



Department of
Environmental
Conservation



Climate Smart
Communities

Putnam County: Climate Change Adaptation & Resilience Plan

Draft Report July 2026



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Special thanks to the residents of Putnam County, for their willingness to contribute to this process.

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Local Government Commitment

PUTNAM COUNTY LEGISLATURE

Resolution #213

Introduced by Legislator: Greg Ellner on behalf of the Physical Services Committee at a Regular Meeting held on September 2, 2025.

page 1

APPROVAL - PUTNAM COUNTY'S PROPOSED VULNERABILITY ASSESSMENT AND CLIMATE ADAPTATION PLAN

WHEREAS, Putnam County pledged to take part in and has become bronze certified in the NYS DEC Climate Smart Communities Certification Program that includes as an action item the preparation of a Vulnerability Assessment and Climate Adaptation Plan; and

WHEREAS, free technical assistance is available to support the development of these documents (PE7 Action: Climate Vulnerability Assessment and PE7 Action: Climate Adaptation Plan) from the Hudson Valley Regional Council (HVRC) through a NYS DEC Climate Smart Communities Coordinator Services contract; and

WHEREAS, the Climate Smart Task Force, comprised of municipal officials and environmental volunteer community leaders, will collaborate with HVRC in the development of a combined Vulnerability Assessment and Climate Adaptation Plan, review drafts, and provide valuable feedback on iterations that result in final draft; and

WHEREAS, the Climate Smart task force will provide an opportunity for public input and comment on the draft report; and

WHEREAS, the Climate Smart task force will present a summary of the vulnerability results and adaptation plan to the County legislature for consideration of adoption; now therefore be it

RESOLVED, that the County Executive, together with the Putnam County Legislature, support the County's undertaking of the combined Vulnerability Assessment and Climate Adaptation Plan; and be it further

RESOLVED, that the County Executive, together with the Putnam County Legislature, supports, approves and authorizes the Department of Planning, Development and Public Transportation to submit these documents to the NYS DEC Office for Climate Change for consideration of points toward Climate Smart Communities certification for Putnam County; and be it further

RESOLVED, that this resolution shall take effect immediately.

BY POLL VOTE: ALL AYES. CARRIED UNANIMOUSLY.

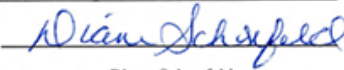
APPROVED

State of New York
ss:
County of Putnam


COUNTY EXECUTIVE 9/5/25
DATE

I hereby certify that the above is a true and exact copy of a resolution passed by the Putnam County Legislature while in session on September 2, 2025.

Dated: September 4, 2025

Signed: 

Diane Schonfeld
Clerk of the Legislature of Putnam County

Key Terms

The following key terms list uses the definitions compiled by the NYS DEC CCARP Template. Definitions are direct quotes.

Adaptation (climate change): In human systems, the process of adjustment to actual or expected climate and its effects to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects ([IPCC 2022](#)).

Incremental adaptation: Adaptation that maintains the essence and integrity of a system or process at a given scale ([IPCC 2022](#)).

Transformational adaptation: Adaptation that changes the fundamental attributes of a social-ecological system in anticipation of climate change and its impacts ([IPCC 2022](#)).

Adaptive capacity: The ability of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences ([IPCC 2022](#)).

Adaptive management: A process of iteratively planning, implementing, and modifying strategies for managing resources in the face of uncertainty and change. Adaptive management involves adjusting approaches in response to observations of their effect and changes in the system brought on by resulting feedback effects and other variables ([IPCC 2022](#)).

Climate change: Changes in average weather conditions that persist over several decades or longer. Climate change encompasses both increases and decreases in temperature, as well as shifts in precipitation, changes in frequency and location of severe weather events, and changes to other features of the climate system ([Grade et al. 2023](#)).

Climate change effects: The physical effects of anthropogenic (human-caused) climate change, including changes in average temperatures, precipitation rates, sea level rise, and ocean temperatures.

Climate change impacts: The impacts experienced by a human, natural system, or human-made system because of climate variation including physical changes in average conditions or

extreme weather. Examples of climate change impacts include flooding of homes or ecosystem changes ([Vogel et al. 2016](#)).

Disadvantaged communities: Those that bear the burdens of negative public health effects, environmental pollution, impacts of climate change, and possess certain socioeconomic criteria, or communities comprising high concentrations of low- and moderate-income households. To ensure New York State's investments and actions benefit all communities and address climate inequities, the State's Climate Justice Working Group adopted criteria to identify certain census tracts and households as disadvantaged communities.

Drought: An exceptional period of water shortage for existing ecosystems and the human population (due to low rainfall, high temperature and/or wind) ([NOAA 2023](#)).

Ecosystem services: Ecological processes or functions having monetary or non monetary value to individuals or society at large. These are frequently classified as (1) supporting services, such as productivity or biodiversity maintenance, (2) provisioning services, such as food or fiber, (3) regulating services, such as climate regulation or carbon sequestration, and (4) cultural services, such as tourism or spiritual and aesthetic appreciation ([IPCC 2022](#)).

Exposure: The presence of people; livelihoods; species or ecosystems; environmental functions, services, and resources; infrastructure; or economic, social, or cultural assets in places and settings that could be adversely affected ([IPCC 2022](#)).

Extreme heat: Temperatures that are much hotter and/or humid than average. Because some places are hotter than others, extreme heat depends on what is considered average for a particular location at that time of year ([CDC 2023](#)).

Extreme cold: Individual days with a maximum temperature at or below 32°F or below 0°F; threshold used depends on the region within the state ([Lamie et al. 2024](#)).

Extreme weather: A period of abnormal weather conditions that can negatively affect humans, natural and human-made resources. Extreme weather is used in this report as an umbrella term referring to a combination of extreme heat, extreme cold, extreme precipitation, or extreme wind.

Flood or flooding: The overflowing of the normal confines of a stream or other water body or the accumulation of water over areas that are not normally submerged ([IPCC 2021](#)).

Flash flood: A flood caused by heavy or excessive rainfall in a short period of time, generally less than six hours. Flash floods can occur within minutes or a few hours of excessive rainfall. They can also occur even if no rain has fallen, for instance, after a levee or dam has failed or after a sudden release of water by a debris or ice jam ([NWS 2023](#)).

Greenhouse gas (GHG): Any gas that absorbs infrared radiation in the atmosphere: examples include carbon dioxide, methane, nitrous oxide, ozone, and water vapor.

Hazard: The potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources ([IPCC 2022](#)).

Heat wave: A sustained period of abnormally high ambient temperatures lasting for several days. In the projections generated for the New York State Climate Impacts Assessment (2024), a heat wave is defined as three or more consecutive days with maximum temperatures at or above 90°F ([Stevens, A., & Lamie, C., Eds. 2024](#)).

Maladaptation: Actions that may lead to increased risk of adverse climate-related outcomes, including via increased greenhouse gas (GHG) emissions, increased or shifted vulnerability to climate change, inequitable outcomes, or diminished welfare, now or in the future. Most often, maladaptation is an unintended consequence ([IPCC 2022](#)).

Mitigation (climate change): Actions that reduce the levels of greenhouse gases in the atmosphere; includes reducing emissions of greenhouse gases and enhancing sinks (things that absorb more greenhouse gases than they emit). Examples include switching to renewable energy sources and implementing energy efficiency measures. Mitigation (hazard mitigation): Any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards ([FEMA 2024](#)).

Monitoring and evaluation (M&E): Mechanisms put in place to [...] monitor and evaluate efforts to reduce greenhouse gas emissions and/or adapt to the impacts of climate change with the aim of systematically identifying, characterizing and assessing progress over time ([IPCC 2022](#)).

Nature-based solutions (NbS): Actions to protect, sustainably manage, and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits (IUCN 2016).

Resilience: The capacity of interconnected social, economic, and ecological systems to cope with a hazardous event, trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity and structure. Resilience is a positive attribute when it maintains capacity for adaptation, learning, and/or transformation ([IPCC 2022](#)).

Scenario: A plausible description of how the future may develop based on a coherent and internally consistent set of assumptions about key driving forces (e.g., rate of technological change, prices) and relationships. Scenarios are neither predictions nor forecasts but are used to provide a view of the implications of developments and actions ([IPCC, 2022](#)).

Sensitivity: The degree to which a system or species is affected, either adversely or beneficially, by climate variability or change. The effect may be direct (e.g., a change in crop yield in response to a change in the mean, range, or variability of temperature) or indirect (e.g., damages caused by an increase in the frequency of coastal flooding due to sea level rise) ([IPCC, 2022](#)).

Vulnerability: The degree to which physical, biological, and socioeconomic systems are susceptible to and unable to cope with adverse impacts of climate change. ([SOCCR2, 2018](#)). Generally, systems that are sensitive to climate conditions and less able to adapt to changes are considered to be vulnerable to climate change impacts.

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Executive Summary

Natural hazards have and will continue to pose challenges for the residents, businesses, infrastructure, and natural resources that make Putnam County a great place to live and work. Events like Hurricane Ida in 2021, the [Sedgewood Fire](#) in Kent in 2024, or numerous instances of flooding have caused significant damage and costs over time. Projections suggest that the County could face increased vulnerabilities to natural hazards in the future. Protecting the long-term health, safety, and resilience of Putnam County requires proactive planning and preparation.

This Climate Change Adaptation & Resilience Plan (CCARP) aims to support Putnam County in responding to and preparing for the impacts of a changing climate. Specifically, Putnam County could face increasing temperatures, changing precipitation patterns, and rising sea levels in the coming decades. While Putnam County is not a coastal community, rising sea levels can impact river levels and flood potential along the Hudson River.

Adaptation and resiliency planning can guide proactive preparation for these potential trends by considering how the County can reduce its susceptibility to climate-related challenges and increase its ability to rebound from natural hazards events in the future. In particular, the CCARP:

- Reviews data and projections related to climate trends,
- Analyzes potential risks to infrastructure, communities, social programs, and environmental resources,
- Assesses progress and opportunities for growth within the County's existing policies and plans, and
- Proposes actionable strategies to reduce risks and maximize positive outcomes into the future.

Informed by stakeholder and public input, this plan seeks to reflect the concerns and goals of the Putnam County community to support long-term planning and projects. Examples of priorities that emerged through the planning process include:

- Furthering reliable access to power and energy;
- Ensuring stormwater infrastructure can accommodate expected precipitation;
- Reducing risks from the dams located in Putnam County;
- Planning for continuous access to healthcare facilities and services;
- Ensuring strategies support vulnerable communities;
- Addressing wildfire risks; and
- Supporting the County's ecosystems, agricultural lands, and food systems.

The strategies outlined in the Plan aim to support the County in achieving these and other related goals. They include recommendations related to outreach, data collection, planning, infrastructural upgrades, and additional projects. While the primary audience for the Plan is county staff and officials, it also seeks to compile information and resources that can support community education and engagement.

The CCARP fits into a larger planning and programmatic context within Putnam County. For example, the County:

- Actively participates in the [New York State Climate Smart Communities](#) program;
- Has an existing [Hazard Mitigation Plan](#) that reviews potential climate impacts;
- Offers programs to support vulnerable populations;
- Conducts community outreach and education; and
- Can utilize a variety of emergency services and alert systems.

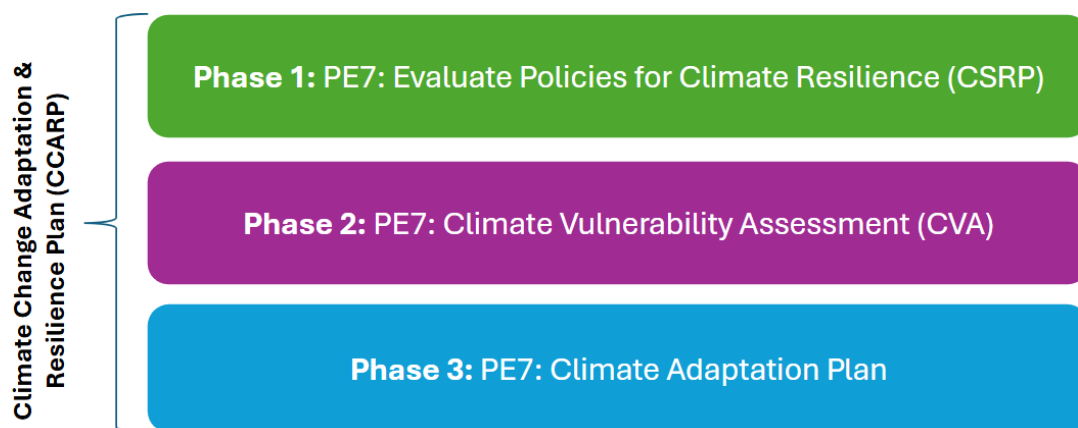
This plan augments the County's ability to prepare for natural hazards and changing climate conditions through its focus on stakeholder engagement; holistic consideration of environmental, social, and infrastructural assets; and long-term, future-oriented outlook.

Introduction

Putnam County is susceptible to climate risks including increasing temperatures, changing precipitation patterns, and rising sea levels that impact water levels and flood potential along the Hudson River. To assess and plan for these risk patterns, Putnam County signed a resolution in September 2025 to work with Hudson Valley Regional Council (HVRC) on a Climate Change Adaptation and Resilience Plan (CCARP). The CCARP aims to increase County-level resilience and adaptive capacity by identifying climate risks, analyzing vulnerable assets, and identifying strategies to proactively adapt to expected impacts. The purpose of this plan is to support Putnam County in preparing for a safe, resilient future under expected climate impacts.

The CCARP planning process used a three-phase approach. Phase 1 involved reviewing existing plans and policies for climate resilience measures, following guidance from the Climate Smart Communities (CSC) program [PE7: Evaluate Policies for Climate Resilience](#) action. This phase included a collaborative stakeholder workshop and background research to create an inventory of existing plans and their resiliency strengths and gaps. Phase 2 used a combination of research and a public-facing survey to identify key infrastructure, social, and environmental assets in the County and to analyze how/if they are vulnerable to expected climate impacts. This phase was informed by the steps outlined in the CSC [PE7: Climate](#)

[Vulnerability Assessment](#) action. Phase 3 used the outputs of Phases 1 and 2 to create a set of recommendations for Putnam County to build county-level resilience and adaptive capacity. It involved two stakeholder workshops to identify and prioritize climate adaptation strategies, a public engagement Lunch & Learn webinar event and survey, and additional background research to ensure strategies align with County contexts and priorities. This step was informed by guidance from the CSC [PE7: Climate Adaptation Plan](#) action.



The three-phase process was outlined at a preliminary CCARP meeting with members of Putnam County and HVRC staff | Graphic created by HVRC.

The development of the CCARP also included a separate, parallel planning process to create a Climate Change Adaptation and Resilience Vision Statement for Putnam County. This process explored what a climate resilient Putnam County would look like in order to guide and inspire adaptation planning efforts. The Visioning process was driven by a public-facing survey and a stakeholder workshop exercise.

Through its three-phased process, the CCARP engaged County staff, local leaders, community partners, and Putnam County residents in furthering resilience and adaptive capacity in the Putnam County. It also builds on the County's track record of leadership, as a [Bronze Certified](#) Climate Smart Community currently progressing towards Silver Certification.

CCARP Leadership Team, Participatory Engagement Process, and Framework

This CCARP was created through a participatory process, driven by stakeholder and public engagement. A CCARP Leadership Team convened at the start of the planning process. The Leadership Team included members from Putnam County's Department of Planning,

Development, and Public Transportation and from the Hudson Valley Regional Council.

Members included:

- Barbara Barosa (Commissioner, Putnam County Department of Planning, Development, and Public Transportation)
- Ilona Campo, (Planner / Climate Smart Coordinator, Putnam County Department of Planning, Development, and Public Transportation)
- Matthew Covucci (Deputy Commissioner, Putnam County Department of Planning, Development, and Public Transportation)
- Sofie diTommaso (former Resilience & Adaptation Coordinator, HVRC)
- Mary Lambert, (former Climate Action Planning Manager, HVRC)

Members of the Leadership Team met on a routine basis to discuss the CCARP process and content. A list of meeting agendas and participants can be found in [Appendix A](#).

Stakeholder and public engagement were critical components of the CCARP process. During their second meeting on October 6, 2025, the CCARP Leadership Team reviewed the concepts from the “Spectrum of Community Engagement to Ownership”, cited in the Climate Smart Communities Program’s [Inclusive Engagement Primer](#), and began preliminary conversations on intended stakeholder engagement strategies.¹

Through this and subsequent conversations, the following stakeholder and public engagement strategies were included as part of the CCARP planning process:

Stakeholder Engagement

<i>Presentation to the Putnam County CSC Task Force:</i>		
Date: October 24, 2025	Location: Virtual	Documentation: Meeting Slides
Description: HVRC joined a Putnam County CSC Task Force meeting to provide an introduction to the CCARP planning process and expected timeline.		

<i>Presentation to the Putnam County Physical Services Committee:</i>		
Date: November 17, 2025	Location: In-person: County Office Building Room #318 in Carmel, NY 10512	Documentation: Meeting information
Description: HVRC presented about the CCARP process and provided a project status update at a Putnam County Physical Services Committee meeting.		

Climate Smart Resiliency Planning Workshop:		
Date: November 20, 2025	Location: Hybrid: Donald B Smith Campus, 110 Old Route 6, Carmel, Bureau of Emergency Services Classroom	Documentation: Appendix B includes the CSRP Tool, Summary Report, and workshop documentation
Description: Putnam County and HVRC hosted a 2-hour long Climate Smart Resiliency Planning (CSRP) Workshop to assess resiliency strengths and gaps in existing policies and plans in Putnam County. The workshop included three components: • Opening remarks from County Executive Kevin Byrne; • A presentation about the CCARP planning process as well as top climate hazards facing the County; and • A collaborative exercise to inventory resiliency strengths and gaps in county plans and policies. The Workshop was attended by 19 people, including participants and facilitators. This included members of Putnam County staff, an elected official, a partner organization, and members of HVRC’s staff. Prior to the workshop, members of the CSRP Leadership Team compiled an initial list of existing plans and policies in the County and assessed their existing resiliency measures using a spreadsheet-based, CSRP Tool. During the workshop, participants reviewed the draft CSRP Tool and shared additional insights from their respective departments and organizations. Following the workshop, the CSRP Tool went through a feedback process before a final draft and summary report was produced. (See “Community Plans Consistency Report” section for additional information about the process and outcomes).		

Partner Organization Survey		
Date: January 2026-May 2026	Format: Virtual Survey	Documentation: Appendix C includes a copy of the Partnership Survey and survey outreach.
Description: The CCARP Leadership Team distributed a partner organization survey to over 130 organizations in Putnam County. The survey was also posted on the County’s CCARP webpage. The purpose of this survey was to assess whether and how organizations in the County were interested in participating in the CCARP process. The survey collected information on resilience-related capacities within organizations; whether/how organizations would like to be involved in the CCARP process; upcoming events where information about the CCARP could be shared; and interest in writing a letter of support for the CCARP.		

CCARP Working Group		
Date: February 9, 2026-July 2026	Kick-Off Meeting Location: Planning Dept. Conference Room - 841 Fair St., Carmel, NY 10512	Documentation: Appendix D
The CCARP Leadership Team also invited a subset of county and additional stakeholders to participate in a CCARP Working Group. The purpose of the Working Group was to provide guidance on the Climate Adaptation Plan component of the CCARP and support engagement efforts. Participants invited to join the CCARP Working Group included: • Barbara Barosa (Commissioner / CSTF Member, Putnam County Planning Department) • Marlene Barrett (Director, Putnam County Office of Senior Resources) • Joe Bellucci (Deputy Commissioner / CSTF Member, Putnam County Department of Public Works) • Ilona Campo (Planner / Climate Smart Coordinator, Putnam County Planning Department) • Matt Covucci (Deputy Commissioner, Putnam County Planning Department), • Sofie diTommaso (former Resilience & Adaptation Coordinator, HVRC) • Ralph Falloon (former Deputy Commissioner, Putnam County Bureau of Emergency Services) • Mary Lambert (former Climate Action Planning Manager, HVRC) • Nancy Montgomery (Legislator – District 1, Putnam County Legislature) • Joe Montuori (Executive Director, Sustainable Putnam) • Gary Redlon (Coordinator of Engineering Projects, Putnam County Department of Public Works) • Shanna Siegel (Supervising Public Health Educator / Public Information Officer, Putnam County Department of Health) While many of these members participated in the CSRP Workshop, the first official meeting for the CCARP Working Group took place on February 9, 2026, as part of an Exploratory Scenario Planning Workshop (see "Exploratory Scenario Planning Workshops.")		

Exploratory Scenario Planning Workshops:		
Dates:	Locations:	Documentation: Appendix E

February 9, 2026 March 9, 2026	Feb 9, 2026: Planning Dept. Conference Room - 841 Fair St., Carmel, NY 10512 Mar 9, 2026: Donald B Smith Campus, 110 Old Route 6, Carmel, Bureau of Emergency Services Classroom #1	
Description: The CCARP process included a two-part, exploratory scenario planning process. Exploratory scenario planning is a stakeholder engagement tool designed to support planning for an uncertain future. It is beneficial for identifying strategies that can be successful across a range of potential future conditions, and involves: • Identifying uncertainties about future conditions, • Using these uncertain variables to craft narrative descriptions—or “scenarios”—about what the future could look like, and • Leveraging these scenarios to evaluate potential planning strategies.² The CCARP scenario planning process included two workshops on February 9 and March 9, 2026. The first workshop focused on collaboratively generating scenarios to inform the adaptation planning process. It also served as the kick-off meeting to the CCARP Working Group (see “CCARP Working Group”). The second workshop used the scenarios generated to assess a list of potential adaptation strategies for inclusion into the CCARP and to generate new ideas for adaptation strategies. A word cloud exercise was also completed to inform the Resilience and Adaptation Vision Statement. Following the workshop, an updated list of adaptation strategies was generated that incorporated feedback and suggestions from workshop participants. The updated strategies list was shared with stakeholders in the County in a survey format for additional input/comments. The survey was available from March 20-April 3, 2026. (See “Community Future Scenarios” section for additional information.)		

Public Engagement

CCARP Website		
Date: November 2025-Indefinitely	Format: Website	Documentation: Appendix F
Description: A webpage was created on Putnam County’s website to host information about the CCARP. The webpage includes information on the CCARP process, the benefits of resiliency planning, and a project timeline. It also served as the central location for sharing all stakeholder/public engagement opportunities and resources relevant to the planning		

process. The CCARP webpage was actively updated as needed throughout the CCARP planning process and will remain available indefinitely as a public resource.

Vision Statement Survey

Date: November 2025-April 2026	Format: Survey	Documentation: Appendix G includes information about the Draft Vision Statement and Vision Statement survey
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Description: As part of the CCARP process, Putnam County created a Resilience & Adaptation Vision Statement. The visioning process was informed by the CSC [PE7 Climate Adaptation Plan](#) action.

The CCARP Leadership Team wrote a draft Vision Statement, drawing inspiration from preexisting vision statements in the County. The draft was posted to the CCARP website, along with a short survey to provide feedback. The Vision Statement survey was also promoted at the Climate Smart Resiliency Planning Workshop, through the Partner Organization Survey, and at the two Scenario Planning Workshops. The same set of survey questions was also included as an optional component of the Climate Vulnerability Assessment Survey (see "[Climate Vulnerability Assessment Survey](#)").

Climate Vulnerability Assessment Survey:

Date: Nov 25, 2025-Jan 5, 2026	Format: Survey	Documentation: Appendix H includes information about the survey content, outreach strategies, and results.
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Description: The CCARP Leadership Team administered a public-facing survey to inform the Climate Vulnerability Assessment component of the CCARP. The purpose of the survey was to provide a qualitative perspective on climate hazards and assets in the County. The survey was open to anyone who lives or works in Putnam County, and it gathered information on:

- Prior experiences with severe weather events,
- Concerns about future climate-related events,
- Priorities related to social, environmental, and infrastructural assets, and
- Personal stories and lived experiences.

Through the survey, participants were also invited to provide feedback on Putnam County's Resilience and Adaptation Vision Statement (see "[Vision Statement Survey](#)"). Demographic information was collected as an optional component of the survey to understand the survey

sample. Overall, every village and town in the County was represented, although the majority of responses came from the Town of Carmel, Town of Philipstown, and Town of Putnam Valley (see Figure 1).

The survey was available in English and Spanish. The English version of the survey was posted from Nov 25, 2025-Jan 5, 2026 and the Spanish version was posted from Dec 5, 2025 to Jan 5, 2026. Surveys were posted at different times due to staff time needed to translate and format the survey.

Outreach for the survey included mailing the chief elected officials of all municipalities in Putnam County, promoting the survey on Putnam County's social media, including a link to the survey on the desktops of the computers used by Putnam County staff, posting a press release to the County website, and emailing additional Putnam County contacts. Outreach for the survey was further supported by partners and local leaders. For example, Sustainable Putnam advertised the survey through their newsletter, and the Town of Philipstown included a link to the survey on their website. In total, 143 people responded to the survey. Two additional responses were submitted following the closure of the survey. While those additional responses were not incorporated into the summary statistics, their feedback was reviewed to inform the CVA.

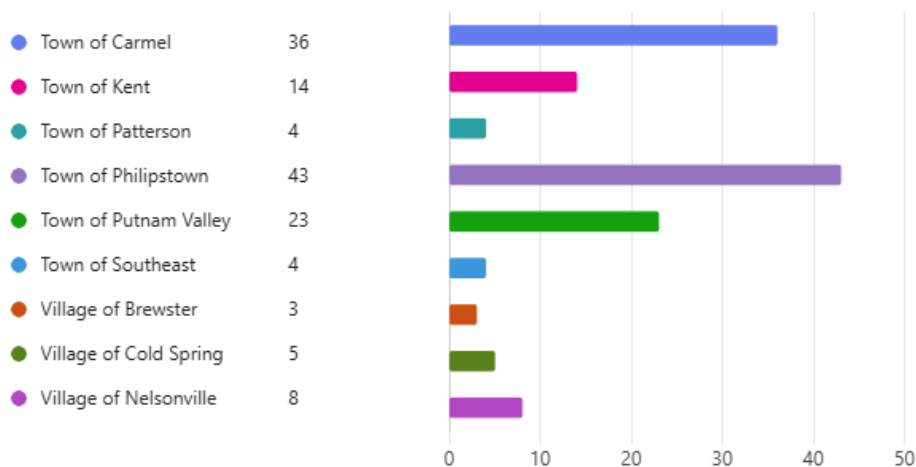


Figure 1 Breakdown of Climate Vulnerability Assessment stakeholder survey responses by municipality | Putnam County Climate Vulnerability Assessment Survey 2025-2026

CCARP Lunch & Learn Webinar & Public Engagement Survey		
Date: April 21 st 12:00-1:00 pm	Format: Lunch & Learn Webinar & Public Engagement Survey	Documentation: Appendix I
Description: A Lunch & Learn webinar was held on April 21st from 12:00-1:00 pm. The Lunch and Learn event included opening remarks from Ilona Campo (Planner and CSC Coordinator, Putnam County Planning Department) and a presentation by HVRC. Following the presentation, there was time for Q&A. The presentation covered: • The CCARP process, • Public/stakeholder engagement, • An overview of the draft Climate Vulnerability Assessment, and • An introduction to adaptation planning strategies. After the Lunch & Learn webinar, the presentation component was rerecorded and uploaded to Putnam County's CCARP website as a public-facing resource. From April 23-May 11, 2026, a survey was also uploaded to the CCARP webpage that allowed community members to weigh in on adaptation strategies. Participants who joined the Lunch & Learn webinar who either lived or worked in Putnam County were encouraged to fill out the survey. Putnam County also promoted the survey while tabling at the Earthfest event at Boscobel House and Gardens on April 25, 2026. The survey received 16 responses.		
CCARP Public Comment (Anticipated)		
Date: Expected July 2026	Format: Virtual	Documentation: Appendix J
Description: The Draft CCARP will be posted on the Putnam County CCARP webpage to solicit additional public input.		

