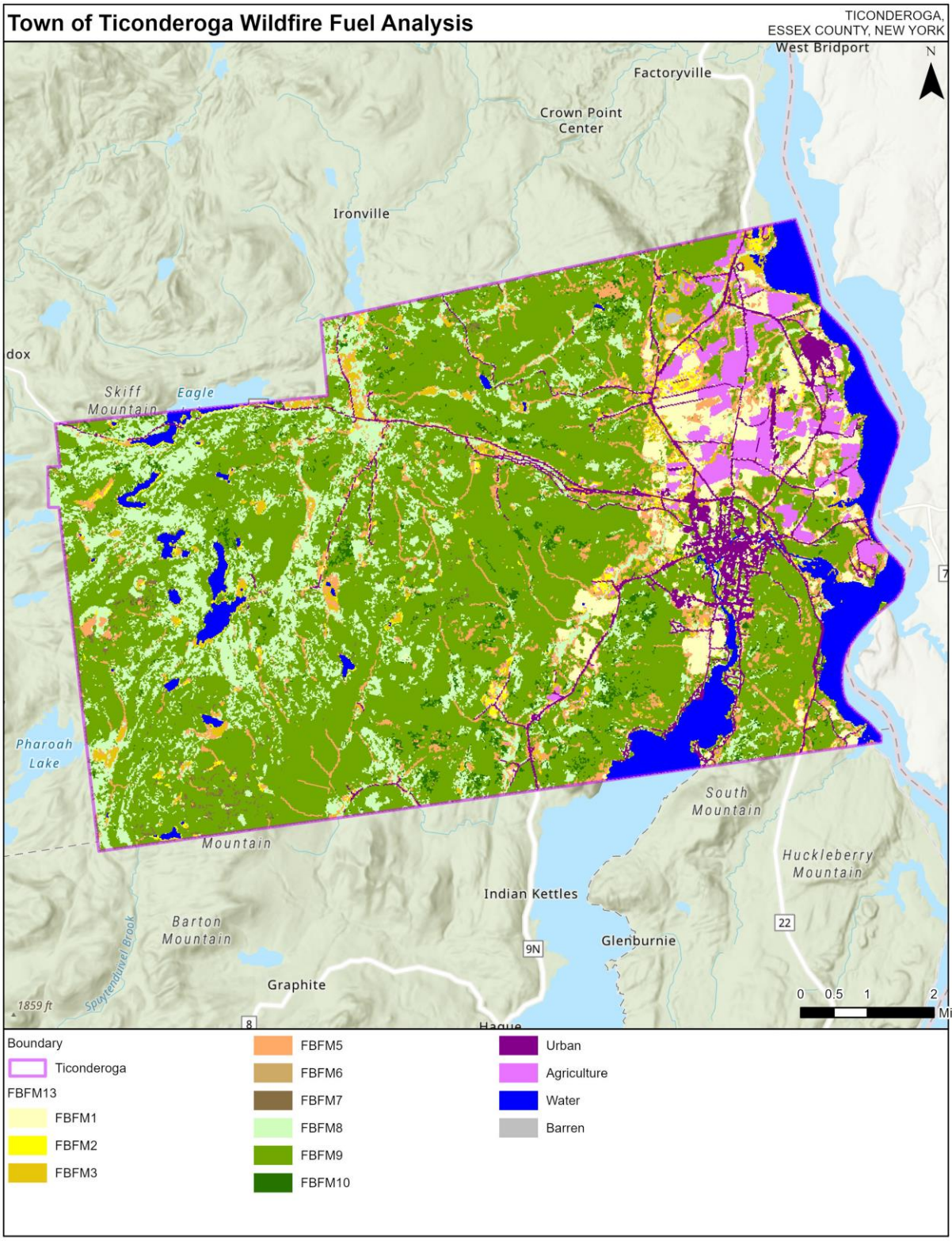


Figure 90. Wildfire Fuel Analysis: Town of Ticonderoga

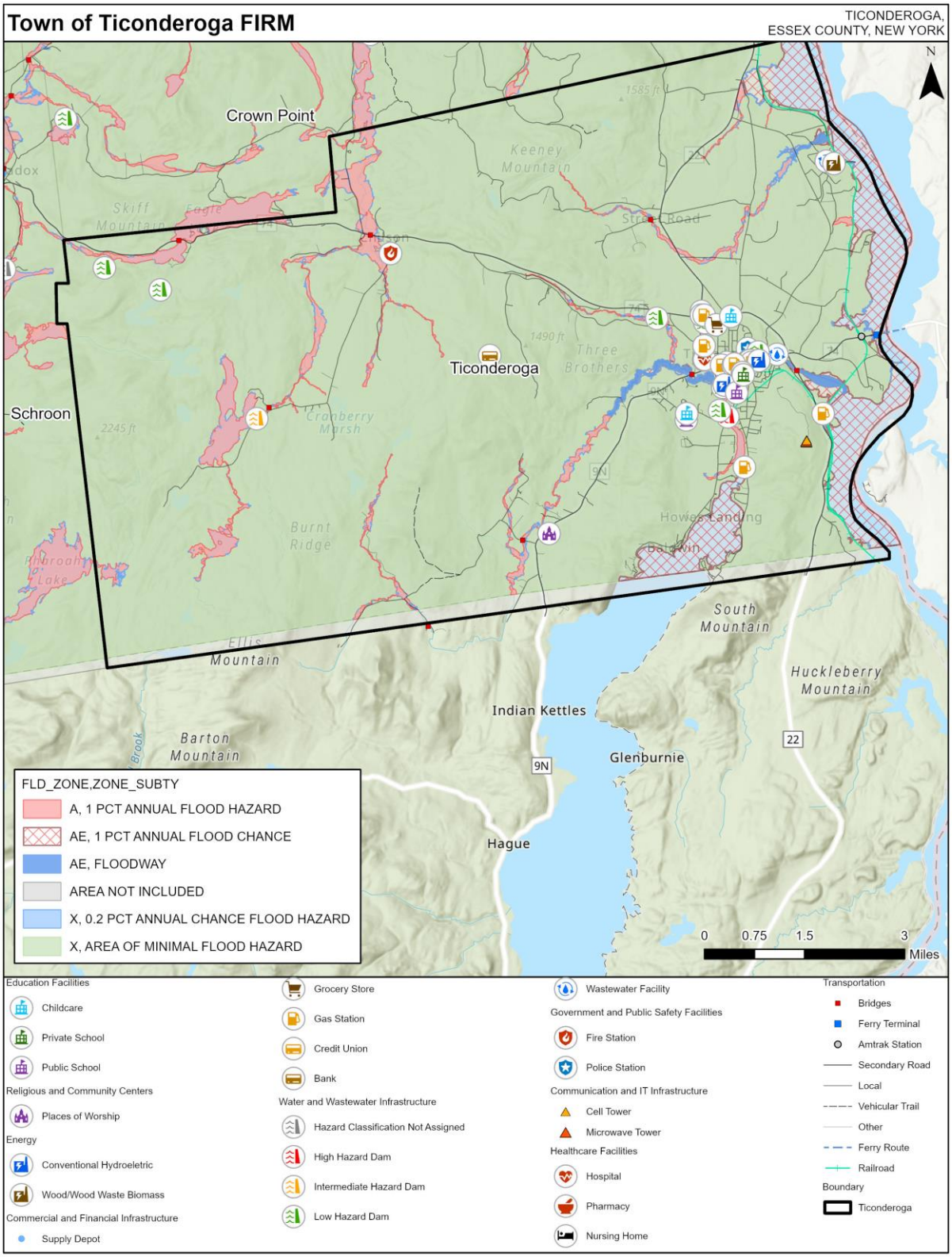


Figure 91. FIRM: Town of Ticonderoga

Potential Loss

Ticonderoga potential loss was calculated using data from the Essex County Real Property website, which provided property information for all parcels. The data was analyzed to determine the total property value within each of the nine class codes. To estimate potential loss from hazard events, it was assumed that 10% of the properties in each class code would be affected. The projected financial impact was then calculated as 10% of the total property value for each class code.

The Essex County Real Property Tax Services website categorizes real property into nine class codes:

- 100 Agriculture
- 200 Residential
- 300 Vacant Lands
- 400 Commercial
- 500 Recreation and Entertainment
- 600 Community
- 700 Industrial
- 800 Public Services
- 900 Forest, Conservation Lands and Parks

Table 243. Potential Loss: Town of Ticonderoga

Class Code	Number of Structures	Structure Values	Number of Structures Impacted	Potential Loss
100	50	$5,433,900	5	$543,390
200	2068	$429,464,600	206	$42,946,460
300	727	$35,781,800	72	$3,578,180
400	170	$62,367,600	17	$6,236,760
500	20	$8,070,800	2	$807,080
600	53	$93,687,300	53	$9,368,730
700	11	$76,044,840	1	$7,604,484
800	88	$44,441,080	8	$4,444,108
900	201	$32,495,352	20	$3,249,535

Mitigation Strategy

Ticonderoga's mitigation strategy outlined in the 2019 plan was reviewed to assess the completion status of proposed projects. As part of the 2025 plan update, new mitigation projects were identified as detailed in the table below. Projects were prioritized as High, Medium, or Low during

the plan update process. High priority projects focus on ensuring towns and villages remain fully functional during disasters, while Medium and Low priority projects strive to enhance municipal operations and address the needs of residents. Project implementation will proceed as funding becomes available. Any project may advance when financial resources, political support, and other considerations align.

The costs of proposed mitigation projects were determined, outlined in the table below. For other mitigation projects, estimated costs are provided. Potential implementation costs were categorized as High, Medium, or Low to assist with funding prioritization and planning.

Table 244. Mitigation Strategies: Town of Ticonderoga

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
1. Fire Hydrant Mapping	2,4,6	Map fire hydrants & determine pressure capabilities	Fires (wildland or structures)	Fire Dept.	Low	2019/ Completed	Town Budget	High	Plans & regulations or Infrastructure
2. Develop Safety Committee	3,4	Develop comm. for coordination of mitigation actions	All	Town Supervisor	Low	2020/Completed	Town Budget	High	Education Outreach Plans
3. Develop Newsletter as outreach	3,4	Newsletter for public education	All	Town	Low	2019/ Completed and Ongoing	Town Budget	High	Education Outreach Plans
4. Coordinate with EC DPW to clean up debris under bridges	2	Maintenance of bridges	Flooding	Town Hwy Dept County DPW	Low	2020/ Completed and Ongoing	Town Budget	High	Infrastructure
5. Autumn culvert maintenance program (remove leaves)	2	Maintenance of culverts	Flooding	Town Hwy dept.	Low	2020/ Completed and Ongoing	Town Budget	High	Infrastructure
6. Construct new police station	2,4	New police station	All	Town Supervisor County	$1M	Unknown/ Funding	NYS DOS	High	Infrastructure

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
						Depend-ent			
7. Construct new fire sta-tion	2,4	New fire station-move outside of 500 year flood plain	All	Town	$1M	1-10 years Year 1-5 Obtain funds Year 6-10 Build fire station	FEMA Fire Grants, NYS DOS	High	Infra-structure
8. Obtain generator for communica-tions center	2	Critical facility needs back up power	All	Town Supervi-sor	$10K	2020/Co mpleted	FEMA Town budget	High	Infra-structure
9. Earthquake Impact Re-duction	1,2,3,4	Conduct training for code officers and up-date mu-nicipal plans to reflect new seis-mic stand-ards.	Earth-quake	Town Su-pervisors, Town Code Of-ficers	Varia-ble/ Low	Ongoing 1-5 years	Local Budg-ets, FEMA Hazard Mitiga-tion Grant Pro-gram (HMGP), NY State Division of Home-land Se-curity and Emer-gency Services (DHSES) Grants	Low	Educa-tion, & Training
10. Wastewater Plant	2	Build a berm around plant or	Flooding	Town Su-pervi-sor/Board	Me-dium – New Project	1-5 years planning 5-10 years de-velop-ment	Depart-ment of Trans-porta-tion (NYSDO	Me-dium	Infra-structure

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
		other-wise mit-igate					T) BRIDGE NY Pro-gram, NYS Empire State Devel-opment (ESD) Infra-struc-ture Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Devel-opment Water Grants		

Ticonderoga will continue to actively implement project and programs to reduce disaster–related effects impacting the town.

DRAFT

Annex P: Town of Westport

Profile

The Town of Westport, located in eastern Essex County, spans an area of 68 square miles and with a population of approximately 1,312. Positioned along the western shore of Lake Champlain, Westport is bordered by Essex and Lewis to the north, Elizabethtown to the west, and Moriah to the south. Its extensive lakefront contributes to its popularity as a seasonal resort destination, drawing seasonal residents, visitors, and campers during the summer months. The town is also known for its two well–established children's summer camps situated along the lake's shores.

Westport features a scenic landscape characterized by forested areas, small ponds, and streams flowing from higher elevations, enhancing its appeal as a recreational destination. The Boquet River flows northeast through the riverside hamlet of Wadhams, while the Canadian Pacific Rail lines traverse the eastern section of town in a north–south direction. Interstate Route 87 runs through the northwestern corner near Wadhams for approximately four miles, facilitating regional connectivity. State Routes 9N and 22, along with various town and county roads, interconnect residential clusters, agricultural areas, and the town's two primary hamlets.

Westport is home to Camp Dudley, the oldest continuously operating summer camp in the United States. The town is recognized as the ice fishing capital of Essex County. Adding to its cultural appeal is The Depot Theatre, one of only two professional theaters in the Adirondacks. Established in 1979, the theater operates out of the historic Amtrak railway station, offering plays, musicals, and an annual gala during the summer months in its 136–seat, air–conditioned venue.

Notable landmarks in Westport listed on the National Register of Historic Places include Camp Dudley Road Historic District, Champlain II Shipwreck, Essex County Fairgrounds, the First Congregational and Presbyterian Society Church, Lake View Grange No. 970, and the Vergennes Canal Boat. The town is part of the Lake Champlain Birding Trail, featuring key birding sites like the Coon Mountain Preserve (managed by The Nature Conservancy), Webb Royce Swamp, and the Westport Boat Launch.

For over a century, Westport flourished as a lake–based tourist destination, attracting visitors with its natural beauty, cultural heritage, and outdoor recreation opportunities. The town's rich history and vibrant summer activity continue to make it a cherished destination in the Adirondacks.

Table 245. Table of Facts: Town of Westport

Fact	Description
Land Area	68 sq. miles
Incorporated Village(s)	None
Hamlets	Westport & Wadhams
Population Census	1,312 (2020 Census)
Governance	Town
Total Assessed Valuation	$134,304,825
Highest Elevation	Campbell Mt.– 1,939'

Fact	Description
Largest Lake	Lake Champlain–eastern border
River(s)	Boquet River, Stacey Brook & Hoisington Brook
Dams	10
Bridges	2 County Road
Interstate Highway	I–87 northwestern edge of Town
State Routes	9N & 22
County Roads	8, 9, 10, 44, 59 & 60
Land Agriculture Use	14,000 acres
Land Classified Industrial	None
Land Classified Residential, as Hamlet	759.1 acres
Hospital/Medical Facility	Westport Health Center
Fire & Rescue	Westport Fire & Wadhams Fire Dept
Schools	Westport Central
Railroads	CP Rail north/south
Passenger Trains/Day	Amtrak 68 & 69 2/day
Freight Trains/Day	Approx. 5/day
Ferry Dock(s)	None
Interstate Bridge	None
Largest Employer	General Composite
Law Enforcement	NYSP & County Sheriff
Correctional Facility	None
Power Utility Provider(s)	National Grid
Water Supply Source(s)	Lake Champlain, Springs & Private wells
Emergency Shelters	Westport Central School

Notable Updates

Westport has made significant progress in hazard mitigation and resilience through infrastructure projects and initiatives. The Wadhams Well Improvements project, funded by USDA Rural Development, was undertaken following the collapse of a primary well to address water supply concerns. FEMA–supported repairs, including work on Mountain Spring Road and flood–damaged areas, are moving forward with site inspections and material preparations currently underway. A $3 million wastewater upgrade project is advancing to enhance sewer infrastructure, further strengthening Westport's resilience.

Environmental and resource management efforts also progressed. A Forest Management Plan was approved to promote sustainable regeneration, addressing erosion and water runoff

DRAFT

concerns. FEMA–backed initiatives targeted erosion and storm–related washouts in areas like Angier Hill, further strengthening the town's environmental resilience. Policy and planning enhancements include recent Land Use Law Amendments adopted in October 2024, which adjust density requirements, encourage accessory apartment use, and enhance zoning flexibility to support sustainable development. Collaborations with FEMA on floodplain mapping updates are improving town preparedness for future flood risks.

Grant acquisition was a key focus, with funding from NYSERDA and FEMA supporting projects like solar PV installations on the Town Hall and emergency sewer equipment replacements. Capital improvements like roadway paving and park renovations, were funded through federal, state, and local sources—demonstrating the town's ability to secure diverse funding streams. Emergency preparedness initiatives include improving communication infrastructure, like cellular coverage enhancements across the Adirondack region, to ensure better connectivity for public safety. FEMA grants were actively utilized to strengthen hazard preparedness and recovery efforts.

Community engagement remained central to these efforts, with public hearings and discussions ensuring transparency and resident involvement. Recent dialogues on water and sewer rate adjustments focused on aligning infrastructure needs with fiscal sustainability. These initiatives reflect Westport's proactive approach to mitigating natural hazards, improving infrastructure resilience, and integrating sustainable practices into its governance framework. The town continues to build a safer and more resilient community through these efforts.

Planning Process

The town initially took part in a Hazard Mitigation Survey, followed by an in-person Stakeholder Hazard Mitigation Introduction Meeting. Subsequently, the Town Supervisor received a copy of the town's section of the county plan for review and revision to update its portion of the county plan. The Town Supervisor participated in county-level meetings related to the plan and attended a final mitigation strategy meeting.

Capability Assessment

Westport implemented a range of planning mechanisms to support hazard resilience and community development, including: emergency operations plan, disaster recovery plan, floodplain regulations, zoning regulations, subdivision regulations, comprehensive plan, open space plan, stormwater management plan, natural resource protection plan, economic development plan (2016), farmland plan, building codes, fire codes, and a comprehensive emergency management plan. Collectively, these regulatory measures ensure that new development is both hazard–resistant and aligned with sustainable growth objectives. Through an assessment of its planning capability, the town recognizes that these mechanisms play a critical role in mitigating potential hazards and fostering long–term community resilience.

Table 246. Planning Documents: Town of Westport

Planning Documents
Emergency Operations Plan (2017)
Disaster Recovery Plan (2017)

Planning Documents
Floodplain Regulations (1987)
Zoning Regulations (1995)
Subdivision Regulations (1987)
Comprehensive Plan (1995)
Open Space Plan (1995)
Stormwater Management Plan (2016)
Natural Resource Protection Plan (1995)
Economic Development Plan (2016)
Farmland Plan (2016)
Building Code (1985)
Fire Codes (1985)
Comprehensive Emergency Management Plan (2018)

This hazard mitigation plan should be integrated into other existing plans in Westport. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all enabling legislation has similar information in those documents. Integration can ensure consistency between enabling legislation.

Westport completed a self–assessment of their capabilities. The town has building code staff who is well versed on construction practices and serves as the floodplain administrator. The Supervisor serves as the emergency manager during disasters. The town coordinates with the county resources of GIS, planners, grant writers, and engineering as needed for projects. The town hires other professionals, like land surveyors, as needed. The DEC and APA assist the town with environmental or scientific data needs.

The town uses a variety of funding sources to implement projects. They have used capital improvement funds for water, sewer, and road infrastructure projects. Community development block grants, CDBG, were used for housing rehabilitation and visitor center building rehabilitation. Special taxes were used in the past for sewer and water projects. Water and sewer fees are also used for operation and maintenance of existing water and sewer systems. Special tax bonds were used for upgrades to existing water and sewer systems. Westport has a variety of intergovernmental agreements with towns and the county for sharing of resources during normal day–to–day projects, as well as during times of disasters.

Westport conducts a variety of education and outreach projects. The fire department conducts seminars on a variety of topics. Flyers are distributed on water quality and use, fire safety, and hazardous chemical pick up. The town coordinated with the Boquet River association and Lake Champlain Watershed Advisory Group of on water quality issues.

DRAFT

The town ranked several categories of abilities. Planning and regulatory capability; administrative and technical capabilities; and financial capabilities were all ranked as High. Education and outreach were ranked as a Medium capability.