Place Narrative

Socioeconomic Survey

Putnam County is located approximately 50 miles north of New York City and is comprised of

six towns and three villages.³ The County is bordered by Dutchess County, western Connecticut, Westchester County, and the Hudson River.⁴ It includes the towns of Carmel, Kent, Patterson, Philipstown, Putnam Valley, and Southeast as well as the villages of Brewster, Cold Spring, and Nelsonville.⁵ The County has a mixture of rural and urban areas, based on housing density thresholds used by the US Census.⁶ As of 2022, the US Census Bureau reported the population of Putnam County to be 98,045 - 1.6% down from the population in 2010. As of 2020, the population density stands at 424 per square mile.⁷ Putnam County covers about 157,000 acres, of which roughly one-quarter to nearly one-third is protected.^{8 9}

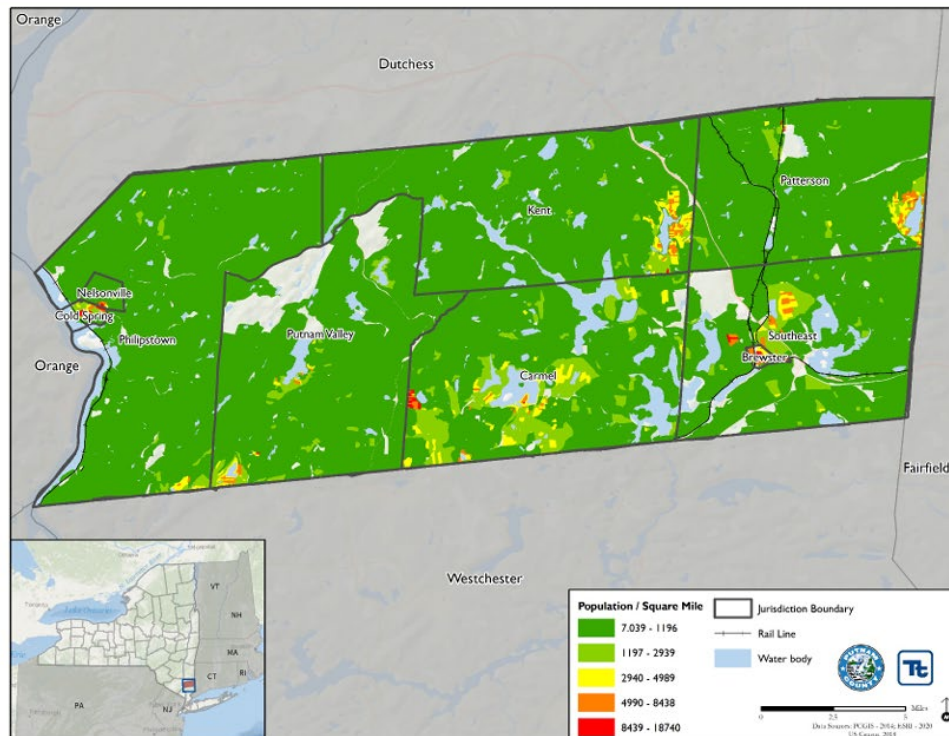


Figure 2: Population Density Map for Putnam County | [HMP Section 4](#), p. 10

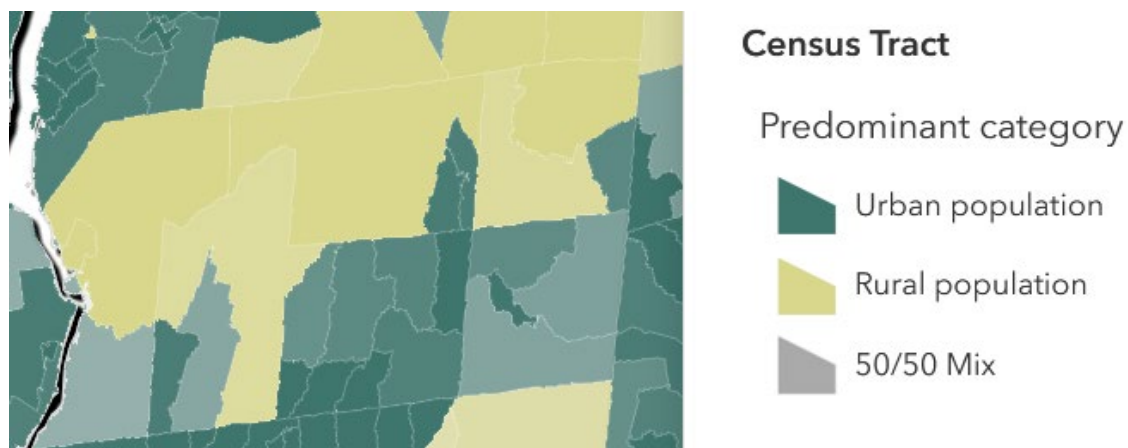


Figure 3 : Urban vs. Rural population percentages in Putnam County by Census Tract | [2020 US Census](#)

History: Putnam County has been inhabited by Indigenous Peoples since time immemorial; evidence of their presence on the land dates from nine to 12 thousand years ago.¹⁰ By the seventeenth century, it was home to the Eastern Algonquian dialect of Munsee Lenape speakers known as the Wappinger People, which means “Easterner” in many Algonquian dialects.¹¹¹² In that time, they lived east of the Hudson River, reaching from present-day Poughkeepsie to Manhattan Island, into the lower Connecticut River Valley.¹³ The Wappinger were a confederacy, separated into bands. Each band was headed by a chief.¹⁴ The Nochpeem and Tankiteke were two bands in Putnam County.¹⁵ The Wappinger moved “seasonally between fixed sites” and relied primarily on agriculture.¹⁶ Maize was their primary food source and was primarily cultivated by women, supplemented by hunting, fishing, and collecting.^{17 18} The Wappinger are believed to be independent from, but related to, the Lenape.¹⁹

Putnam’s designation as a County occurred in 1812, when it was formed and split from portions of land originally included within Dutchess County.^{20 21} From the mid-19th century to mid-20th century, the County’s identity spanned a manufacturing location, an agricultural hub, a New York summer tourism destination, and, eventually, an outer suburb of New York City.²² Today, the County continues to attract residents commuting to New York City and working locally as well as visitors drawn to the area’s scenic beauty; cultural, arts, historic, and spiritual centers; and vibrant local businesses.^{23 24 25}

Demographics: Putnam County is generally considered an affluent County in both the state and country, with a medium household income of \$121,485.^{26 27} The County has an ~84.6% homeownership rate, which is substantially higher than the state average.²⁸ The percentage

of the population who has earned a Bachelor's degree or further education is slightly higher than the state average, at 48.4%.²⁹

According to the 2024 American Community Survey (ACS) 5-Year Estimates, 4.7% of the population is less than age 5; 33.7% is 5-34; 42.3% is 35-64; and 19.3% is over the age of 65.³⁰ For comparison, in New York State as a whole, 5.4% of the population is less than age 5; 38% is 5-34; 38.6% is 35-64; 17.8% is over the age of 65.³¹ The population of older adults has increased over time. For example, the population of adults age 65 or older grew by ~7,462 people between the 2010 ACS 5-year estimate and 2024 ACS 5-year estimate, despite the overall population of Putnam County decreasing slightly.^{32 33} Based on the 2024 ACS 5-year estimate data profile, the racial demographic makeup of Putnam County is 70.9% White; 20% Hispanic/Latino; 3% Multiracial; 2.8% Black; 2.3% Asian; and 0.1% American Indian and Alaska Native. 0.9% of the population identified as "some other race."³⁴

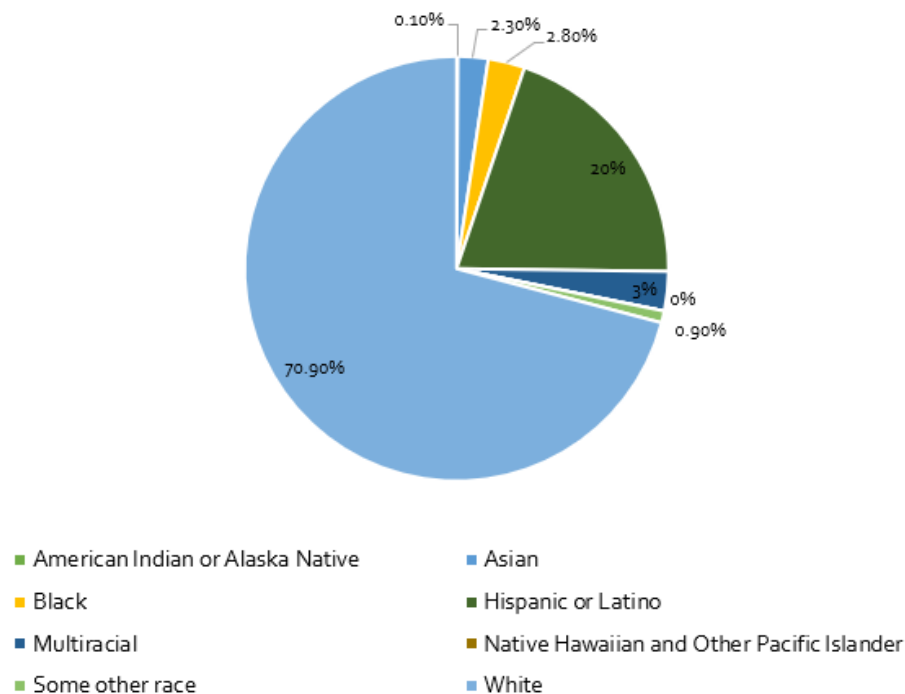


Figure 4: The racial breakdown of Putnam County, New York, based on 2024 ACS 5-Year Estimates | Chart created by HVRC using [2024 ACS 5-Year Estimates data](#)

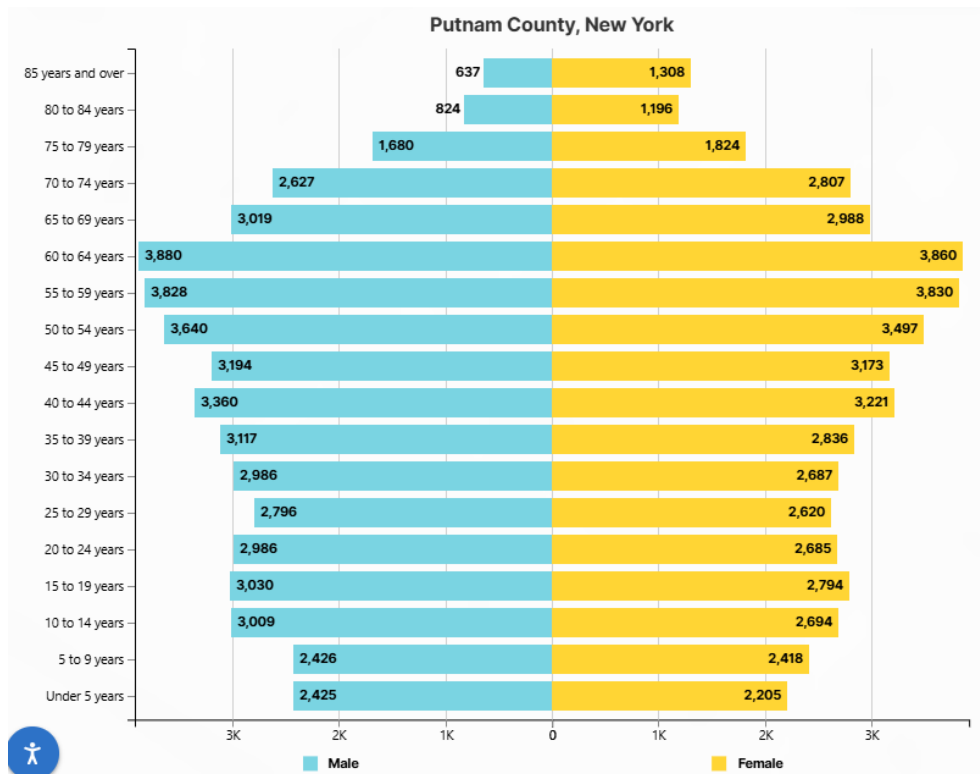


Figure 5 : Age pyramid of Putnam County, New York, based on 2024 ACS 5-Year Estimates; split by sex: male in blue, and female in yellow | [U.S. Census Bureau](https://www.census.gov)

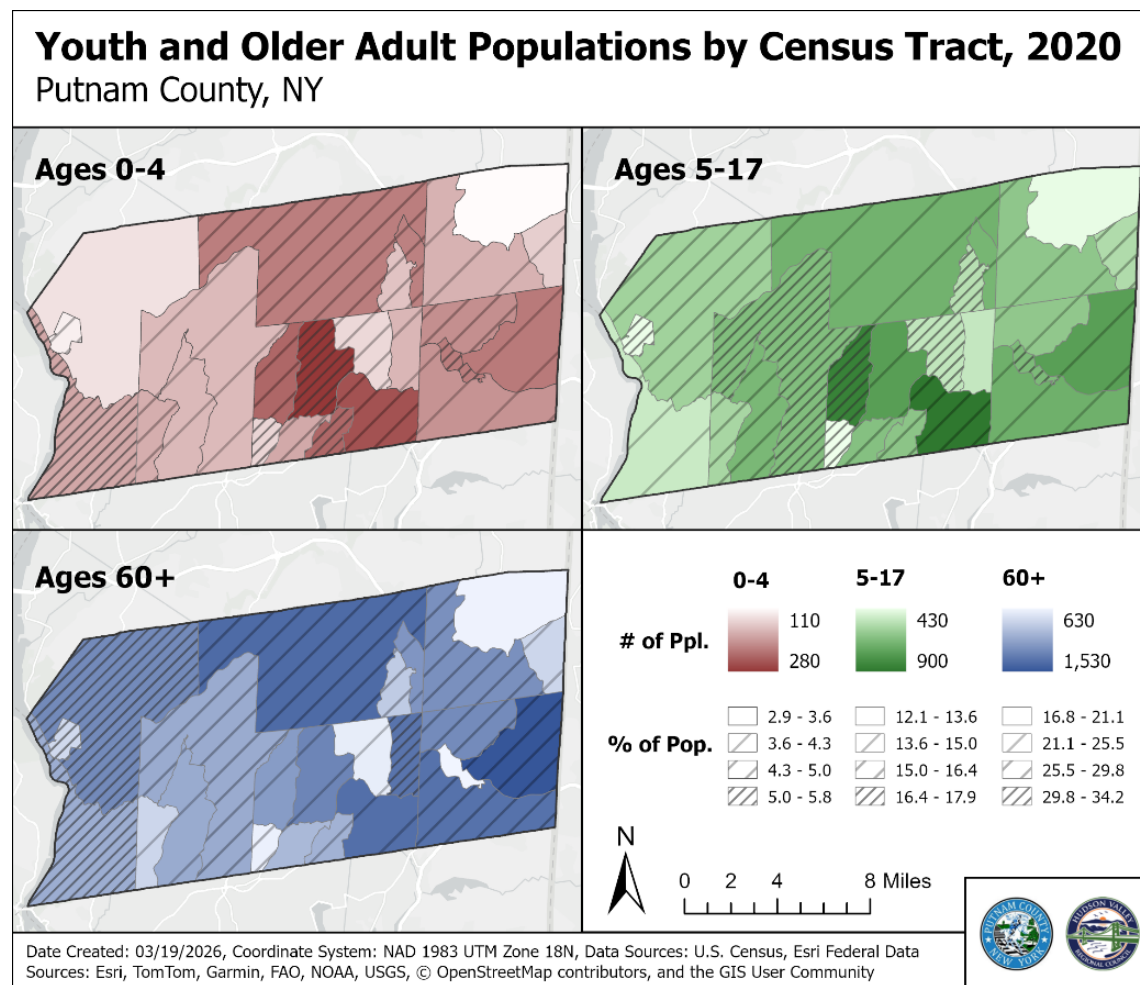


Figure 6: Youth and older adult age groups (0-4, 5-17, and 60+) in Putnam County by census tract. Increasing color intensity indicates a greater number of people, while denser hatching indicates a higher share of tract population. Age groups are separated by map panels, and value ranges vary by group | Data from 2020 Decennial U.S. Census

Social Vulnerability: Social vulnerability is the susceptibility of vulnerable groups to experience the adverse impacts of natural hazards, such as death, injury, and loss of property or income, as defined by the Federal Emergency Management Agency's (FEMA) National Risk Index (NRI).³⁵ These groups include children, senior citizens, people with disabilities, and low-income residents.³⁶ Putnam County's social vulnerability index is categorized as "very low."³⁷ However, social vulnerability is not evenly distributed within the County, with portions of Patterson categorized as a very high level of vulnerability (See Figure 7).³⁸ The December 2025 FEMA NRI uses Social Vulnerability data sourced from the 2023 US Census Community Resilience Estimates Social Vulnerability Measure.^{39 40}

NRI Social Vulnerability by Census Tract

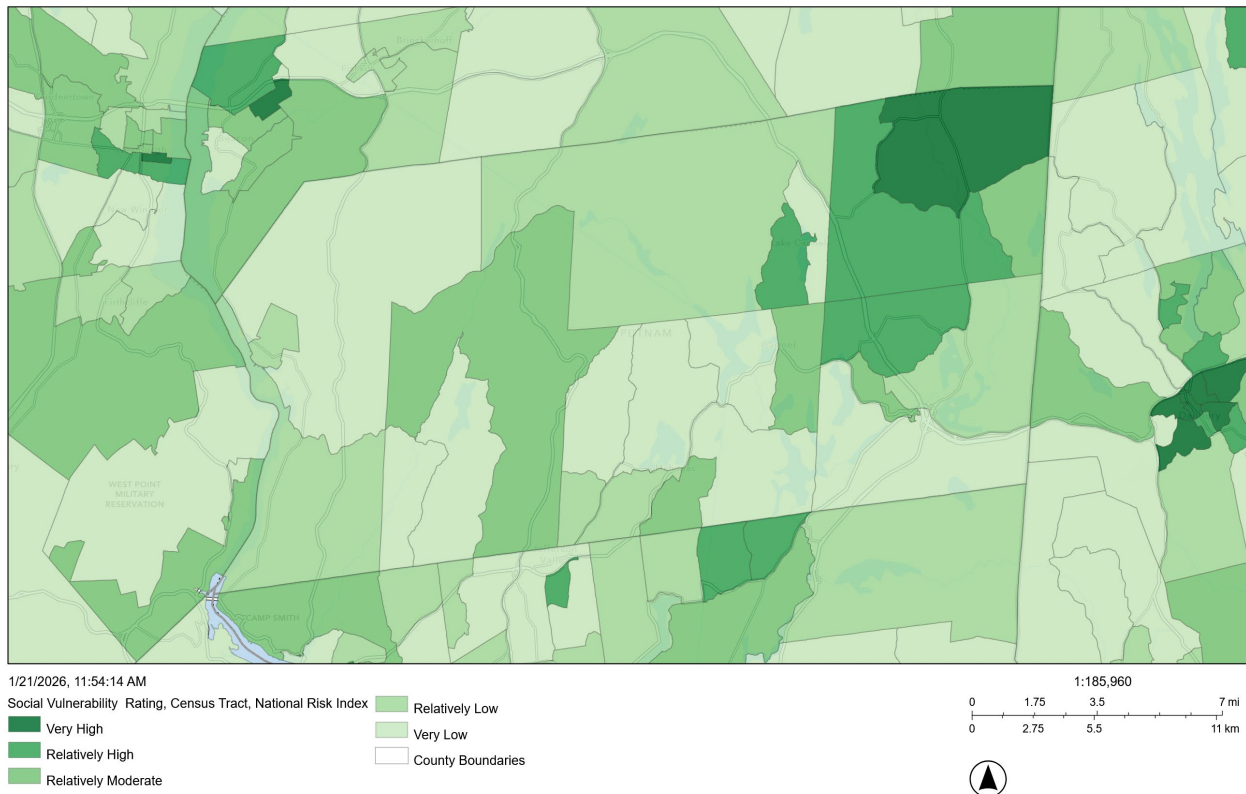


Figure 7 Putnam County Social Vulnerability Component of the NRI by Census Tract | US Census cited by [FEMA Resilience Analysis and Planning Tool](#)

Additionally, the County does not contain any designated Disadvantaged Community census tracts based on New York State criteria.⁴¹ However, the County includes a variety of populations that may face greater vulnerability to climate hazards including older adults, low-income populations, residents who do not speak English, and people with disabilities. As of the 2023 ACS, 18.7% of Putnam County's population is over the age of 65,⁴² 6.5% is below the poverty level,⁴³English,⁴⁴ 10.2% have one or more disabilities.⁴⁵ ⁴⁶

Employment: The County has varied employment sectors. Using US Census categories, top industries include:

- educational services, health care and social assistance;
- retail trade;
- professional, scientific, management, administrative, and waste management services; and construction.⁴⁷

Agriculture also continues to play an important role in Putnam County. As of 2025, the County had 172 parcels in the Agricultural District, comprised of 5,642.5 acres.⁴⁸ Agricultural lands also

shape the landscape of Putnam County, creating an identity for the community, a draw for outside visitors, and habitat for plants and animals.⁴⁹

The following table includes a list of the largest employers, listed alphabetically, in the County and their locations. The largest employers list is sourced from the [mid-Hudson Region's 2025-2030 Comprehensive Economic Development Plan](#).⁵⁰

Employer	Location
Ace Endico Corp	Brewster
Brewster Central School District	Brewster
Carmel Central School District	Carmel
Green Chimneys	Brewster & Carmel
Mahopac Central School District	Mahopac
Putnam County	Carmel
Putnam Valley Central School District	Putnam Valley
Putnam Hospital	Carmel
Putnam Precision Products Inc	Brewster
The Arc of Mid-Hudson	Carmel

Governance: Planning and regulations in Putnam County are molded by federal, state, and local-level planning capabilities. County departments relevant to adaptation and resiliency planning include the:

- **Bureau of Emergency Services**, which is charged with emergency “response, remediation/mitigation, and recovery from natural and manmade disasters.”⁵¹
- **Department of Planning, Development, and Public Transportation**, which is tasked with “land use reviews, public transit operations, and climate-smart initiatives.”⁵²
- **Department of Public Works**,⁵³ which houses the Engineering Department and the Putnam County Parks Division.⁵⁴
- **The Soil and Water Conservation District**, which supports conservation of soil, water, and natural resources.⁵⁵
- **Agricultural & Farmland Protection Board**, which “was formed in 1997 by the County Legislature to protect and promote the availability of land for farming purposes.”⁵⁶
- **Department of Health**, which manages disease, environmental hazards, disaster response, and public health-related topics.⁵⁷
- **Office of Senior Resources**, which supports senior populations in the County.⁵⁸

- **Department of Social Services & Mental Health**, which provides financial and social services to eligible Putnam County community members. The department also manages the Supplemental Nutrition Assistance Program (SNAP) for the County.⁵⁹
- **Department of Parks & Recreation**, which includes management of donated or purchased land for conservation, preserving open space, protecting environmentally sensitive areas, and promoting smart stewardship of County owned lands⁶⁰⁶¹

Local-level governance decisions play a key role in the County's overall resilience. In Putnam County, the municipalities are responsible for implementing comprehensive plans, zoning, site plans, and subdivision review requirements, and building codes.⁶² The State of New York has relevant building codes, real-estate disclosure requirements, and environmental regulations. Additionally, New York is a Home Rule state, which counties, cities, towns, and villages have an elected legislative body with the powers to adopt local laws in order to, "regulate the quality of life in communities and to provide direct services to the people."⁶³

Community Preparedness: Putnam County has taken strides toward building resilience and adaptive capacity that have created the groundwork for this Climate Change Adaptation and Resilience Plan. For example, Putnam County became a registered Climate Smart Community through the [New York State Climate Smart Communities](#) program in 2019 and earned [Bronze Certification](#) in 2024. Through the CSC program, Putnam County has already completed multiple [PE7 Actions](#) to "Enhance Community Resilience to Climate Change." For example, the County has worked to promote cooling centers that are accessible via public transportation ([PE 7 Action: Cooling Centers](#)); purchased land for open space conservation ([PE7 Action: Conserve Natural Areas](#)), and replaced culverts and a bridge. It also manages information on the condition of dams in the County ([PE7 Action: Culverts and Dams](#)). As a part of this Climate Change Adaptation and Resilience Plan (CCARP), the County has completed the [Climate Smart Resiliency Planning](#) (CSRP) Tool, an inventory tool used to assess existing resiliency measures in plans and policies. This process drew from guidance in the [PE7 Action: Evaluate Policies for Climate Resilience](#).

The County's 2021 [Hazard Mitigation Plan](#) also includes substantial consideration of climate effects. For example, adaptive capacity to different climate hazards is assessed in Section 9.1.⁶⁴ Sections 5.4.1-5.4.10 also address relevant "Hazards of Concern," and detail expected climate impacts for each hazard. This CCARP will continue to build on the County's track record of progress.

Putnam County is well-positioned to take this next step in its climate resilience and adaptation planning. In August 2025, the Physical Services Committee passed a resolution to support the creation of a Climate Change Adaptation and Resilience Plan in collaboration with the Hudson Valley Regional Council. The resolution was formally signed by the County Executive on September 5, 2025. Throughout the CCARP process, there have been multiple avenues for stakeholder and public engagement to increase alignment with community goals and priorities.

Ecosystem Survey

Geology: Putnam County's landscape and rivers are influenced by its bedrock.⁶⁵ Most of the County lies within the Hudson Highlands Range, part of the Reading Prong in the Appalachian Range.⁶⁶ The most rugged terrain exists in the western areas of the County.⁶⁷ The County's highest elevation is 1,540 feet at Scofield Ridge in Philipstown.⁶⁸

Land Use: Given the high percentage of protected lands and the relatively low population density across much of the County, substantial areas remain available for forests, open space, and other natural landscapes. These lands include large, contiguous tracts of mature forest, wetlands, stream corridors, ridgelines, and grasslands that support wildlife habitat, protect water resources, and contribute to the County's scenic and rural character. Together, these natural areas provide important ecological functions, opportunities for passive recreation, and long-term environmental resilience.

According to Putnam County's 2021 Hazard Mitigation Plan, forests take up the highest amount of space in the County out of all land uses, spanning more than 68% of the County's land area, with large blocks of forested and vacant land mostly in the western portions of the County's area. Developed land only accounts for 16.9% of the County's area.⁶⁹

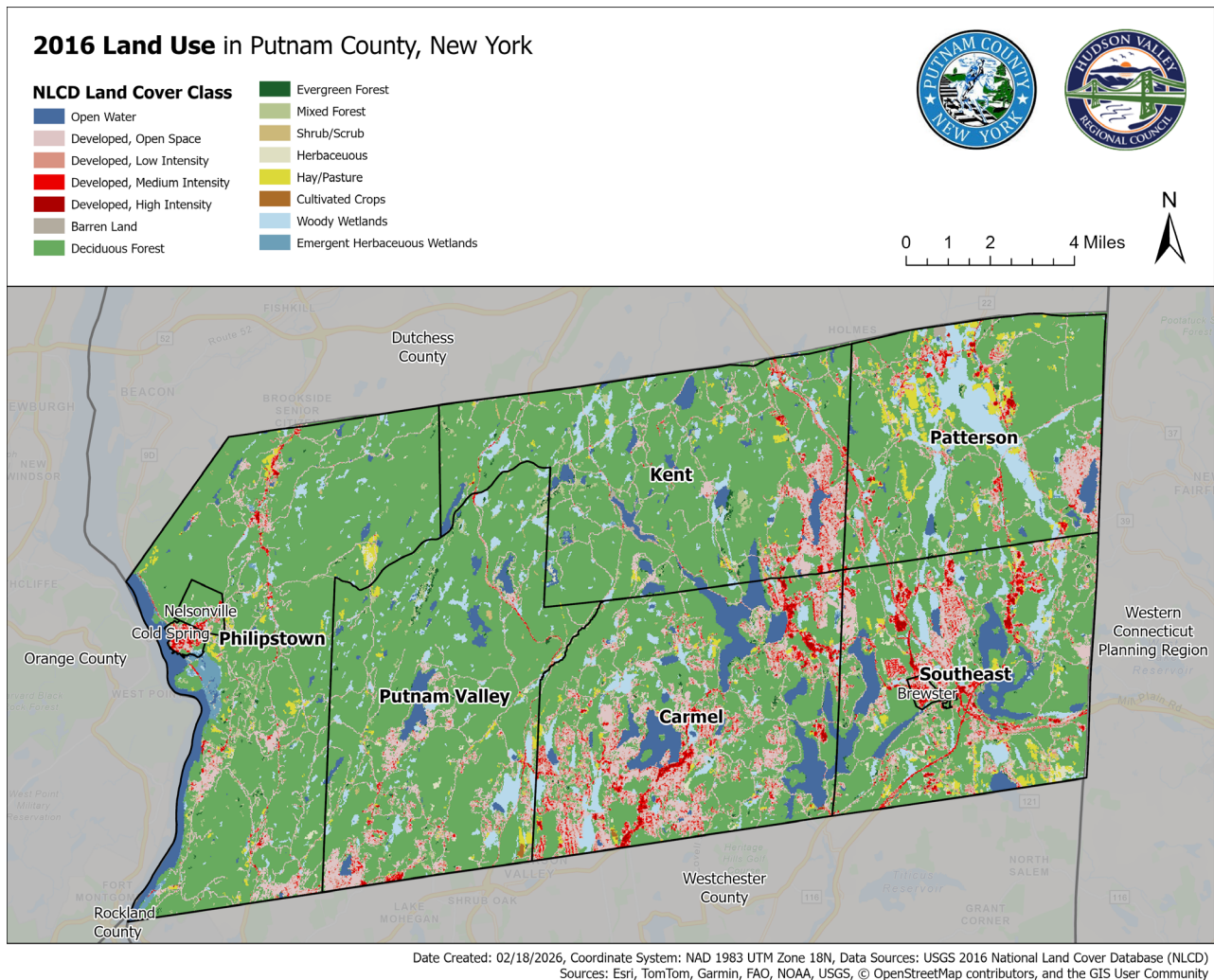


Figure 8: Land Use Map for Putnam County | National Land Cover Database (NLCD) 2016, via [Cornell University Geospatial Information Repository](#).

In addition to forests, the County has a variety of noteworthy ecosystems including wetlands, ponds, lakes, rivers, creeks, and mountains.⁷⁰ Some notable waterways in the County include East Branch Reservoir, West Branch Reservoir, Croton Falls Reservoir, East Branch Croton River, West Branch Croton River, Canopus Creek, and the Hudson River.⁷¹ A full map of waterbodies in Putnam County can be found below.

Waterbodies in Putnam County

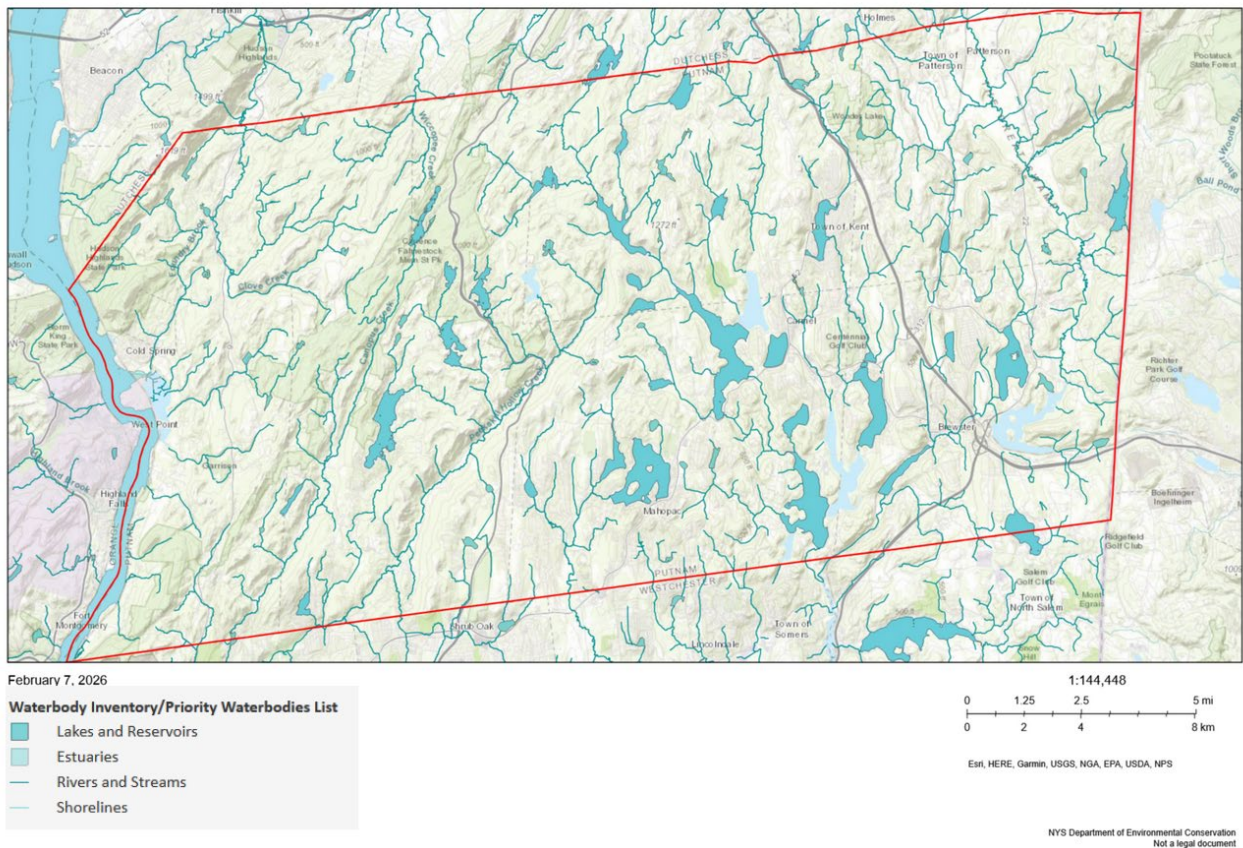


Figure 9: *Waterbodies in Putnam County* | [NYS Department of Environmental Conservation Environmental Resource Mapper](#)

Watershed: Putnam County is located in the Lower Hudson Watershed, which is part of the larger Hudson/Mohawk River Basin and extends from Manhattan to north of Albany.⁷² Specifically, much of the County lies within the Croton Watershed (Fig. 10), which provides 10% of daily water consumed in New York City during regular conditions, and 30% during droughts.^{73 74} Boyds Corner Reservoir, West Branch Reservoir, and Lake Gleneida are connected to the more northern Catskill/Delaware Watershed via the Delaware Aqueduct, which runs through the center of the County.⁷⁵ Together, the Croton, Catskill, and Delaware Watersheds provide an average of 1.2 billion gallons of water each day to a majority of the > 9 million people living in New York City and Westchester, Putnam, Orange, and Ulster Counties in aggregate.⁷⁶



Figure 10: Croton Watershed | NYC DEP: Current Water Distribution; [Croton System](#)

Beyond providing drinking water, Putnam County's water resources provide habitat, social, and economic benefits and contribute to the County's scenic character, and beaches exist throughout the County along lakes and the Hudson River. However, some water resources are

threatened by harmful algal blooms—especially by blue-green algae—which can pose health concerns.⁷⁷ Ponds and lakes are particularly vulnerable to harmful algal blooms.⁷⁸

Ecosystems: Other features of Putnam County’s landscape provide many social and environmental assets. Every municipality within the County includes wetlands >12.4 acres, which are important for water filtration, flood mitigation, erosion control, and habitat.⁷⁹ Amongst its wetlands, the County contains portions of the Great Swamp, a wetland that spans ~4,200 acres.⁸⁰ The Town of Patterson in northeastern Putnam County contains the large majority of the Great Swamp’s protected land in the County.⁸¹

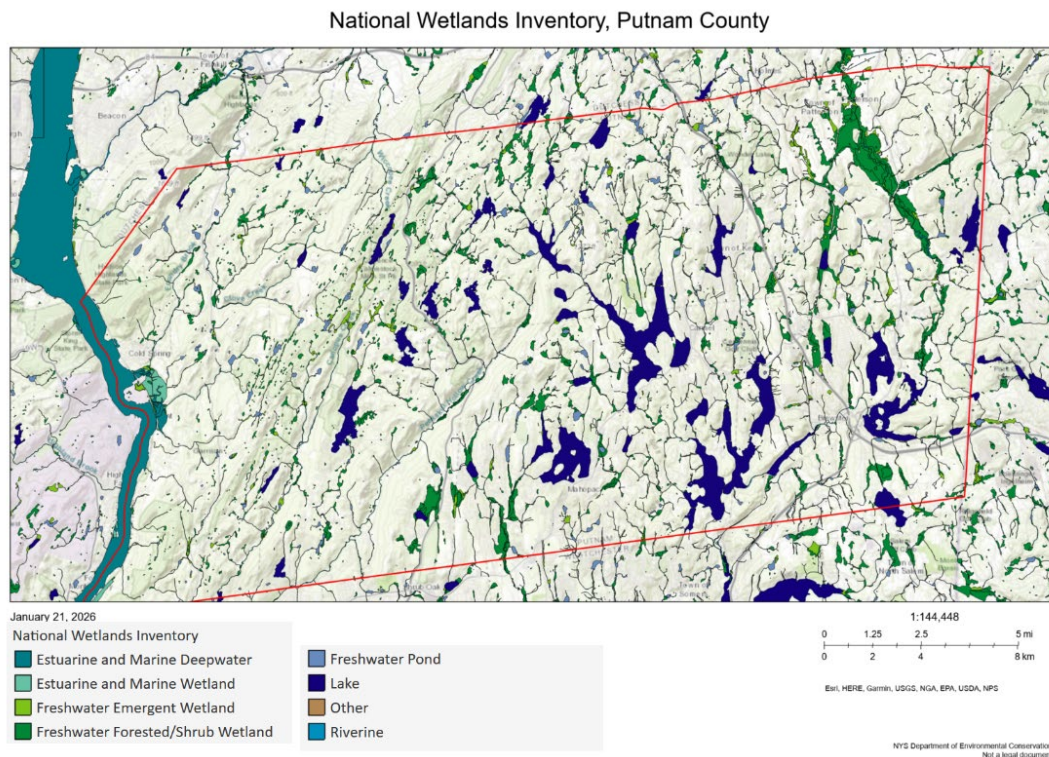


Figure 11: *National Wetlands Inventory in Putnam County* |
National Wetlands Inventory, via [NYS DEC Environmental Resource Mapper](#)

Biodiversity: Beyond providing aesthetic beauty and ecosystem services, the County’s landscapes host a variety of rare, threatened, or protected plant and animal species including certain species of bats, rabbits, birds, fish, snakes, and dragonflies.⁸² For example, the Great Swamp provides habitat for rare turtles, snakes, salamanders, frogs, and butterflies.⁸³ It provides habitat for 180 recorded bird species and dozens of butterfly, dragonfly, damselfly,

bee, and wasp species. It also contains wet meadow habitat, among the rarest of wetland types.^{84 85 86}

Important Habitats and Areas for Rare Wildlife

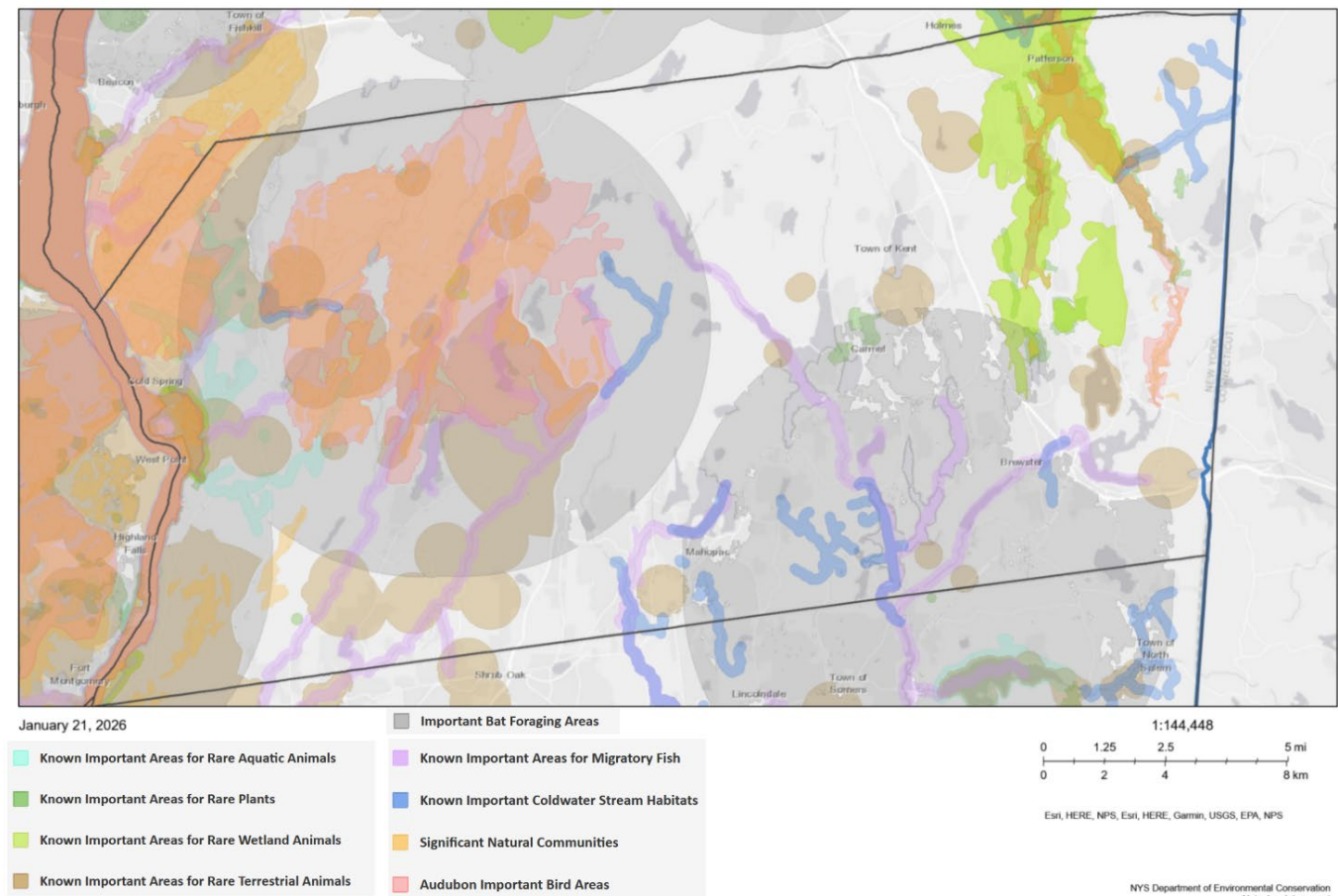


Figure 12: Important habitats and areas for rare wildlife in Putnam County | New York Natural Heritage Program; Audubon New York, via NYS DEC [Hudson Valley Natural Resource Mapper](#)

Recreation: There are several natural recreation areas throughout Putnam County, which also serve as habitat for biodiversity. These include the Fred Dill Wildlife Sanctuary, the Hudson Highlands State Park Preserve, the Michael Ciaiola Conservation Area, the Putnam County Trailway, Veterans Memorial Park, the Great Swamp, Wonder Lake State Park, California Hill State Park, Donald J. Trump State Park, Ice Pond Conservation Area, Cranberry Mountain Wildlife Management Area, Maybrook Trailway, and Clarence Fahnestock Memorial State Park.^{87 88 89 90 91} For humans, these areas provide space for hiking, boating, fishing, hunting, and birding.⁹² The Thunder Ridge Ski Area, located in Patterson, is a popular winter attraction for visitors throughout Downstate New York looking to take advantage of Putnam County's location within the Appalachian Mountains.⁹³

Land Ownership: The largest landowners in Putnam County are the State of New York, which owns ~260 parcels comprising ~25,500 acres (~39.9 square miles) primarily in Putnam County's state parks, and the City of New York, which owns ~500 parcels in the County to provide protection to its water resources, totaling over 16,500 acres (~25.75 square miles).⁹⁴ New York City is the top taxpayer in the County, and its land includes many of the reservoirs and lakes in the central and southeastern areas of the County, aligning with the Croton Watershed system.⁹⁵ Putnam County and the United States federal government own the next greatest land areas, and most of the County's remaining land is owned by nonprofit organizations, businesses, individual owners, the towns and communities that comprise Putnam County, and utilities.⁹⁶

Some of Putnam County's publicly accessible preserved lands are owned by land trusts and conservation organizations, including the Hudson Highlands Land Trust, the Putnam County Land Trust, the Westchester Land Trust, the Open Space Institute, and Scenic Hudson. Private organizations such as camps and social clubs also manage natural areas across the County, although their lands may not be generally accessible to the public.⁹⁷

Fahnestock Park is by far the largest protected area encompassing roughly 15,600 acres that span Putnam and Dutchess counties.⁹⁸ The largest Putnam County-owned protected area is Michael Ciaiola Conservation Area, which is over 800 acres.⁹⁹

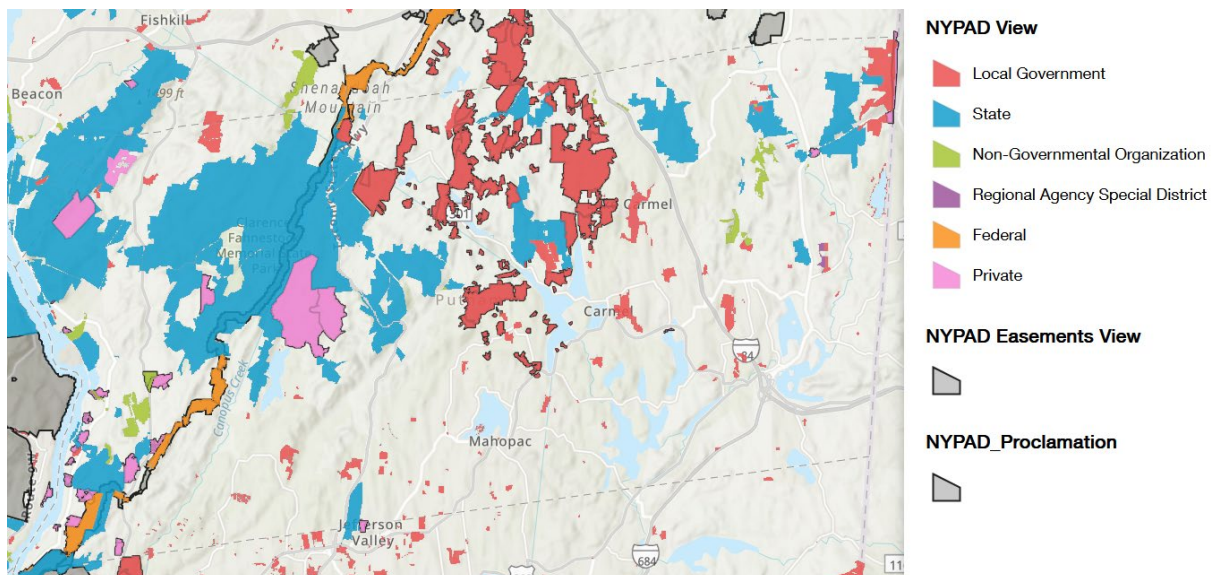


Figure 13 Map of protected land in Putnam County by landowner | [New York Protected Areas Database](#)

Dams: Dams exist across Putnam County, and they can support power production, agriculture, water supply, recreation, and flood protection.¹⁰⁰ That said, they may inhibit habitat connectivity, and they pose a hazard in the case of failure.¹⁰¹ According to New York State data, 121 dams are present throughout Putnam County. Dams are owned privately or by local and state governments, including New York City.¹⁰² Most of these dams pose little risk; however, there are 21 dams in Putnam County are classified as high hazards according to the New York State Department of Environmental Conservation (NYSDEC).¹⁰³

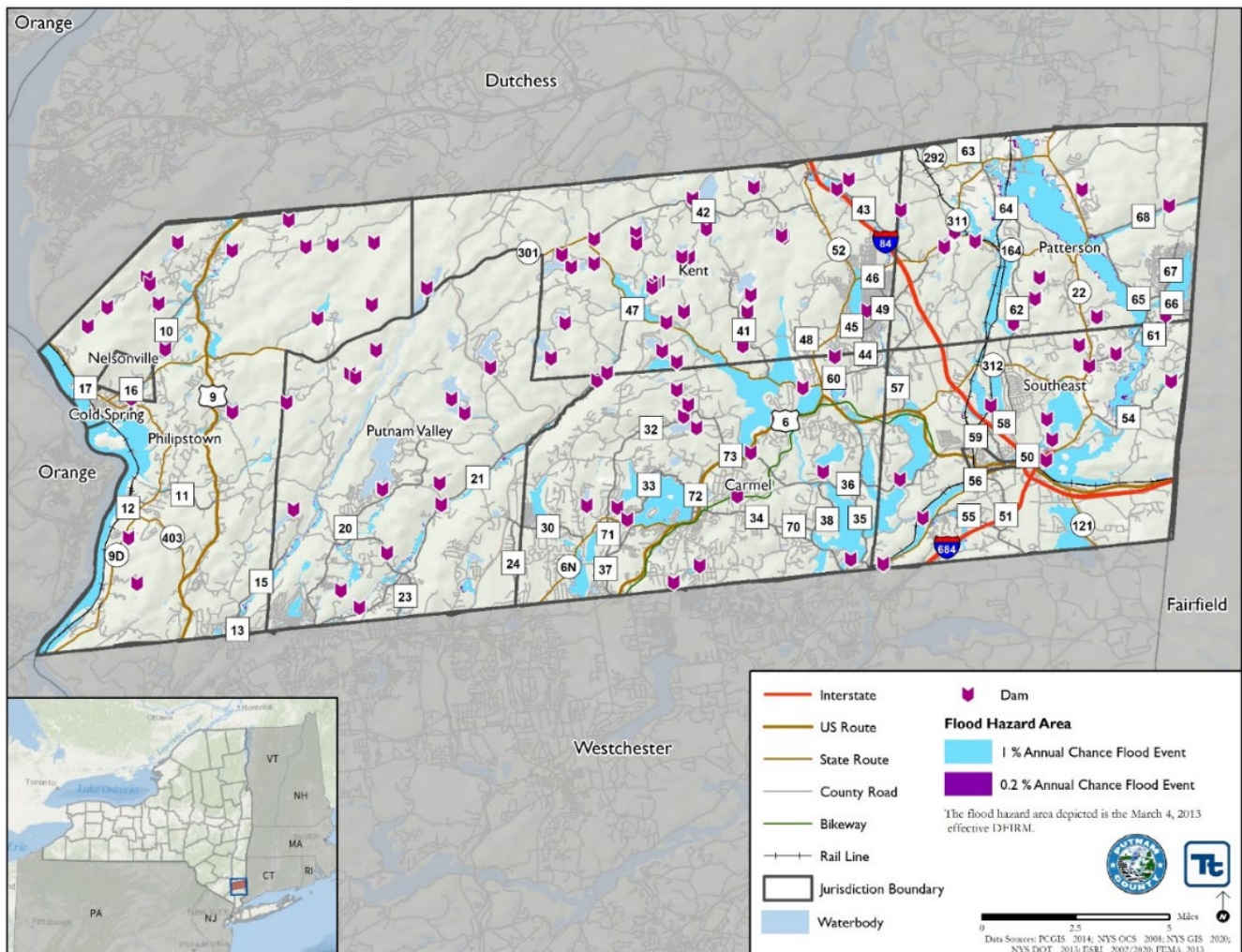


Figure 14 Dams in Putnam County, overlaid with 100-year and 500-year flood hazard area | [Putnam County Hazard Mitigation Plan Section 5.4.5, p. 11](#)

Development Pressures: Development pressures in Putnam County remain fairly low, although there are several areas in the County projected for future development, posing some risk for the County's ecosystems and natural resources. According to the NYMTC Moving

Forward 2055 report, most of these areas are in the western portion of the County.¹⁰⁴ Potential corridors for mixed-use sustainable development exist along Route 6 and Interstate 84, and housing growth areas are in Carmel, Brewster, Patterson, and Cold Spring.¹⁰⁵ Several downtowns in the County are projected to be centers for sustainable development, including Cold Spring, Mahopac, Carmel, Brewster, and Patterson.¹⁰⁶

Given its uniqueness as an ecosystem, the Great Swamp is an important environmental area in the County that may be vulnerable to future planning and development.¹⁰⁷ For example, housing growth areas in Patterson intersect with the Great Swamp, posing potential development concerns.^{108 109} Several additional protected environmental areas in Putnam County may constrain or be vulnerable to development. These include, but are not limited to, the Hudson Highlands State Park Preserve, which lies near a housing growth area in Cold Spring, and land owned and protected by New York City, intersecting with several housing growth areas and corridors identified for development in the eastern portion of the County.¹¹⁰

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Figure 5.4.5-5 New Development and 1- and 0.2-Percent Annual Chance Flood Event Hazard Area in Putnam County

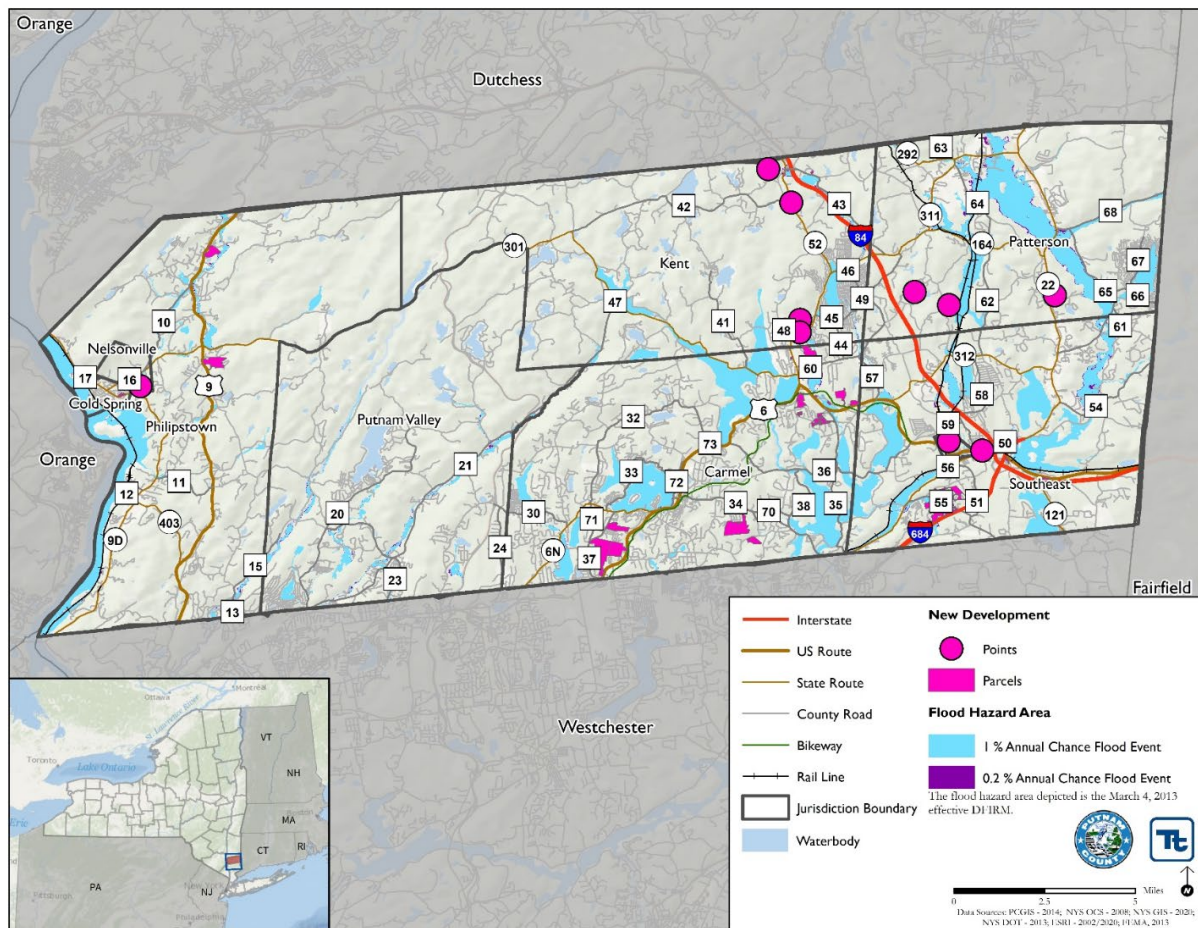


Figure 15: Potential New Development (as of 2020) in Putnam County with Flood Hazard Areas | [Putnam County Hazard Mitigation Plan Section 5.4.5, p. 28](#)

Future Ecosystem Pressures: While Putnam County does not have a current Natural Resource Inventory, inventories completed at the community level note certain challenges and long-term concerns for their respective locations. For example, Kent’s Natural Resources Inventory mentions concerns about habitat fragmentation, light pollution, surface and ground water contamination, non-native and invasive species, deer, and climate change within the town.¹¹² Putnam Valley’s Natural Resources Inventory includes concerns about drinking water resources, point-source and diffuse pollution into water bodies, aquatic connectivity, wetland encroachment, maintaining forest connectivity, biodiversity, and preserving farmland.¹¹³

History of Extreme Weather Events

Putnam County experiences humid, continental weather, with large temperature variations spanning -24°F to 106°F and a temperature average of 50°F.¹¹⁴ Putnam County has

experienced a variety of past extreme weather experiences, including extreme storms, severe winter storms, flooding, drought, extreme heat, and wildfire.