Critical Facilities

Critical facilities flood vulnerability was assessed as the plan was updated. The table below described if these facilities are located in the 500–year floodplain, if the facility has been flooded in the past, and if any kind of mitigation has been completed to reduce the flood potential to these structures. Generator capabilities was also assessed to determine if these facilities could function without electric power, a common issue for critical facilities during disaster events.

Westport has fire stations, critical vehicle equipment storage facilities, emergency operation centers, communications center, health care facilities, schools, public and private utility facilities. These facilities are not located in the 500–year floodplain, and all of these facilities have a generator. The town sewer plant is located in the 500–year floodplain of Lake Champlain. A study needs to be completed to determine effects of the 500–year flood to this facility. The new updated FIRM will be able to determine depth of the 500–year flood to this facility. Mitigation measures can be developed once the vulnerability is assessed to the 500–year flood.

Table 247. Critical Infrastructure in Floodplain: Town of Westport

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Police Station	No	No	No	Yes
Fire Station	No	No	No	Yes
Critical vehicle storage areas & buildings	No	No	No	Yes
Emergency Operations Center	No	No	No	Yes
Communication Center	No	No	No	Yes
Medical facilities	No	No	No	Yes
Schools	No	No	No	Yes
Drinking Water Plant	No	No	No	Yes
Wastewater Plant	Yes	Yes	No (needs 500–year flood inundation level determination)	Yes

The town identified one area that can be used for temporary housing needs after a disaster—the site of the old landfill (no power, water or sewer available). The school is designated as the American Red Cross Shelter and can be used for temporary housing of residents displaced by hazard events. In the past, displaced residents also obtained temporary housing with friends, relatives or neighbors.

Table 248. Housing for Displaced Residents: Town of Westport

Facility	Type of Housing
Old Landfill	RV, mobile homes
Mental Health Association of Essex County	ARC Shelter
Westport Central Schools	ARC Shelter

National Flood Insurance Plan (NFIP) Summary

The following information concerns flood vulnerable structures in Westport. The numbers of actual structures in flood vulnerable areas is likely larger than the number of insured structures. Once the Flood Insurance Rate Maps (FIRMs) are updated by FEMA, new maps will determine the actual number of vulnerable structures.

Table 249. Flood Insurance: Town of Westport

Policies	2011	2018	2024	Total Amount of Claims
Policies	7	17	17	$169,545
Number of Repetitive Loss Structures	1	1 nonresidential	-	-

Westport will continue to actively manage floodplains to mitigate future flood risks. New development within special flood hazard areas will be carefully reviewed and approved to ensure compliance with the local floodplain ordinance. As FEMA updates the Flood Insurance Rate Maps (FIRMs), the town will hold meetings with floodplain managers, town supervisors, and village mayors to provide training on the National Flood Insurance Program (NFIP). These meetings will also serve as a forum to discuss compliance requirements and best practices for floodplain management.

Hazard Identification & Ranking

Table 250. Hazard Ranking: Town of Westport

Hazard Ranking	Hazards
HIGH	• Floods • High Winds • Ice Storms • Severe Winter Storms • Rail Events
MEDIUM	• Drought • Hailstorms • Hurricanes • Wildfires

DRAFT

Hazard Ranking	Hazards
LOW	• Avalanches • Earthquakes • Land Subsidence • Extreme Temperature Events • Expansive Soils

Hazard Event History

Table 251. Hazard Events: Town of Westport

Hazard	Event	Year	Impact
Flooding	Lake Champlain flooding	2011	Elevated lake levels led to significant shoreline erosion & property damage.
Winter Storms	Ice storm	1998	Severe ice accumulation caused widespread power outages, hazardous travel conditions, & tree damage.
Severe Thunderstorms	Severe summer storms	2020	High winds & lightning resulted in downed trees, power outages, & minor property damage.
Public Health	COVID–19 Pandemic	2020-2021	The pandemic disrupted public health services, the local economy, & community activities.
Hurricanes	Hurricane Irene	2011	Heavy rainfall from the hurricane caused flooding, road closures, & infrastructure damage.
Drought	Northeastern U.S. drought	2016	Extended periods of low rainfall led to water supply concerns & agricultural impacts in the region.
Earthquake	Northern New York earthquake	2002	M5.1 earthquake centered near Plattsburgh was felt in Westport, causing minor structural damages.
Wildfires	Adirondack forest fires	2018	Dry conditions contributed to forest fires in the Adirondack region, raising air quality concerns.
Extreme Temperatures	Heatwave	2019	Prolonged high temperatures resulted in increased health risks & energy consumption.
Tornadoes	Upstate New York tornado	1999	A rare tornado in the region caused localized damage, highlighting the area's vulnerability to such events.

Hazard Analysis

Westport has experienced a variety of natural hazards highlighting its vulnerability to extreme weather, geological events, and climate–related challenges. Flooding is a recurring issue, with events like the 2011 Lake Champlain flooding and Hurricane Irene causing significant shoreline erosion, property damage, and road closures. Winter storms like the devastating 1998 ice storm, disrupted power, damaged trees, creating hazardous travel conditions. Severe summer storms in 2020 brought high winds and lightning, resulting in downed trees and power outages, while the 2002 Northern New York earthquake demonstrated regional susceptibility to minor seismic activity.

Westport also faced health and climate–related challenges. The COVID–19 Pandemic disrupted local services and economic activities, and the 2016 drought led to concerns over water supplies and agricultural productivity. Extreme heat waves (like in 2019) posed health risks and increased energy demands, while dry conditions in 2018 contributed to Adirondack forest fires, raising air quality concerns. Though rare, tornadoes do occur in the region, as seen in 1999, causing localized damage.

These events underscore the need for proactive hazard mitigation planning, improved infrastructure resilience, and enhanced public awareness to safeguard the community from future hazards. By addressing these vulnerabilities, Westport can better prepare for and respond to evolving risks.

DRAFT

Hazard Mapping

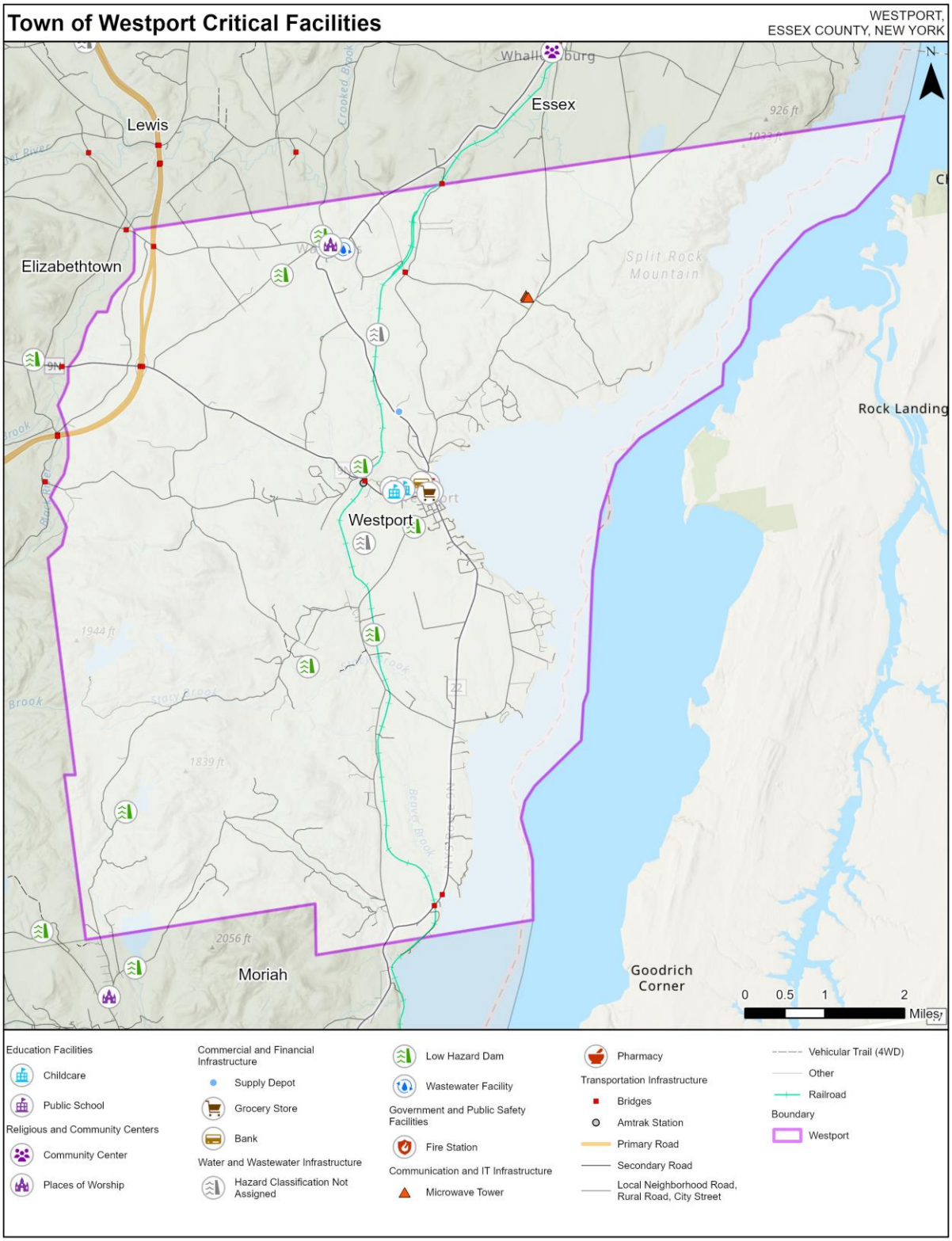


Figure 92. Critical Facilities: Town of Westport

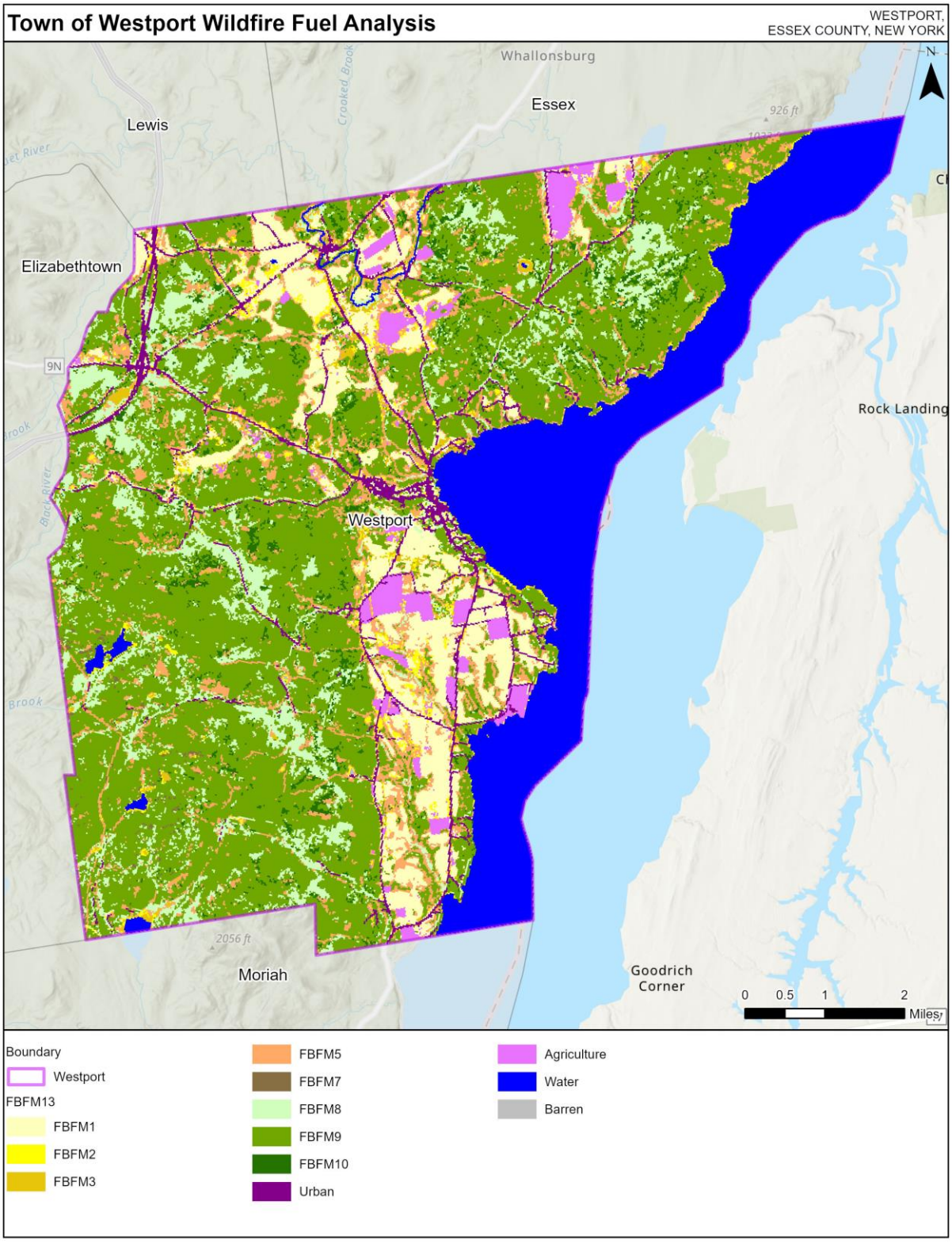


Figure 93. Wildfire Fuel Analysis: Town of Westport

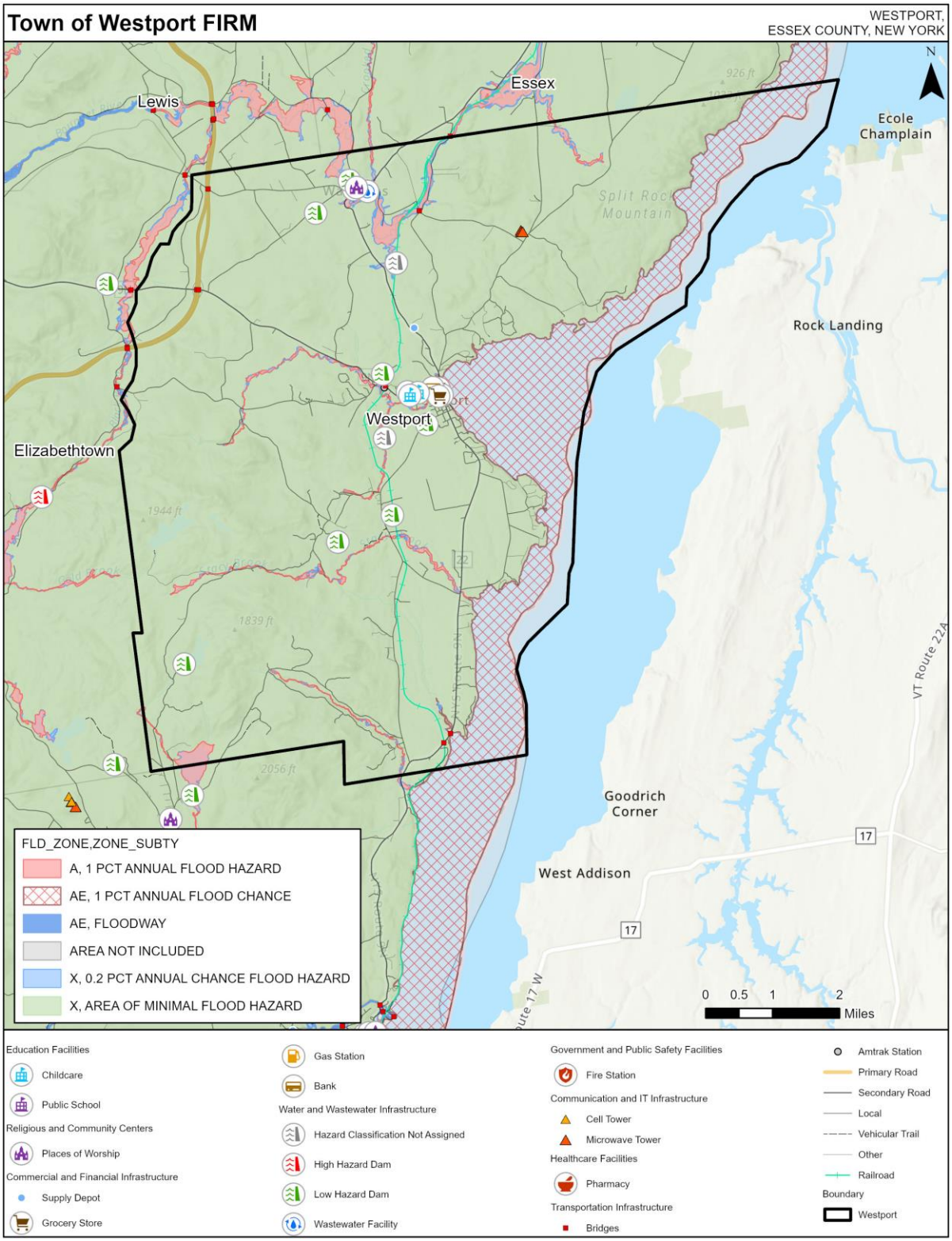


Figure 94. FIRM: Town of Westport

Potential Loss

Potential loss for Westport was calculated using data from the Essex County Real Property website, which provided property valuations for all parcels. This data was analyzed to determine the total property value within each of the nine class codes. To estimate potential losses from hazard events, it was assumed that 10% of the properties in each class code would be affected. The projected financial impact was then calculated as 10% of the total property value for each class code.

The Essex County Real Property Tax Services website categorizes real property into nine class codes:

- 100 Agriculture
- 200 Residential
- 300 Vacant Lands
- 400 Commercial
- 500 Recreation and Entertainment
- 600 Community
- 700 Industrial
- 800 Public Services
- 900 Forest, Conservation Lands and Parks

Table 252. Potential Loss: Town of Westport

Class Code	Number of Structures	Structure Values	Number of Structures Impacted	Potential Loss
100	53	$6,240,900	5	$624,090
200	777	$245,582,600	77	$24,558,260
300	327	$22,706,700	32	$2,270,670
400	36	$8,045,200	4	$804,520
500	19	$24,259,300	2	$2,425,930
600	28	$10,840,600	28	$1,084,060
700	3	$694,000	0	$694,000
800	75	$16,346,974	7	$16,346,974
900	72	$18,196,812	7	$18,196,812

Mitigation Strategy

The mitigation strategy from the 2019 plan was reviewed to assess the completion status of proposed projects. As part of the 2025 plan update, new mitigation projects were identified, outlined in the table below. During the plan update process, projects were prioritized as High, Medium,

DRAFT

or Low based on their importance and impact. High priority projects focus on ensuring that towns and villages remain fully functional during disasters, while Medium and Low priority projects strive to enhance municipal operations and address community needs. Project implementation will proceed as funding becomes available. However, any project may advance when financial resources, political support, and other determining factors align.

Proposed mitigation project cost was determined and included in the table below. Other mitigation projects have estimated the costs of these projects. The potential cost to implement mitigation projects was ranked as High, Medium, or Low cost.

Table 253. Mitigation Strategies: Town of Westport

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
1. Generators for critical facilities.	2,4	Town Hall DPW garage need generators	Loss of power from major storm events	Town Supervisor	$30K	2 years from time of application.	FEMA town budgets	High	Structure & Infrastructure Project
2. Sewer Plant Berm Keep plant & filter beds from flooding during a flood event	2,4	Construct Berm around Wadhams sewer 2 filter bed area.	Flooding	Town of Westport	$500K	1-5 years	FEMA PDM NYS DOS	High	Structure & Infrastructure Project
3. Generator for commercial fuel provider	2,4	Obtain generator for Suburban Propane company	All	Town	Low	2 years	SBA	High	Structure & Infrastructure Project
4. Earthquake Impact Reduction	1,2,3,4	Conduct training for code officers and update municipal plans to reflect new seismic standards.	Earthquake	Town Supervisors, Town Code Officers	Variable/ Low	Ongoing 1-5 years	Local Budgets, FEMA Hazard Mitigation Grant Program (HMGP), NY State	Low	Education, & Training

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
							Division of Homeland Security and Emergency Services (DHSES) Grants		
5. Marriam-Forge Road Bridge	2,4,5	Improve bridge to reduce impact for flooding/Erosion	Flooding/Erosion (Scour)	Essex County DPW	1.5 Million	Initial Planning	NYS Department of Transportation (NYSDOT) BRIDGE NY Program, NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development	High	Infrastructure

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
							Water Grants, US DOT Bridge Investment Program		
6.Wastewater Plant	2	Build a berm around plant or otherwise mitigate	Flooding	Town Supervisor/Board	Medium – New Project	1-5 years planning 5-10 years development	Department of Transportation (NYSDOT) BRIDGE NY Program, NYS Empire State Development (ESD) Infrastructure Grants, BRIC, FEMA HMGP, FEMA FMA, USDA Rural Development Water Grants	Medium	Infrastructure

Westport will continue to implement project and programs to reduce the effects from disasters that impact the Town.