The impacts of climate change are expected to affect many existing trends related to extreme weather events in the County. According to Putnam County's Hazard Mitigation Plan (2021), the County can anticipate:

- Exacerbated extreme heat, flooding, and potentially drought;^{115 116 117}
- A decrease in extreme cold;¹¹⁸ and
- Variable impacts on severe storms and severe winter weather. (See "[Observed and Projected Climate Change Effects](#)" section for more information.)¹¹⁹

These changing weather patterns will have disproportionate impacts on the most vulnerable populations.¹²⁰

The following section summarizes the history of extreme weather events in Putnam County, focusing on events from the past 10 years (2016-2025), and includes information on expected climate effects. Additional information on each weather event is available in [Appendix K](#), including dates, descriptions, and impacts (if available) of extreme weather events separated by event type and data source.

Data for this section is sourced from Putnam County's Hazard Mitigation Plan, NOAA National Center for Environmental Information Storm Events Database (NCEI SED), the United States Drought Monitor (USDM), the Federal Emergency Management Agency (FEMA), and desktop research. As the NCEI SED compiles information from several sources, including officials and trained spotters, it may not be exhaustive. [Appendix K](#) also includes additional information on data sources used in the History of Extreme Weather Events section of this plan.

Extreme Storms

Background: Extreme storms are common in Putnam County, and include thunderstorms, lightning, hail, tornadoes, high winds, and hurricanes/tropical storms.¹²¹ Collectively, they are estimated to have caused \$26.5 million in damages to the County from 1950 to April 2020.¹²² This is likely an underestimate, as full reporting did not begin until 1996.¹²³

Expected Climate Effects: In New York State, high-precipitation storms with a historic 1% chance of occurring each year are now occurring nearly twice as often. Under climate change, thunderstorms are generally expected to occur more frequently in southern New York, and storms may bring more intense wind and rain, even if the number of storms stays consistent with historic levels.¹²⁴

Extreme Storm History: 32 extreme storm events were reported in the County from 2016 to 2025.¹²⁵ Of 29 events reported by the NCEI SED, seven caused \$10,000 or more in damages across Putnam County.¹²⁶ Four storms have been declared as Emergencies or Major Disasters by FEMA since 2016, one of which was included in the NCEI SED database.^{127 128 i}

Severe Winter Storms

Background: Severe winter storms are those where the main types of precipitation are snow, sleet, or freezing rain, and they can bring heavy or blowing snow and dangerous wind chills. Putnam County's winter storms include blizzards, snowstorms, Nor'Easters, and ice storms.¹²⁹ Heavy snow events have been the most common type of Severe Winter Storm in Putnam County between 1954 and 2019, and the County has historically seen an average within 25-50 inches of annual snowfall.¹³⁰

Expected Climate Effects: Under climate change, winter precipitation is projected to increase by 5-15% by the 2050s, although snow cover overall may decrease as a result of warming temperatures and shorter winters.¹³¹

Severe Winter Storms History: 88 winter weather events occurred in Putnam County between 1996 and April 2020, along with five FEMA Declarations in the County since federal declarations began in 1954.¹³² Between 2016 and 2025, 35 events were logged in total.^{133 ii}

Flooding

Background: Putnam County is susceptible to:

- Coastal flooding, caused by seawaters rising above regular tidal levels;
- Riverine flooding, which occurs along non-tidal river channels and includes overbank and flash flooding;
- Stormwater and urban floods caused by drainage issues and high groundwater levels;
- Ice jam flooding, which occur when pieces of floating ice float downstream and create an obstruction; and
- Flooding from dam failure.¹³⁴

ⁱ Information compiled from [OpenFEMA](#) Datasets and the [NOAA NCEI](#). Specific storm events noted in [Appendix K](#).

ⁱⁱ Information compiled from the NOAA NCEI. Specific winter storm events noted in [Appendix K](#).

The primary sources of flooding in Putnam County are the Hudson River and its tributaries and floodplains. Floodplains are defined as water-adjacent land inundated during flood events, which exist throughout the County. That said, stormwater and urban floods can occur outside standard floodplains.¹³⁵

Expected Climate Effects: Under future climate change, the County may experience increases in several kinds of flooding, caused by precipitation increases and a rising Hudson River due to global sea level rise. Precipitation amounts are projected to increase by 11-12% in the Southern Hudson Region by the 2080s, and the Hudson River may rise 21-35 inches up to Albany within the same time frame.¹³⁶

Flooding History: 30 flood events occurred between 1996 and 2019 in Putnam County, causing an estimated \$1.96 million in property damage.¹³⁷ Since then, there have been an additional logged four flooding events in the County from the NCEI, and one FEMA Disaster Declaration.^{138 139 140 iii}

Drought

Background: Drought is characterized by below-normal precipitation levels, occurring from shortfalls in precipitation or changes in surface and subsurface water supplies. Droughts are regional, potentially affecting everyone in Putnam County, with downstream effects for those in the lower portion of the state, especially New York City. The County's climate overall is humid, meaning severe or extreme drought conditions are rare, though dry conditions are relatively frequent.¹⁴¹

Expected Climate Effects: Under climate change, though precipitation may increase, rising temperatures and heat wave intensity mean that summer droughts are projected to increase in Putnam County.¹⁴² However, drought is not considered one of Putnam County's top climate hazards.

Drought History: Drought conditions are categorized from Do, Abnormally Dry, to D4, Exceptional Drought, based on water resource levels, water use restrictions, and impacts to agriculture (Fig. 15).¹⁴³ Between 2016-2025, the County has seen four distinct drought events where the majority of the County experienced at least Moderate Drought conditions. There were 15 events with Abnormally Dry conditions or where a minority of the County experienced

ⁱⁱⁱ Information compiled from [OpenFEMA](#) Datasets and the [NOAA NCEI](#). Specific flooding events noted in [Appendix K](#).

Moderate Drought levels. The duration, severity, and extent of the droughts from 2016-2025 are shown in Fig. 15, and specific severity and duration in [Appendix K](#).¹⁴⁴

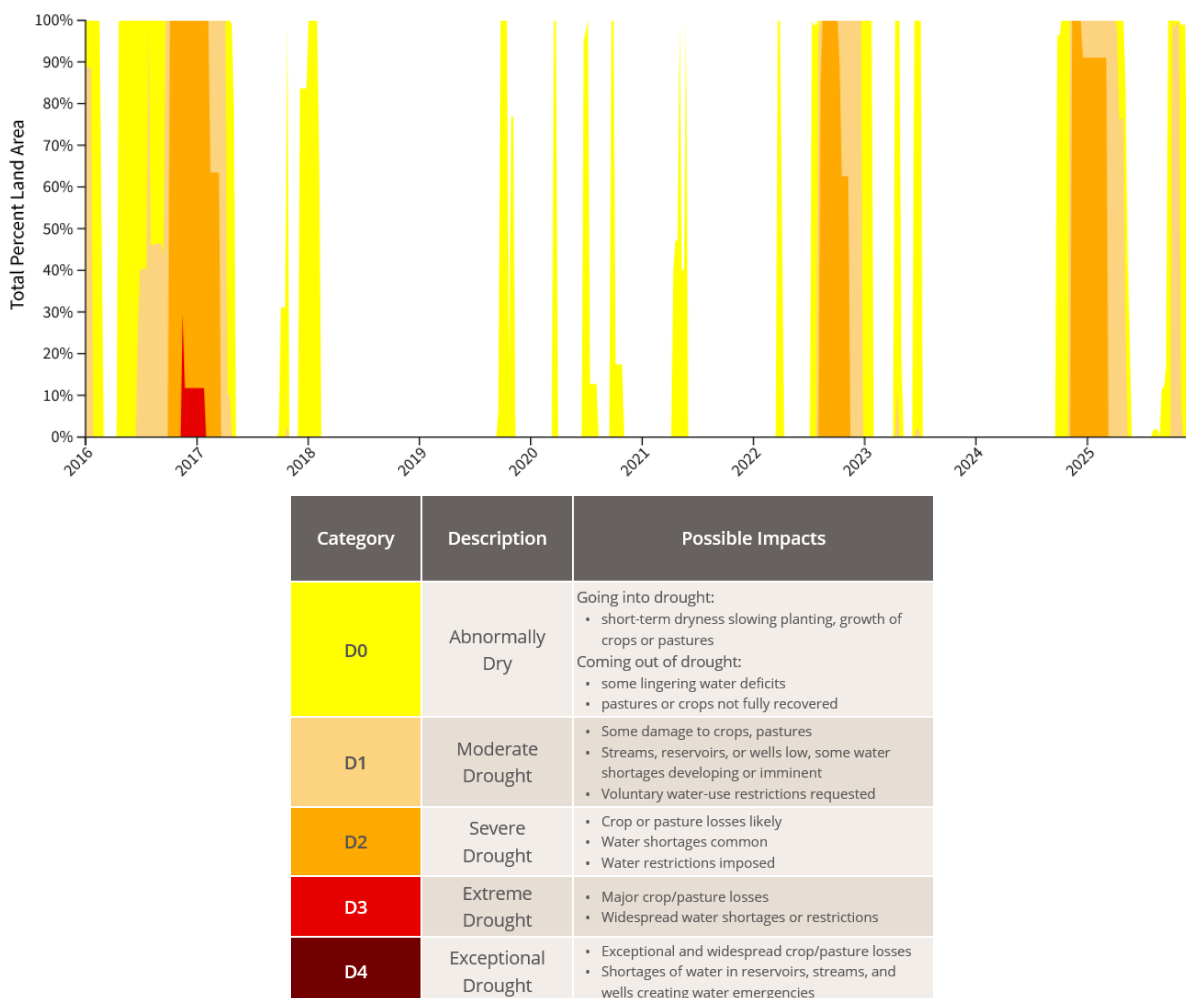


Figure 16: Droughts in Putnam County from 2016 to 2025 | NDMC USDM, via [NOAA NIDIS](#); NDMC USDM, via [Northeast Regional Climate Center](#)

Extreme Heat

Background: Extreme heat occurs throughout Putnam County for much of the summer, with variations due to altitude. It is measured by both air temperature and relative humidity through a metric called the Heat Index, which provides a measure of how people are physiologically affected by high temperatures.¹⁴⁵

Expected Climate Effects: Under climate change, summer temperatures in New York State are projected to rise between 5.3°F and 11.1°F by the 2080s, increasing the frequency of days

with high absolute temperatures and Heat Indices, and increasing the frequency and duration of heat waves.¹⁴⁶

History: One extreme heat event has been logged in Putnam County between 2016-2025 although this may not be exhaustive.^{147148 iv v} The National Weather Service (NWS) issues alerts based on Heat Index thresholds. In New York, a Heat Advisory is issued when the heat index reaches 95–104°F and remains at or above that level for a minimum of 2 hours. An Excessive Heat Watch is issued 1 to 2 days in advance when Excessive Heat Warning criteria are considered likely. An Excessive Heat Warning is also issued by the County when the heat index reaches 105°F or greater and is expected to persist for 2 hours or more, consistent with National Weather Service criteria. The County also issues seasonal and event-specific public advisories with heat safety information via its website and social media accounts.

Wildfire

Background: Putnam County is at a generally low risk of wildfires, meaning that fires do not ignite readily, and spread tends to be slow and irregular. That said, areas that are heavily forested or contain large tracts of brush and shrubs are still fire-prone, and over two thirds of the County's land area contain houses proximate to wildland vegetation, where wildfire problems are most pronounced.^{149 150} From 2003-2017, Putnam County had a high wildfire occurrence rate per square mile compared to the majority of New York State, with highest occurrence in its westernmost areas.¹⁵¹

Expected Climate Effects: Under climate change, wildfires will continue to occur, but the probability of their size and intensity cannot be predicted.¹⁵² Their frequency has been projected to increase in New York State, but the probability remains low compared to other regions of the United States.¹⁵³

Wildfire History: At least five wildfires of variable sizes occurred in Putnam County since 2020 although this list may not be exhaustive.^{vi}

Underlying threats, challenges, barriers, risks

Due to its social, economic, ecosystem, weather, and climate-related trends, Putnam County can anticipate a variety of potential challenges in building its resilience and adaptive capacity.

^v Information compiled from the [NOAA NCEI](#) and [Putnam County's 2021 HMP](#). Specific heat events noted in [Appendix K](#).

^{vi} Information compiled from desktop search. Sources and specific fire events noted in [Appendix K](#).

Relevant challenges or risks related to Putnam County's socioeconomic trends include, but are not limited to, the following:

- Putnam County's large and growing percentage of older adults may require additional outreach or support in adaptation outreach and strategies.
- Due to their outdoor nature, Putnam County's employment sectors like agriculture and construction could be particularly vulnerable to changing climate conditions.
- Many departments and offices within and outside the County government are relevant to resilience and adaptation planning, potentially requiring a significant amount of cross-departmental collaboration.
- Many institutions such as hospitals and schools which serve vulnerable community members are privately or municipally operated, limiting adaptive capacity on the county-level.

From an ecosystems perspective, Putnam County may face the following vulnerabilities:

- Putnam County's large number of lakes, streams, wetlands, and location along the Hudson River face increased susceptibility to flooding.
- Putnam County's ecosystems include habitat for rare and endangered species that may be susceptible to climate impacts, particularly harmful algal blooms, inland flooding, and invasive species, or pest introductions.

Uncertainties or Unknowns

Based on the above Place Narrative, there are data gaps or uncertainties that may impact adaptation and resiliency planning in Putnam County. A partial list of uncertainties includes:

- Social networks contribute to climate change adaptation and resilience. People who belong to a strong social network can share access to information, transportation, or other resources to be resilient in the face of climate impacts. People are more likely to respond to a climate impact if someone they know expresses concern about that impact.¹⁵⁴ Community organizations can play an important part in resilience, but this requires strong communication and buy-in from residents.¹⁵⁵ Each of these effects exist within Putnam County, and they are difficult to quantify.
- Data on storms and severe weather events may be incomplete due to a lack of standardized reporting methods.
- Data on the ownership or protection status of assets may be out of date or become so in the future due to infrastructure repair, infrastructure removal, or the buying/selling of land.

- Areas of development are predictive and may not reflect development projects as they are completed.
- Natural resources and assets may be underreported due to a lack of a county-level Natural Resources Inventory. Additionally, there may be additional natural assets within yards, golf courses, or other private settings.

Climate Vulnerability Assessment

This climate change vulnerability assessment is meant to be an initial qualitative assessment of how climate change impacts community needs, sectors, assets, and values in Putnam County. Climate change is influencing the intensity and frequency of extreme weather events. In addition, climate change acts as a “threat multiplier” by adding additional stress to existing problems, challenges, and risks. In the future, projected changes to temperature, precipitation, and sea level could result in even more significant impacts to the environment, infrastructure, economy, and human health.

The climate of New York State is undergoing various notable shifts in the 21st century. According to the New York State Climate Impacts Assessment, the state is experiencing:

- Increasing temperatures,
- Changing precipitation levels, and
- Rising sea levels.¹⁵⁶

This assessment also provides additional information on extreme weather hazards. These include extreme heat, severe storms, drought, and wildfire.

The following Climate Vulnerability Assessment details the associated risks and human impacts of these climate hazards on Putnam County and its residents. The aim of this assessment is to support planning and implementation of climate resilience and adaptation strategies at the county-level and the municipality-level. By developing, planning, and implementing resilience strategies, communities can reduce and better manage risk under changing climate conditions.

Observed and Projected Climate Change Physical Effects in NY State and Putnam County

Climate Hazard #1 - Increasing Temperatures

According to the 2022 New York State Climate Summary published by the National Oceanic and Atmospheric Administration (NOAA), since the beginning of the 1900s, New York has experienced a temperature increase slightly under 2.5°F.¹⁵⁷

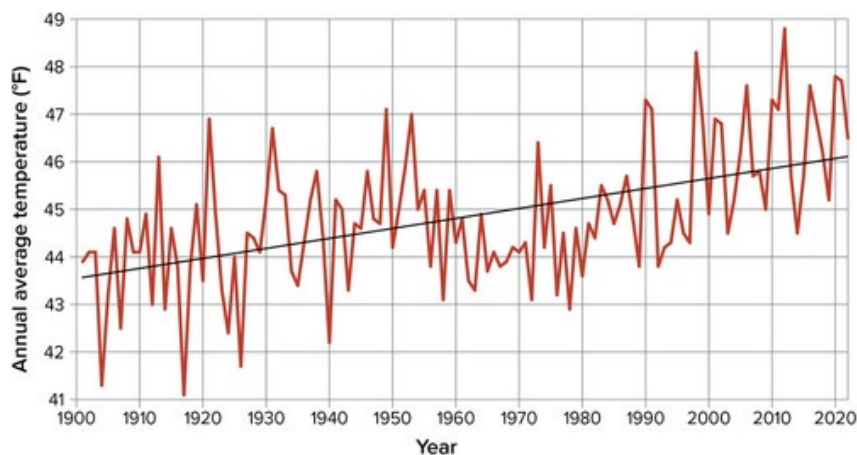


Figure 17: Annual average temperature in New York State, 1901–2022; [NYS Climate Impacts Assessment](#)

In a higher emissions scenario, the average temperature in the State is projected to increase to “11°F warmer than the hottest year on record.”¹⁵⁸ Even in the best-case scenario with low emissions, the average temperature is projected to increase by 3°F compared to average historical temperatures.¹⁵⁹

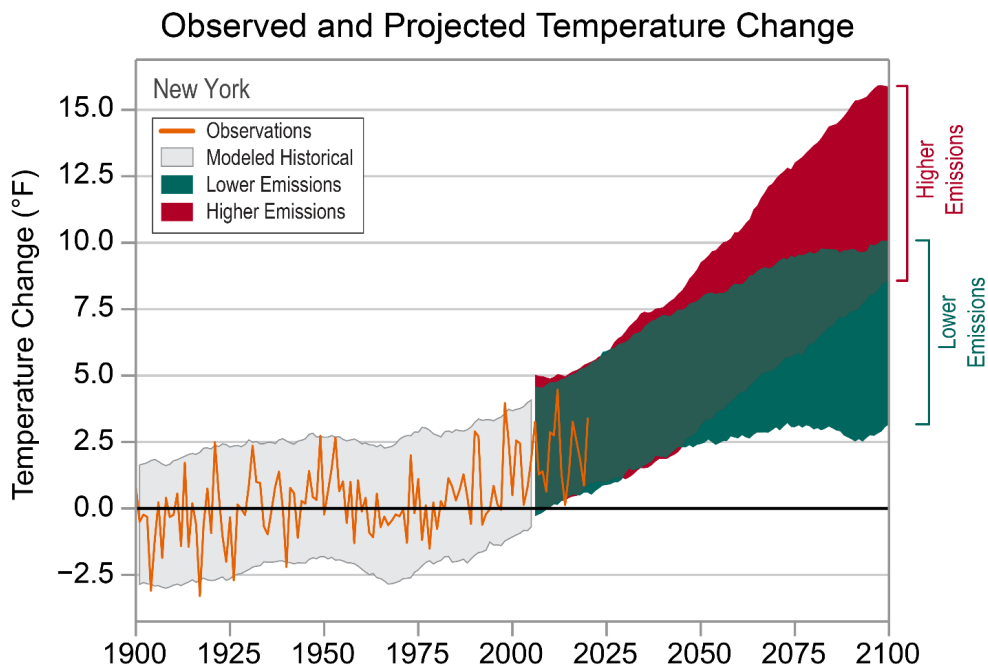


Figure 18: Observed and Projected Temperature Change in New York State | [NYS Climate Summaries](#)

The increasing temperatures are estimated to have a two-fold impact on the State’s climate – an increase in the number of days with temperatures above 90°F and a decrease in the number of days with temperatures below 32°F. The higher frequency of ‘extreme hot days’ is expected to disproportionately affect low-income households, outdoor workers, unhoused people, people with disabilities and pre-existing medical conditions, and older adults.¹⁶⁰ In Putnam County, approximately 20.3% of the population is over the age of 65.¹⁶¹ This is slightly higher than the average living in Counties across the mid-Hudson region (19.04%).^{162 163}

Increasing Temperature in Putnam County

Data from the New York State Climate Impacts Assessment anticipates an increase in temperature of 4.1°F-6.1°F and 5.7°F-10°F by the 2050s and 2080s respectively in the South Hudson Valley Region, where Putnam County is located. These estimates use a 1981-2010 baseline average.¹⁶⁴

As a result of the increase in temperature, Putnam County is also projected to witness an increase in the number of heatwaves (defined as three or more consecutive days with temperatures above 90°F). On average, the South Hudson region records 18 days with temperatures greater than 90°F per year. By 2050, this is anticipated to rise to 41- 64 days, and by 2100, this could rise to 48-87.¹⁶⁵

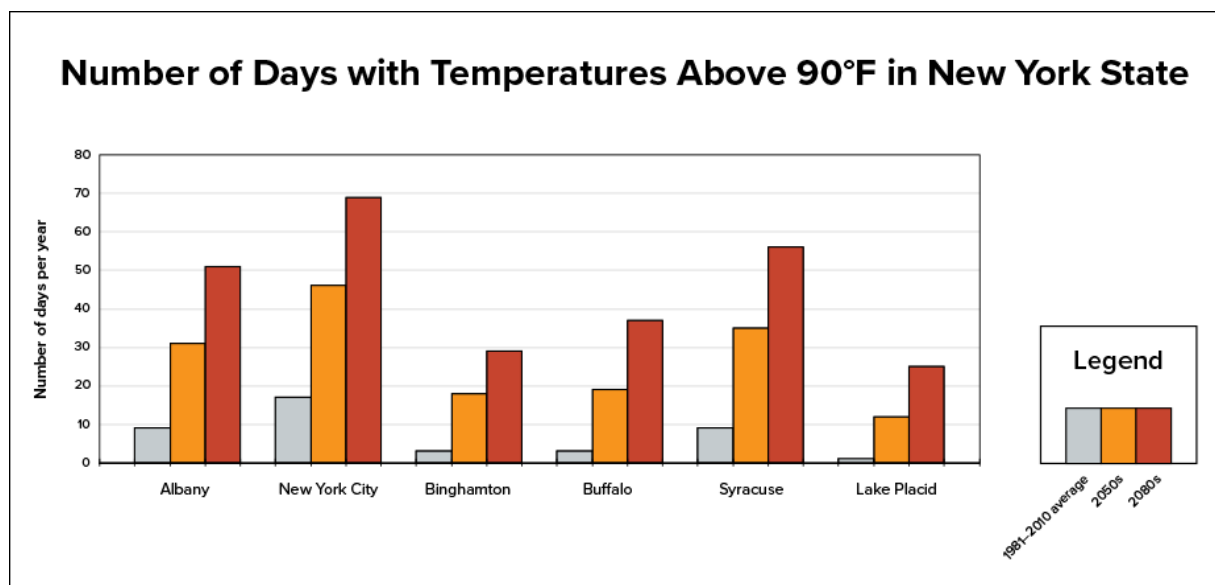


Figure 19: Projected changes to the number of days per year with temperatures above 90°F at six locations across New York State | [NYS Climate Impacts Assessment](#)

As New York’s climate continues to warm, it is possible to compare counties, cities, towns, and villages to other locations around the United States to see where a municipality’s new local

“norm” would be. Following a high greenhouse gas emissions model, by 2080, the climate of Putnam County may be comparable to that of Ola, Arkansas.¹⁶⁶

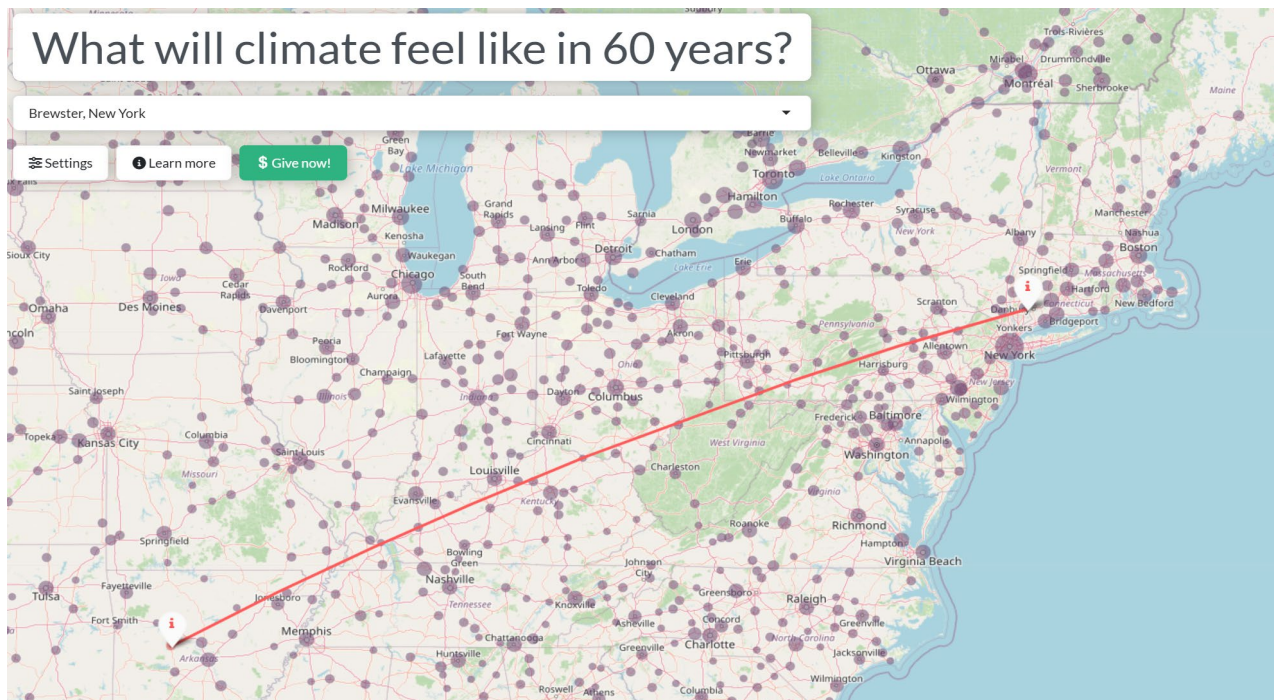


Figure 20: The climate of Brewster (of Putnam County NY) is projected to be comparable to Ola, Arkansas by 2080 under high emissions trajectory | [University of Maryland Center for Environmental Sciences](#)

The impacts of rising temperatures may not be evenly distributed. The map below illustrates the maximum heat index experienced across Putnam County using data from 2010-2020. Data used to generate the map is sourced from the DEC Urban Heat Island Mapper Tool, highlighting some areas with higher potential heat concern.¹⁶⁷

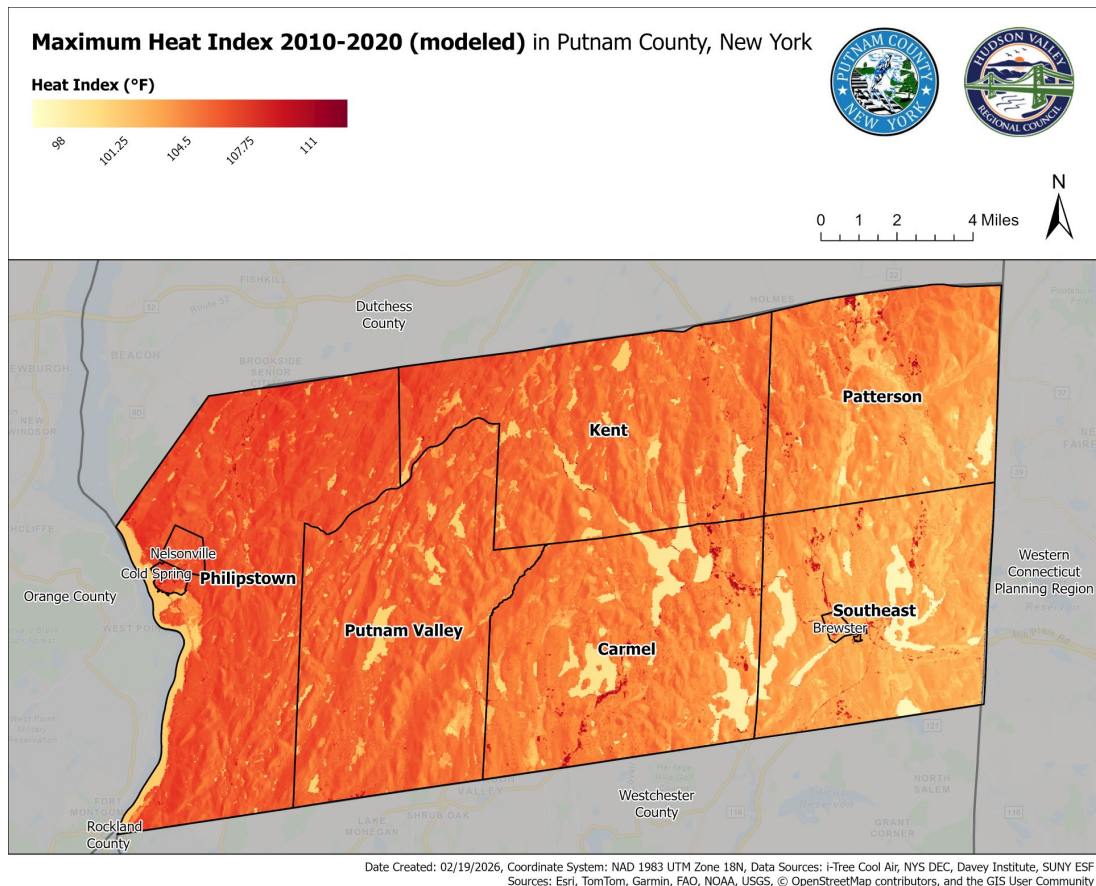


Figure 21: Maximum heat index modeled in Putnam County from 2010-2020, sourced from the [i-Tree Cool Air model](#). This model uses physical environmental variables and station data to reconstruct the hottest temperature experienced between 2010-2020 on a 30-m grid across New York State.