Annex Q: Town of Willsboro

Profile

The Town of Willsboro is located in the northeastern part of Essex County, bordered by Essex on the south, Lewis to the west, Chesterfield to the north and Lake Champlain to the east. Like other lakeshore towns in the county, Willsboro has a varied physical topography with mountains in the west and relatively flat plains and former farmlands in the east. The eastern Adirondacks rise to an elevation of 1,482 feet within the town limits.

All rivers and brooks in the area drain into Lake Champlain, with two major lakes—Long Pond and Highlands Forge Lake—in addition to extensive wetlands contributing to the watershed. The Boquet River, designated as a Wild, Scenic, and Recreational River by New York State, is an important salmon fishery, flowing into Lake Champlain along the town's southern border. Its main tributaries, the North Branch of the Boquet River and Spruce Mill Brook, originate in Lewis and flow southwest.

Flooding can occur any time of year but is most frequent in early spring when heavy rains, ice jams, and melting snow contribute to rising water levels. Along the Boquet River, flooding is primarily driven by steep, narrow valleys that drain high mountain peaks to the west, creating rapid and concentrated runoff that quickly fills the river and causes downstream overflow. Recognizing this risk, Willsboro began relocating critical facilities away from the floodplain in 1983. As a result, the town hall, fire department, and health center were moved to less vulnerable locations, and the major bridge through the center of town was rebuilt to improve resilience.

State Route 22 serves as the main transportation artery, with a large network of secondary roads branching from it. The Canadian Pacific Rail Lines run north–south through the town, accommodating several daily freight trains and two passenger trains. With considerable frontage on Lake Champlain, public and private property is vulnerable to damage from wave action and high lake levels in the spring and fall.

Table 254. Table of Facts: Town of Willsboro

Fact	Description
Land Area	42.8 sq. miles/46,741.3 acres
Incorporated Village(s)	None
Hamlets	Willsboro & portion of Reber
Population Census	1,905 (2020 Census)
Governance	Town
Total Assessed Valuation	$184,267,310
Highest Elevation	Sugarloaf Mtn.–1,509'
Largest Lake	Lake Champlain–eastern border & Long Pond
River(s)	Boquet
Dams	4
Bridges	4 County Road

DRAFT

Fact	Description
Interstate Highway	None
State Routes	22
County Roads	14, 27, 57, 61, 62, 66 & 68
Land Agriculture Use	7,430 acres
Land Classified Industrial	396 acres
Land Classified Residential, as Hamlet	571.7 acres
Hospital/Medical Facility	Smith House Health Center
Fire & Rescue	Willsboro Fire, Willsboro Essex EMS & Reber Fire Company
Schools	Willsboro Central
Railroads	CP Rail north/south
Passenger Trains/Day	Amtrak 68 & 69 2/day
Freight Trains/Day	Approx. 5/day
Ferry Dock(s)	None
Interstate Bridge	None
Largest Employer	NYCO Minerals
Law Enforcement	NYSP & County Sheriff
Correctional Facility	None
Power Utility Provider(s)	NYSEG
Water Supply Source(s)	Lake Champlain & Private wells
Emergency Shelters	Willsboro Central School

Notable Updates

Willsboro made substantial progress in hazard mitigation through various initiatives aimed at enhancing community safety, infrastructure resilience, and emergency preparedness. Significant advancements were achieved in infrastructure and facility improvements, including the near completion of the salt/sand shed project, which will enhance the town's ability to manage snow and ice during winter months. Upgrades to the wastewater treatment plant were also prioritized to address hydraulic overflow incidents and improve stormwater management capacity.

Water and sewer management is a focal point, with multiple service line leaks repaired and on-going maintenance of aging infrastructure. A pilot study for a new water treatment plant, funded by grants, is underway to ensure the safety and reliability of town water systems. Community engagement has been a key component of hazard mitigation efforts, with public hearings and discussions involving residents in projects like comprehensive planning and zoning updates. These updates strive to address pressing challenges, including stormwater management and travel trailer use.

Emergency preparedness was strengthened with proposed improvements to alarm and surveillance systems for critical facilities and community spaces. The town has enhanced public awareness through regular updates and public meetings. Financially, Willsboro successfully utilized grants to fund critical projects including comprehensive planning, recreational space development, and infrastructure enhancements like those at Noblewood Park and local water systems.

Through a combination of infrastructure development, public engagement, and effective resource allocation, Willsboro continues to build a resilient and sustainable community capable of managing and mitigating a wide range of hazards. These efforts highlight the town's proactive approach to safeguarding its residents and adapting to future challenges.

Planning Process

The town initially took part in a Hazard Mitigation Survey, followed by an in-person Stakeholder Hazard Mitigation Introduction Meeting. Subsequently, the Town Supervisor received a copy of the town's section of the county plan for review and revision to update its portion of the county plan. The Town Supervisor participated in county-level meetings related to the plan and attended a final mitigation strategy meeting.

Capability Assessment

Willsboro implemented a range of planning mechanisms to support hazard resilience and community development, including comprehensive emergency management plan, emergency operations plan, zoning ordinance, subdivision regulation, town comprehensive plan, floodplain regulations, building codes, and fire codes. Collectively, these regulatory measures ensure that new development is both hazard–resistant and aligned with sustainable growth objectives. Through an assessment of its planning capability, the town recognizes that these mechanisms play a critical role in mitigating potential hazards and fostering long–term community resilience.

Table 255. Planning Documents: Town of Willsboro

Planning Documents: Town of Willsboro
Comprehensive Emergency Management Plan
Emergency Operations Plan
Zoning Ordinance
Subdivision Regulation
Town Comprehensive Plan
Floodplain Regulations
Building Codes
Fire Codes

This hazard mitigation plan should be integrated into other existing plans in Willsboro. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all

DRAFT

enabling legislation to have similar information in those documents. Integration can ensure consistency between enabling legislation.

The town conducted a capabilities self–assessment to identify key resources and areas of reliance. It has planners, a code officer, and GIS capabilities to support local development and regulatory enforcement. For additional expertise, the town utilizes county staff for emergency management, land surveying, and grant writing, while DEC and APA staff provide support on scientific issues. When necessary, the town also hires land surveyors and engineers to assist with specific projects.

Willsboro uses a variety of funding sources to implement projects. Capital improvement funds are used for water and sewer systems. CDBG are used to rehabilitee housing in town. Water and sewer fees are used to maintain the current systems. General revenue sources are used for towers. The town has intergovernmental agreements with fire, ambulance and county agencies for assistance. Willsboro assessed its education and outreach capabilities. The town is interested in public information efforts for areas like responsible water use, fire safety, household preparedness for disasters, and environmental education. The Boquet River Association is actively involved in projects as well as The Nature Conservancy. The town used the town Facebook page during disaster to notify residents of the loss of power event of May 2018.

The town ranked several categories of abilities. Planning and regulatory capabilities, administrative and technical capabilities, financial capabilities, and education and outreach capabilities were all ranked as Moderate.

Critical Facilities

An assessment of critical facilities' flood vulnerability was conducted by Willsboro as part of the plan update. The table below outlines whether these facilities are located within the 500–year floodplain, have experienced past flooding, or have undergone mitigation measures to reduce flood risk. Generator capabilities were evaluated to determine whether these facilities can operate independently of electric power—a common challenge during disaster events.

Two critical facilities (the water and sewer plants) are located within the 500–year floodplain, though it is unclear whether they have backup generators. The fire station, emergency operations center, and school are all equipped with generators, ensuring continued functionality during power outages. However, the critical vehicle storage facility and medical facility do not have generators, which may impact their ability to operate during emergencies.

Table 256. Critical Infrastructure in Floodplain: Town of Willsboro

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Water Plant	Yes	Yes	No (berm needed)	Unknown
Sewer Plant	Yes	Yes	No (berm needed)	Unknown
Fire Station	No	No	No	Yes
Emergency	No	No	No	Yes

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Operation Center				
School	No	No	No	Yes
Critical Vehicle Storage Facility	No	No	No	No
Medical Facility	No	No	No	No

The town designated one area for temporary housing following a disaster. The Town Tennis Court Area would serve this purpose if needed, though it currently lacks power, water, and sewer connections. The site includes both paved and unpaved areas, making it suitable for temporary housing units like RVs or mobile homes. The local school is designated as an American Red Cross (ARC) Shelter, providing temporary housing for residents displaced by a hazard event. Historically, displaced residents also found temporary housing with friends, relatives, or neighbors.

Table 257. Housing for Displaced Residents: Town of Willsboro

Facility	Type of Housing
Town Tennis Court Areas	RV, mobile homes
Willsboro School	ARC Shelter

National Flood Insurance Plan (NFIP) Summary

The following information concerns flood vulnerable structures in Willsboro. The numbers of actual structures in the flood vulnerable areas is likely larger than the number of insured structures. Once the Flood Insurance Rate Maps (FIRMs) are updated by FEMA, new maps will determine the actual number of vulnerable structures.

Table 258. Flood Insurance: Town of Willsboro

Policies	2011	2018	2024	Total Amount of Claims
Policies	19	19	19	$104,697
Number of Repetitive Loss Structures	1	2 1 x single family 1 x nonresidential	-	-

Willsboro will continue to actively manage floodplains to mitigate future flood risks. New development within special flood hazard areas will be carefully reviewed and approved to ensure compliance with the local floodplain ordinance. As FEMA updates the Flood Insurance Rate Maps (FIRMs), the town will hold meetings with floodplain managers, town supervisors, and village mayors to provide training on the National Flood Insurance Program (NFIP). These meetings will

DRAFT

also serve as a forum to discuss compliance requirements and best practices for floodplain management.

Hazard Identification & Ranking

Table 259. Hazard Ranking: Town of Willsboro

Hazard Ranking	Hazard
HIGH	• Drought • Earthquakes • Floods • Hailstorms • High Winds • Hurricanes • Ice Storms • Severe Winter Weather • Rail Events
MEDIUM	• Extreme Temperatures
LOW	• Avalanches • Land Subsidence • Landslides • Wildfires

Hazard Event History

Table 260. Hazard History: Town of Willsboro

Hazard	Event	Year	Impact
Flooding	Lake Champlain flooding	2011	Elevated lake levels led to significant shoreline erosion & property damage.
	Severe storms & flooding	2023	Heavy rainfall caused minor flooding in low–lying regions & increased water levels.
Winter Storms	Ice storm	1998	Severe ice accumulation caused widespread power outages, hazardous travel conditions, & tree damage.
Severe Thunderstorms	Severe summer storms	2020	High winds & lightning resulted in downed trees, power outages, & minor property damage.
	Severe Thunderstorm with hail	2023	Hail & high winds caused downed trees, temporary road blockages, & localized power outages.

Hazard	Event	Year	Impact
Public Health	COVID–19 Pandemic	2020-2021	The pandemic disrupted public health services, the local economy, & community activities.
Hurricanes	Hurricane Irene	2011	Heavy rainfall from the hurricane caused flooding, road closures, & infrastructure damage.
Drought	Northeastern U.S. drought	2016	Extended periods of low rainfall led to water supply concerns & agricultural impacts in the region.
Earthquake	Northern New York earthquake	2002	M5.1 earthquake centered near Plattsburgh felt in Willsboro, causing minor structural damage.
Wildfires	Adirondack forest fires	2018	Dry conditions contributed to forest fires in the Adirondack region, raising air quality concerns in Willsboro.
Extreme Temperatures	Heatwave	2019	Prolonged high temperatures resulted in increased health risks & energy consumption.
Tornadoes	Upstate New York tornado	1999	A rare tornado in the region caused localized damage, highlighting area vulnerabilities to such events.

Hazard Analysis

Willsboro faces a range of natural hazards that historically impacted its infrastructure, environment, and community well–being. Flooding remains a significant concern, with events like the 2011 Lake Champlain flooding causing shoreline erosion and property damage. In 2023, severe storms resulted in minor flooding in low–lying areas, highlighting the ongoing vulnerability to heavy rainfall and rising water levels. Winter storms like the 1998 ice storm, have caused widespread power outages, hazardous travel conditions, and tree damage, underscoring the need for resilient infrastructure and emergency preparedness.

Severe thunderstorms are another recurring hazard. The 2020 summer storms and the September 2023 hailstorm both caused downed trees, road blockages, and power outages, emphasizing the importance of proactive vegetation management and robust utility systems. Hurricanes (particularly Hurricane Irene in 2011) brought heavy rainfall, flooding, and road closures, further demonstrating regional susceptibility to extreme weather events.

Willsboro also experienced drought–related challenges like the 2016 Northeastern U.S. drought, which strained water supplies and affected agricultural productivity. Extreme heat waves, including one in 2019, posed health risks and increased energy demands, while dry conditions in 2018 contributed to Adirondack forest fires, raising air quality concerns. Although rare, geological events like the 2002 Northern New York earthquake and the 1999 tornado underscore the importance of maintaining a comprehensive, multi–hazard preparedness strategy.

The COVID–19 Pandemic disrupted public health services and the local economy, highlighting the need for robust health infrastructure. These events collectively emphasize the importance of continued investment in hazard mitigation, infrastructure resilience, and public education to safeguard the community against evolving risks. By addressing these vulnerabilities and

DRAFT

strengthening preparedness, Willsboro can enhance its capacity to protect residents and adapt to future challenges.

Hazard Mapping

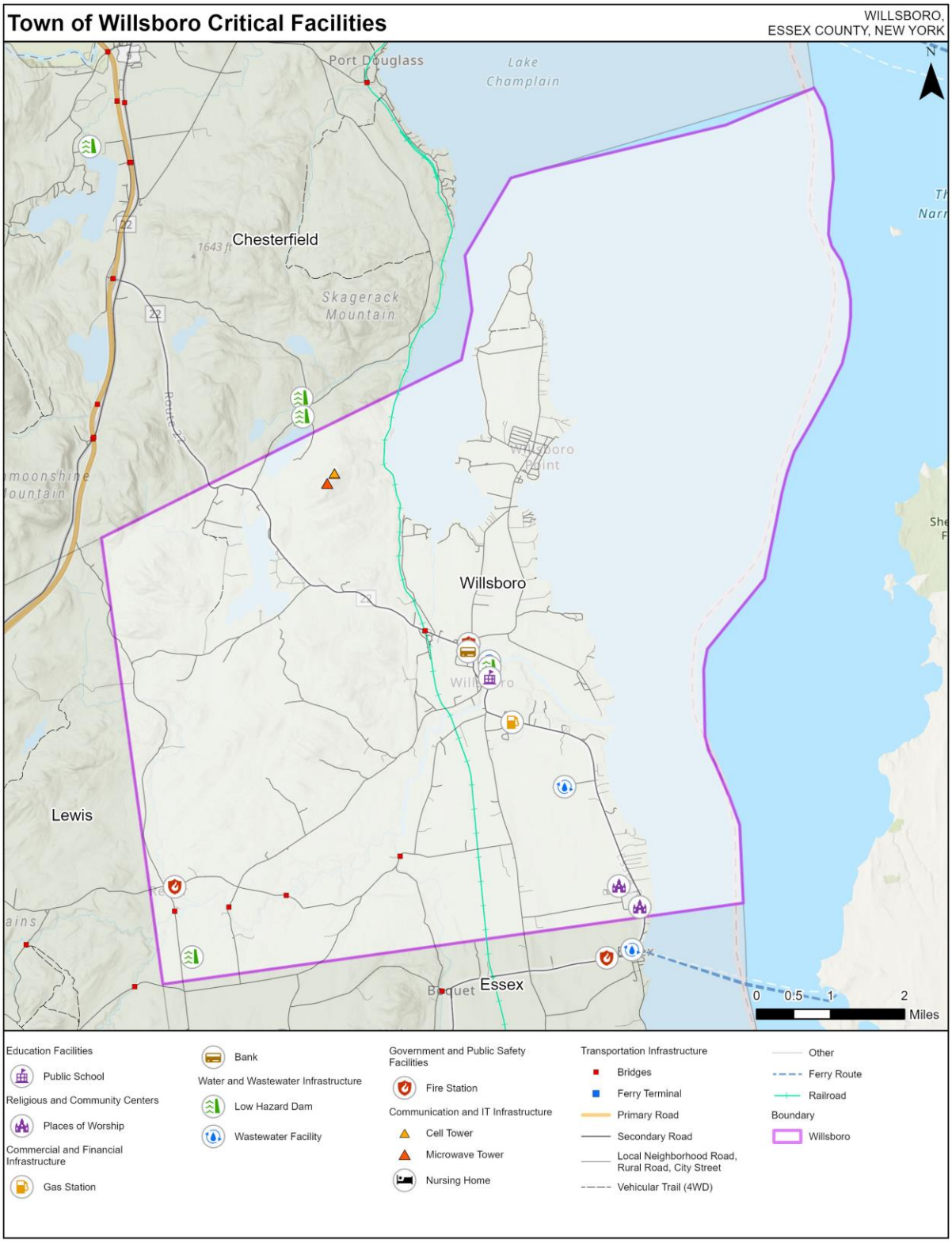


Figure 95. Critical Facilities: Town of Willsboro

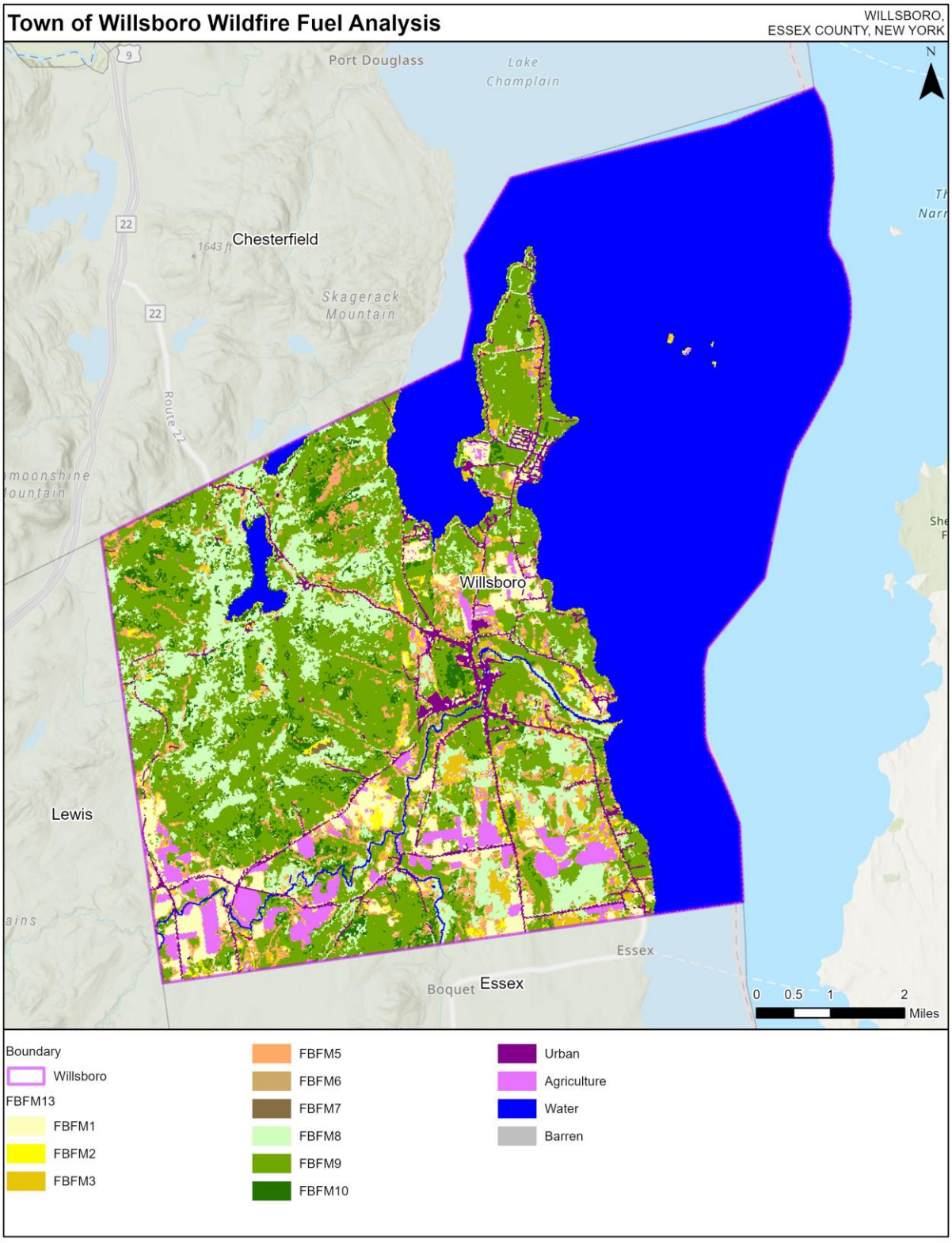


Figure 96. Wildfire Fuel Analysis: Town of Willsboro

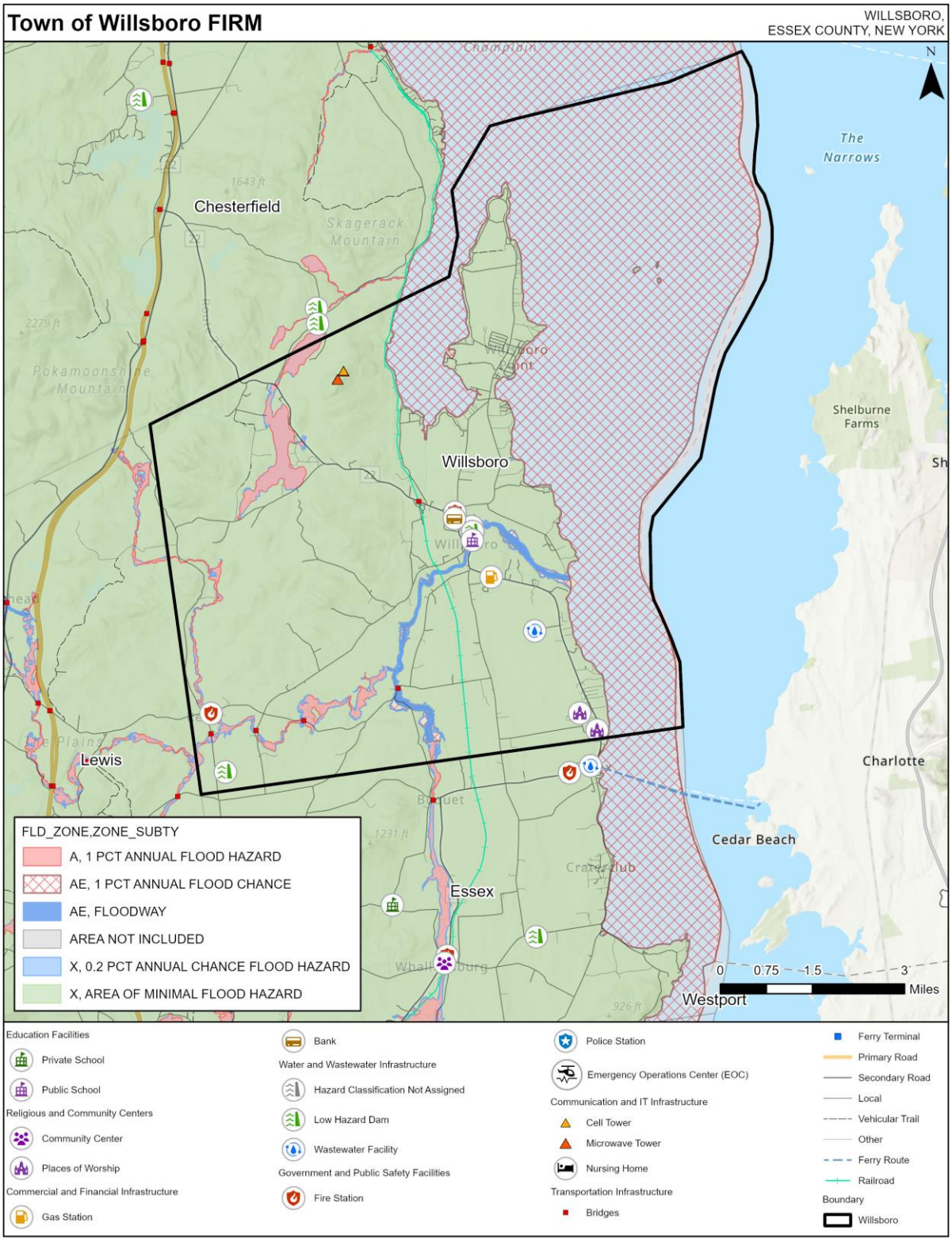


Figure 97. FIRM: Town of Willsboro

Potential Loss

The potential loss for Willsboro was calculated using data from the Essex County Real Property website, which provided property valuations for all parcels. The data was analyzed to determine the total property value within each of the nine class codes. To estimate potential losses from hazard events, it was assumed that 10% of the properties in each class code would be affected. The projected financial impact was then calculated as 10% of the total property value for each class code.

The Essex County Real Property Tax Services website categorizes real property into nine class codes:

- 100 Agriculture
- 200 Residential
- 300 Vacant Lands
- 400 Commercial
- 500 Recreation and Entertainment
- 600 Community
- 700 Industrial
- 800 Public Services
- 900 Forest, Conservation Lands and Parks

Table 261. Potential Loss: Town of Willsboro

Class Code	Number of Structures	Structure Values	Number of Structures Impacted	Potential Loss
100	45	$7,870,600	1.70	$787,060
200	1373	$376,995,350	134.40	$37,699,535
300	616	$36,817,100	7.90	$3,681,710
400	50	$11,171,000	4.70	$1,117,100
500	8	$4,818,700	0.70	$481,870
600	27	$24,911,600	2.20	$2,491,160
700	8	$11,107,000	0.40	$1,110,700
800	37	$16,719,447	0.70	$1,671,944
900	64	$11,484,500	1.10	$1,148,450

Mitigation Strategy

The mitigation strategy included in the 2019 plan was reviewed to determine if the project(s) were completed. New mitigation projects were identified for the 2025 plan update. These new projects are included in the table below. Project prioritization occurred as the plan was updated.

These projects list the priority as High, Medium, and Low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and Low priority projects improve other functions of towns and villages, addressing actual residents. Project implementation will occur as funding is obtained. Any project can be implemented as funding, political will, and other opportunities align.

Proposed mitigation project costs were determined and included in the table below. Other mitigation projects have estimated the costs of these projects. The potential cost to implement mitigation projects are ranked as High, Medium, or Low cost based on projected financial requirements.

Table 262. Mitigation Strategies: Town of Willsboro

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
1. Construct new sand shed	2	Construct new shed for sand storage, (salt comprises 25%) for use in winter	Snow & ice events	Town	$750K	1-5 years	DEC	High	Natural System Protection
2. Water tank storage	2	Construct 1 water storage tank for backup water.	Drought	Town	$1.25M	1-5 years	NYS DOS	Medium	Infrastructure Project
3. Town Hall generator	2	New generator for Town Hall	All	Town	$100K	2 years	NYS DOS	Medium	Infrastructure Project
4. Water pump	2,3,5	Secure high capacity source of water	Floods, fire, loss of power	Town	$15M	1-10 years Year 1-5 Obtain funds Year 6-10	NYS DOS	High	Infrastructure Project
5. River dry hydrant	2,5	Install dry hydrant for	Fires	Town Supervisor	High	1-2 years	NYS DOS	Medium	Infrastructure Project

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
		fire-fighting capacity		Town Fire Dept					
6. Earth-quake Im-pact Re-duction	1,2,3,4	Conduct training for code officers and up-date munici-pal plans to re-flect new seismic stand-ards.	Earth-quake	Town Supervi-sors, Town Code Officers	Variable/ Low	Ongoing 1-5 years	Local Budg-ets, FEMA Hazard Mitiga-tion Grant Pro-gram (HMGP) , NY State Division of Home-land Secu-rity and Emer-gency Ser-vices (DHSES) Grants	Low	Education, & Training
7. Agricul-ture Drain-age Im-prove-ments	2,4,5	Improve agricul-tural re-silience to flood-ing	Flooding, Soil Ero-sion	Essex County Soil and water	$150,000	New Pro-ject/ 1-5 years	USDA, Agricul-tural Grants	Me-dium	Infrastruc-ture

Willsboro will continue to actively implement projects and programs to reduce disaster–related effects impacting the Town.

Annex R: Town of Wilmington

Profile

The Town of Wilmington, located in northern Essex County, is bordered by Black Brook to the north, Jay to the east, Keene to the south, North Elba to the southwest, and St. Armand to the west. Spanning 65 square miles, Wilmington features a mountainous landscape dominated by Whiteface Mountain, which stands at 4,867 feet and is the tallest skiable mountain in New York State. Situated in the Stephenson Range in the town's northwest, Whiteface is home to the Whiteface Mountain Olympic Ski Area, owned by the state and managed by the Olympic Regional Development Authority (ORDA). This internationally renowned ski destination regularly hosts competitions and events, with ORDA personnel working alongside local emergency service staff to conduct training, drills, and emergency response coordination. In the southeast, the Sentinel Range features elevations exceeding 3,800 feet.

The West Branch of the Au Sable River serves as the town's primary drainage system, flowing between the two mountain ranges. At an elevation of 800 feet, it crosses into Jay. Wilmington retains much of its natural beauty, with large areas of state land remaining undeveloped. While isolated residences and seasonal homes exist along roads leading to neighboring towns, the population is more concentrated along State Route 86, north of the Ski Center, where commercial development is most active.

The town is vulnerable to flooding, particularly during winter, when ice jams pose a threat. A dam on the West Branch—approximately 300 feet downstream from Route 86—is of concern to town officials. Wilmington's strong community spirit fosters close collaboration between town personnel and emergency crews to address potential hazards. The town maintains a comprehensive emergency management plan (CEMP) and actively partners with county and state agencies to enhance resilience and safety for its residents.

Wilmington is also home to Santa's Workshop, one of the first theme parks for children in the United States, located near the community of North Pole and in operation since 1949. The Adirondack Wildlife Refuge, an organization dedicated to rehabilitating injured and orphaned wildlife, is located within the town.

Table 263. Table of Facts: Town of Wilmington

Fact	Description
Land Area	65 sq. miles/4,038.3 acres
Incorporated Village(s)	None
Hamlets	Wilmington
Population Census	843 (2020 Census)
Governance	Town
Total Assessed Valuation	$579,899,853
Highest Elevation	Whiteface Mtn.–4,872'
Largest Lake	Lake Everest

DRAFT

Fact	Description
River(s)	West branch of the Au Sable River
Dams	4
Bridges	2 county road; 2 state roads
Interstate Highway	None
State Routes	86 & 431
County Roads	12, 18, 19 & 63
Land Agriculture Use	None
Land Classified Industrial	None
Land Classified Residential, as Hamlet	571.7 acres
Hospital/Medical Facility	Wilmington Health Center
Fire & Rescue	Wilmington Fire District
Schools	Adirondack Christian School
Railroads	None
Passenger Trains/Day	None
Freight Trains/Day	None
Ferry Dock(s)	None
Interstate Bridge	None
Largest Employer	ORDA
Law Enforcement	NYSP & County Sheriff
Correctional Facility	None
Power Utility Provider(s)	NYSEG
Water Supply Source(s)	Red Brook, White Brook, West Branch of Au Sable River & private wells
Emergency Shelters	Town Garage, Firehouse, & Community Center
Critical Facilities	Fire Station, Community Center, 2 state bridges, 2 county bridges, 2 Low Hazard dams, 1 Intermediate Hazard dam, 1 private school, 1 gas station, 1 town garage, 2 microwave towers, 1 cell phone tower, 1 NYS police station

Notable Updates

Wilmington has undertaken significant hazard mitigation initiatives to enhance resilience and ensure community safety. Infrastructure improvements remain a focal point, with ongoing upgrades to water and wastewater systems to address aging infrastructure and improve stormwater management. The town has also prioritized the development of its comprehensive plan, integrating hazard mitigation considerations into zoning and land use decisions. Recent updates

include discussions on zoning adjustments to facilitate sustainable growth while reducing exposure to hazards.

Community engagement plays a pivotal role in Wilmington's mitigation strategy. Public hearings and regular board meetings encouraged resident participation in shaping hazard preparedness initiatives. Efforts to secure grant funding for critical infrastructure projects have also been fruitful, with resources allocated to key areas like water system upgrades and emergency preparedness.

Wilmington continues to assess its capabilities, focusing on enhancing emergency response and communication systems. This includes maintaining strong coordination with local emergency services and leveraging state and federal resources for training and equipment. The town's proactive approach reflects its commitment to reducing vulnerabilities and building a safer, more resilient community.

Planning Process

The town initially took part in a Hazard Mitigation Survey, followed by an in-person Stakeholder Hazard Mitigation Introduction Meeting. Subsequently, the Town Supervisor received a copy of the town's section of the county plan for review and revision to update its portion of the county plan. The Town Supervisor participated in county-level meetings related to the plan and attended a final mitigation strategy meeting.

Capability Assessment

Wilmington implemented a range of planning mechanisms to support hazard resilience and community development, including comprehensive emergency management plan, continuity of operations plan, floodplain regulations, zoning regulations, subdivision regulations, comprehensive master plan, historic preservation plan, building codes, and fire codes. Collectively, these regulatory measures ensure that new development is both hazard–resistant and aligned with sustainable growth objectives. Through an assessment of its planning capability, the town recognizes that these mechanisms play a critical role in mitigating potential hazards and fostering long–term community resilience.

Table 264. Planning Documents: Town of Wilmington

Planning Documents
Comprehensive Emergency Management Plan
Continuity of Operations Plan
Floodplain Regulations
Zoning Regulations
Subdivision Regulations
Comprehensive Master Plan
Historic Preservation Plan
Building Codes

DRAFT

Planning Documents
Fire Codes

This hazard mitigation plan should be integrated into other existing plans in Wilmington. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure all enabling legislation has similar information to those documents. Integration can ensure consistency between enabling legislation.

A self–assessment of Wilmington's capabilities was conducted. The Planning Board and Zoning Board of Appeals possess substantial planning experience and knowledge, and the town also utilizes county resources when necessary. County engineering staff are consulted, or firms are hired, as needed. Wilmington has designated personnel for emergency management and a floodplain administrator. Land surveyors are hired on an as–needed basis, while DEC and APA staff are consulted for scientific issues. County resources are used for GIS services, and county staff also assist with grant writing and grant administration.

Wilmington funds projects through a variety of sources. Capital improvement funds were utilized for Town Beach improvements, and Community Development Block Grants (CDBGs) were used for housing rehabilitation. Water and sewer fees maintain the town's existing systems, and the town has formed several partnerships with New York State, Essex County, and neighboring towns and villages for shared usage programs.

The town evaluated its educational and outreach capabilities. Wilmington is a Firewise community, and the fire department conducts educational programs in private schools within the town, partnering with Lake Placid for broader school initiatives. The DEC and APA also hold educational programs in the town, and the Au Sable River Association organizes programs related to the Au Sable River, which runs through Wilmington. The Visitors Bureau educates tourists visiting Wilmington. Wilmington maintains a Facebook page, used during disasters to communicate important information to both residents and visitors.

In terms of town capabilities, planning and regulatory as well as administrative and technical capabilities were rated as High. Financial and education and outreach capabilities were rated as Moderate.

Critical Facilities

An assessment of critical facilities' flood vulnerability was conducted as part of the plan update. The table below details whether these facilities are located within the 500–year floodplain, have experienced past flooding, or have undergone mitigation measures to reduce flood risk. Generator capabilities were evaluated to determine whether these facilities can operate independently of electric power—a common issue for critical infrastructure during disaster events.

The fire station is the only critical facility currently located in the 500–year floodplain; however, it is equipped with a generator. The remaining critical facilities—police station, critical vehicle and equipment storage facilities, emergency operations center, pumping station, town hall (which also serves as the communication center), medical clinic, private school, Verizon building,

and water plant—are not located within the 500–year floodplain. All these facilities have backup generators, except for the private school, which lacks an emergency power source.

Table 265. Critical Infrastructure in Floodplain: Town of Wilmington

Critical Facility	500–Year Floodplain	Flooded in the Past	Mitigated	Generator
Fire Station	Yes	Yes	No (need to relo-cate)	Yes
Police Station	No	No	No	Yes
Critical Vehicle & Equipment Storage Facilities	No	No	No	Yes
Emergency Operations Center	No	No	No	Yes
Pumping Station (2)	No	No	No	Yes
Town Hall	No	No	No	Yes
Town Library	No	No	No	Yes
Medical Clinic	No	No	No	Yes
Private School	No	No	No	No
Verizon Building	No	No	No	Yes
Water Plant	No	No	No	Yes

Wilmington identified three locations for temporary housing in the event of a hazard. The first option includes the Ballpark and T–ball field, which currently lack power and water but could be utilized with the necessary infrastructure setup. Other options include the parcel by the Fire-house and the Town Highway Garage, both of which are equipped with power and water and offer paved and unpaved areas suitable for temporary housing units like RVs or mobile homes.

The local school serves as an American Red Cross (ARC) Shelter, providing emergency housing for residents displaced by a hazard event. In the past, affected residents also found temporary housing with friends, relatives, or neighbors to meet their immediate needs. These proactive measures reflect Wilmington's commitment to ensuring adequate shelter and emergency pre-paredness for its community.

Table 266. Housing for Displaced Residents: Town of Wilmington

Facility	Type of Housing
Ballpark & T–ball Field	RV, mobile homes
Firehouse Parcel	RV, mobile homes
Town Highway Garage	RV, mobile homes
Calvary Baptist Church	American Red Cross (ARC) Shelter

DRAFT

National Flood Insurance Plan (NFIP) Summary

The following information concerns flood vulnerable structures in Wilmington. The numbers of actual structures in the flood vulnerable areas is likely larger than the number of insured structures. Once Flood Insurance Rate Maps (FIRMs) are updated by FEMA, new maps will determine the actual number of vulnerable structures.

Table 267. Town of Wilmington Flood Insurance

Policies	2011	2018	2024	Total Amount of Claims
Policies	7	3	9	$17,137
Number of Repetitive Loss Structures	-	-	-	-

Wilmington will continue to actively manage floodplains in the future. The town will carefully review and approve new development in special flood hazard areas to ensure these structures are built in compliance with the local floodplain ordinance. As the new FIRMs are updated by FEMA, meetings will occur with floodplain managers, town supervisors and village mayors to provide training on the National Flood Insurance Program (NFIP). Compliance will be discussed at these meetings.

Hazard Identification & Ranking

Table 268. Hazard Ranking: Town of Wilmington

Hazard Ranking	Hazard
HIGH	• Floods • Extreme Temperatures • High Winds • Ice Storms • Severe Winter Storms • Wildfires
MEDIUM	• Drought • Earthquakes • Hurricanes • Land subsidence
LOW	• Avalanches • Hailstorms • Landslides

Hazard Event History

Table 269. Hazard Events: Town of Wilmington

Hazard	Event	Year	Impact
Flooding	Hurricane Irene	2011	Heavy rainfall caused widespread flooding, leading to road closures, property damage, & infrastructure impacts.
	Flash flooding	2021	Intense rainfall resulted in flash flooding, affecting homes & businesses & highlighting the need for improved stormwater management.
Winter Storms	Ice storm	1998	Severe ice accumulation caused widespread power outages, tree damage, & hazardous travel conditions.
	Late–season winter storm	2019	Heavy snowfall & ice accumulation created hazardous travel, school closures, & strain on municipal resources.
Severe Thunderstorms	Severe summer storms	2015	Strong winds & heavy rain caused localized flooding, power outages, & damage to infrastructure.
High Winds	Windstorm	2017	A powerful windstorm with gusts over 60 mph downed trees, caused power outages, & blocked roads.
Extreme Cold	Arctic cold wave	2022	Temperatures dropped below -20°F, increasing risks of frostbite & hypothermia & straining heating systems.
Tropical Systems	Hurricane Sandy	2012	Wilmington experienced high winds & power outages despite not being directly in the storm's path.
Drought	Northeastern drought	2016	Extended dry conditions led to water supply concerns & impacted agriculture in the region.
Wildfires	Adirondack forest fires	2018	Dry conditions contributed to regional forest fires, raising air quality concerns in Wilmington.