Increasing Temperatures Stakeholder Perspectives: Residents and employees in Putnam County have noted prior experiences with high temperatures. Based on the stakeholder survey, over 75% of participants reported that they had experienced extreme heat (temperatures >90 °F), and 76.2% reported that they had experienced at least one heat wave (3+ days with max temperatures > 90 °F) within the past 5-10 years.

Survey respondents indicated a variety of levels of concern about rising temperatures in the future, with the majority of respondents indicating a high or medium level of concern. Specifically, nearly 50% (49.7%) of respondents reported that they felt high levels of concern about extreme heat in the next 10-15 years, 27.3% reported a medium level of concern, 20.3% reported a low level of concern, and 2.8% reported that they were unsure.

Concerns about heat waves 10-15 years into the future follow similar trends: over 50% (51%) of respondents reported high-levels of concern, 27.3% reported medium concern, 20.3% reported low-levels of concern, and 1.4% reported that they were unsure.

Climate Hazard #2 - Changing Precipitation

The Fifth National Climate Assessment, produced by the U.S. Global Change Research Program (USGCRP), reveals an increase of about 60% for the amount of precipitation on the “heaviest 1% of days” over the northeastern United States – a figure that can likely be attributed to the effects of climate change on natural weather patterns.

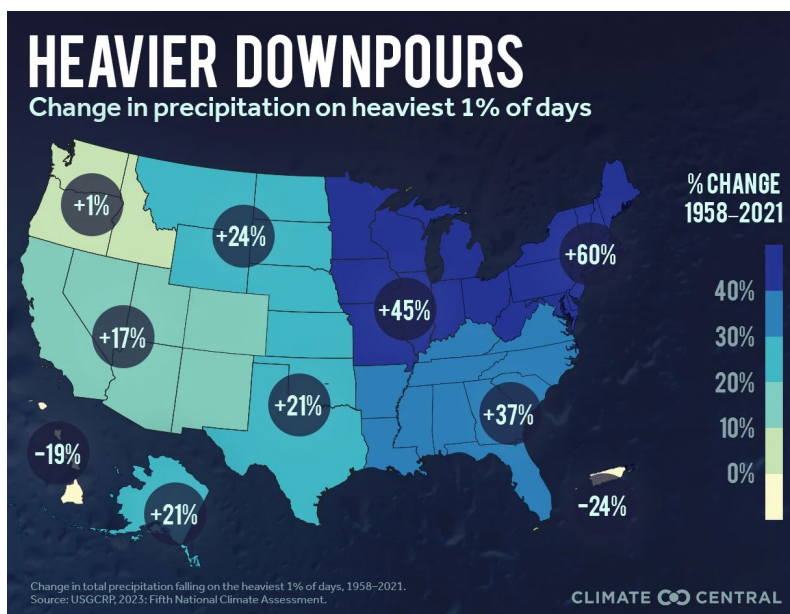


Figure 22: Change in precipitation between 1958 and 2021 across the United States | [Climate Central](#) with data from Fifth National Climate Assessment

Within New York State, the State Climate Impacts Assessment highlights that there has been higher precipitation overall and more common occurrences of “heavy precipitation” in the State.¹⁶⁸ New York can expect a similar pattern in the future. From 1901 to 2022, the annual precipitation in the State increased 10-20%. By the 2080s, a 6-17% increase in precipitation levels is possible in New York State.¹⁶⁹ The lower Hudson Valley and, consequently, Putnam County, is expected to face some of the greatest increases.¹⁷⁰

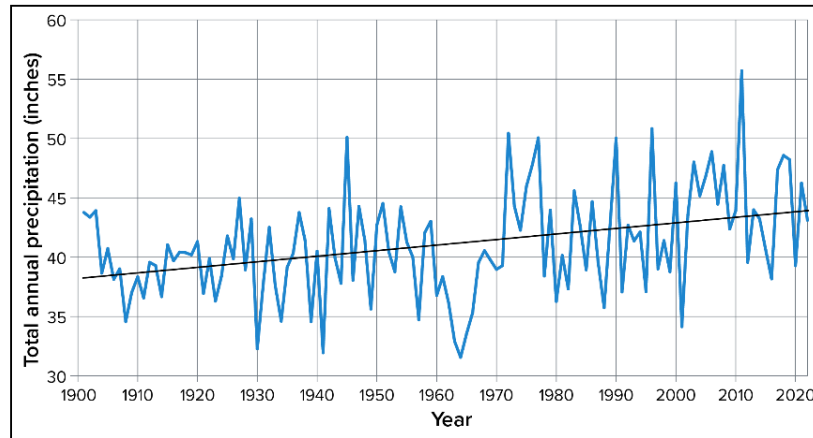


Figure 23: Annual Total Precipitation in New York State, 1901-2022 | [NYS Climate Impacts Assessment](#)

Increasing Precipitation in Putnam County

Putnam County and the surrounding lower Hudson Valley are at heightened risk for more drastic increases in precipitation than many areas of New York State. New York City can anticipate an increase in precipitation of 4-11% and 7-17% by the 2050s and 2080s respectively.¹⁷¹ Given its relatively close proximity to NYC, the County can expect to experience similar trends.¹⁷²

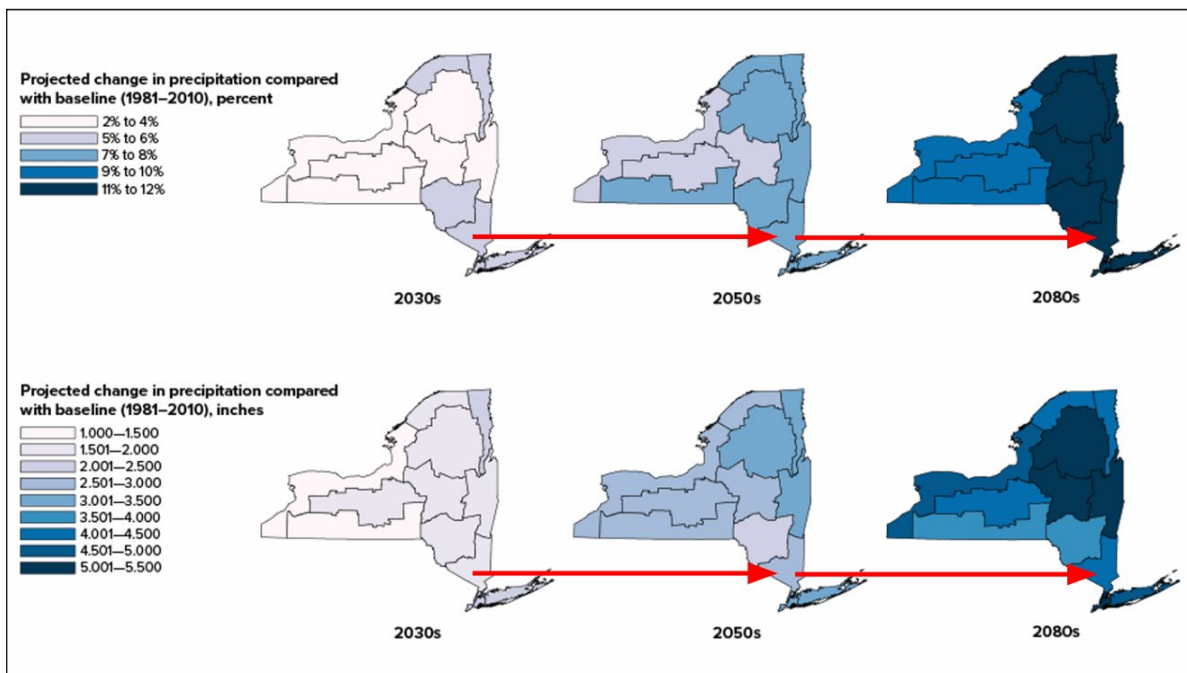


Figure 24: Projected annual precipitation in New York State during the 21st century, relative to the 1981–2010 baseline | [NYS Climate Impacts Assessment](#)

The anticipated increase in precipitation could arise from a higher number of rainy days and/or be the result of heavy tropical storms, which could result in flash floods or riverine flooding. Water quality concerns could result from the expected increasing precipitation levels. For example, the New York Climate Impacts Assessment notes that water from extreme storms often is not absorbed by the ground cover and “runs off surfaces into water bodies. Runoff can contaminate water sources with pollutants, pathogens, and sediments.”¹⁷³ Putnam County, which has many streams, tributaries, and over 60 lakes, is at heightened risk of water contamination caused by more extreme runoff.¹⁷⁴

Increases in precipitation can have dire implications as heavy rain feeds into dangerous floods. Although only two flooding events in total were recorded in Putnam County between 2015 and 2020, according to the Putnam County Bureau of Emergency Services, such events are predicted to become more frequent under the projected climate conditions mentioned above.¹⁷⁵ vii



Image 1: Flooding in Cold Spring, NY on December 23, 2022 | Ronald Zorilla, [My Coast NY](#)



Image 2: Damage to Hudson Valley InterArts building in Patterson following a rain event in July, 2025 | Patterson Fire Department, accessed via [Putnam County Times & Putnam County Press](#)

Changing Precipitation Stakeholder Perspectives: Residents and employees of Putnam County have noted prior experiences with precipitation from severe storms. Based on a stakeholder survey, 68.5% of respondents indicated that they had experienced precipitation-related severe storms in the past 5-10 years. The majority of survey participants reported a high or medium level of concern about severe precipitation 10-15 years into the future: 49% of respondents reported a high-level of concern, 29.4% and medium level of concern, 20.3% a low level of concern, and 1.4% unsure.

^{vii} List of recorded flooding events may not be exhaustive.

While not specifically related to severe storms/precipitation, 53.1% of respondents also indicated that they had experienced flooding in the past 5-10 years and concern levels about flooding in 10-15 years into the future were primarily high or medium: 41.3% of respondents reported high levels of concern, 32.9% medium, 24.5% low, and 1.4% unsure.

As part of Putnam County's 2021 Hazard Mitigation Plan, a Citizen Survey was distributed that also assessed concerns about flooding, although the survey did not have a 10-15 year future outlook. The survey measured concerns about flooding to streets and properties, basements, and first floor levels or above. Out of these flooding types, respondents reported the highest level of concern about flooding to streets and properties: 14.79% reported that were highly concerned or extremely concerned; 60% reported that they were somewhat concerned or concerned; and 25.22% reported that they were not concerned.¹⁷⁶ The Climate Vulnerability Assessment and Hazard Mitigation Plan surveys are not perfectly comparable. However, the increase in high concern (14.79% to 41.3%) indicates that there may be growing concern about future flooding within the County.

The graph below compares the percentage of survey respondents who reported high, medium, and low concerns about flooding across the two surveys. Data from the Hazard Mitigation Plan survey represents concerns about street and property flooding. High concern corresponds with highly or extremely highly concerned responses, and medium concern corresponds with somewhat concerned or concerned responses.

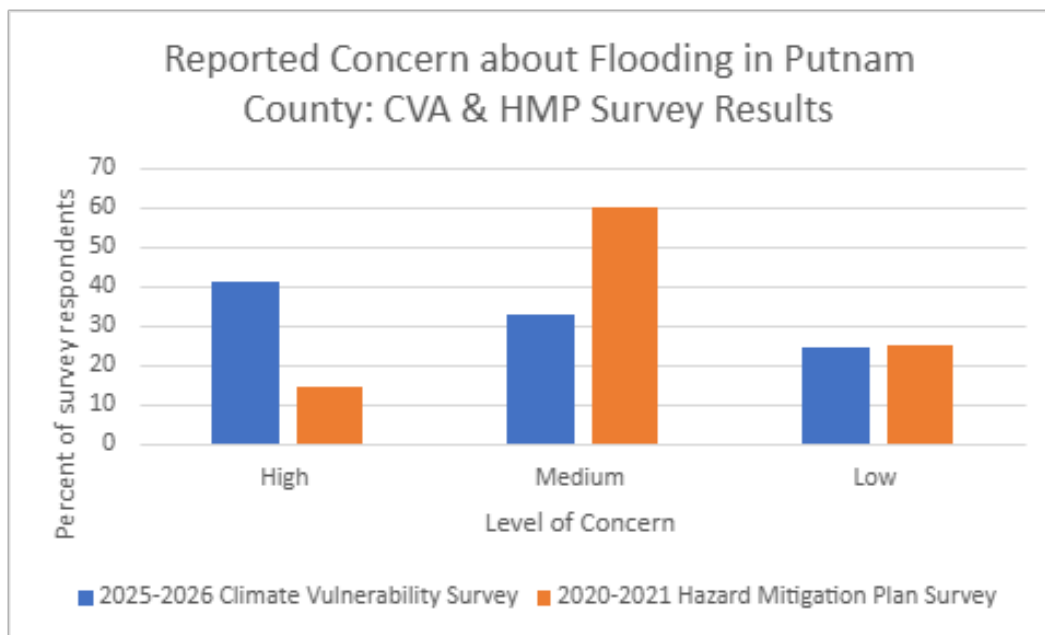


Figure 25: Concern about flooding in Putnam County based on Climate Vulnerability Assessment (2025-2026) and Hazard Mitigation Plan (2020-2021) data.

Climate Hazard #3 - Rising Sea Levels

New York State has experienced about 13 inches of sea level rise, using an 1880 baseline. This increase is higher than the global average of 7-8 inches.¹⁷⁷ Sea level projections globally span 1-8 feet, although projections of 1-4 feet are considered most likely by 2100, worldwide.^{178 179} The increase is projected to be larger in New York State than globally.¹⁸⁰

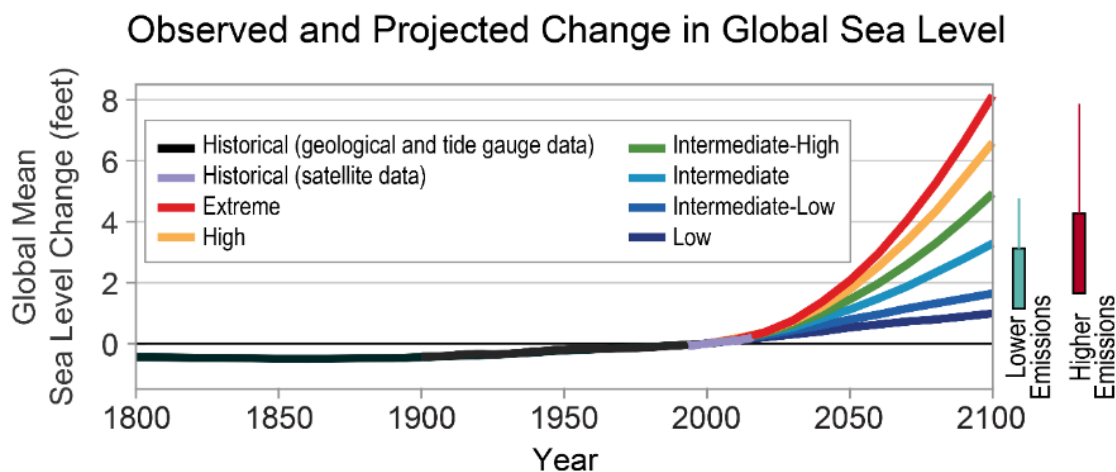


Figure 26: Observed and Projected Change in Global Sea Level | [New York State Climate Summaries](#)

Rising Sea Levels in Putnam County

There are multiple municipalities within Putnam County situated along the Hudson River and its tributaries. As global sea level rises, people in these areas will begin to face intensifying impacts as the River begins to expand beyond its normal tides. These impacts may include increased salinity in wetlands, in turn altering ecosystems, and saltwater intrusion into freshwater aquifers, which can be absorbed into soils and contaminate drinking water sources. A digital sea level rise mapper from the National Oceanic and Atmospheric Administration (NOAA) illustrates this reality, projecting a likely sea level rise of ~12 inches by 2040 and ~21-77 inches by 2100 in southeast New York and northeast New Jersey.¹⁸¹

Cold Spring, North Putnam (2020-2025)

Cold Spring, North Putnam (2100)

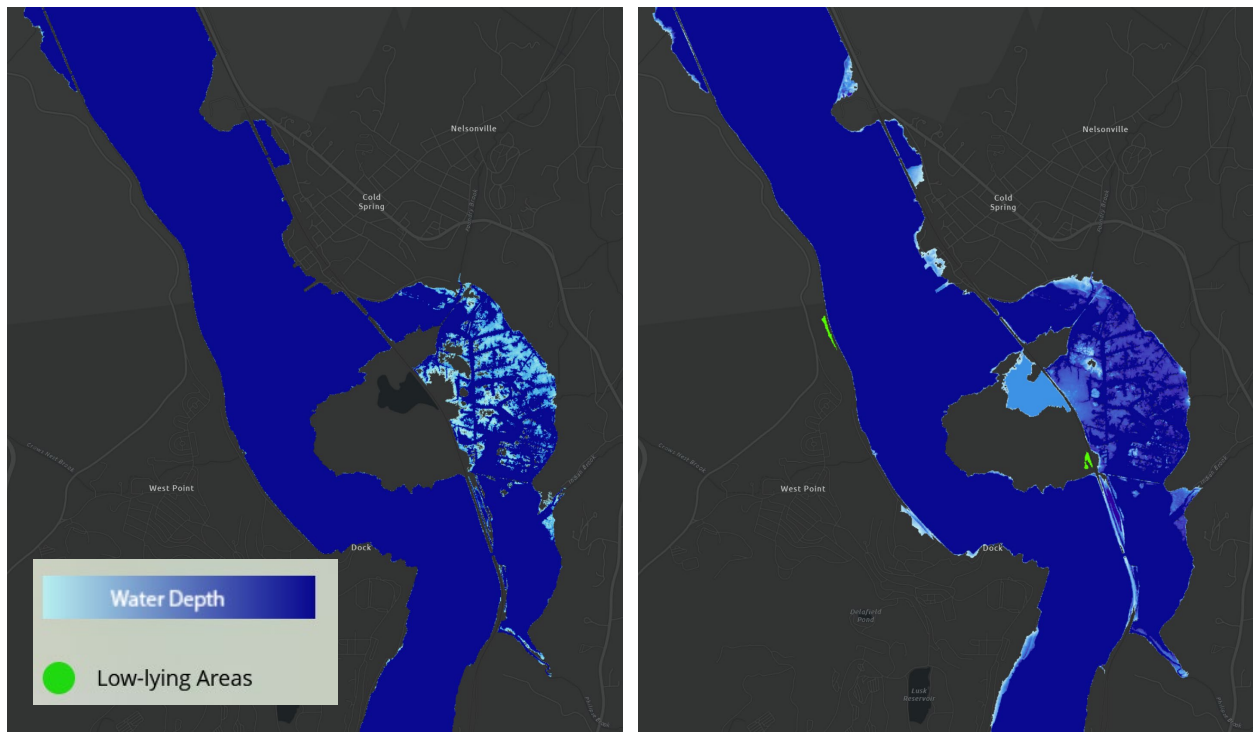


Figure 27: NOAA's Sea Level Rise Viewer illustrates possible changes in water levels near Cold Spring during the Hudson River's high tide. Water depth is shown to increase with darker shades of blue, and low-lying areas at risk of flooding are shown in green. The image to the left indicates shows 6 inches of sea level rise (within the range of likely projections for years between 2020-2025), and the image to the right indicated projections under 48 inches of sea level rise (within the intermediate-intermediate high projections for 2100) | [NOAA](#)

Manitou Preserve, South Putnam (2020-2025)

Manitou Preserve, South Putnam (2100)

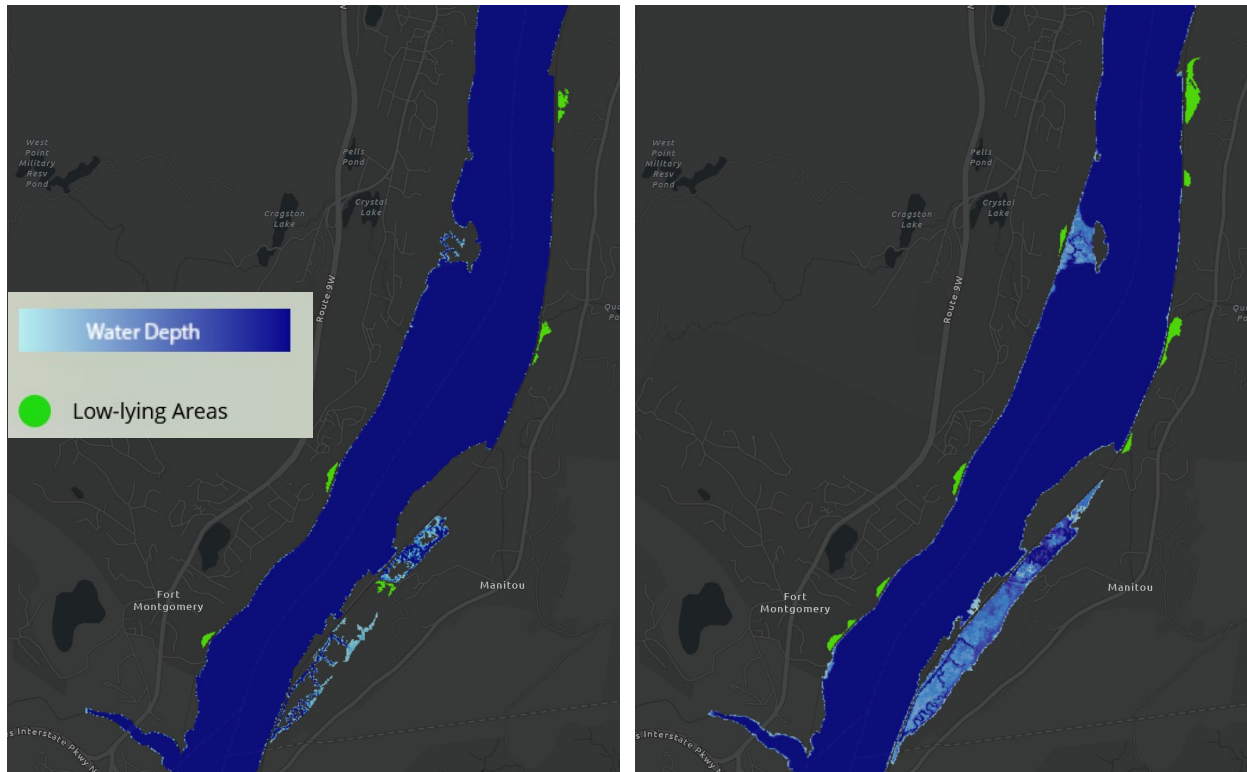


Figure 28: NOAA's Sea Level Rise Viewer illustrates possible changes in water levels near Manitou Point Preserve during the Hudson River's high tide. Water depth is shown to increase with darker shades of blue, and low-lying areas at risk of flooding are shown in green. The image to the left indicates shows 6 inches of sea level rise (within the range of likely projections for years between 2020-2025), and the image to the right indicated projections under 48 inches of sea level rise (within the intermediate-intermediate high projections for 2100) | [NOAA](#)

New York State Department of Environmental Conservation also has sea level rise projections for New York City/Lower Hudson Valley, the region where Putnam County is located. Using a 1995-2014 baseline, sea level rise projections under a low, medium, high, and rapid ice melt scenario are included below:

Table 1: Table Adapted from NY DEC, Projected Sea Level Rise in New York City/Lower Hudson Region based on 6 NYCRR Part 490 Projections | [NY DEC](#)

New York City/Lower Hudson				
Year	Low	Medium	High	Rapid Ice Melt
2050	12 inches	16 inches	23 inches	N/A
2100	25 inches	36 inches	65 inches	114 inches
*Projected sea level rise using 1995-2014 baseline				

Sea Level Rise Stakeholder Perspectives: While not specific to sea level rise, the stakeholder survey indicated that 53.1% of respondents had experienced flooding in the past 5-10 years.¹⁸²

Concerns about flooding in 10-15 years into the future were primarily high or medium. 41.3% of respondents reported high levels of concern, 32.9% medium, 24.5% low, and 1.4% unsure.

Other Climate Hazards in Putnam County

According to the U.S. Climate Vulnerability Index, Putnam County falls within the 99th percentile of vulnerability to extreme events nationally – 4th out of all 62 New York State counties in this category.¹⁸³ According to the Index, the County is especially vulnerable to sea level rise, flooding, storms, and heightened precipitation. It has an “average” level of vulnerability to temperature changes and droughts, and “lower vulnerability” to wildfires. As temperature, precipitation, and flooding have already been covered in this document, the following sections will focus on storms, droughts, and wildfires.

Droughts

Drought can significantly impact agriculture, water quantity, and water quality. People living in drought conditions are more prone to experience dust storms and wildfires. The inhalation of wildfire smoke can significantly increase the risk of aggravating respiratory and cardiovascular conditions, since wildfire smoke poses greater health concerns than “non-smoke particulate pollution.”^{184 185}

The historical trends of Putnam County’s dry conditions and droughts, as well as wet conditions and extreme precipitation, are detailed in the National Integrated Drought Information System (NIDIS) dashboard below. This figure illustrates the occurrence of dry and wet conditions from 1980 to 2025. The blue-green lines represent wet conditions, increasing from light green to light blue to dark blue. The orange-red lines represent dry conditions, increasing from yellow to orange to red.

Although not seen as one of the greatest climate threats, the figure below indicates there have been a series of consecutive dry conditions from 2012 to 2022. Since 2022, conditions have alternated between dry and wet. Simultaneously, while wet conditions are less frequent, they are more intense, as depicted by the deep blue lines in 2012, 2019, and 2024, as compared to 1984 or 1996.¹⁸⁶

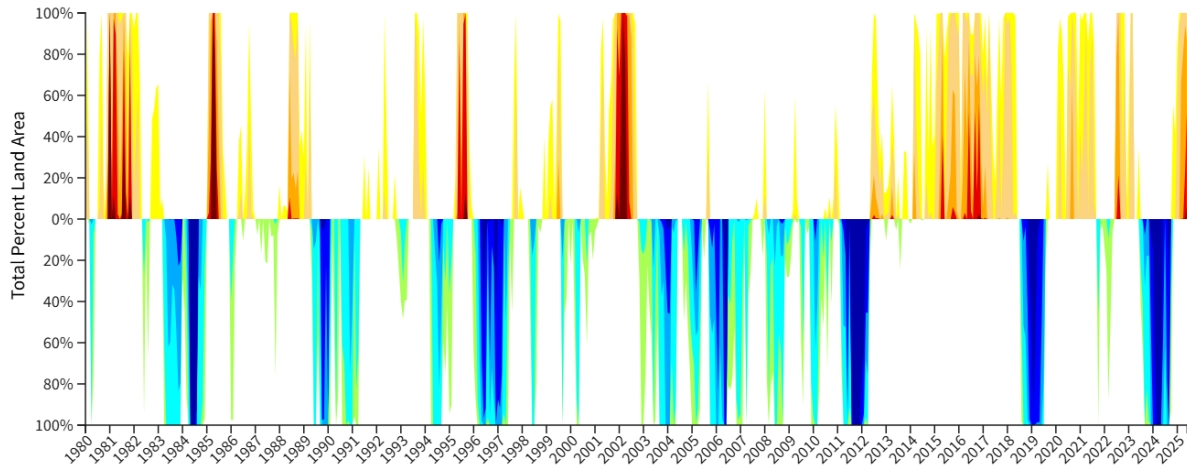


Figure 29: Historical Trend of Dry and Wet Conditions in Putnam County | [NIDIS](#)

Residents of Putnam County have also identified drought as an issue and consider it a high concern. In response to a stakeholder survey, 63.6% of respondents indicated that they had experienced drought in Putnam County in the past 5-10 years. Concern about drought 5-10 years in the future were primarily ranked as high or medium by respondents: 46.2% reported high concern, 34.3% medium concern, 19.9% low concern, and 0.7% were unsure.