Hazard Analysis

Wilmington has faced a wide range of natural hazards over the years, emphasizing the need for ongoing preparedness and mitigation efforts. Flooding has been a recurring concern, with Hurricane Irene in 2011 causing widespread road closures, property damage, and infrastructure impacts. The 2021 flash flooding highlighted the vulnerabilities of homes and businesses to intense rainfall, underscoring the importance of improved stormwater management systems. Winter storms, including the 1998 ice storm and the late–season storm in 2019, have brought heavy snowfall and ice accumulation, leading to hazardous travel conditions, power outages, and significant strain on municipal resources.

Severe weather events like the 2015 summer storms and the 2017 windstorm, caused localized flooding, downed trees, power outages, and road blockages, highlighting the importance of resilient power infrastructure and emergency response capabilities. Extreme cold events, including the arctic cold wave of 2022, posed serious health risks and increased demand on heating systems, further emphasizing the need for preparedness in extreme weather scenarios. Wilmington has also experienced the impacts of tropical systems like Hurricane Sandy in 2012, which brought high winds and power outages despite not being directly in the storm's path.

DRAFT

Drought conditions in 2016 created water supply concerns and impacted agriculture, while dry conditions in 2018 contributed to regional forest fires, raising air quality concerns. These hazards demonstrate Wilmington's vulnerability to climate–related challenges, including flooding, severe storms, extreme temperatures, and drought. Proactive measures to enhance infrastructure resilience, emergency preparedness, and public awareness are critical for protecting the community and mitigating future risks. Wilmington's efforts must focus on addressing these vulnerabilities to build a safer and more resilient future.

Hazard Mapping

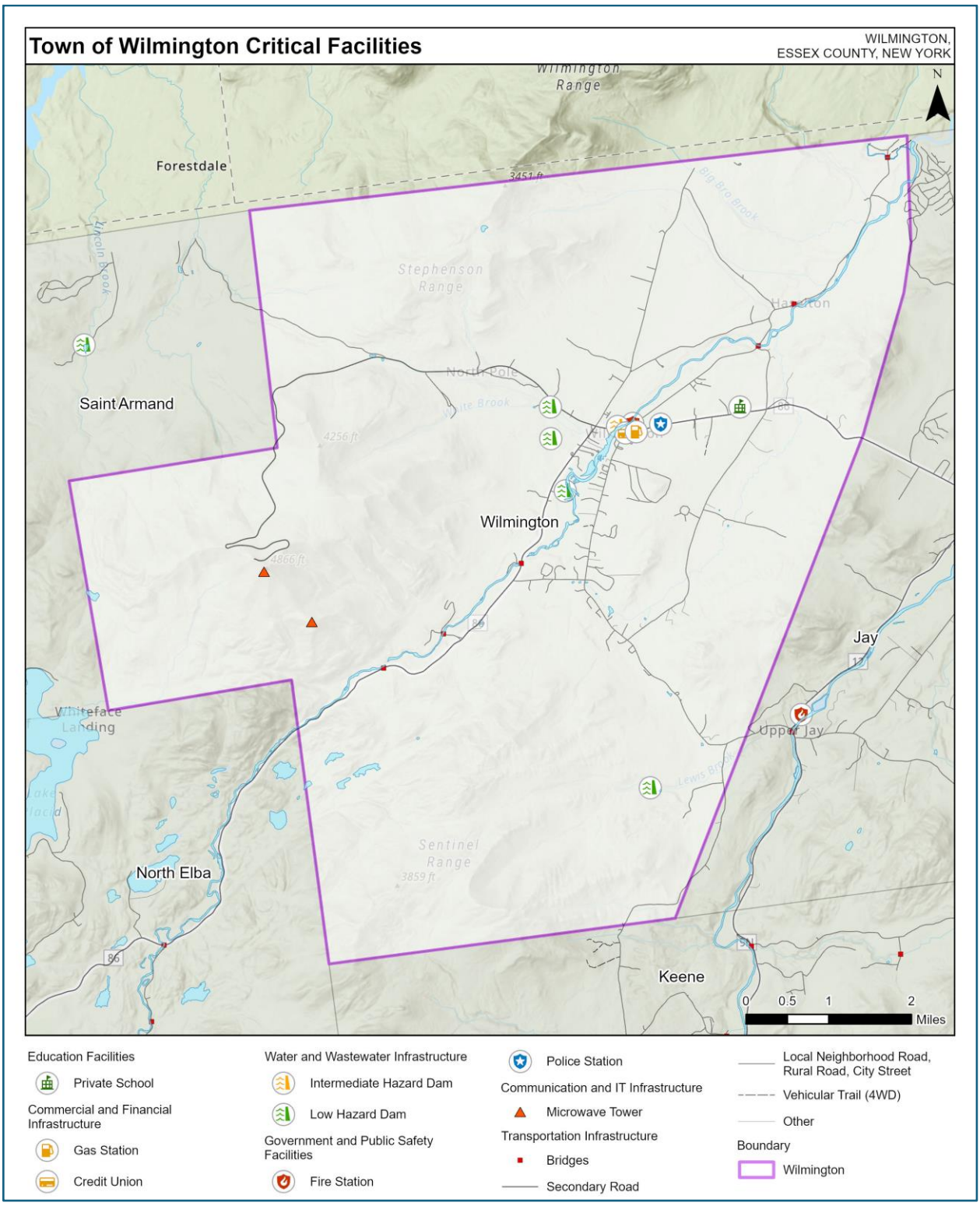


Figure 98. Critical Facilities: Town of Wilmington

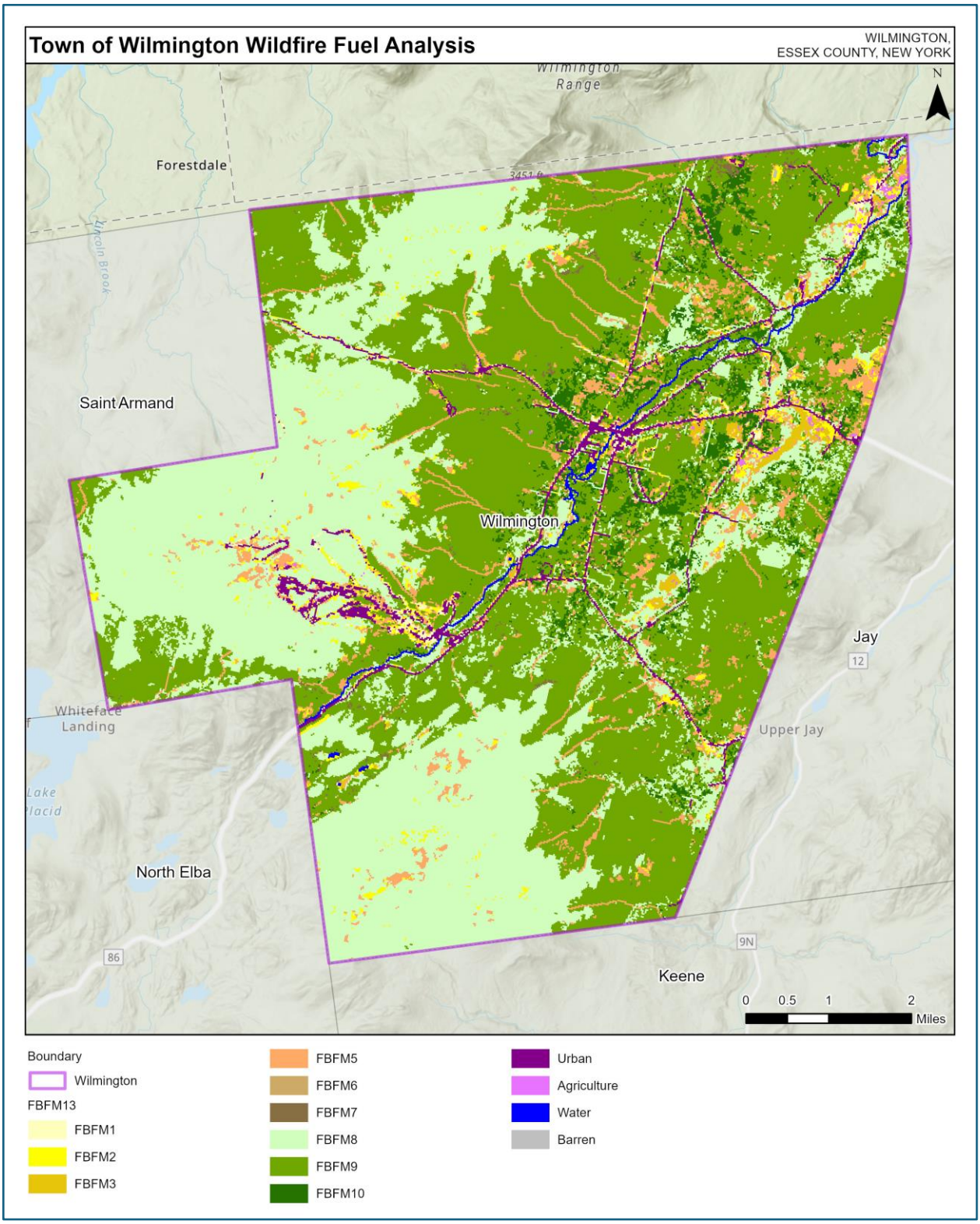


Figure 99. Wildfire Fuel Analysis: Town of Wilmington

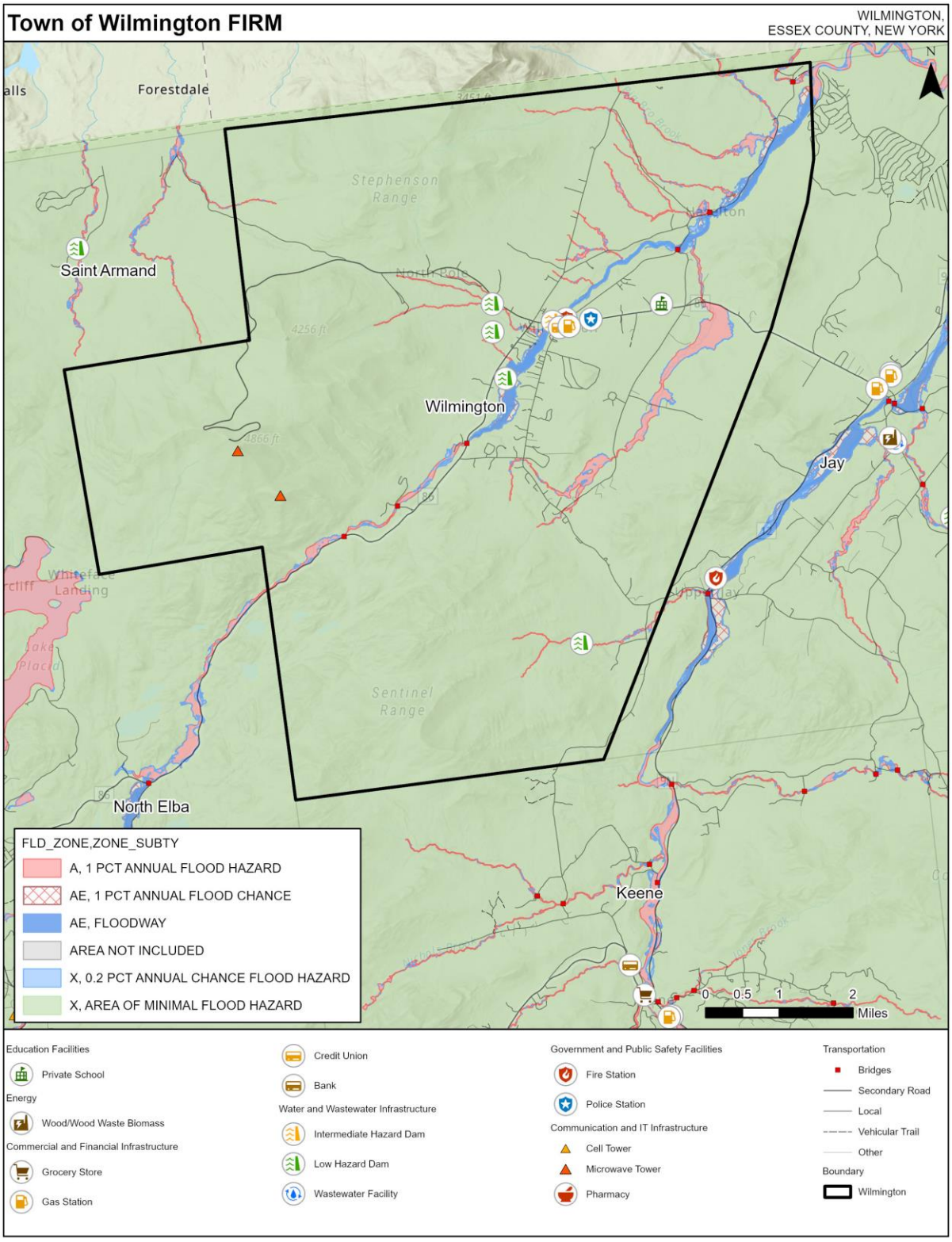


Figure 100. FIRM: Town of Wilmington

Potential Loss

Potential loss for Wilmington was calculated using data from the Essex County Real Property website, which provided property valuations for all parcels. The data was analyzed to determine the total property value within each of the nine class codes. To estimate potential losses from hazard events, it was assumed that 10% of the properties in each class code would be affected. The projected financial impact was then calculated as 10% of the total property value for each class code.

The Essex County Real Property Tax Services website categorizes real property into nine class codes:

- 100 Agriculture
- 200 Residential
- 300 Vacant Lands
- 400 Commercial
- 500 Recreation and Entertainment
- 600 Community
- 700 Industrial
- 800 Public Services
- 900 Forest, Conservation Lands & Parks

Table 270. Potential Loss: Town of Wilmington

Class Code	Number of Structures	Structure Values	Number of Structures Impacted	Potential Loss
100	0	$0	0	$0
200	739	$201,262,200	69.70	$20,126,220
300	381	$20,000,050	3.00	$2,000,005
400	50	$16,086,700	4.80	$1,608,670
500	12	$19,366,200	1.10	$1,936,620
600	16	$7,318,300	1.10	$731,830
700	0	$0	0.00	$0
800	25	$12,954,867	0.30	$1,295,486
900	164	$164,390,030	1.30	$16,439,003

Mitigation Strategy

The mitigation strategy included in the 2019 plan was reviewed to determine if project(s) were completed. New mitigation projects were identified for the 2025 plan update. These new projects are included in the table below. Project prioritization occurred as the plan was updated. These

projects list priority as High, Medium, or Low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and Low priority projects improve other functions of towns and villages, addressing actual residents. Project implementation will occur as funding is obtained. Any project can be implemented as funding, political will, and other opportunities align.

Proposed mitigation project costs were determined and included in the table below. Other mitigation projects estimated the costs of these projects. The potential cost to implement mitigation projects are ranked as High, Medium, or Low cost based on projected financial requirements.

Table 271. Mitigation Strategies: Town of Wilmington

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
1. Install ditches & clean existing culverts	2,4,5	Ditches & maintenance of culverts	Flooding	Town Supervisor	Existing budgets	1	Town budgets	High	Natural System Protection
2. Lenny Preston Road replace existing culvert with larger culvert.	2,4,5	Upgrade culvert	Flooding	Town Supervisor	Low	1-5 years	Town budgets	Medium	Infrastructure Project
3. Generator for private school	1,2	New generator for private school	All	Town Supervisor	$50K	2 years	School budget	Medium	Infrastructure Project
4. Hardy Road culvert	2,4,5	Upgrade culvert	Flooding	Town Supervisor	Low	1-5 years	Town budget	High	Infrastructure Project
5. Replace culverts on county roads, Bonnie View & Hazleton Road	2,4,5	Replace culverts on county roads	Flooding	Town Supervisor	Low	1-2 years	Town budgets	Medium	Infrastructure Project
6. Fire station Move	2	Relocate or otherwise mitigate from 500-	Flooding	Town Supervisor	High	1-5 planning 5-10 execution	FEMA HMPG	Medium	Infrastructure Project

DRAFT

Project # & Name	Goal/Objective	Project or Action	Hazard Addressed	Lead Agency	Estimated Cost	Timeframe to Complete (in years)	Potential Funding Sources	Priority (High, Medium, Low)	Mitigation Technique Category
		year flood-plain							

Wilmington will continue to actively implement projects and programs to reduce the disaster-related effects impacting the town.

Appendices

Appendix	Subject
Appendix A	Glossary
Appendix B	Acronyms
Appendix C	Community Involvement Documentation
Appendix D	Mitigation Action Worksheets
Appendix E	Potential Funding Sources
Appendix F	Adoption Letters

DRAFT

Appendix A: Glossary

Table 272. Glossary

Mitigation	Actions Taken to Reduce or Eliminate Long–term Risks to Human Life and Property from Hazards
Hazard	A potential source of harm or adverse effect on a person or property.
Risk Assessment	The process of identifying & evaluating risks posed by hazards.
Vulnerability	The susceptibility of people, property, infrastructure, & resources to damage from hazards.
Capability Assessment	Evaluation of the ability of a community to implement effective mitigation measures.
Resilience	The ability of a community to recover from the impacts of hazards.
Disaster Mitigation Act of 2000 (DMA 2000)	Federal legislation requiring local governments to develop & adopt hazard mitigation plans to qualify for certain types of non–emergency disaster assistance.
Flood Insurance Rate Map (FIRM)	Maps produced by FEMA that show areas at risk of flooding.
Wildfire	An uncontrolled fire spreading through vegetative fuels, posing a threat to life & property.
Severe Storm	A weather event characterized by strong winds, heavy rain, hail, lightning, & potentially tornadoes.
Earthquake	A sudden & violent shaking of the ground, often causing significant damage.
Technological Hazard	Hazards originating from technological or industrial conditions, including accidents, dangerous procedures, or failures.
Public Participation	The process of involving community members in decision–making & planning.
Critical Infrastructure	Essential systems & assets (like hospitals, schools, & utilities) vital to the functioning of a community.
Early Warning System	A system designed to detect imminent hazards & provide timely information to allow individuals & communities to take protective actions.
Retrofit	To add new technology or features to older systems or buildings to make them safer & more resilient.
Emergency Response	The immediate actions taken to ensure public safety & health during & immediately after a disaster.

Mitigation	Actions Taken to Reduce or Eliminate Long–term Risks to Human Life and Property from Hazards
Land Use Planning	The process of managing land resources to prevent or minimize exposure to hazards.
Green Infrastructure	Sustainable & environmentally friendly infrastructure solutions like rain gardens & permeable pavement, that help manage stormwater & reduce flood risks.
Evacuation Route	A designated path or road that leads people to safety during an emergency.

DRAFT

Appendix B: Acronyms

Table 273. Acronyms

Abbreviation	Definition
CDC	Centers for Disease Control & Prevention
CEMP	Comprehensive Emergency Management Plan
DMA 2000	Disaster Mitigation Act of 2000
DNR	Department of Natural Resources
EOC	Emergency Operations Center
ESF	Emergency Support Function
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GIS	Geographic Information System
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
IAP2	International Association for Public Participation
ICS	Incident Command System
LEPC	Local Emergency Planning Committee
NGO	Non–Governmental Organization
NOAA	National Oceanic & Atmospheric Administration
NWS	National Weather Service
SOP	Standard Operating Procedure
SVI	Social Vulnerability Index
USGS	United States Geological Survey

Appendix C: Community Involvement Documentation – TO BE UPDATED INCLUSIVE OF STAKEHOLDER MEETING AS WELL AS PUBLIC AND STAKEHOLDER REVIEW FEEDBACK.

Documentation of public participation, including meeting minutes, surveys, and public comments, highlighting community involvement in the planning process.

Overview of Community Engagement Efforts

This section should provide a summary of the methods used to inform and involve the community in the hazard mitigation planning process. It may include goals for community engagement, target audiences, and strategies used to reach these groups.

Public Meeting Records

Meeting Dates & Locations

[List of dates, times, and venues for each public meeting or workshop held. It should specify whether each session was in–person, virtual, or a hybrid of both.]

Attendance Sheets

[Sign–in sheets or virtual attendance logs, with participant information (names and affiliations, where applicable) to demonstrate turnout.]

Meeting Agendas

[Copies of meeting agendas, outlining the topics covered and scheduled speakers or facilitators.]

Minutes or Meeting Notes

[Summaries or detailed minutes from the meetings, capturing the main points discussed, key feedback received, and any consensus or disagreements.]