Wildfires

Wildfires, while natural and essential for the health of forests, can be dangerous and destructive – particularly as they become more frequent in areas where climate conditions become hotter and drier. While Putnam County is classified as lower risk for wildfires, based on the National Climate Index, recent events suggest that wildfire activity is an emerging concern. In the past several years, there have been numerous forest fires in Putnam County and the surrounding region, underscoring the potential for increased risk during dry or windy conditions. Putnam Valley firefighters had to manage a 21-acre fire in April 2025.¹⁸⁷ Across the Hudson River, the 2024 Jennings Creek fire burned >5,000 acres of land at the border of New York and New Jersey,¹⁸⁸ highlighting that wildfire risk is not confined by municipal boundaries and can affect the broader region. More locally, a brush fire also broke out in Kent, NY in October 2024 that impacted 33 acres.¹⁸⁹

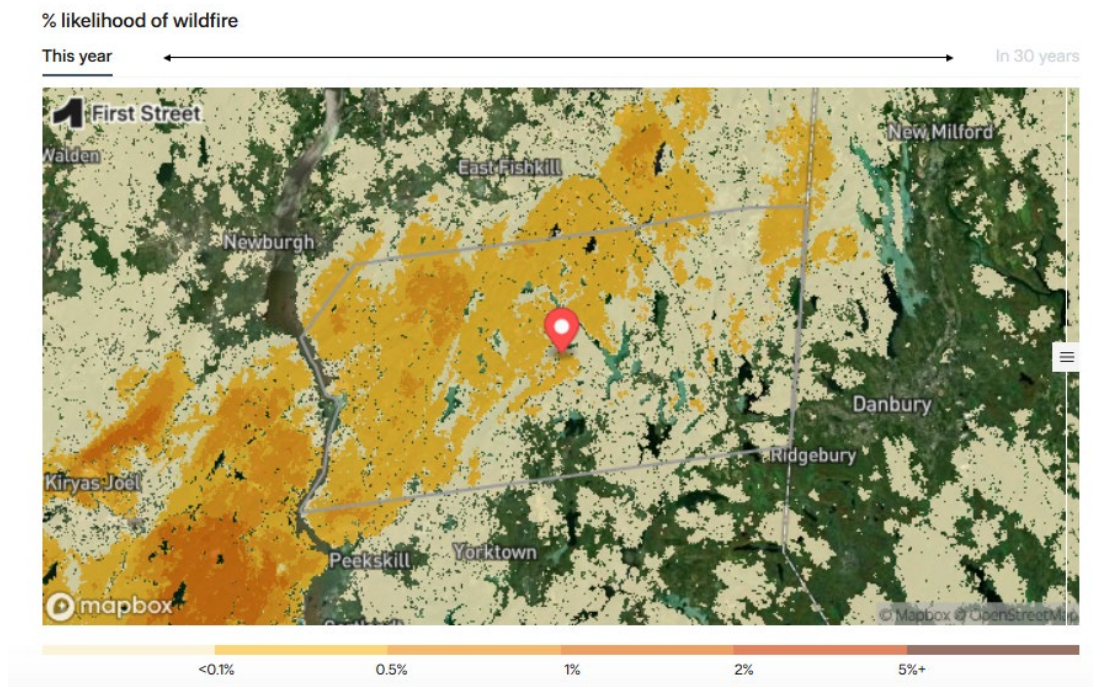


Image 3: Photo of a 2024 wildfire in West Milford, NJ, less than 40 miles from Putnam County, NY | [The Guardian](#)



Image 4: Photo of a brush fire in Kent, NY on Oct 26, 2024 | Kent Volunteer Fire Department, accessed via [Putnam County Times & Putnam County Press](#)

As wildfire frequency increases, as is predicted across the County,¹⁹⁰ the air quality, overall health conditions, tree cover, and water quality will worsen. This may lead to increased incidences of asthma, cardiovascular disease, and other heat and air pollution related health impacts.^{191 192}



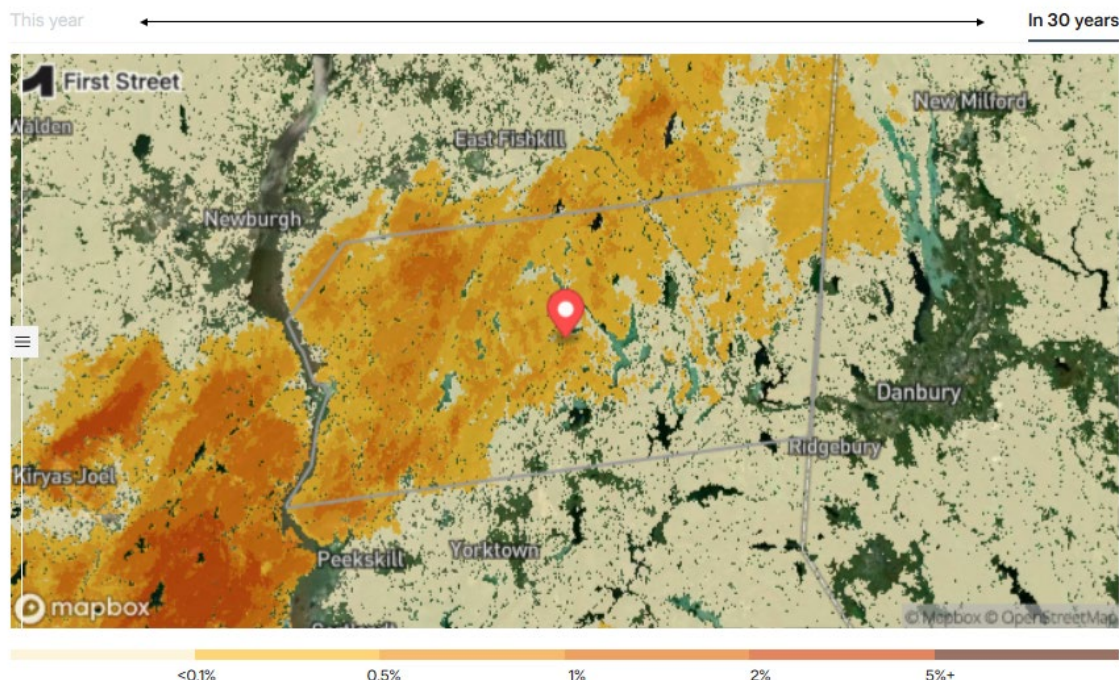


Figure 30: Wildfire likelihood in Putnam County in 2026 (top) and in 2056 (bottom) | [First Street Foundation](#)

Based on stakeholder feedback, there were low levels of prior experiences with wildfires in the past and mixed levels of concern about wildfires in the future. In the survey, 21.7% of respondents indicated that they had experienced wildfire 5-10 years in the past and 32.2% reported high levels of concern about wildfire 10-15 years into the future. At 38.5%, the most people reported medium concern, 26.6% reported low concern, and 2.8% were unsure. More respondents had prior experience with poor air quality 5-10 years in the past: 67.1%.^{viii} Air quality was primarily a high or medium priority 10-15 years into the future based on survey responses.

Storms (Hurricanes, Tornadoes, and Winter Storms)

Climate change is projected to exacerbate the impacts of hurricanes, increasing the amount of rainfall and the severity of storm surges in New York State.¹⁹³ Hurricanes can structurally influence buildings, damage transportation infrastructure, flood homes, displace communities, and lead to loss of biodiversity.

^{viii} The disparity between survey respondents experiencing wildfire compared to poor air quality can likely be attributed to Canadian wildfires, from which smoke and particulate matter has been carried into New York. Of note is the June 2023 wildfires in Quebec, which led to [hazy conditions and air quality warnings across much of New York State](#), including Putnam County.

Putnam County ranks 14 out of 62 counties in terms of expected annual economic loss from hurricanes, with damages estimated to cost the County \$4.2 million.¹⁹⁴ Between 1954 and 2020, Putnam has been listed in 12 severe storm-related FEMA declarations, including for Superstorm Sandy and Hurricane Irene. Including all severe storms within the County, there have been 203 events that caused an estimated \$26.5 million in property damages.¹⁹⁵

In response to a stakeholder survey, many respondents indicated prior experiences with severe storms in the past 5-10 years. Prior experiences with severe storms related to precipitation were the most commonly reported (68.5%), followed by severe winter storms (52.4%), hurricanes (27.3%), and tornados (20.9%). Concern about severe storms 10-15 years into the future followed a similar pattern. 49% indicated a high level of concerns about precipitation-related severe storms; 37.8% for severe winter storms; 24.5% for hurricanes; and 14.7% for tornadoes.

Exposure, Sensitivity and Adaptive Capacity

Putnam County is home to a variety of infrastructure, social, and environmental assets and services. For this analysis:

- **Infrastructure assets** refer to the built components of the community;
- **Social assets** refer to aspects that are important for communities and economies; and
- **Environmental assets** refer to the County's ecosystems and the services that they provide.

Climate trends—including increasing temperatures, changing precipitation, and rising sea levels—can impact infrastructural, social, and environmental assets. The following section seeks to answer three questions:

1. What assets/community services are important to Putnam County?
2. How will climate hazards affect these assets?
3. To what level can adaptive measures be implemented?

Under this framework, each asset is evaluated based on its exposure, vulnerability, and adaptive capacity, in accordance with guidance from the New York Climate Smart Communities (CSC) program. Definitions provided by the CSC program are included below:

- **Exposure** refers to whether an asset or system is located in an area that is likely to experience the effects of a climate change hazard now or in the future.
- **Sensitivity** refers to how an asset or system fares when exposed to a climate hazard.

- **Adaptive capacity** refers to the ability of an asset or system to adjust to actual or expected climate stresses.¹⁹⁶

The CVA specifically addresses the following infrastructure, social, and environmental assets:

Infrastructure	Social	Environmental
• Energy and Power • Travel and Transportation • Cooling and Warming Centers • Storm and Emergency Shelters • Stormwater Infrastructure • Dams • Septic Infrastructure • Homes and Residential Properties • Public Buildings • Waste Disposal and Collection	• Healthcare Facilities and Services • Local Jobs and Businesses • Vulnerable Communities • Food Access and Food Security • Historic Preservation • Resources for Youth and Older Adults • Cultural Resources, Tourism, and Community Events	• Drinking Water • Clean Air • Ecosystems, Habitats, and Biodiversity • Parks, Open Space, and Recreational Sites • Agricultural Lands and Soils

Infrastructural Assets

Energy + Power

Asset Description

Access to reliable power and energy is a key asset in the community, both for operations of daily life and for responding when there is a natural hazard. During normal conditions, energy access enables essential activities such as heating and cooling homes, operating businesses, running schools, and maintaining public facilities. During extreme events, its importance becomes even more acute. For example, functional power is critical during heat waves to allow residents—especially older adults, young children, and medically vulnerable populations—to cool their homes, reducing the risk of heat-related illness and mortality.

Energy infrastructure is equally vital during flooding, storms, and winter weather. Emergency shelters require power for lighting, HVAC, refrigeration of medications, and medical equipment. Water and wastewater treatment facilities rely on electricity to maintain safe drinking water and sanitation. Communications systems, traffic signals, and emergency response coordination all depend on uninterrupted or rapidly restored power.

Energy resilience is also an equity issue. Power outages disproportionately affect low-income households, residents of multi-family or manufactured housing, and communities

with limited access to backup generation or cooling centers. Counties play a key role in planning for resilient energy systems—such as backup power for critical facilities, microgrids, and coordinated outage response—to ensure that all residents can remain safe during climate extremes.

Survey Response

Access to reliable power and energy was generally ranked as a **high priority** for County resiliency planning based on stakeholder survey input. **Of all infrastructural assets assessed, stakeholders identified this as the highest priority.** A breakdown of participant prioritization levels can be found below for access to reliable power + energy.

	High	Medium	Low
Access to reliable power + energy	86.7%	9.8%	3.5%

Prior experiences with power outages were frequently noted by survey respondents. When asked about personal experiences related to the climate trends assessed, 67 respondents described power outages in the County. Examples of stories shared can be found below:

- *"I've experienced multiple prolonged power outages in my years in this residence. I was able to invest in a whole-house generator (natural gas service to the home) so while I don't suffer the same disruption as my neighbors, it is still a serious issue."*
- *"We bought a generator after repeated and prolonged power interruptions."*
- *"Power outages have been more and more frequent during any type of inclement weather."*

Exposure

Energy and power in Putnam County are susceptible to trends including **rising temperatures** and **changing precipitation patterns**.

Sensitivity

Climate hazards have the potential to impact power and energy in two ways: contributing to power outages and/or impacting financial access to power. First, climate hazards can pose risks for power outages in the area. According to Putnam County's Hazard Mitigation Plan, Section 5.4.7 (Severe Storms), "Municipalities have identified power outages due to downed trees as the most serious and frequently occurring hazard impacting life in County communities."¹⁹⁷ Putnam County can anticipate an increase in severe precipitation, which could damage power lines and cause additional power outages. Rising temperatures could also lead to brownouts. According to the HMP (2021) Section 5.4.4 "Extreme heat events can sometimes cause short periods of utility failures, commonly

referred to as brown-outs, due to increased usage from air conditioners and other energy-intensive appliances.”¹⁹⁸

Second, as the number of warm days increases, there could be additional demand for energy for air conditioning during warmer months. Energy burden is a metric that represents “the percentage of gross household income spent on energy costs.”¹⁹⁹ In Putnam County, the average energy burden is 2% according to the U.S. Department of Energy Low-income Energy Affordability Data Tool.²⁰⁰ “High energy burdened households” are those with over a 6% energy burden.²⁰¹ While overall energy burden remains low in the County, rising AC demand could pose challenges for low-income households, and could lead to heat exposure during high heat days. This could be particularly challenging for residents with limited mobility to access cooling centers.

Adaptive Capacity

Overall, adaptive capacity for power and energy is **high** in Putnam County due to the ability to support backup power and maintain infrastructure. The County has made progress on adaptation actions that help reduce vulnerability to power outages and support continuity of essential services. For example, the County has secured backup generators on wheels and trailers, making progress on the 2021 HMP goal for the Highway Department to secure “large, fixed generators (800 kW) that can be deployed via tractor trailer to lifeline facilities as well as additional smaller, mobile generators that can power traffic lights.”²⁰² Some libraries that serve as cooling centers also have access to generators.²⁰³ While not currently in place, Putnam County has a goal in its 2021 Hazard Mitigation Plan to create an incentive program for private gas station/fuel distributors to secure backup power generators.²⁰⁴ Notably, there are still some areas where backup power generation is not available. For example, the Friendship Center in Carmel, NY currently lacks backup power supply—although the facility is located within walking distance to the TOPS building, a cooling/emergency shelter equipped with backup power.

Travel + Transportation

Asset Description

Putnam County’s transportation infrastructure is a critical resilience asset that supports daily mobility, economic activity, and emergency response before, during, and after climate-related hazards. Major transportation corridors, including the I-84, the Taconic Parkway, Route 6, Route 9, and Route 9D, serve as vital regional connectors, supporting commuter travel, freight movement, and access to healthcare and emergency services. There are also many County-owned and local roads that are especially important for reaching residential areas, rural communities, and critical facilities.²⁰⁵

Public transit further strengthens the County’s resilience by providing redundant, equitable, and accessible transportation options, particularly for residents without access to personal vehicles. The Putnam Area Rapid Transit (PART) public bus system includes three regular routes; a complementary paratransit program; one seasonal trolley; a commuter shuttle for the Croton Falls Metro North Station; and a micro-transit service in Patterson, and portions of Southeast and Carmel.^{206 207} As of 2026, MV Transportation operates the PART system and Via Transportation operates the microtransit service.^{208 ix} Routes outside of the County also provide transportation options to County residents including Housatonic Area Regional Transit (HART) and Westchester County Bee Line routes and further enhance connectivity beyond county borders.²⁰⁹

Rail infrastructure also plays a key role in resilience. The Metro North Harlem Line and Hudson Line provide train travel options to Albany and New York City. Railroad stops are present in Breakneck, Brewster Village, Southeast, Cold Spring, Garrison, Manitou, and Patterson.²¹⁰ Rail transportation is important to the County for daily commutes, travel needs, and access to critical services like healthcare. It also offers alternatives to roadway travel during fuel shortages, extreme weather events, or roadway disruptions.

From a climate resilience perspective, transportation infrastructure is essential for emergency response and evacuation. Specific evacuation routes in Putnam County include: Route 9D, Route 9, Sprout Brook Road, Oscawana Lake Road, Peekskill Hollow Road, Taconic State Parkway, Route 301, Route 84, Route 311, Route 6, Route 22, Route 684.²¹¹ A map of designated evacuation routes in Putnam County can be found below:

^{ix} MV Transportation operates Putnam Area Rapid Transit on a contractual obligation, which terminates on March 31, 2027 as of the authorship of this report.

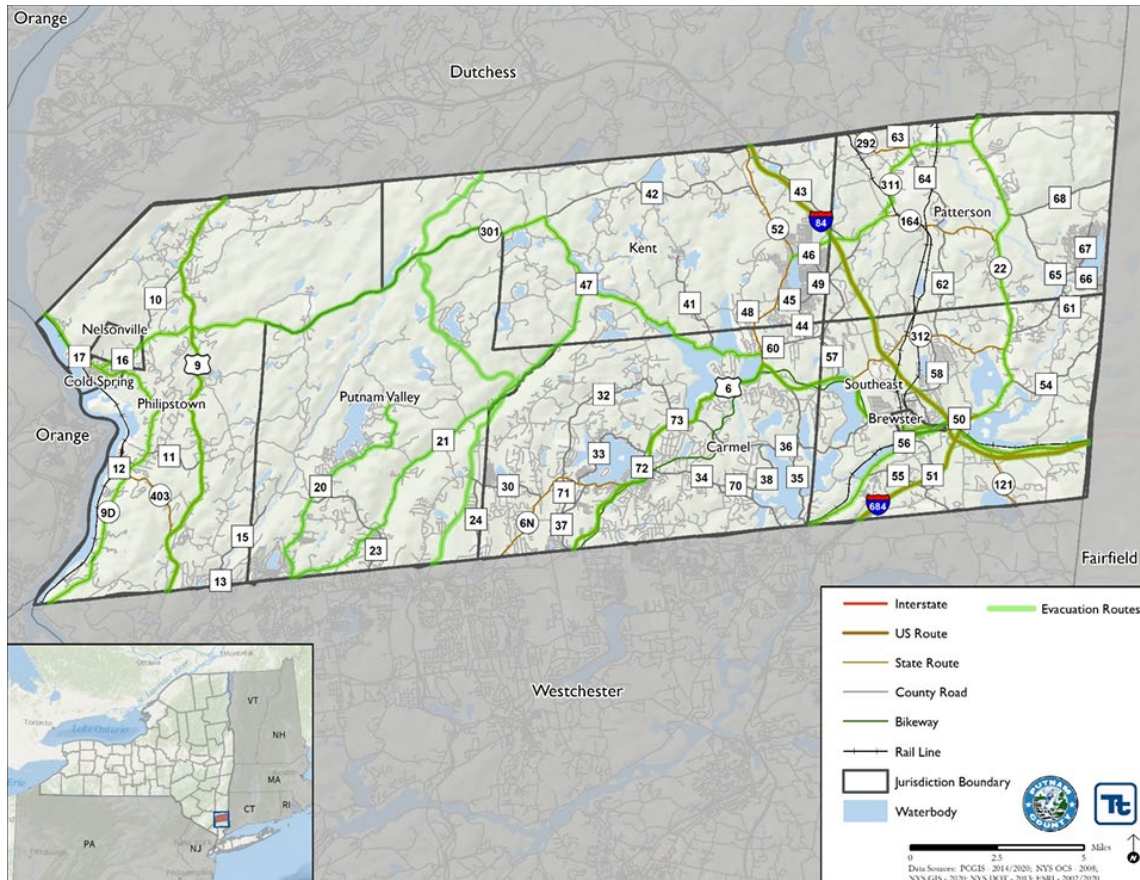


Figure 31: Map of Evacuation Routes in Putnam County | [Putnam County Hazard Mitigation Plan \(2021\) Section 4](#), p. 60.

Survey Response

Overall, stakeholders indicated that travel and transportation should be a **medium-high priority** for County resilience planning, depending on the specific transportation-related asset evaluated. Within this category, access to safe travel and transportation options was ranked as the highest priority, followed by availability of evacuation routes, and access to public transportation. A breakdown of participant prioritization levels can be found below for travel and transportation-related assets.

	High	Medium	Low
Access to safe travel + transportation options	70.6%	22.4%	7%
Availability of evacuation routes	58.7%	27.3%	14%
Access to public transportation	50.3%	32.9%	16.8%

Travel and transportation disruptions were noted by many survey respondents. When asked about personal experiences with disruptions due to climate hazards, 36 respondents described transportation/travel-related disruptions in the County. Examples of stories shared:

- *"We live on [...] road and there have often been trees and power lines down or roads washed out that prevent us from getting out. Last year our road was washed out by a storm and our driveway was obstructed by an enormous sink hole and we had to get out— our car was irreparably damaged in the process."*
- *"There is flooding on Route 9, also in downtown Cold Spring, power outages happen all the time, mostly from felled trees which happen frequently."*
- *"Route 9D, Route 403 frequently flood or turn into rapids during heavy rain."*

Exposure

Travel and transportation assets in the County are exposed to **increasing temperatures, rising sea levels, and changing precipitation patterns.**

Sensitivity

Climate hazards can impact travel and transportation options in the County, including by (1) flooding roadways/rail lines, (2) necessitating evacuation, (3) damaging road infrastructure, and/or (4) impacting transportation users. First, roadways and rail lines are susceptible to flooding, both from sea level rise and from increased precipitation. According to Putnam County's Hazard Mitigation Plan, ~28.7%, or 420 miles of roadways in Putnam County, are at risk under a 1% annual chance flood event scenario. Roads that would be impacted are as follows: "U.S. Routes 6 and 9, Interstate 684 and 84, State Roads NY-164, NY-22, NY-292, NY-301, NY-311, NY-52, NY-6N, and NY-9D and various county roads."²¹² Notably, many of these roads overlap with portions of the County's evacuation routes. See [Appendix M](#) for maps of County and non-County roads that fall within the 0.2% Annual Chance floodplain and for additional information about potential flood risks. Rail lines are also susceptible to flooding. According to a 2025 MTA press release, 80% of the Hudson Line—which services Putnam County—could face flooding concerns from both sea level rise and precipitation.²¹³

Second, flooding, severe storms, or other climate hazards could prompt evacuation. Putnam County has existing planning documents—including the Hurricane and Tropical Storm Emergency Evacuation Guide—to support evacuation planning. In the event of evacuation, people without access to personal transportation, elderly adults, and people with disabilities may be particularly vulnerable due to limited transportation access.

Third, road infrastructure is vulnerable to damage from storms, precipitation, and sea level rise as well as to extreme heat. According to the New York State Climate Impacts Assessment, extreme heat can impact the longevity of asphalt, damage roads, harm concrete, and impact bridge joints. Similarly, “washouts” and damage from fallen debris can impact roadways in the event of severe precipitation or storms.²¹⁴ Such damage to roadways has been documented in the County in the past. For example, flooding in July 2025 led to “cobblestone-sized rocks strewn across major roadways from water washout,”²¹⁵ and a major rainfall event in 2023 led to storm damage including at Peekskill Hollow Road in Putnam Valley and Old Manitou Road in Garrison.²¹⁶ Sea level rise could pose additional risks to roads, bridges, and protective infrastructure/natural landscapes near roads.²¹⁷

Fourth, climate hazards can present challenges for road users. High temperatures can pose health risks for people waiting for public transportation or using active transportation. Debris, flooding, and severe precipitation can also impact road/driving safety.

Adaptive Capacity

Overall, adaptive capacity for travel and transportation is **high** in the County, although there is some variation depending on the mode of transportation and ownership models. For example, Putnam County has greater control over county-owned roads and bridges than rail lines or bus systems operated by external entities.

Putnam County has undertaken—and continues to plan—actions that strengthen the adaptive capacity of its transportation system. Past efforts include culvert and bridge replacement projects that improve system reliability and reduce vulnerability to flooding and extreme weather.²¹⁸ Furthermore, creating an Emergency Transportation Plan is a current goal for the County, according to the 2021 Hazard Mitigation Plan.²¹⁹ This plan could support coordinated evacuation, emergency response, and continuity of transportation services during climate-related events.



Image 5: Damage outside Ludington Court Highway Garage in July 2023 in Kent, NY | Kent Highway Department.



Image 6: Flooding outside Ludington Court Highway Garage in Kent, NY. Kent is working to reduce the vulnerability of this facility by building an alternative driveway to the site that is less prone to flooding | Kent Highway Department.

Cooling/Warming Centers

Asset Description

Cooling and warming centers are critical community resilience assets that protect public health during extreme temperature events. Many libraries and town halls serve as designated cooling centers in Putnam County, providing safe, air-conditioned spaces where residents can seek relief during heat waves. These facilities are typically open to the public, centrally located, and familiar to residents, making them effective and accessible locations for emergency use. A full list of cooling centers can be found below:

Cooling Centers		
Putnam County continues to promote awareness and outreach to residents about available cooling centers during the summer months via the County's Department of Health and Bureau of Emergency Services website, Facebook, Instagram, and Twitter accounts. Select local libraries, town halls, senior centers, and other public facilities are available as a cooling centers, though residents are encouraged to call ahead to confirm hours of operation. All PART routes (1, 2, and 5), the seasonal Cold Spring trolley (operating Saturdays and Sundays, Memorial Day to Labor Day weekend), and the Putnam On-Demand service area have designated stops or options to stop at or near the libraries and town halls. As of 2026, below is an outline of the cooling centers available during the summer months.		
LOCATION	CONTACT	HOURS OF OPERATION (CALL AHEAD TO CONFIRM)
• Brewster Public Library	845-279-6421	Monday-Thursday: 9am-7pm
• Desmond Fish Public Library (Garrison)	845-424-3020	Monday-Friday: 10am-5pm
• Julia L. Butterfield Library (Cold Spring)	845-265-3040	Monday & Wednesday: 10am-8pm Tuesday & Thursday: 10am-5pm Sunday: 10am-3pm
• Kent Public Library	845-225-8585	Monday-Wednesday: 10am-8pm Thursday: 10am-5pm
• Mahopac Public Library	845-628-2009	Monday-Thursday: 9:30am-8pm
• Patterson Library	845-878-6121	Monday-Thursday: 10am-8pm Friday: 10am-5pm
• Putnam Valley Library	845-528-3242	Wednesday: 10am-8pm Friday: 10am-5pm
• Reed Memorial Library (Carmel)	845-225-2439	Monday & Wednesday: 10am-5pm Tuesday & Thursday: 10am-7pm
• Patterson Recreation Center	845-878-7200	Monday-Thursday: 9am-9pm
• Hudson Valley Regional Community Health Center (Brewster)	845-878-9078	Monday-Thursday: Open 24 hours
• Putnam Valley Senior Center	845-808-1730	Monday-Thursday: 9am-2pm
• Town of Carmel Town Hall	845-628-1500	Tuesday-Thursday: 9am-4pm
• German American Club (Putnam Valley)	845-528-5800	Thursday-Friday: 9am-9pm
• Knights of Columbus (10 Fair Street, Carmel)	845-225-6318	*Call Ahead

Table 2: Cooling Centers in Putnam County | [Putnam County](#)

According to Putnam County's Hazard Mitigation Plan, when warming shelters are needed, their locations are shared via the Putnam County website and social media, as well as on municipal websites.²²⁰ For example, in winter 2025-2026, the Carmel Town Hall was used as a warming center. The County also has a "Code Blue" policy that can be enacted during winter weather conditions. Bel Air and Henry Van Motels in Brewster have previously been used as emergency shelters during "Code Blue" situations.

Survey Results

Access to cooling and warming centers was generally ranked as a **medium priority** for County resilience planning based on stakeholder survey responses. A breakdown of participant prioritization levels can be found below for access to cooling and warming centers.

	High	Medium	Low
Access to cooling and warming centers	48.3%	35.7%	16.1%

When asked about personal experiences with disruptions due to climate hazards, one respondent described disruptions related to cooling/warming centers.