Advertisements & Outreach Materials

Newsletter Advertisements

[Copies of any newsletters distributed to the community, especially those that include survey links or QR codes for feedback. These may have captions or additional descriptions of how newsletters were distributed (e.g., “sent via email to all county residents on X date”).]

Social Media Advertisements

[Screenshots of social media posts advertising public meetings, surveys, or comment periods. These should specify the platform (e.g., Facebook, X (formerly Twitter), Instagram), the date posted, and performance metrics if available (likes, shares, reach, etc.).]

Print Media Ads and Flyers

[Scans or photos of any printed advertisements like newspaper ads, flyers, and posters displayed in public spaces like libraries, schools, and community centers.]

DRAFT

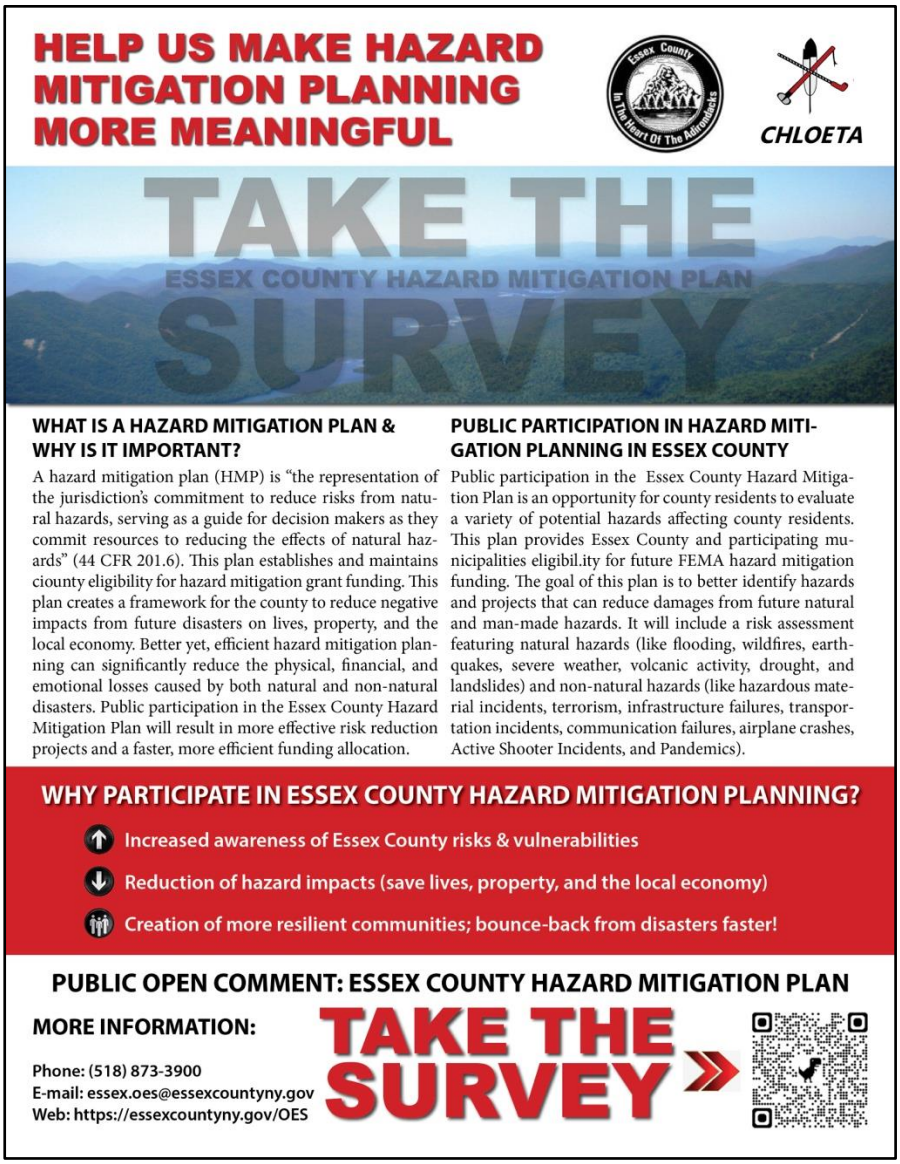


Figure 101. Advertisement: Public Hazard Mitigation Survey

Community Surveys

Survey Advertisement Copies

[Screenshots or photos of advertisements for the community survey. Include details on where these ads were posted and any analytics showing how many people viewed or interacted with them.]

Public Survey: Essex County Bulletin Board

Location: https://essexcountyny.gov | Date Published: xx/xx/xxxx | Date Closed: xx/xx/xxxx

Summary of Results

Survey Questions

PUBLIC SURVEY: ESSEX COUNTY HAZARD MITIGATION PLANNING

INTRODUCTION:

As part of the effort to enhance Essex County's resilience to potential hazards, the county is conducting a hazard mitigation planning survey to gather valuable public insights from county residents and business owners. Your participation is crucial in helping to identify threats, vulnerabilities, and community needs. Please take a few moments to complete this survey. Upon submission, you will receive an E-mail copy of your survey response.

Thank you for taking the time to complete the Essex County Hazard Mitigation Planning survey!

E-mail address: _____

SECTION 1: GENERAL INFORMATION

What is your current residence status in Essex County?

- Homeowner
- Renter
- Business Owner
- Other

How long have you lived or operated a business in Essex County?

Less than 1 year

- 1-5 years
- 6-10 years
- More than 10 years

SECTION 2: AWARENESS & PREPAREDNESS

How aware are you of the natural and man-made hazards that could affect Essex County?

- Very aware
- Somewhat aware
- Not very aware
- Not aware at all

Have you received any information on hazard mitigation or emergency preparedness from local authorities?

- Yes
- No

Do you have an emergency plan in place for your household/business?

DRAFT

- Yes
- No
- In-progress

Have you participated in any emergency preparedness training or drills?

- Yes
- No

SECTION 3: IDENTIFICATION OF HAZARDS AND VULNERABILITIES

What types of natural hazards do you think pose the greatest threat to Essex County? (Select all that apply)

- Floods
- Severe Winter Weather
- Extreme Temperatures
- High Wind Events
- Drought
- Hurricanes
- Earthquakes
- Ice Storms
- Landslides
- Wildfire
- Avalanche
- Land Subsidence
- Dam Failures
- Hail Events
- Other

What types of man-made hazards do you think pose the greatest threat to Essex County? (Select all that apply)

- Rail Events
- Hazardous Materials Incidents: Risks associated with the transportation, storage, and use of hazardous materials.
- Infrastructure Failure: This includes public works and critical infrastructure failures.

- Transportation Incidents: Accidents involving various modes of transportation that could cause significant disruptions.
- Communications Failures: Disruptions in communication systems that can impact emergency response.
- Terrorism: Potential terrorist activities that could affect the county.
- Plane Crashes: Incidents involving aircraft that could cause substantial damage and casualties.
- Human Trafficking: Recognized as a significant risk that needs to be addressed.
- Other

Have you or your property been directly affected by any of these hazards in the past 5 years?

- Yes
- No

If yes, please specify the type of hazard and the impact it had.

[Long form answer] _____

COMMUNITY NEEDS & RESOURCES

How prepared do you feel Essex County is to respond to a major disaster?

- Very prepared
- Somewhat prepared
- Not very prepared
- Not prepared at all

What resources or support would help you better prepare for a disaster? (Select all that apply)

- Emergency kits and supplies
- Community training and workshops
- Information on creating emergency plans
- Alerts and notifications

Do you know where to access emergency shelters or evacuation routes in case of a disaster?

- Yes
- No

DRAFT

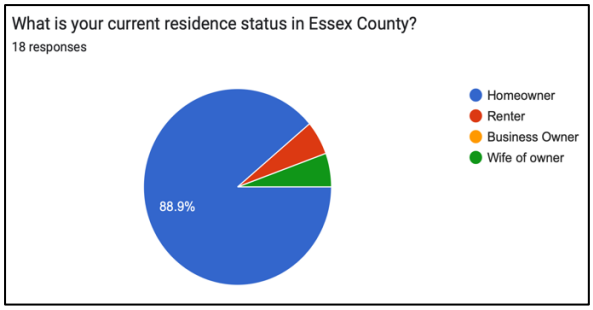
What communication methods would you prefer for receiving emergency alerts and information? (Select all that apply)

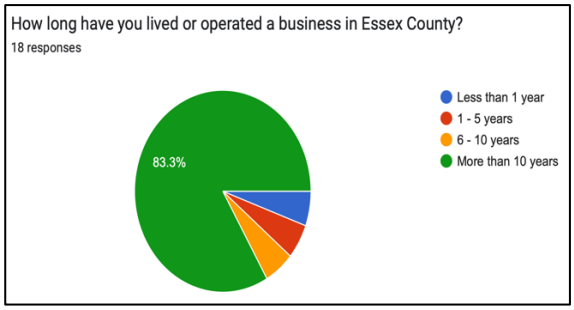
- Text messages
- E-mail
- Social media
- Local news stations
- Community bulletin boards

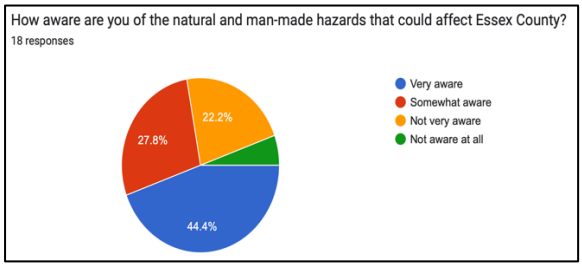
Do you have any additional comments or suggestions regarding hazard mitigation and emergency preparedness in Essex County?

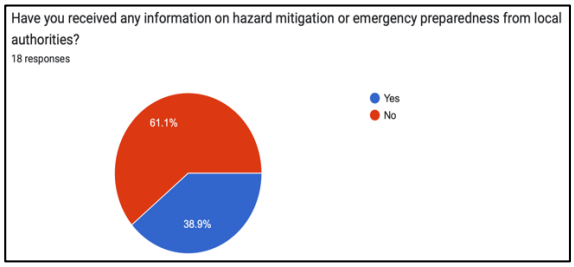
[Long form answer] _____

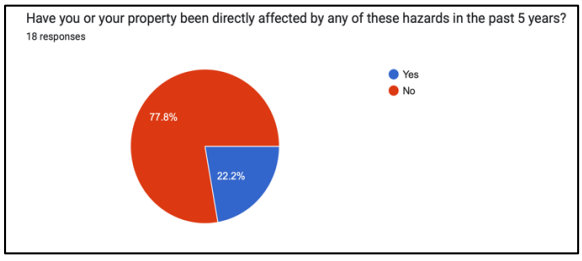
Summary of Results [as of 241030]

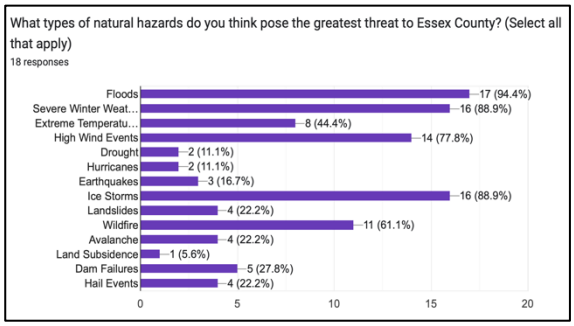


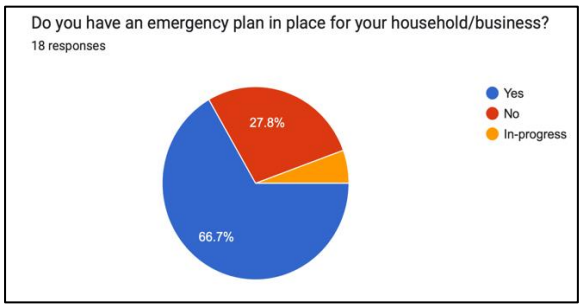


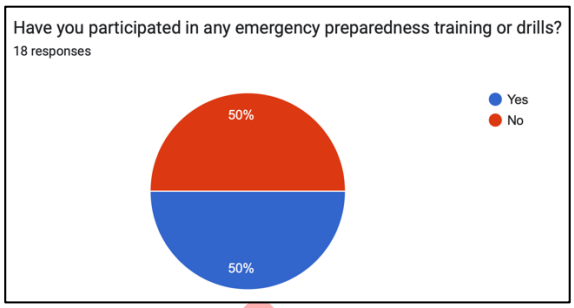


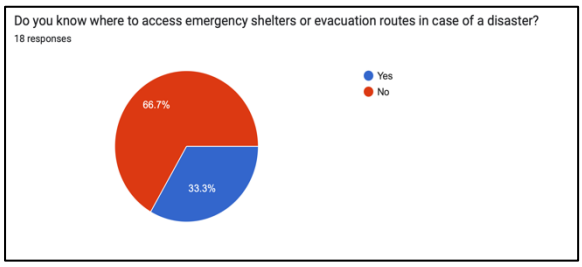


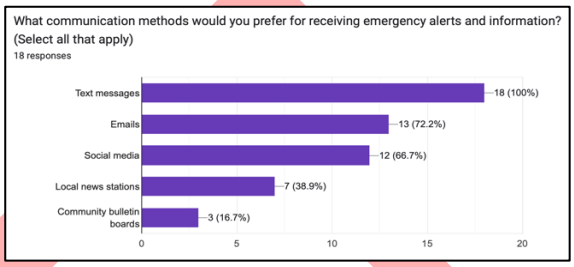


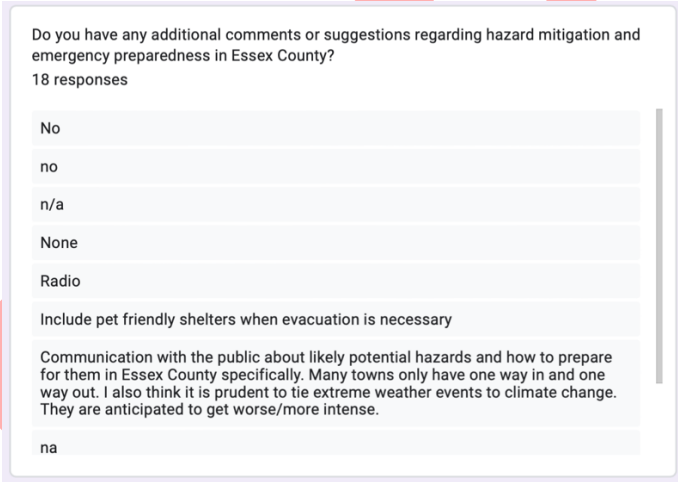












Survey Response Analysis

[Breakdown of the survey data, highlighting major themes, trends, or community concerns that emerged, and how these insights were integrated into the hazard mitigation planning process.]

Survey data incoming.

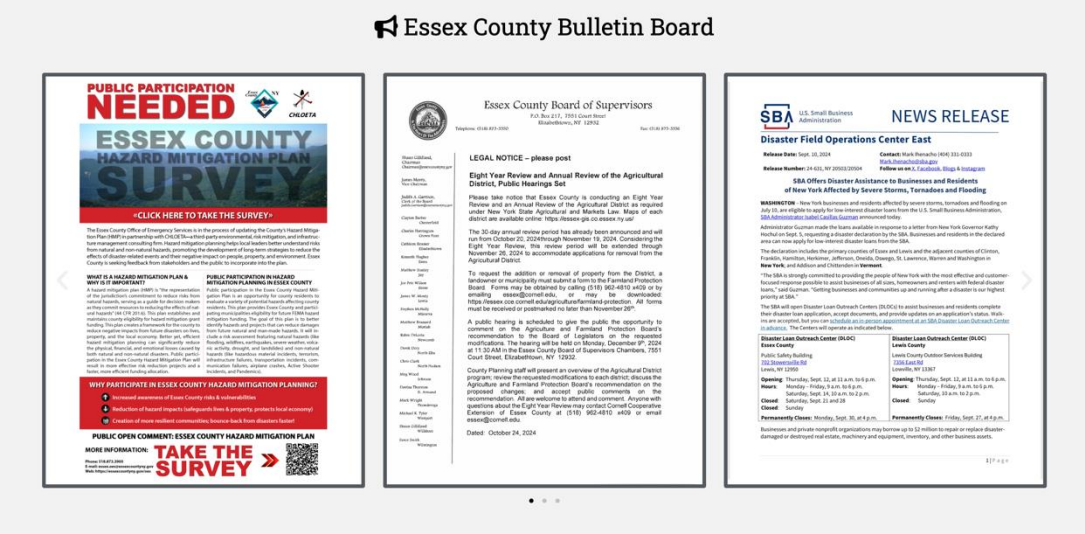
Photographic Documentation

Photos of Public Meetings & Workshops

[Images capturing the public participation in action, like meeting attendees, facilitators, and informational displays used during the sessions.]

Images of Community Outreach Materials in Context

[Photos showing newsletters or flyers displayed in public places like community bulletin boards, to show efforts to maximize visibility.]



Public Survey: Essex County Bulletin Board
Location: https://essexcountyny.gov | Date Published: xx/xx/xxxx | Date Closed: xx/xx/xxxx

Figure 102. Public Survey Posting: Essex County Public Bulletin Board

Follow–Up & Feedback Documentation (THIS SECTION TO BE PUBLISHED)

Public Comment Records

[Collection of written public comments, including emails or written feedback forms submitted by community members.]

Response & Adjustments Based on Feedback

[Summary of how public input influenced the plan, with specific examples of adjustments made in response to community suggestions.]

Appendix D: Mitigation Action Worksheets

Mitigation action worksheets, outlining specific actions, responsible parties, timelines, and funding sources for each mitigation measure.

TO BE PUBLISHED

DRAFT

Appendix E: Potential Funding Sources

While it is important to recognize the mitigation strategies for each jurisdiction to help achieve the mitigation goals and objectives of the HMP, it is also important to provide sources for funding to implement these strategies. The table below provides a list of Federal programs, descriptions, and links for those seeking funding sources. Please note that this table is not intended to be a comprehensive list, but rather a starting point to help identify potential sources of funding for the identified mitigation strategies.

Mitigation Funding Sources Program	Description	Lead Agency	Website
Hazard Mitigation Assistance (HMA)	Grants to provide funding for eligible mitigation activities that reduce disaster losses and protect life and property from future disaster damages – includes FMA, HMGP, PDM	FEMA	https://www.fema.gov/grants/mitigation/disaster-type
Flood Mitigation Assistance (FMA)	Program Grants to States and communities for pre-disaster mitigation planning and projects to help reduce or eliminate the long-term risk of flood damage to structures insurable under the National Flood Insurance Program	FEMA	• Building Resilient Infrastructure and Communities • Community Assistance Program – State Support Services Element • Cooperating Technical Partners Program • Dam Safety Program • Hazard Mitigation Grant Program • Hazard Mitigation Grant Program Post Fire • Flood Mitigation Assistance (FMA) Grant Program • Flood Mitigation Assistance Swift Current (Swift Current) • Safeguarding Tomorrow Revolving Loan Fund
Hazard Mitigation Grant Program (HMGP)	Grants to States and communities for planning and projects providing long-term hazard mitigation measures following a major disaster declaration	FEMA	Hazard Mitigation Grant Program
Building Resilient Infrastructure and	Replacement program for PDM that will invest in local mitigation	FEMA	Building Resilient Infrastructure and Communities

Mitigation Funding Sources Program	Description	Lead Agency	Website
Communities (BRIC)	projects and promote capacity-building		
Assistance to Firefighters Grant Program	The primary goal of the Assistance to Firefighters Grants (AFG) is to enhance the safety of the public and firefighters with respect to fire-related hazards by providing direct financial assistance to eligible fire departments, nonaffiliated Emergency Medical Services organizations, and State Fire Training Academies. This funding is for critically needed resources to equip and train emergency personnel to recognized standards, enhance operations efficiencies, foster interoperability, and support community resilience.	FEMA	Hazard Mitigation Grant Program Post Fire
Pre-Disaster Mitigation Grant Program	The Pre-Disaster Mitigation (PDM) grant program makes federal funds available to state, local, tribal, and territorial governments to plan for and implement sustainable cost-effective measures designed to reduce the risk to individuals and property from future natural hazards, while also reducing reliance on federal funding from future disasters. The program is authorized by Section 203 of the Stafford Act.	FEMA	Pre-Disaster Mitigation Grant Program
Safeguarding Tomorrow Revolving Loan Fund	The Safeguarding Tomorrow Revolving Loan Fund (RLF) program is authorized under Section 205 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to provide capitalization grants to states, eligible federally recognized tribes, territories and the District of Columbia to establish revolving loan funds that provide hazard mitigation assistance for local governments to	FEMA	Safeguarding Tomorrow Revolving Loan Fund

DRAFT

Mitigation Funding Sources Program	Description	Lead Agency	Website
	reduce risks from natural hazards and disasters.		