Exposure

Access to cooling/warming centers could be impacted by **rising temperatures** and **changing precipitation**.

Sensitivity

Climate hazards could impact cooling and warming centers by (1) increasing demand for cooling centers, (2) impacting the accessibility of centers, and/or (3) damaging physical infrastructure. First, as temperatures rise, there may be an increase in the number of days that require opening cooling centers. This increase in demand could have variable impacts on different communities within the County, depending on the availability of cooling centers. For example, Putnam Lake is one of the most vulnerable places in the County to heat, based on the New York State Department of Health Heat Vulnerability Index.²²¹ However, it currently does not have a cooling center.

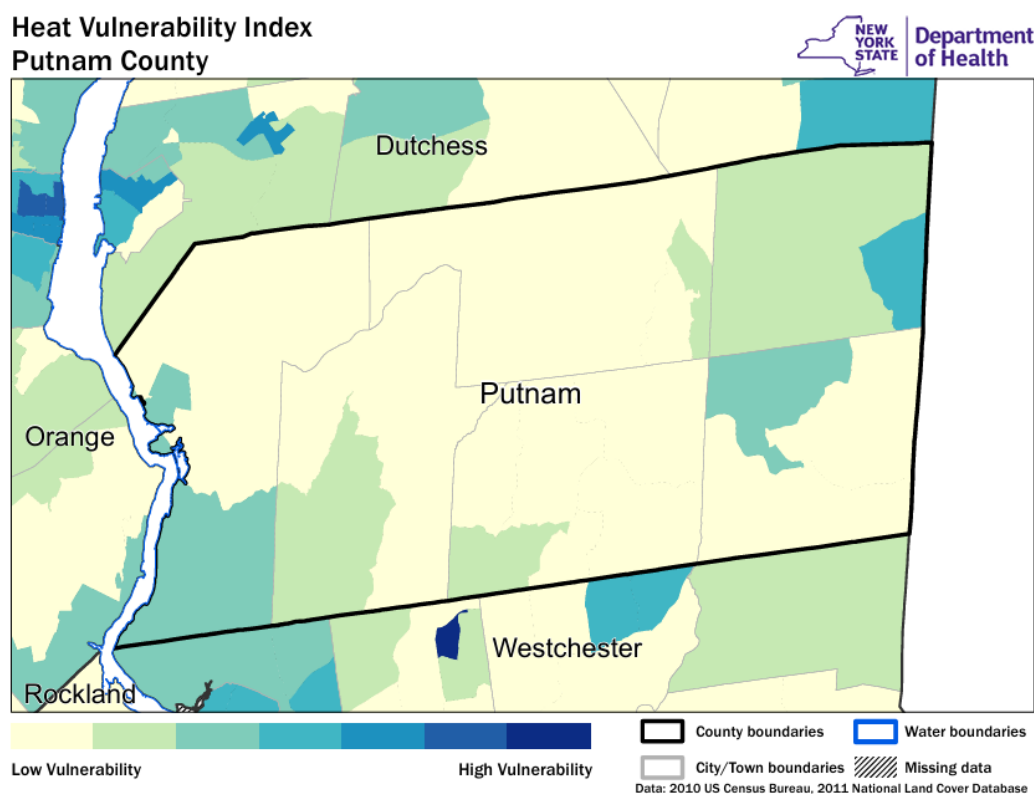


Figure 32: The New York State Department of Health developed a Heat Vulnerability Index, based on language, socioeconomic, environmental, and elderly isolation/vulnerability characteristics, to inform where heat vulnerable communities may be located. In Putnam County, heat vulnerability is generally low to moderate, coded between 1-4 on the 7-color Heat Vulnerability Index scale (see map below). Putnam Lake has a heat vulnerability index level

that scores 4 out of 7, which is the highest level of heat vulnerability present in the County. | [New York State Department of Health](#).

Second, there are potential compounding climate impacts that could impact the accessibility of cooling centers. For example, if extreme heat and severe precipitation events co-occur, transportation to cooling shelters could be disrupted. Vulnerable populations may also face increased barriers to accessing cooling centers due to language barriers in accessing communications materials about cooling centers or mobility challenges related to reaching cooling centers.

Third, flooding from precipitation could also impact the physical infrastructure of cooling centers. For example, the Patterson Library is located within a 0.2% Annual Change Flood Hazard Area, and the Putnam Valley Library is located close to a regulatory floodway and 0.2% Annual Chance Flood Hazard Area.²²²

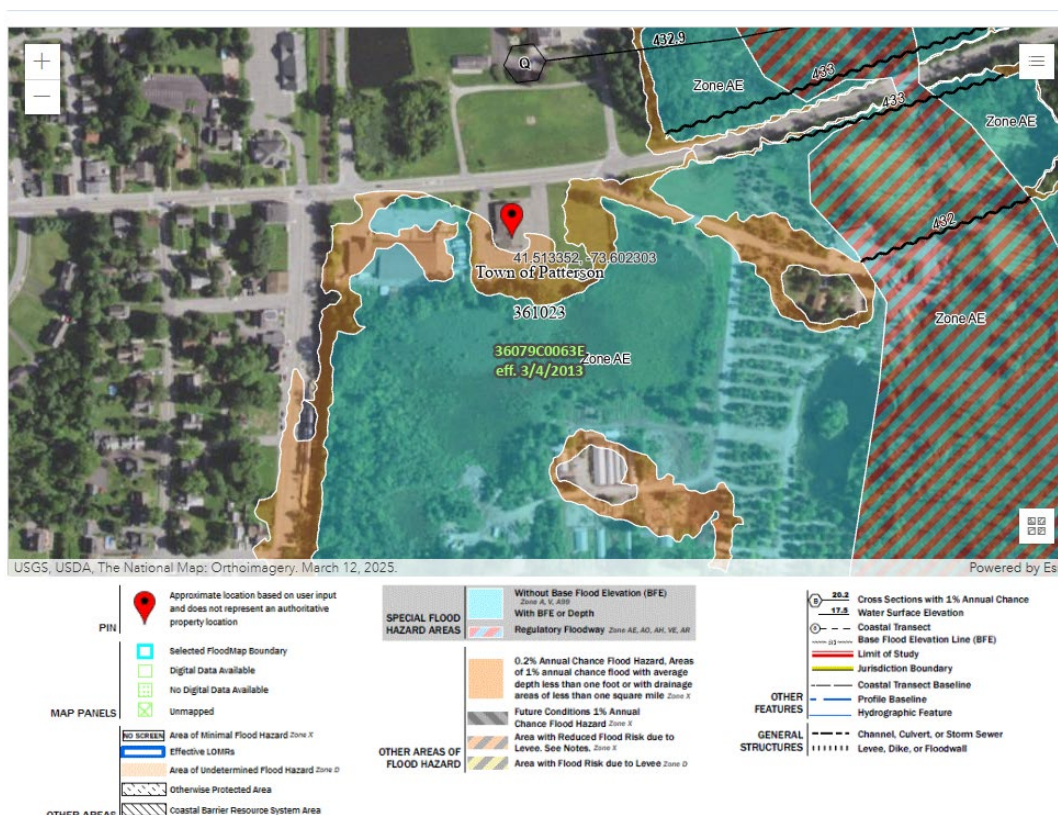


Figure 33: Patterson Public Library is located in a 0.2% annual chance flood hazard area. | [FEMA's Flood Mapping Center](#)

Adaptive Capacity

Overall, the adaptive capacity for cooling and warming centers is **high** in Putnam County. While the physical infrastructure of cooling centers (i.e. library and town hall buildings) is not controlled by the County, Putnam County can support adaptive capacity in other ways. For example, it can conduct outreach about cooling center locations and heat risks. Further, there has been progress increasing the adaptive capacity of cooling centers in Putnam County. For example, some libraries have generators that can withstand power outages, and cooling centers at libraries and town halls are currently accessible by public transportation.^{223 224}

Storm + Emergency Shelters

Asset Description

Emergency shelters are a vital component of Putnam County's emergency management and climate resilience framework, providing safe, temporary refuge for residents displaced by severe weather and other hazard events. Putnam County has a storm shelter at the Donald B. Smith Government Center Campus in Carmel, although it is not operated as a full-time storm shelter.

Most storm shelters are available through partnerships with municipalities, churches, and local organizations. Coordination with shelter partners is facilitated by Red Cross, helping to ensure consistency with established sheltering standards and emergency protocols. From a resilience perspective, this flexible, partnership-based sheltering model allows the County to scale shelter operations based on the severity and duration of an event. When a hazard event is forecasted that will require sheltering, partners are either contacted or will reach out to volunteer their facilities. When an unanticipated hazard event occurs, partner organizations are contacted directly to quickly activate shelter locations.

Emergency shelters also play a critical role in addressing the needs of vulnerable populations, including residents without safe housing, those living in flood-prone areas, individuals with limited mobility, and households experiencing prolonged power outages. Currently the County also has one deployable trailer for pets. Locations for storm shelters are advertised through social media and/or the County website.

Survey Results

Access to adequate storm and emergency shelters was generally ranked as a **medium-high priority** for County resilience planning based on stakeholder survey responses. A breakdown

of participant prioritization levels can be found below for access to storm and emergency shelters.

	High	Medium	Low
Access to adequate storm and emergency shelters	55.2%	30.1%	14.7%

Exposure

Storm shelters could be impacted by **changing precipitation, sea level rise, and increasing temperatures.**

Sensitivity

Storm shelters face variable sensitivity to climate hazards. Because storm shelters are coordinated for each hazard event, maps of all storm shelters are not available. However, storm shelters are generally believed to be located outside of flood and hazard areas. Increases in precipitation and severe storms could increase the need for storm shelters and the number of events that require shelters. Power outages from brownouts due to extreme heat and/or from storm events could impact the ability to communicate information about storm shelter locations if residents lose access to power to check for website/social media updates. Flooding from sea level rise and/or from precipitation events could impact travel and transportation to storm shelter locations. Reaching vulnerable populations could also be a particular challenge for storm shelter coordination due to outreach and communications barriers and/or transportation barriers.

Adaptive Capacity

Adaptive capacity for storm shelters is **medium** in Putnam County. Operations of shelters run by partner organizations are not controlled by the County, and different shelters may have different rules. As such, the County has limited ability to influence the adaptive capacity of individual shelters. Nonetheless, the County can influence the coordination of storm shelters and outreach to residents. It also has current goals that could expand access to shelters for County residents. For example, Putnam County's 2021 Hazard Mitigation Plan includes a goal to create a shelter facility that can accommodate pets and service animals at Tilly Foster Farm.²²⁵

Stormwater Infrastructure

Asset Description

Stormwater infrastructure is a critical component of community resilience, as it manages runoff from storm events and reduces the risks associated with flooding, erosion, and water damage. Stormwater infrastructure addresses runoff from storm events by diverting water away from sites (gray infrastructure) or supporting its storage/infiltration into sites (green infrastructure).²²⁶

When stormwater infrastructure is undersized, degraded, or absent, excess runoff can overwhelm roads, bridges, buildings, and emergency facilities, leading to flooding, infrastructure damage, and service disruptions. Green stormwater infrastructure provides additional resilience benefits by slowing runoff, reducing peak flows, improving water quality, and lowering long-term maintenance costs. These systems can also offer co-benefits such as urban cooling, groundwater recharge, and enhanced ecological function, making them particularly valuable in developed areas and flood-prone locations.

Survey Results

Maintaining stormwater infrastructure was generally deemed a **high priority** for county resilience planning based on stakeholder survey feedback. It generated the second highest prioritization level from survey respondents out of all infrastructural assets. A breakdown of participant prioritization levels can be found below.

	High	Medium	Low
Maintaining stormwater infrastructure	78.3%	16.1%	5.6%

When asked about personal experiences with disruptions due to climate hazards, six respondents described experiences or challenges with stormwater and/or stormwater infrastructure.

Exposure

Stormwater infrastructure in Putnam County is susceptible to **changing precipitation**.

Sensitivity

Right-sized stormwater infrastructure can help protect communities from flooding and damage. However, if not equipped to handle expected water levels, inadequate stormwater infrastructure can pose significant resiliency risks. Locations prone to flooding along “roadways with underlying culverts” have already been identified in the County’s 2021 Hazard Mitigation Plan. Specific locations of concern include the “area surrounding Lake Mahopac in the Town of Carmel, the vicinity of Wicopee Road in the Town of Putnam Valley, and Holmes in the Town of Patterson.”²²⁷

Additional challenges with stormwater infrastructure have also been documented within the County. For example, a July 2025 news article noted that a rain event exceeded storm drain capacity in Patterson, after the County received ~5 in of rain in < 2 hours.²²⁸ A Putnam County News and Press Release article described a July 2023 storm event that led to a State of Emergency in the County and damaged “numerous roads, bridges, and culverts.”²²⁹

As precipitation and severe storms increase, stormwater infrastructure may face increased susceptibility to flooding and damage. However, data gaps in the condition of crossings in Putnam County present potential challenges to fully assess sensitivity to climate impacts. Crossings are areas where roads cross a stream or wetland. While some crossings in the County have already been assessed—particularly in Putnam Valley and Philipstown—a significant number of crossings remain unassessed.

Adaptive Capacity

Adaptive capacity for stormwater infrastructure is **high**. Generally, the ability to upgrade stormwater infrastructure to address expected climate impacts is possible, including at the County-level. For example, Putnam County has previously completed culvert replacement projects. One project involved resizing a culvert "from 15.5' to 18' to accommodate aquatic connectivity and 50-100 year flooding risks."²³⁰ Cost could present one barrier to improving the adaptive capacity of stormwater infrastructure. While Putnam County does not currently have a stormwater management plan, it previously had a goal to create one, although the 2021 Hazard Mitigation Plan indicates that this goal's status as "discontinue."²³¹

Dams

Asset Description

Dams can be used to store water for recreation, power, drinking water, and irrigation. **While often used for beneficial purposes, dams can pose significant resilience-related liabilities in the event that they overtop or fail.** Specifically, the NY DEC highlights that potential energy from stored water could threaten human safety as well as damage properties.²³²

Putnam County's numerous dams present potential challenges and opportunities for advancing County resilience. The New York State Inventory of Dams, published through the New York State Department of Environmental Conservation, indicates that there are 121 dams in Putnam County. Many of these dams are in need of maintenance or repair, increasing vulnerability to climate change.²³³ A map of dams located in Putnam County can be found below:

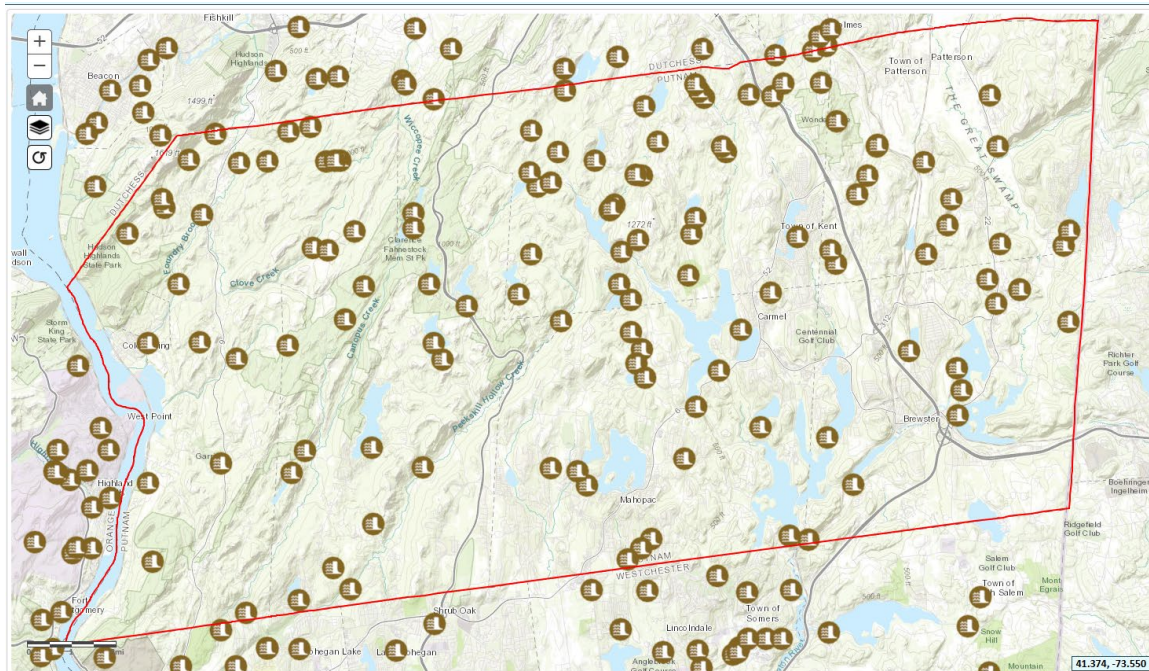


Figure 34: Map of dams in Putnam County | [DEC Info Finder](#)

Survey Results

Overall, preventing dam failure was ranked as a **high priority** for County resilience planning based on stakeholder survey responses. Preventing dam failure was ranked as the third highest priority for County resilience planning out of all infrastructural assets. A breakdown of participant prioritization levels can be found below:

	High	Medium	Low
Preventing dam failure	77.6%	15.4%	7%

Exposure

Dams in Putnam County are particularly vulnerable to **changing precipitation**.

Sensitivity

Dams, particularly if poorly maintained, could pose significant risks under projected increases in precipitation. Specifically, significant precipitation events could lead to dams overtopping or failing. Consequences of dam failure are most significant for large dams, although failure at smaller dams can lead to negative environmental impacts through water quality impairment.²³⁴ Many of the dams in Putnam County are in need of repair or maintenance, increasing vulnerability to changes in precipitation/severe precipitation events. Of the 21 High Hazard dams in Putnam County, 11 have a "last condition rating" of either "unsound - deficiency recognized," (6 dams), "unsound-fair" (3 dams), or "deficiently maintained" (2 dams).²³⁵ Across all the dams located in Putnam County, 81 were "not rated;" 13 had "no deficiencies noted;" 4 were "deficiently maintained;" 15 were "unsound

with deficiencies recognized;" 5 were "unsound-fair;" 2 were "unsound [with] more analysis needed," and 1 was "unsafe."²³⁶

Adaptive Capacity

Adaptive capacity for dam infrastructure in Putnam County is **medium**. In general, data access poses a significant challenge for assessing the vulnerability of dams. For example:

- Because dams are owned by a variety of different parties, the County does not have up-to-date information about the status and maintenance of all dams.
- If any dams were constructed and not reported, this could be a potential data gap.
- Putnam County also does not currently have maps that illustrate potential flood impacts from dams.

Additionally, Putnam County cannot directly control the operations/maintenance of all dam infrastructure, because dams in the County are owned by a variety of entities including: Putnam County, New York City, state government, and private entities.²³⁷ However, the County would be negatively impacted should a dam fail, regardless of who owned the dam. Primary avenues available for the County to influence adaptive capacity for dams include outreach, education, data collection, coordination with dam operators, and maintenance of County-owned facilities.

Septic Infrastructure

Asset Description

Septic systems provide critical services in Putnam County but could face increasing risks due to climate impacts. Septic systems are a decentralized wastewater treatment strategy.²³⁸ They include two parts: a septic tank (used to digest organic matter and sort out materials) and a drain field (used to release effluent).²³⁹ When functioning properly, septic systems can treat wastewater in a relatively low-cost way.²⁴⁰ However, septic systems can pose risks to communities if not properly maintained or if drain fields are compromised. Within Putnam County, the majority of homes use septic systems, making this a critical asset for County resilience planning.²⁴¹

Survey Results

Preventing damage to septic infrastructure was generally ranked as a **high priority** for County resilience planning by stakeholder survey participants. A breakdown of participant prioritization levels can be found below for septic infrastructure.

	High	Medium	Low
Preventing damage to septic infrastructure	76.2%	16.1%	7.7%

When asked about personal experiences with disruptions due to climate hazards, 1 respondent described damage to a septic system.

Exposure

Septic infrastructure is vulnerable to flooding from **changing precipitation** and **sea level rise**.

Sensitivity

Climate hazards could impact the safe operation of septic systems, primarily by interfering with drainage areas. Septic systems need unsaturated drainage systems to function properly.²⁴² Flooding and soil saturation from changing precipitation or sea level rise could damage drainage capacity, posing a variety of potential challenges to Putnam County. For example, according to the NY Climate Impacts Assessment, saturated soils surrounding a septic system can reduce treatment and can cause groundwater and surface water contamination.²⁴³

Adaptive Capacity

Overall, adaptive capacity for septic systems is **medium** at the county level. The County has full oversight of septic systems. For example, the Health Department is charged with reviewing septic repair permits to ensure compliance. The Health Department has also previously conducted education related to septic maintenance that could modestly impact adaptive capacity. For example, a January 2024 News & Press Release addressed septic maintenance.²⁴⁴ However, management of individual septic systems is conducted at the unit level, which could lead to data gaps and uncertainties. Changing climate conditions impacting soil moisture and drainage could be challenging to address.

Homes and Residential Properties

Asset Description

Homes and residential properties can contribute to the safety and wellbeing of residents but may face high climate vulnerability. Residential properties play a key role in the day-to-day experiences of residents. They represent a major source of financial investment and may hold intrinsic value. Within Putnam County, the vast majority of residential properties are single family homes, and most homes are owner-occupied (83.8%).^{245 246}

Residential properties also impact resilience and hazard preparedness within Putnam County. For example, maintaining safe, well-adapted homes and residential properties can provide a critical lifeline during major hazard events: homes can be places of refuge during storm events, provide access to necessary cooling during extreme heat days, or serve as protection against poor outdoor air quality. These functions may be particularly important

for vulnerable communities to maintain health and safety during hazard events. Given that residential buildings comprise ~96% of all buildings in the County, protecting homes and residential buildings is a key challenge.²⁴⁷

Survey Results

Overall, survey participants ranked protecting homes from property damage as a **high priority** for County resilience planning. A breakdown of participant prioritization levels can be found below for residential properties.

	High	Medium	Low
Protecting homes from property damage	66.4%	25.2%	8.4%

When asked about personal experiences with disruptions due to climate hazards, eight survey respondents described experiences related to residential buildings/properties. An example of a story shared can be found below:

- *"Flooding disrupts & damages nearly everything & is often accompanied by power outages; I lost a months old water heater because of flooding & associated power outage, septic was compromised, a good portion of run off could be managed in many areas by splitting & diverting run-off and continuing evaluation, but at what cost?"*

Exposure

Residential properties face risks from **rising temperatures, sea level rise, and changing precipitation.**

Sensitivity

Climate hazards can impact residential properties due to direct impacts from rising temperatures and flooding as well as by exacerbating social and financial challenges related to housing. First, increasing temperatures could pose challenges to building integrity, comfort, and maintenance costs. According to the NY Climate Impacts Assessment, higher temperatures can negatively impact building materials and require more frequent repair.²⁴⁸ Changing temperatures will also impact the ability to maintain comfortable temperatures in residential buildings, potentially requiring less heating in the winter months, but more air conditioning in the warmer months.²⁴⁹ Putnam County has many older and historic buildings as part of its residential building stock that may be particularly vulnerable to these impacts (see "[Historic Preservation](#)" section).

Flooding from severe precipitation events and sea level rise could also impact residential properties. For example, flooding could result in health concerns due to mold and could bring risks of expensive water damage.²⁵⁰ The HMP estimates that \$31.3 million in losses due to building and content losses could arise from a 1% chance flood event in the residential

sector.²⁵¹ Susceptibility to flood damage varies across the County. About 894 people reside in 1% annual flood event hazard areas, and 1,097 people reside in 0.2% annual flood event hazard areas, according to Putnam County's Hazard Mitigation Plan.²⁵² Properties located along the Hudson River could also face higher risks due to sea level rise, particularly in Cold Spring and Philipstown.

The map below illustrates the distribution and exposure density of residential properties in the County. This metric demonstrates the value of residential properties—including building structures and content—per square mile. While there are areas along lakefronts that have high concentrations of residential value per square mile, the County's Hazard Mitigation Plan specifies that much of the development near lakes and reservoirs is not within the floodplain. However, there can be "unmapped areas of flood hazard and localized drainage issues [that] contribute to flood hazards throughout the County along creeks and lakeshores."²⁵³

Figure 4.4-6. Distribution of Residential Building Stock and Value Density in Putnam County

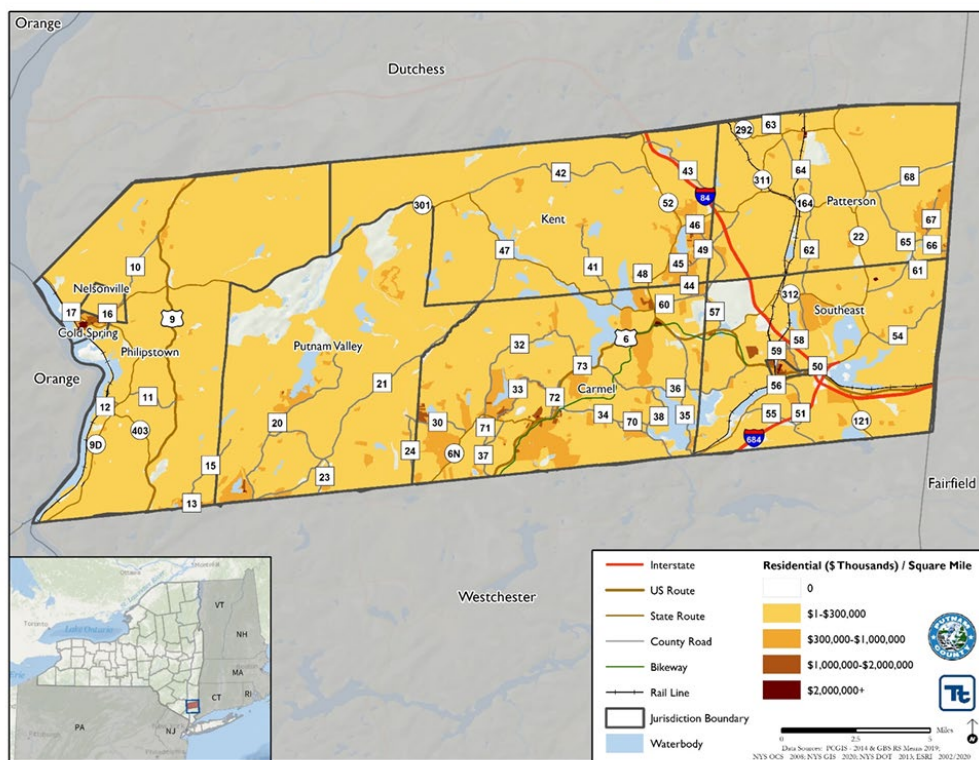


Figure 35: Distribution and exposure density of residential properties in the county | [Putnam County Hazard Mitigation Plan Section 4, p. 19.](#)

Second, damage to homes and properties could cause social and financial implications for homeowners and renters. For example, there could be costs associated with:

- recovering from structural, storm, or flooding damage

- increased air conditioning demand.