Federal Hazard Mitigation Funding Opportunities

As noted on the FEMA hazard mitigation assistance website, FEMA administers five programs that provide funding for eligible mitigation planning and projects that reduces disaster losses and protect life and property from future disaster damages. The programs are the Hazard Mitigation Grant Program (HMGP), and the HMGP Post Fire Grant, the Flood Mitigation Assistance (FMA) Program, the Pre-Disaster Mitigation (PDM) Program, and the Building Resilient Infrastructure & Communities (BRIC) Program.

- HMGP assists in implementing long-term hazard mitigation planning and projects following a Presidential major disaster declaration.
- PDM provides funds for hazard mitigation planning and projects on an annual basis.
- FMA provides funds for planning and projects to reduce or eliminate risk of flood damage to buildings that are insured under the National Flood Insurance Program (NFIP) on an annual basis.
- BRIC supports jurisdictions in hazard mitigation projects, reducing the risks they face from disasters and natural hazards. The BRIC program will replace the existing Pre-Disaster Mitigation (PDM) program. The BRIC program guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency.

HMGP funding is generally 15% of the total amount of Federal assistance provided to a State, Territory, or federally recognized tribe following a major disaster declaration. PDM and FMA funding depends on the amount congress appropriates each year for those programs. BRIC is funded by a 6% ($500 million) set-aside from federal post-disaster grant funding. Individual homeowners and business owners may not apply directly to FEMA. Eligible local governments may apply on their behalf. Federal mitigation grant funding is available to all communities with a current HMP (this plan); however, most of these grants require a “local share” in the range of 10-25 percent of the total grant amount. The FEMA mitigation grant programs are described below.

Hazard Mitigation Grant Program (HMGP)

The HMGP is a post-disaster mitigation program. FEMA makes these grants available to states by after each federal disaster declaration. The HMGP can provide up to 75 percent funding for hazard mitigation measures and can be used to fund cost-effective projects that will protect public or private property or that will reduce the likely damage from future disasters in an area covered by a federal disaster declaration. Examples of projects include acquisition and demolition of structures in hazard prone areas, flood-proofing, or elevation to reduce future damage, minor structural improvements, and development of state or local standards. Projects must fit into an overall mitigation strategy for the area identified as part of a local planning effort. All applicants must have a FEMA-approved HMP (this plan).

Applicants who are eligible for the HMGP are state and local governments, certain nonprofit organizations or institutions that perform essential government services, and Indian tribes and authorized tribal organizations. Individuals or homeowners cannot apply directly for the HMGP; a

local government must apply on their behalf. Applications are submitted to NYS DHSES, placed in rank order for available funding, and submitted to FEMA for final approval. Eligible projects not selected for funding are placed in an inactive status and could be considered as additional HMGP funding becomes available.

Flood Mitigation Assistance (FMA) Program

The FMA program combines the previous Repetitive Flood Claims and Severe Repetitive Loss Grants into one grant program. The FMA provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP. The FMA is funded annually; no federal disaster declaration is required. Only NFIP insured homes and businesses are eligible for mitigation in this program. Funding for FMA is very limited and, as with the HMGP, individuals cannot apply directly for the program. Applications must come from local governments or other eligible organizations. The federal cost share for an FMA project is at least 75 percent. For the nom-federal share, at most 25 percent of the total eligible costs must be provided by a non-federal source; of this 25 percent, no more than half can be provided as in-kind contributions from third parties. At minimum, a FEMA-approved local flood mitigation plan is required before a project can be approved. The FMA funds are distributed from FEMA to the state. The NYS DHSES serves as the grantee and program administrator for the FMA program.

Building Resilient Infrastructure and Communities (BRIC) Program

Building Resilient Infrastructure and Communities (BRIC) will support states, local communities, tribes, and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. BRIC is a new FEMA pre-disaster hazard mitigation program that replaces the existing Pre-Disaster Mitigation (PDM) program.

The BRIC program guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency.

Rehabilitation of High Hazard Potential Dams (HHPD) Program

The Rehabilitation of High Hazard Potential Dams (HHPD) grant program provides technical, planning, design, and construction assistance for eligible rehabilitation activities that reduce dam risk and increase community preparedness.

The HHPD Grant Program will provide assistance for technical, planning, design, and construction activities toward:

- Repair
- Removal
- Structural/nonstructural rehabilitation of eligible high hazard potential dams

Extraordinary Circumstances

For FMA project subawards, the FEMA Region might apply extraordinary circumstances when justification is provided and with concurrence from FEMA Headquarters (Risk Reduction and Risk Analysis Divisions) prior to granting an exception. If this exception is granted, a local mitigation plan must be approved by FEMA within 12 months of the award of the project subaward to that community.

DRAFT

For HMGP, BRIC, and FMA, extraordinary circumstances exist when a determination is made by the applicant and FEMA that the proposed project is consistent with the priorities and strategies identified in the State (Standard or Enhanced) Mitigation Plan and that the jurisdiction meets at least one of the criteria below. If the jurisdiction does not meet at least one of these criteria, the region must coordinate with FEMA Headquarters (Risk Reduction and Risk Analysis Divisions) for HMGP; however, for BRIC and FMA the region must coordinate and seek concurrence prior to granting an exception. The criteria are as follows:

- The jurisdiction meets the small, impoverished community criteria (see Part VIII, B.2 of HMA Unified Guidance).
- The jurisdiction has been determined to have had insufficient capacity due to lack of available funding, staffing, or other necessary expertise to satisfy the mitigation planning requirement prior to the current disaster or application deadline.
- The jurisdiction has been determined to have been at low risk from hazards because of low frequency of occurrence or minimal damage from previous occurrences as a result of sparse development.
- The jurisdiction experienced significant disruption from a declared disaster or another event that impacts its ability to complete the mitigation planning process prior to award or final approval of a project award.
- The jurisdiction does not have a mitigation plan for reasons beyond the control of the state, federally recognized tribe, or local community, such as Disaster Relief Fund restrictions that delay FEMA from granting a subaward prior to the expiration of the local or tribal mitigation plan.

For HMGP, BRIC, and FMA, the applicant must provide written justification that identifies the specific criteria or circumstance listed above, explains why there is no longer an impediment to satisfying the mitigation planning requirement, and identifies the specific actions or circumstances that eliminated the deficiency.

When an HMGP project funding is awarded under extraordinary circumstances, the recipient shall acknowledge in writing to the Regional Administrator that a plan will be completed within 12 months of the subaward. The recipient must provide a work plan for completing the local or tribal mitigation plan, including milestones and a timetable, to ensure that the jurisdiction will complete the plan in the required time. This requirement shall be incorporated into the award (both the planning and project subaward agreements if a planning subaward is also awarded).

Federal and State Disaster and Recovery Assistance Programs

Following a disaster, various types of assistance could be made available by local, state, and federal governments. The types and levels of disaster assistance depend on the severity of the damage and the declarations that result from the disaster event. The following sections detail the general types of assistance that might be provided should the President of the United States declare the event a major disaster.

Individual Assistance (IA)

Individual Assistance (IA) provides help for homeowners, renters, businesses, and some nonprofit entities after disasters occur. This program is largely funded by the U.S. Small Business Administration. For homeowners and renters, those who suffered uninsured or underinsured losses could be eligible for a Home Disaster Loan to repair or replace damaged real estate or personal property. Renters are eligible for loans to cover personal property losses. Individuals

are allowed to borrow up to $200,000 to repair or replace real estate, $40,000 to cover losses to personal property, and an additional 20 percent for mitigation. For businesses, loans could be made to repair or replace disaster damages to property owned by the business, including real estate, machinery and equipment, inventory, and supplies. Businesses of any size are eligible. Non-profit organizations, such as charities, churches, and private universities are eligible. An Economic Injury Disaster Loan provides necessary working capital until normal operations resume after a physical disaster but are restricted by law to small businesses only.

Public Assistance (PA)

Public Assistance (PA) provides cost reimbursement aid to local governments (state, county, local, municipal authorities, and school districts) and certain non-profit agencies that were involved in disaster response and recovery programs or that suffered loss or damage to facilities or property used to deliver government-like services. This program is largely funded by FEMA with both local and state matching contributions required.

Small-Business Administration (SBA) Loans

SBA provides low-interest disaster loans to homeowners, renters, business of all sizes, and most private nonprofit organizations. SBA disaster loans can be used to repair or replace the following items damaged or destroyed in a declared disaster: real estate, personal property, machinery and equipment, and inventory and business assets.

Homeowners could apply for up to $200,000 to replace or repair their primary residence. Renters and homeowners could borrow up to $40,000 to replace or repair personal property-such as clothing, furniture, cars, and appliances that were damaged or destroyed in a disaster. Physical disaster loans of up to $2 million are available to qualified businesses or most private nonprofit organizations.

Social Services Block Grant Program (SSBG)

To address the needs of critical health and human service providers and the populations they serve, the State of New York will receive a total of $235.4 million in federal Superstorm Sandy SSBG funding. The state will distribute $200,034,600 through a public and transparent solicitation for proposals and allocate $35.4 million in State Priority Projects, using the SSBG funding. Sandy SSBG resources are dedicated to covering necessary expenses resulting from Superstorm Sandy, including social, health, and mental health services for individuals, and for repair, renovation, and rebuilding of health care facilities, mental hygiene facilities, childcare facilities, and other social services facilities.

Department of Homeland Security Grant Program (HSGP)

The HSGP plays an important role in the implementation of the National Preparedness System by supporting the building, sustainment, and delivery of core capabilities essential to achieving the National Preparedness Goal of a secure and resilient nation. The FY 2020 HSGP supports efforts to build and sustain core capabilities across the Prevention, Protection, Mitigation, Response, and Recovery mission areas. This includes two priorities: building and sustaining law enforcement terrorism prevention capabilities and maturation and enhancement of state and major urban area fusion centers (HSGP 2020). HSGP is comprised of three interconnected grant programs including the State Homeland Security Program (SHSP), Urban Areas Security Initiative (UASI), and the Operation Stonegarden (OPSG). Together, these grant programs fund a range of preparedness activities, including planning, organization, equipment purchase, training, exercises, and management and administration.

DRAFT

Community Development Block Grants (CDBG)

CDBG are federal funds intended to provide low and moderate-income households with viable communities, including decent housing, a suitable living environment, and expanded economic opportunities. Eligible activities include community facilities and improvements, roads and infrastructure, housing rehabilitation and preservation, development activities, public services, economic development, and planning and administration. Public improvements could include flood and drainage improvements. In limited instances and during the times of "urgent need" (e.g., post disaster) as defined by the CDBG National Objectives, CDBG funding could be used to acquire a property located in a floodplain that was severely damaged by a recent flood, demolish a structure severely damaged by an earthquake, or repair a public facility severely damaged by a hazard event.

U.S. Economic Development Administration

The U.S. Economic Development Administration (USEDA) is an agency of the U.S. Department of Commerce that supports regional economic development in communities around the country. It provides funding to support comprehensive planning and makes strategic investments that foster employment creation and attract private investment in economically distressed areas of the United States. Through its Public Works Program, USEDA invests in key public infrastructure, such as traditional public works projects, including water and sewer systems improvements, expansion of port and harbor facilities, brownfields, multitenant manufacturing and other facilities, business and industrial parks, business incubator facilities, redevelopment technology-based facilities, telecommunications facilities, and development facilities. Through its Economic Adjustment Program, USEDA administers its Revolving Loan Fund Program, which supplies small businesses and entrepreneurs with the gap financing needed to start or expand their business in areas that have experienced or are under threat of serious structural damage to the underlying economic base.

Federal Highway Administration - Emergency Relief

The Federal Highway Administration Emergency Relief is a grant program that can be used for repair or reconstruction of Federal-aid highways and roads on Federal lands which have suffered serious damage as a result of a disaster. NYS is serving as the liaison between local municipalities and FHWA. The program is appropriated $100 million annually.

Federal Transit Administration - Emergency Relief

The Federal Transit Authority Emergency Relief is a grant program that funds capital projects to protect, repair, reconstruct, or replace equipment and facilities of public transportation systems. Administered by the Federal Transit Authority at the U.S. Department of Transportation and directly allocated to MTA and Port Authority, this transportation-specific fund was created as an alternative to FEMA PA. Currently, a total of $5.2 Billion has been allocated to NYS-related entities related to Hurricane Sandy. IN the wake of the COVID-19 outbreak in 2020, the program provided emergency-related capital and operating expenses to transit providers.

State Hazard Mitigation Funding Opportunities

The NYS Capabilities section of the 2019 New York State Hazard Mitigation Plan features a section on mitigation-related funding administered by state agencies that eligible jurisdictions can use to find mitigation actions. A list of funding opportunities can be accessed here:

New York Mitigation Funding

Empire State Development

Empire State Development offers a wide range of financing, grants, and incentives to promote business and employment growth and real estate development throughout the state. Several programs address infrastructure construction associated with project development, acquisition, and demolition associated with project development and brownfield remediation and redevelopment.

- Damaged Roads and Signals. High winds, storm tidal surge and flooding caused significant damage to NYSDOT facilities, roads and local transportation infrastructure in the Hudson Valley, Long Island and New York City. Repair and replacement will be necessary for these facilities and infrastructure. In some cases, municipalities will be direct applicants; therefore, not all FEMA-eligible costs are included for damaged infrastructure.
- Scour Critical/Floodprone Bridge Program. The Scour Critical/Flood Prone Bridge Program is an initiative developed to harden New York State's at-risk bridges to withstand extreme weather events. In the past three years, the state has suffered 9 presidentially declared disasters due to extreme weather, many involving severe flooding.
- Emergency Watershed Protection Program. The purpose of the Emergency Watershed Protection Program (EWP) was established by Congress to respond to emergencies created by natural disasters. The EWP Program is designed to help people and conserve natural resources by relieving imminent hazards to life and property caused by floods, fires, drought, windstorms, and other natural occurrences. The U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) administers the EWP Program, EWP-
- New York State Department of Environmental Conservation Climate Smart Communities (CSC) Program .The CSC program is jointly sponsored by the following six New York State agencies: DEC; Energy Research and Development Authority; Public Service Commission; Department of State; NYSDOT; and the Department of Health. The program encourages municipalities to minimize the risks of climate change and reduce long-term costs through actions which reduce greenhouse gas emissions and adapt to a changing climate. The program offers free technical support on energy and climate and guidance tailored to New York State communities.
- Climate Smart Communities Grant Program. In April 2016, DEC announced an expansion of the Environmental Protection Fund to support communities ready to reduce greenhouse gas emissions and prepare for the effects of climate change. Climate Smart Community Implementation grants support mitigation and adaptation projects and range from $100,000 to $2 million. Competitive grants ranging from $25,000 to $100,000 will provide support for local governments to become certified Climate Smart Communities. All counties, cities, towns, and villages of the State of New York are eligible to receive funding.
- Water Quality Improvement Project (WQIP) Program. The WQIP program is a competitive, reimbursement grant program that funds projects that directly address documented water quality impairments. The competitive, statewide grant program is open to local governments and not-for-profit corporations. Grant recipients can receive up to 75 percent of the project costs for high priority wastewater treatment improvement, non-agricultural nonpoint source abatement and control, land acquisition for source water protection, aquatic habitat restoration, and municipal separate storm sewer system projects; up to 50 percent for salt storage projects; and up to 40 percent for general wastewater infrastructure improvement projects.

DRAFT

- New York State DEC/ Environmental Facilities Corporation (EFC) Wastewater Infrastructure Engineering Planning Grant (EPG). The DEC, in conjunction with the New York State EFC, offers grants to municipalities to help pay for the initial planning of eligible Clean Water State Revolving Fund (CWSRF) water quality projects.

New York State Department of Transportation

- BRIDGE NY. The BRIDGE NY program, administered by the NYSDOT, is open to all municipal owners of bridges and culverts. Projects are awarded through a competitive process and support all phases of project development. Projects selected for funding under the BRIDGE NY Initiative are evaluated based on the resiliency of the structure, including such factors as hydraulic vulnerability and structural resiliency; the significance and importance of the bridge, including traffic volumes, detour considerations, number and types of businesses served, and impacts on commerce; and the current bridge and culvert structural conditions.
- Community Risk and Resiliency Act (CRRA). On September 22, 2014, Governor Andrew Cuomo signed bill A06558/S06617-B, the CRRA. The purpose of the bill is to ensure that certain state monies, facility-siting regulations, and permits include consideration of the effects of climate risk and extreme-weather events. Homeownership Repair and Rebuilding Fund
- The Homeownership Repair and Rebuilding Fund provides grants of up to an additional $10,000 to eligible homeowners who have already qualified for FEMA housing assistance's maximum grant ($31,900) and will not receive other assistance from private insurance or government agencies that would duplicate the grant's funding. The HRRF includes $100 million dedicated to help homeowners affected by Sandy and was provided directly from the State of New York.

Appendix F: Adoption Letters

The following is a placeholder example as the Plan is processed through approvals and adoption.

<COUNTY/TOWN LETTERHEAD>

CERTIFICATE OF ADOPTION TOWN COUNCIL/COUNTY

COUNTY/TOWN OF XX/NEW YORK

A RESOLUTION ADOPTING THE COUNTY OF TOWN OF XXXX HAZARD MITIGATION PLAN 2025 UPDATE

WHEREAS, the County/Town of XXXX established a Committee to prepare the Town/County Hazard Mitigation Plan 2025 Update; and

WHEREAS, the County/Town of XXXX Hazard Mitigation Plan 2025 Update contains several potential future projects to mitigate potential impacts from natural hazards in the County/Town of XXXX, and

WHEREAS, duly-noticed public announcements were published on multiple platforms for public and stakeholder feedback and engagement with feedback incorporated in the HAZARD MITIGATION PLAN, from March 20, 2025 and April 20, 2025 and

WHEREAS, the County/Town of XXXX authorizes responsible departments and/or agencies to execute their responsibilities demonstrated in the plan, and

NOW, THEREFORE BE IT RESOLVED that the County/Town of XXXX COUNCIL adopts the County/Town of XXXX Hazard Mitigation Plan 2025 Update, in accordance with the charter and bylaws of the County/Town of XXXX.

ADOPTED AND SIGNED this Date. _____

Name(s)

Title(s)

Signature(s)

DRAFT

References

Adirondack Council. About Us. https://www.adirondackcouncil.org/page/about-us-1.html.

Adirondack Council. Adirondack Council Accomplishments. https://www.adirondackcouncil.org/page/adirondack-council-accomplishments-3.html.

Adirondack Daily Enterprise. Local News and Reports. https://www.adirondackdailyenterprise.com.

Adirondack Explorer. Historic Dam in Danger. https://www.adirondackexplorer.org/stories/historic-dam-in-danger.

Adirondack Explorer. Two Skiers Survive Massive Avalanche on Wright Peak. https://www.adirondackexplorer.org/stories/two-skiers-survive-massive-avalanche-on-wright-peak.

American Meteorological Society (AMS). Winter Weather Statements of the AMS in Force. https://www.ametsoc.org/index.cfm/ams/about-ams/ams-statements/statements-of-the-ams-in-force/winter-weather.

Ausable River Association. Ausable River Watershed Management Plan. https://view.publitas.com/ausable-river-association/ausable-river-watershed-management-plan/page/8-9.

BestPlaces. Climate in Essex County, New York. https://www.bestplaces.net/climate/county/new_york/essex.

Census Reporter. Essex County, NY Profile. https://censusreporter.org/profiles/05000US36031-essex-county-ny.

Centers for Disease Control and Prevention (CDC). 2009 H1N1 Pandemic Resources. https://www.cdc.gov/flu/pandemic-resources/2009-h1n1-pandemic.html.

Centers for Disease Control and Prevention (CDC). Coronavirus (COVID-19) Information. https://www.cdc.gov/coronavirus/2019-ncov/index.html.

Centers for Disease Control and Prevention (CDC). Eastern Equine Encephalitis (EEE) Virus Information. https://www.cdc.gov/easternequineencephalitis/index.html.

Centers for Disease Control and Prevention (CDC). Emerging Infectious Diseases. https://www.nc.cdc.gov/eid.

Centers for Disease Control and Prevention (CDC). Infectious Disease Overview. https://www.cdc.gov/ncezid/index.html.

Centers for Disease Control and Prevention (CDC). Pandemic Basics. https://www.cdc.gov/flu/pandemic-resources/basics/index.html.

Centers for Disease Control and Prevention (CDC). Seasonal Influenza Information. https://www.cdc.gov/flu/about/season/index.html.

Centers for Disease Control and Prevention (CDC). Social Vulnerability Index (SVI). 2018. https://www.atsdr.cdc.gov/place-health/php/svi/index.html.

Centers for Disease Control and Prevention (CDC). West Nile Virus Information. https://www.cdc.gov/westnile/index.html.

Cornell Cooperative Extension of Essex County. Essex County Farmland Protection and Food System Plan, 2022. https://essex.cce.cornell.edu/agriculture/essex-county-farmland-protection-and-food-system-plan-2022.

Data USA. Essex County, NY Profile. https://datausa.io/profile/geo/essex-county-ny.

Data USA. Essex County, NY: Employment by Industry, 2023. https://datausa.io/profile/geo/essex-county-ny.

Empire State Development. Adirondacks New York: Tourism Economic Impact, 2023. https://esd.ny.gov/sites/default/files/media/document/Adirondacks-New-York-Tourism-Economic-Impact-2023.pdf.

Essex County Auditor's Office. Property Valuation Data, 2023. https://www.co.essex.ny.us/Treasurer/propertylookup.aspx.

Essex County Department of Public Works. Dam Safety and Maintenance Report: Essex County, NY. Essex County Government, n.d. https://www.co.essex.ny.us.

Essex County Government. History of Essex County, NY. https://www.co.essex.ny.us.

Essex County Historical Society. Adirondack History Center Museum. https://www.adkhistorycenter.org.

Essex County Industrial Development Agency. Annual Report, 2023. https://www.abo.ny.gov/annualreports/PARISAuditReports/FYE2023/IDA/EssexCountyIndustrialDevelopmentAgency2023.pdf.

Essex County Office of Emergency Services. Essex County Emergency Management Plan, 2022. Unpublished document. Lewis, NY: Essex County Office of Emergency Services, 2022.

Essex County Office of Emergency Services. Essex County Hazard Mitigation Plan, 2019. Essex County, NY: Essex County Office of Emergency Services, 2019. https://www.co.essex.ny.us/downloads/2019%20Hazard%20Mitigation%20Plan.pdf.

Essex County Soil and Water Conservation District. Agricultural Environmental Management (AEM) Strategic Plan, 2021–2025. https://www.essexcountyswcd.org/uploads/1/0/9/3/10935374/aem_strategic_plan_2021-2025_essex_county.pdf.

Federal Emergency Management Agency (FEMA). Climate Resilience for Emergency Managers. https://www.fema.gov/emergency-managers/risk-management/climate-resilience.

Federal Emergency Management Agency (FEMA). Community Lifelines. https://www.fema.gov/emergency-managers/practitioners/lifelines.

Federal Emergency Management Agency (FEMA). Disaster Declarations. https://www.fema.gov/disaster.

Federal Emergency Management Agency (FEMA). Disaster Declarations. https://www.fema.gov/disaster/declarations.

Federal Emergency Management Agency (FEMA). Earthquake Basics. https://www.fema.gov.

Federal Emergency Management Agency (FEMA). Flood Insurance Rate Maps (FIRM). 2020. https://www.fema.gov/flood-maps.

Federal Emergency Management Agency (FEMA). Flood Mapping and Disaster Declarations. https://msc.fema.gov.

DRAFT

Federal Emergency Management Agency (FEMA). Hazard Mitigation Grant Program (HMGP) and State and Local Mitigation Planning Resources. 2018. https://www.fema.gov/grants/mitigation/learn/hazard-mitigation.

Federal Emergency Management Agency (FEMA). Hazus Resources Portal. https://msc.fema.gov/portal/resources/hazus.

Federal Emergency Management Agency (FEMA). Local Mitigation Planning Handbook. 2013. https://www.fema.gov/sites/default/files/2020-06/fema-local-mitigation-planning-handbook_03-2013.pdf.

Federal Emergency Management Agency (FEMA). Local Mitigation Planning Handbook. May 2023. https://www.fema.gov/sites/default/files/documents/fema_local-mitigation-planning-handbook_052023.pdf.

Federal Emergency Management Agency (FEMA). Mitigation Planning How-To Guide. 2018. https://www.fema.gov/sites/default/files/2020-06/fema-mitigation-planning-how-to-guide.pdf.

Federal Emergency Management Agency (FEMA). National Inventory of Dams. https://www.fema.gov/emergency-managers/risk-management/dam-safety/national-inventory-dams.

Federal Emergency Management Agency (FEMA). National Risk Index and Mitigation Grants. https://hazards.fema.gov/nri/ | https://www.fema.gov/grants/mitigation.

Federal Emergency Management Agency (FEMA). National Risk Index. https://hazards.fema.gov/nri.

Federal Emergency Management Agency (FEMA). Subsidence Hazards and Risk Management. 2023. https://www.fema.gov.

Federal Emergency Management Agency (FEMA). Technological Hazards. 2017. https://www.fema.gov/emergency-managers/practitioners/hazardous-response-capabilities/resource-library.

Federal Emergency Management Agency. Multi-Hazard Identification and Risk Assessment: A Cornerstone of the National Mitigation Strategy. Washington, DC: Federal Emergency Management Agency, 2005. https://www.fema.gov/sites/default/files/2020-06/multi-hazard-identification-risk-assessment.pdf.

Fort Ticonderoga Association. Historical Data and Archives. https://www.fortticonderoga.org/learn-and-explore/collections/search-the-collections.

Gannett/Record Online. Tornado Archive. https://data.recordonline.com/tornado-archive.

Geology.com. Soil Information and Articles. https://geology.com/articles/soil.

National Centers for Environmental Information (NCEI). Northeast Snowfall Impact Scale (NESIS). https://www.ncei.noaa.gov/access/monitoring/rsi/nesis.

New York State Mesonet. *Weather Monitoring and Data Collection in New York State.* http://www.nysmesonet.org.

New York State Division of Homeland Security and Emergency Services (DHSES). *Hazard Mitigation Plan.* https://www.dhses.ny.gov/hazard-mitigation-plan.

Federal Emergency Management Agency (FEMA). *National Risk Index.* https://hazards.fema.gov/nri.

National Oceanic and Atmospheric Administration (NOAA), Office for Coastal Management. *Hurricanes and Coastal Hazards.* https://coast.noaa.gov/hurricanes.

New York State Department of Environmental Conservation (DEC). *Environmental Protection and Conservation in New York State.* https://www.dec.ny.gov.

Adirondack Council. *Environmental Advocacy for the Adirondacks.* https://www.adirondack-council.org.

National Hurricane Center (NHC). *Tropical Cyclone Forecasts and Analysis.* https://www.nhc.noaa.gov.

National Highway Traffic Safety Administration (NHTSA). *Traffic Safety Research and Data.* https://www.nhtsa.gov/research-data.

New York State Office of the State Comptroller (OSC). *Financial and Government Reports for New York State.* https://www.osc.state.ny.us.

United States Geological Survey (USGS). *Geological Research and Hazard Monitoring.* https://www.usgs.gov.

Intergovernmental Panel on Climate Change (IPCC). Climate Change and Its Impact on Snowpack and Avalanche Risk. https://www.ipcc.ch.

Intergovernmental Panel on Climate Change (IPCC). Climate Change Research and Reports. https://www.ipcc.ch.

International Seismological Centre (ISC). Seismic Events and Causes of Earthquakes. https://www.isc.ac.uk.

Kocin, P., & Uccellini, L. A Snowfall Impact Scale Derived from Northeast Storm Snowfall Distributions. National Centers for Environmental Information (NCEI), 2004. https://www.ncei.noaa.gov/monitoring-content/snow-and-ice/rsi/docs/kocin-and-uccellini-2004.pdf.

Luttrell, K., & Sandwell, D. Ocean Loading Effects on Stress at Near Shore Plate Boundary Fault Systems. Journal of Geophysical Research: Solid Earth, 2010.

Mitigate NY. Dam Safety and Hazard Mitigation. https://mitigateny.org/resource_library/shmp_appendices/dam_safety.

Mitigate NY. Dam Safety and Hazard Mitigation. https://mitigateny.org/resource_library/shmp_appendices/dam_safety#952887.

Mitigate NY. Hazard Mitigation Resource Library. https://mitigateny.org/home.

National Avalanche Center. Avalanche Basics and Safety. 2023. https://avalanche.org.

National Avalanche Center. Climate Change and Avalanche Trends. 2023. https://avalanche.org.

National Centers for Environmental Information (NCEI). Climate at a Glance (CAG). https://www.ncdc.noaa.gov/cag.

National Centers for Environmental Information (NCEI). Extreme Climate Events. https://www.ncdc.noaa.gov/climate-information/extreme-events.

DRAFT

National Centers for Environmental Information (NCEI). Regional Snowfall Index (NESIS). https://www.ncei.noaa.gov/access/monitoring/rsi/nesis.

National Centers for Environmental Information (NCEI). Storm Events Database. https://www.ncdc.noaa.gov/stormevents.

National Earthquake Information Center (NEIC). Understanding Earthquakes. https://earthquake.usgs.gov.

National Grid US. Energy and Infrastructure Services. https://www.nationalgridus.com.

National Highway Traffic Safety Administration (NHTSA). Fatality Analysis Reporting System (FARS). https://www.nhtsa.gov/research-data/fatality-analysis-reporting-system-fars.

National Institute of Allergy and Infectious Diseases (NIAID). Lyme Disease Information. https://www.niaid.nih.gov/diseases-conditions/lyme-disease.

National Institute of Building Sciences, Multi-Hazard Mitigation Council, Natural Hazard Mitigation Saves: 2019 Report (Washington, DC: National Institute of Building Sciences, 2019), https://www.nibs.org/files/pdfs/NIBS_MMC_MitigationSaves_2019.pdf.

National Institute of Environmental Health Sciences (NIEHS). Climate Change and Health Research. https://www.niehs.nih.gov/research/programs/climatechange.

National Interagency Fire Center (NIFC). Wildfire Information. https://www.nifc.gov.

National Oceanic and Atmospheric Administration (NOAA), Storm Prediction Center. Severe Weather GIS Data. https://www.spc.noaa.gov/gis/svrgis.

National Oceanic and Atmospheric Administration (NOAA), Storm Prediction Center. SPC Products. https://www.spc.noaa.gov/misc/about.html.

National Oceanic and Atmospheric Administration (NOAA). Climate Information and Research. https://www.climate.gov.

National Oceanic and Atmospheric Administration (NOAA). *Annual 2023 Global Climate Report.* https://www.ncei.noaa.gov/news/reporting-state-climate-2023.

National Oceanic and Atmospheric Administration (NOAA). Ground Subsidence and Its Effects. 2023. https://www.noaa.gov.

National Oceanic and Atmospheric Administration (NOAA). Severe Weather 101. 2020. https://www.noaa.gov/severe-weather-101.

National Oceanic and Atmospheric Administration (NOAA). Winter Storms Resource Collection. https://www.noaa.gov/education/resource-collections/weather-atmosphere/winter-storms.

National Weather Service (NWS) Albany. Weather Updates for the Albany, NY Region. https://www.weather.gov/aly.

National Weather Service (NWS) New York. Excessive Heat Safety. https://www.weather.gov/okx/excessiveheat.

National Weather Service (NWS). Flood Archives. https://www.weather.gov.

National Weather Service (NWS). Hail Size Chart. https://www.weather.gov/boi/hailsize.

National Weather Service (NWS). Heat and Cold Safety. https://www.weather.gov/safety/heat | https://www.weather.gov/safety/cold.

National Weather Service (NWS). Winter Weather Safety. https://www.weather.gov/safety/winter.

Neilsberg. Essex County, NY Population Statistics and Demographics. https://www.neilsberg.com/insights/topic/essex-county-ny-population.

New York State Climate Impacts Assessment. Climate Methodology Report. Albany, NY: New York State Energy Research and Development Authority (NYSERDA), 2023. https://nysclimateimpacts.org/wp-content/uploads/2023/09/Climate-Methodology-Report-09-21-23-final.pdf.

New York State Climate Impacts Assessment. New York State's Changing Climate. https://nysclimateimpacts.org/explore-the-assessment/new-york-states-changing-climate/nysc-temperature.

New York State Department of Environmental Conservation (DEC). Environmental Protection in New York State. https://www.dec.ny.gov.

New York State Department of Environmental Conservation (DEC). Land Management in New York. https://www.dec.ny.gov/lands/42378.html.

New York State Department of Environmental Conservation (NYSDEC). Dam Safety in New York State. https://www.dec.ny.gov/lands/4991.html.

New York State Department of Environmental Conservation (NYSDEC). Dam Safety Regulations and Compliance. 2019. https://www.dec.ny.gov.

New York State Department of Environmental Conservation. Lake Champlain Watershed Implementation Plan. Albany, NY: New York State Department of Environmental Conservation, 2024. https://dec.ny.gov/sites/default/files/2024-03/Lake%20Champlain%20WIP.pdf.

New York State Department of Environmental Conservation. Lake Champlain Watershed Program. https://dec.ny.gov/nature/waterbodies/watersheds/management/lake-champlain-watershed-program.

New York State Department of Environmental Conservation. The Adirondack Park: A Wild Place for Over 100 Years. https://dec.ny.gov/nature/forests-trees/forest-preserve/birth-of-blue-line-in-adirondack-catskill-parks.

New York State Department of Environmental Conservation. Watersheds in New York State. https://dec.ny.gov/nature/waterbodies/watersheds.

New York State Department of Health. Health Prevention Resources. https://www.health.ny.gov/prevention.

New York State Department of Health. Health Prevention Resources. https://www.co.essex.ny.us/Health.

New York State Department of Motor Vehicles (NY DMV). Traffic Crash Data and Statistics. https://dmv.ny.gov/statistic/traffic-crash-data.

New York State Department of Public Service (DPS). Public Utility and Infrastructure Reports. https://www.dps.ny.gov.

New York State Department of Transportation (NYSDOT) and United States Coast Guard (USCG). Transportation and Maritime Regulations. https://www.dot.ny.gov/ | https://www.uscg.mil.

DRAFT

New York State Department of Transportation (NYSDOT)–Transportation Resilience and Climate Adaptation Plan: Website: https://www.dot.ny.gov/programs/climate-change.

New York State Department of Transportation. Essex County Coordinated Transportation Plan, June 2008. https://www.dot.ny.gov/divisions/policy-and-strategy/public-trans-repository/essex_coord_plan_june_08.pdf.

New York State Division of Homeland Security and Emergency Services (DHSES). New York State Hazard Mitigation Plan (2023): Infrastructure Resilience and Dam Safety. https://www.dhses.ny.gov.

New York State Division of Homeland Security and Emergency Services. Flood Hazard History. https://hazardmitigation.ny.gov/hazards_of_concern/flood/flood_hazard_history.

New York State Energy Research and Development Authority (NYSERDA)–Climate Change Impacts and Adaptation Report (2022): Website: https://www.nyserda.ny.gov.

New York State Energy Research and Development Authority (NYSERDA), New York State Department of Public Service (DPS), and New York State Department of Environmental Conservation (DEC). Climate, Energy, and Environmental Initiatives in New York. https://www.nyserda.ny.gov | https://www.dps.ny.gov | https://www.dec.ny.gov.

New York State Energy Research and Development Authority (NYSERDA). Climate Change Research. https://www.nyserda.ny.gov.

New York State Energy Research and Development Authority (NYSERDA). Climate Change Research. https://www.nyserda.ny.gov/All-Programs/Environmental-Research/Climate-Change-Research.

New York State Energy Research and Development Authority (NYSERDA). New York State Climate Assessment: Climate Trends and Future Impacts. 2022. https://www.nyserda.ny.gov.

New York State Energy Research and Development Authority (NYSERDA). New York State Climate Assessment. April 25, 2022. https://www.nyserda.ny.gov/About/Newsroom/2022-Announcements/2022-04-25-New-York-State-Climate-Assessment.

New York State Geographic Information Systems (NYSGIS). Geographic Data for New York State. https://www.nysgis.state.ny.us.

New York State Geological Survey (NYSGS) & Kozlowski, A. (2011). Geological Investigations of the Keene Valley Landslide. https://www.nysgis.state.ny.us.

New York State Hazard Mitigation Plan (2023). Landslide Risk in New York State. https://www.dhses.ny.gov/hazard-mitigation-plan.

New York State Museum, Geological Survey. Geological Research and Surveys in New York State. https://www.nysm.nysed.gov.

North Country Public Radio. Regional News and Updates. https://www.northcountrypublicradio.org.

Northeast Regional Climate Center (NRCC). Northeast U.S. Climate Data and Research. http://www.nrcc.cornell.edu.

PropertyTax101.org. Essex County, New York - Property Tax Assessments, 2023. https://www.propertytax101.org/newyork/essexcounty.

Sherrod, Laura. “Keene Valley Landslide: Largest Landslide in New York State History.” Kutztown University Geology Department, 2011. https://faculty.kutztown.edu/sherrod/projects/keenevalleylandslide.aspx.

Steffen, H., Wu, P., & Lund, B. Glacial Isostatic Adjustment Today: Observations of Ongoing Deformation and Modeling Approaches. Springer, Solid Earth, 2014.

The New York Times. News and Reports. https://www.nytimes.com.

U.S. Army Corps of Engineers. National Inventory of Dams (NID). https://nid.sec.usace.army.mil.

U.S. Census Bureau. QuickFacts: Essex County, New York. https://www.census.gov/quickfacts/fact/table/essexcountynewyork/PST045224.

U.S. Department of Homeland Security (DHS). Critical Infrastructure Security. https://www.dhs.gov/topic/critical-infrastructure-security.

U.S. Global Change Research Program (USGCRP). Fourth National Climate Assessment (2018). https://nca2018.globalchange.gov.

Union of Concerned Scientists (UCS). Climate Change and Wildfires. https://www.ucsusa.org/resources/climate-change-and-wildfires.

United States Department of Energy (DOE). Energy and Climate Research. https://www.energy.gov.

United States Department of Transportation (DOT), Federal Railroad Administration. Rail Safety and Regulations. https://railroads.dot.gov.

United States Forest Service (USFS). Forest Research. https://www.fs.usda.gov/research.

United States Geological Survey (USGS). Avalanche Hazards and Climate Change. https://www.usgs.gov.

United States Geological Survey (USGS). Avalanche Hazards. 2023. https://www.usgs.gov.

United States Geological Survey (USGS). Earthquake Hazards Program. 2020. https://www.usgs.gov/programs/earthquake-hazards.

United States Geological Survey (USGS). Earthquake Hazards Program. https://earthquake.usgs.gov.

United States Geological Survey (USGS). Geological Research and Monitoring. https://www.usgs.gov.

United States Geological Survey (USGS). Hazard Map 2023: 50-State Update, National Seismic Hazard Model Project. https://www.usgs.gov/media/images/hazard-map-2023-50-state-update-national-seismic-hazard-model-project.

United States Geological Survey (USGS). Karst Landscapes and Subsidence Risks. https://www.usgs.gov/media/images/karst-landscapes-are-more-prone-have-land-subsidence-and-sinkholes.

United States Geological Survey (USGS). Landslide Hazards. https://www.usgs.gov/natural-hazards/landslide-hazards.

United States Geological Survey (USGS). USGS Earthquake Map. https://earthquake.usgs.gov/earthquakes/map.

DRAFT

United States Geological Survey (USGS). What Is an Earthquake? https://www.usgs.gov.

United States Geological Survey (USGS). What Is Subsidence? 2023. https://www.usgs.gov.

United Way of the Adirondack Region. Impact Essex County: Economy and Workforce. https://impactessexcounty.org/economy-and-workforce.

USGS. U.S. Landslide Inventory and Susceptibility. 2024. https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=ae120962f459434b8c904b456c82669d.

Westlaw. New York Codes, Rules, and Regulations (NYCRR). https://govt.westlaw.com/nycrr/Document/I4ed7566ecd1711dda432a117e6e0f345.

World Health Organization (WHO). Disease Outbreak News. https://www.who.int/emergencies/disease-outbreak-news.

York County Planning Commission. Subsidence and Sinkholes Overview. https://www.ycpc.org/DocumentCenter/View/1373/Subsidence-Sinkhole-PDF.