These financial impacts could be particularly impactful for vulnerable populations or for those without insurance. According to Putnam County's 2021 Hazard Mitigation Plan, "the Town of Patterson is estimated to have the lowest percentage of flood insurance given the number of buildings in the floodplain, with approximately one-third of buildings in the flood zone being insured. In Nelsonville, Putnam Valley, Philipstown, and Southeast, the estimated percentage of insured buildings in the floodplain ranges between two-thirds and 86 percent."²⁵⁴

Adaptive Capacity

Overall, adaptive capacity for residential properties in Putnam County is **medium**. Many land use decisions that could impact residential properties and exposure to hazards are completed on the local level (i.e. zoning). However, there are actions that can be taken at the County-level. For example:

- Putnam County's Hazard Mitigation Plan has already identified areas suitable for relocating housing or for building new housing away from high hazard areas.²⁵⁵

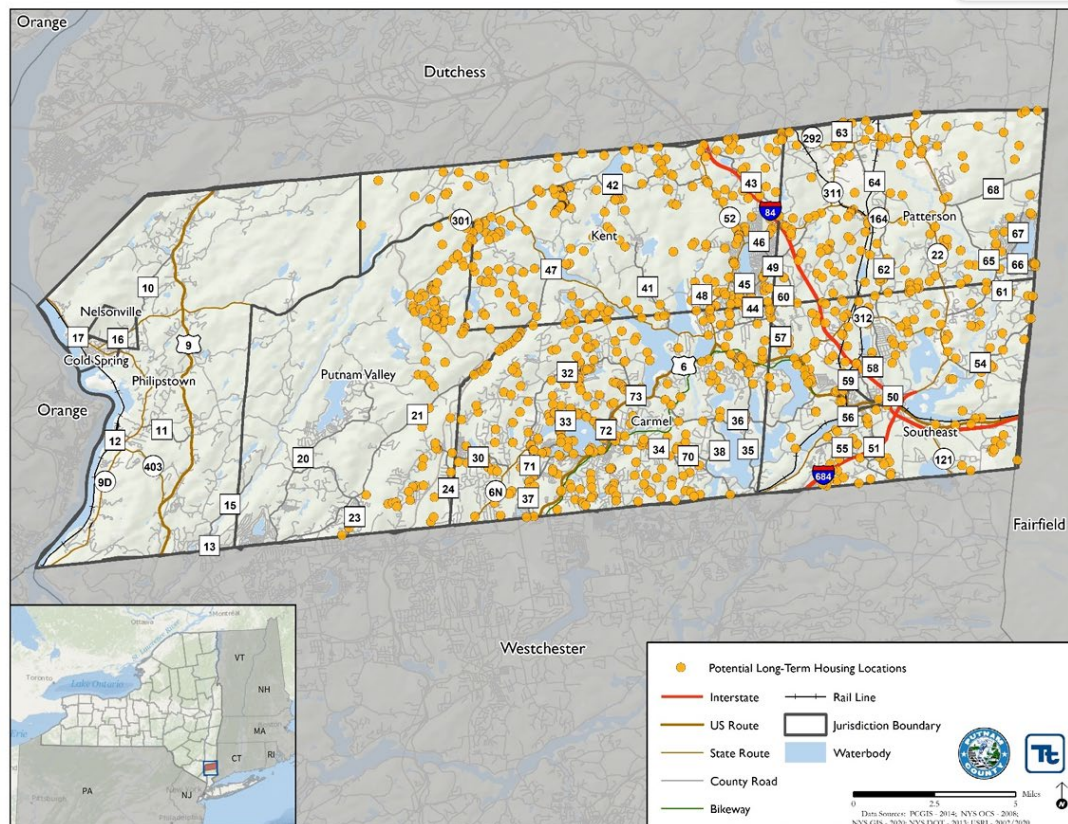


Figure 36: Potential Long-Term Housing Locations in Putnam County, New York | [Putnam County Hazard Mitigation Plan Section 4, p. 58.](#)

- The County has also previously considered conducting a “County-Wide Housing Location/Relocation Planning Initiative for Disaster Displaced Residents and Structures,” although this project was discontinued.²⁵⁶
- Putnam County has existing outreach strategies that could be built upon. For example, the County often conducts outreach following a storm/hazard event, although proactive outreach about hazard preparedness can be improved upon.

Public Buildings

Asset Description

Public buildings are important for County resilience, as they are used by departments to conduct relevant work and represent major financial assets that could be damaged. For example, the Donald B. Smith campus can be used as a storm shelter; the County runs an Emergency Operations Center to organize response during emergencies; and solar panels are used to generate power on the roofs of the Kern Building, the County Office Building, and some buildings within the Donald B. Smith (DBS) Government Campus.^{257 258} Putnam County owns 39 buildings in addition to many non-building properties.²⁵⁹ Additional public buildings are critical for county-level resilience including firehouses and schools, although these properties are managed at more local levels.

Survey Results

Maintaining the operation of public buildings was generally deemed a **lower priority** for county resilience planning based on stakeholder survey responses. A breakdown of participant prioritization levels can be found below for public buildings.

	High	Medium	Low
Maintaining the operation of public buildings	37.8%	47.6%	14.7%

Exposure

Like any building, public buildings could be impacted by all climate hazards, including **sea level rise, changing precipitation patterns, and increasing temperatures.**

Sensitivity

The building sector can anticipate increased cooling costs, black and brownouts, negative impacts on building materials from heat exposure, flooding from sea level rise, and flooding from rivers or extreme precipitation, amongst other impacts.²⁶⁰ A complete analysis of all county buildings was not completed for this assessment due to availability of publicly accessible data. While many buildings appear to be located out of high-risk areas based on FEMA’s Flood Map Service Center, at least one County building is potentially susceptible to flooding. Specifically, the Board of Elections Building and County’s Records

Building could be impacted by increased precipitation and severe storms. It is currently located within an AE zone, based on FEMA’s flood mapping service.²⁶¹ AE zones are Special Flood Hazard Areas, which are locations that would be inundated by a 100-year flood event.²⁶²

Adaptive Capacity

Overall, adaptive capacity for public buildings is **high** in the County, due to direct ownership of properties. However, the adaptive capacity of specific buildings and land parcels could vary due to how land was acquired. For example, vulnerable properties are sometimes acquired via foreclosure, and land acquired by the County could potentially contain vulnerable assets or features. A full assessment of adaptive capacity for public buildings would require further analysis of each land/building property owned by the County as well as county building management priorities and budgetary constraints.

Waste Disposal & Collection

Asset Description

Proper collection and disposal of waste is important for maintaining healthy communities, but waste services and facilities can be disrupted by climate hazards. In general, Putnam County does not control or operate most of the waste infrastructure in the County. According to the DECinfo Locator Tool, there are no active landfills, combustion facilities, household hazardous waste collection facilities, or recyclables handling and recovery facilities within Putnam County—although there are several inactive solid waste landfills.²⁶³ While not county-operated, there are three town-owned transfer stations in Patterson, Kent, and Philipstown. However, the County does run a variety of waste-related programs including two Hazardous Waste Drop-Off Days and drop boxes for medications.²⁶⁴ The County also conducts public outreach on the proper disposal of items such as batteries, medical materials, and cooking and motor oils; encourages at-home composting; and promotes waste reduction practices that residents can adopt²⁶⁵. The County has also recently developed a Local Solid Waste Management Plan, which is anticipated to be finalized and adopted in early Fall 2026. .²⁶⁶

Maintaining proper waste disposal and collection is important for preventing pollution, safeguarding water quality, and protecting public health. Disruptions to waste facilities—whether or not county-owned—could negatively impact quality of life and safety in local communities.

Survey Results

Stakeholders generally ranked maintaining reliable waste disposal systems (waste pickup, recycling etc.) as a **medium-high priority** for County resilience planning. A breakdown of participant prioritization levels can be found below for waste disposal systems.

	High	Medium	Low
Maintaining reliable waste disposal systems	56.6%	35%	8.4%

When asked about personal experiences with disruptions due to climate hazards, two respondents described experiences related to waste disposal and collection.

Exposure

Reliable waste disposal and collection could be impacted by **changing precipitation** and **rising temperatures** in the County.

Sensitivity

Climate hazards could impact waste and disposal facilities directly and indirectly. Town-owned transfer stations are not located within the floodplain based on the FEMA Flood Map Service Center. However, waste collection services could be impacted by disruptions to transportation routes that hinder residents from dropping off waste or curbside pickup programs from reaching residents (see "[Travel and Transportation](#)" section). High heat conditions could impact worker health for municipal curbside pickup programs.

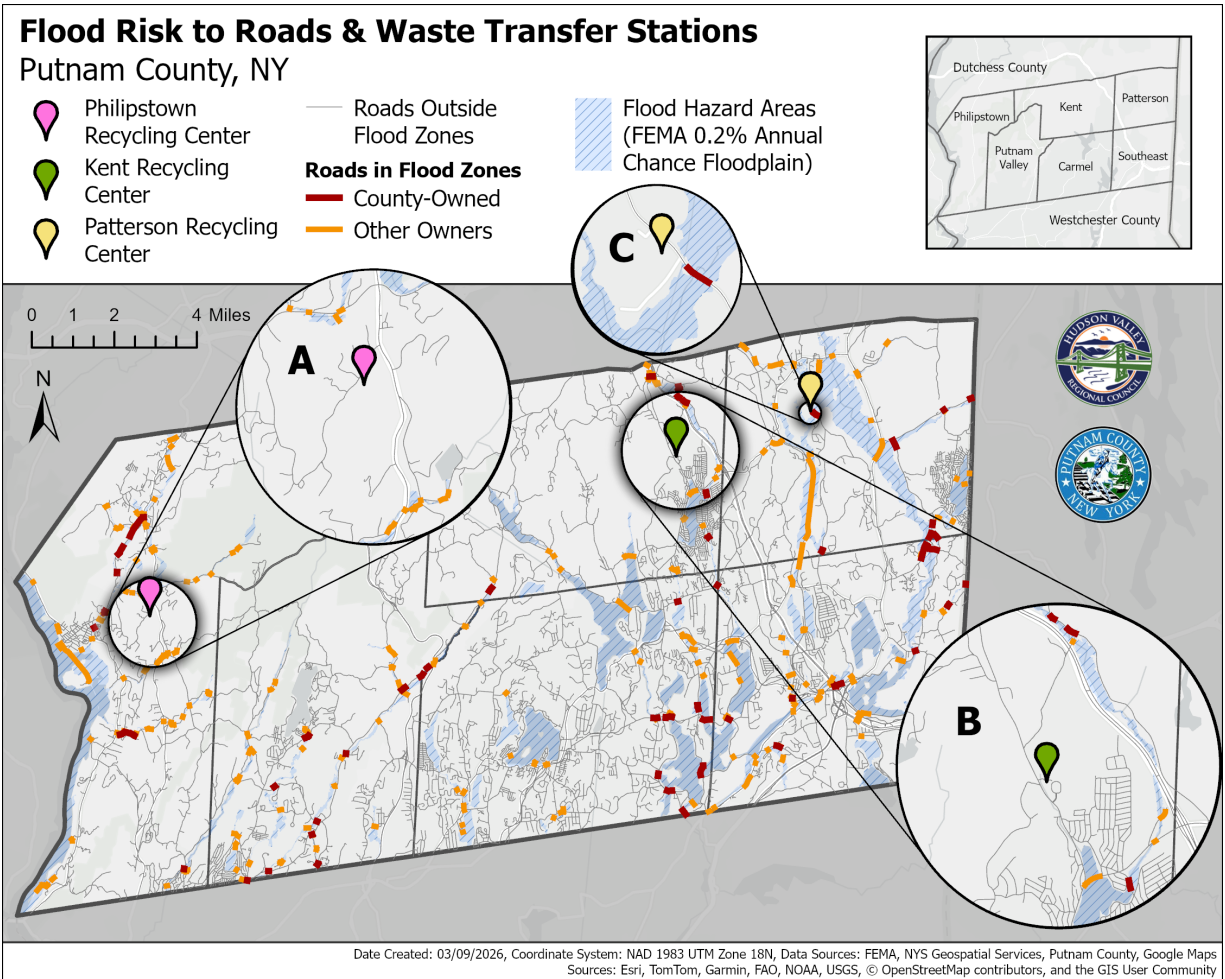


Figure 37: The map above identifies waste transfer stations relative to the FEMA 0.2% Annual Chance Floodplain in Putnam County. Road networks (separated by County and non-County ownership) are also mapped to indicate where routes to and from transfer stations fall within the floodplain. Flood zones were last updated in 2013 for Putnam County and are likely underestimated, suggesting the flood boundaries shown may have greater than a 0.2% chance of occurrence per year.^{267 268} While none of the transfer stations are run by the County, disruptions to transfer stations could impact County residents.

Callouts A, B, and C show the proximity of each transfer station to the floodplain and nearby vulnerable roads. No transfer stations are located within the 0.2% Annual Chance Floodplain. Callout C (top) highlights a County-owned road that intersects the floodplain and leads to the Patterson transfer station. Map callouts do not obstruct floodplains.

Adaptive Capacity

Overall, adaptive capacity for waste disposal and collection systems at the county-level is **low** due to low exposure (see Fig. 36) and the lack of county-level control over waste disposal sites and collection programs. County-level decisions relevant to waste disposal and collection include those related to maintaining transportation infrastructure and/or outreach to residents.

Social Assets

Healthcare Facilities and Services

Asset Description

Healthcare facilities and services are critical resilience assets that protect life, support public health, and enable effective emergency response during both routine conditions and hazard events. There are seven medical or hospital facilities in Putnam County according to the 2021 Hazard Mitigation Plan. This includes one hospital: Putnam Hospital in Carmel, although additional hospitals are available in neighboring communities.²⁶⁹ Medical facilities identified in the Hazard Mitigation Plan are located in Brewster, Carmel, and Southeast.²⁷⁰

In addition to physical healthcare facilities/infrastructure, the County also runs a volunteer Medical Reserve Corps (MRC) to aid in disaster or emergency health needs,²⁷¹ and partners with Empress EMS for emergency medical services.²⁷² The MRC provides trained medical and non-medical volunteers who can augment staffing at shelters, vaccination, or medication distribution sites, and other emergency operations. Empress EMS provides rapid response during emergencies, facilitates transport to hospitals within and outside the County, and plays a critical role in life-saving care during extreme weather events and disasters.

During climate-related hazards such as extreme heat, severe storms, flooding, and extended power outages, healthcare facilities and services must remain operational to treat injuries, manage chronic conditions, and respond to increased demand for emergency and urgent care. The hospital and medical centers rely on continuous power, water, transportation access, and communications, making their protection and resilience essential to the County's overall emergency preparedness.

Survey Results

Access to healthcare facilities and services was generally ranked as a **high priority** for County resilience planning based on stakeholder survey responses. **Of all the social assets, this was ranked as the highest priority.** A breakdown of participant prioritization levels can be found below for healthcare access and services.

	High	Medium	Low
Access to healthcare facilities and services	77.6%	17.5%	4.9%

When asked about personal experiences with disruptions due to climate hazards, four respondents described experiences related to healthcare facilities and services or health more broadly.

Exposure

Access to healthcare facilities and services can be impacted by **rising temperatures, increasing precipitation, and sea level rise.**

Sensitivity

Climate hazards have the potential to impact healthcare facilities/services in the County through impacts on infrastructure and human health. First, climate hazards can cause infrastructural impacts that influence access to healthcare facilities or services. For example, power outages could impact the storage of medications, the operations of medical facilities, and/or the provision of medical care.²⁷³ According to the 2021 Hazard Mitigation Plan, the status of backup power generation at each of the seven medical facilities in Putnam County is unknown or unavailable.²⁷⁴ Furthermore, while Putnam Hospital is located outside of the floodplain, flooding on roads could also impact access to the hospital or other healthcare facilities.²⁷⁵

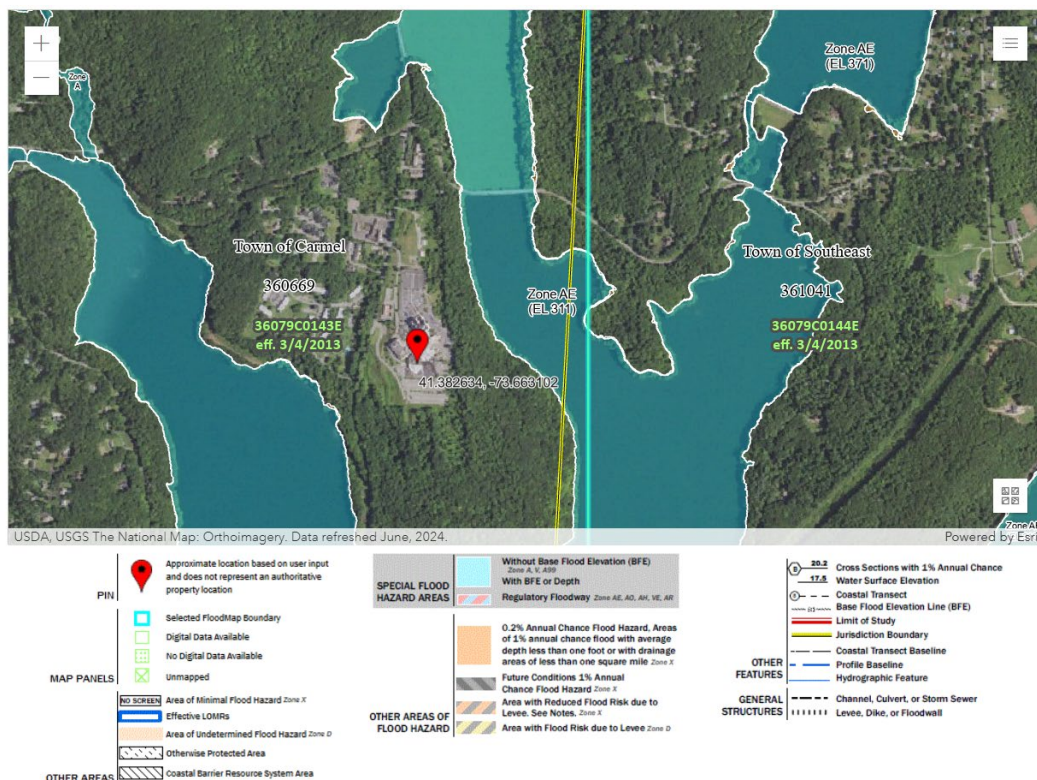


Figure 38: Putnam Hospital is located outside the floodplain | [FEMA's Flood Map Service Center](#)²⁷⁶

Second, according to the World Health Organization (WHO), climate hazards can adversely affect human health. These impacts are especially prevalent in people with pre-existing

medical conditions, disabilities, children, and senior citizens. For instance, increased storms and flooding can cause waterborne illnesses to spread, while wildfires can adversely affect air quality and can aggravate lung and heart conditions.²⁷⁷

Within Putnam County, all three of the top climate hazards—precipitation, sea level rise, and rising temperatures—could impact health and, consequently, demand for health facilities. For example, high heat exposure can lead to physical health concerns; severe precipitation events can lead to injuries or mortality risks; and subsequent flooding can mobilize hazardous substances or lead to moldy conditions.²⁷⁸ Wait times at Putnam Hospital were identified as an area of concern, especially with changing climate conditions.

Vulnerable populations could also be particularly affected. In 2022, 3.5% of the County population had no health insurance, asthma hospitalizations occurred at a rate of 3.5 per 10,000 population, and heart disease caused 52.7 hospitalizations per 10,000 population.²⁷⁹ In 2021, 30.2% of the population was categorized as obese – slightly higher than the New York State average of 29.1%.²⁸⁰ Additionally, those aiding in response/recovery can face greater health risks for some hazards.²⁸¹

Adaptive Capacity

Overall, the adaptive capacity of healthcare facilities and services in Putnam County is **medium**. Resilience to climate hazards at physical healthcare facilities would most likely be controlled by factors outside the County’s control, such as facility-level decisions. However, actions at the County level can influence access to healthcare facilities and services including emergency preparedness and response, management of travel and transportation routes, and provision of public health services. For example, Putnam County’s volunteer Medical Reserve Corps is trained to support in the event of an emergency and to provide emergency preparedness.²⁸²

Local Jobs and Businesses

Asset Description

Maintaining strong local jobs and businesses is critical for County resilience. Local jobs and businesses provide services to the County, support economic wellbeing, and contribute to the routine operations of county life. For example, some major industries in Putnam County include healthcare and social services, retail, management and science, and construction.²⁸³ Strong local jobs and employment opportunities help ensure residents have enough resources to recover from disasters and can provision necessary goods and services.

Survey Results

Maintaining local jobs and businesses was generally ranked as a **high priority** for county resiliency planning based on stakeholder survey responses. A breakdown of participant prioritization levels can be found below for local jobs and businesses.

	High	Medium	Low
Maintaining local jobs and businesses	65%	30.8%	4.2%

When asked about personal experiences with disruptions due to climate hazards, eight respondents described experiences related to local jobs and businesses. Examples of comments shared by residents include:

- *"Storms stop public transport meaning my neighbors can't get to their jobs which has a ripple effect that hurts our whole county. It means they have difficulty paying their rent, buying food, and staying healthy."*
- *"Downed trees prevented me from getting to work after the Tornado in 2018. As did many rainstorms and unplowed roads during the winters. I missed work many days due to the unsafe conditions of the roads in Lake Carmel."*

Exposure

In Putnam County, a variety of local employment sectors and businesses could be impacted by climate hazards, including **increasing temperatures, sea level rise, and changing precipitation patterns.**

Sensitivity

Local jobs and industries will face varying impacts from climate hazards, and outdoor or weather-dependent industries may be particularly impacted. For example, 10.7% of jobs in Putnam County are construction jobs,²⁸⁴ meaning that workers could face high heat exposure or other climate risks.²⁸⁵ Farmers and farm workers could also be impacted by heat exposure, and climate hazards could exacerbate economic stressors.²⁸⁶ (See "[Agricultural Lands + Soils](#)" section.) Furthermore, local businesses located near the Hudson River could experience vulnerability from sea level rise and flooding. Across many job sectors, extreme heat, changing precipitation, and sea level rise could pose potential hazards by disrupting commute patterns or the transport of goods (see "[Travel and Transportation](#)" section).²⁸⁷

Adaptive Capacity

Adaptive capacity for local jobs and businesses is generally **medium**, although adaptive capacity is variable depending on the impacted industry, the hazard of concern, and county-level capabilities. Examples of relevant functions at the County level include outreach, education, and planning-related responsibilities.

Vulnerable Communities

Asset Description

While the impacts of climate change are expected across Putnam County, some populations face disproportionate risks and impacts. Ensuring that all communities within the County—particularly those most vulnerable—have access to necessary resources and services can play a key role in building resilience.

Although Putnam County is not considered a disadvantaged community based on New York State criteria, a number of its communities are considered economically or employment distressed.²⁸⁸ A community is in economic distress if its median annual household income is less than 80% of the national average, and a community is in employment distress if it has a 2-year unemployment rate at least 1% greater than the national average.²⁸⁹ Economic or employment distress can exacerbate the impacts of climate change because residents have less resources to spend on recovering from a disaster or to prepare for expected climate impacts. The below map highlights areas of employment, income, or combined distress in Putnam County.

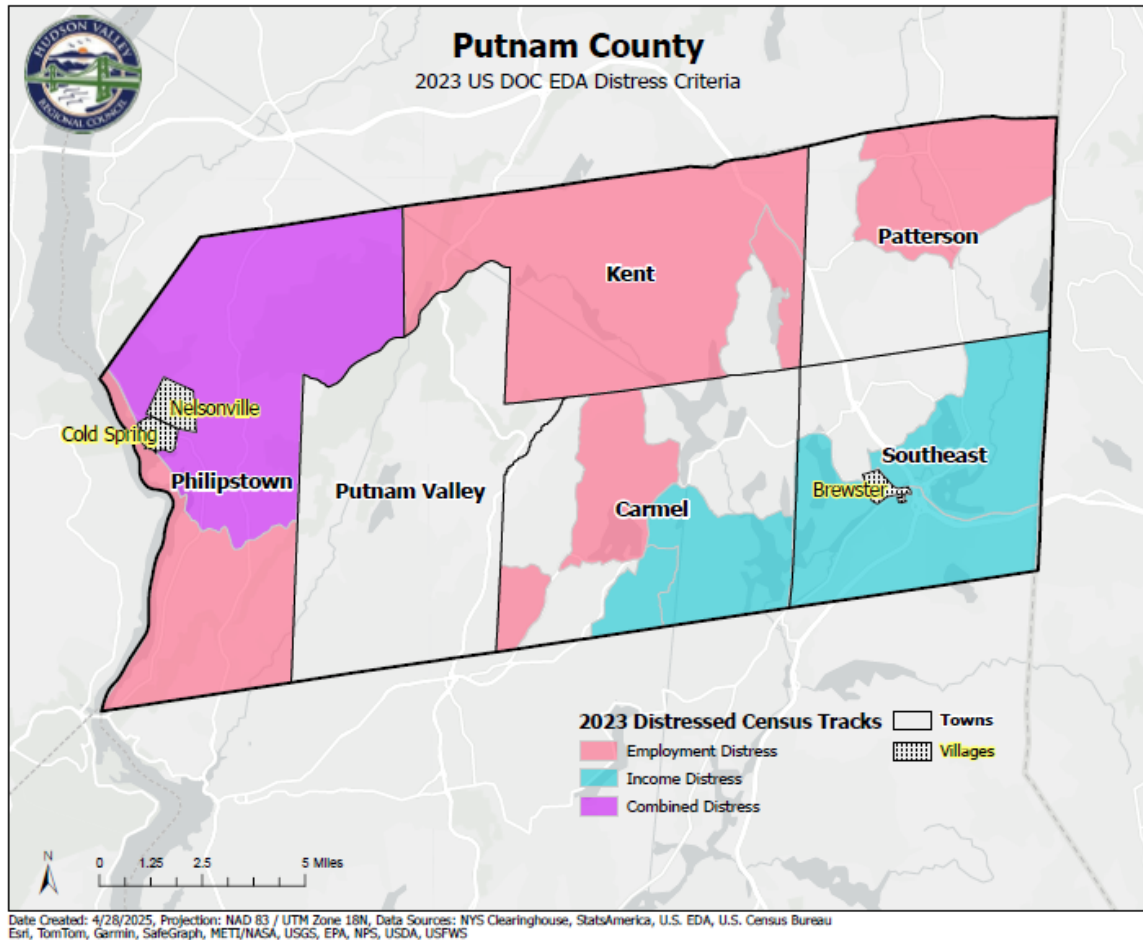


Figure 39: 2023 US DOC EDA Distress Criteria in Putnam County | Map created by [HVRC](#)

In addition, a variety of populations in Putnam County could face disproportionate impacts from climate hazards including: low-income populations, non-English speakers, older adults, youth, and people with disabilities. Maps of the distribution of vulnerable populations can be found below. Outdoor workers and emergency response staff may also face higher vulnerability to climate hazards.

Figure 4.4-5. Distribution of Vulnerable Populations in Putnam County

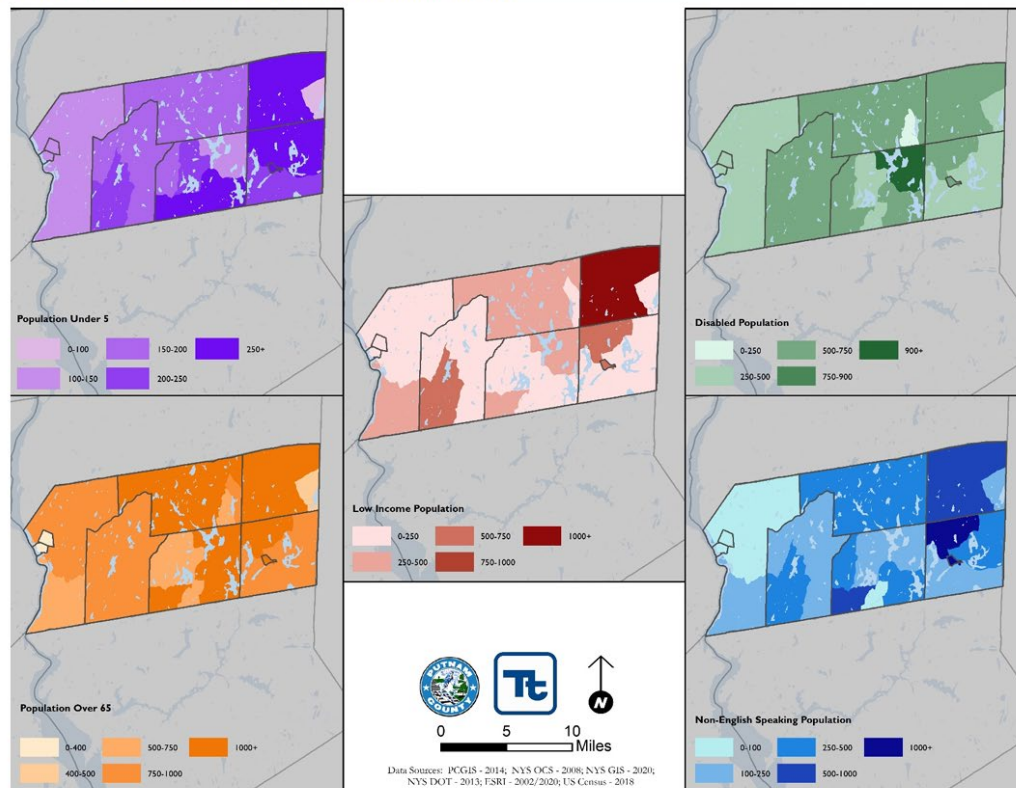


Figure 4o: The distribution of vulnerable populations in Putnam County | [Putnam County Hazard Mitigation Plan Section 4](#), p. 15.

Furthermore, while overall social vulnerability is low in the County, some locations have higher levels of vulnerability based on the CDC/ATSDR Social Vulnerability Index. For example, parts of Brewster have high social vulnerability, and parts of Patterson have medium-high social vulnerability.²⁹⁰

CDC/ATSDR Social Vulnerability Index 2022

PUTNAM COUNTY, NEW YORK

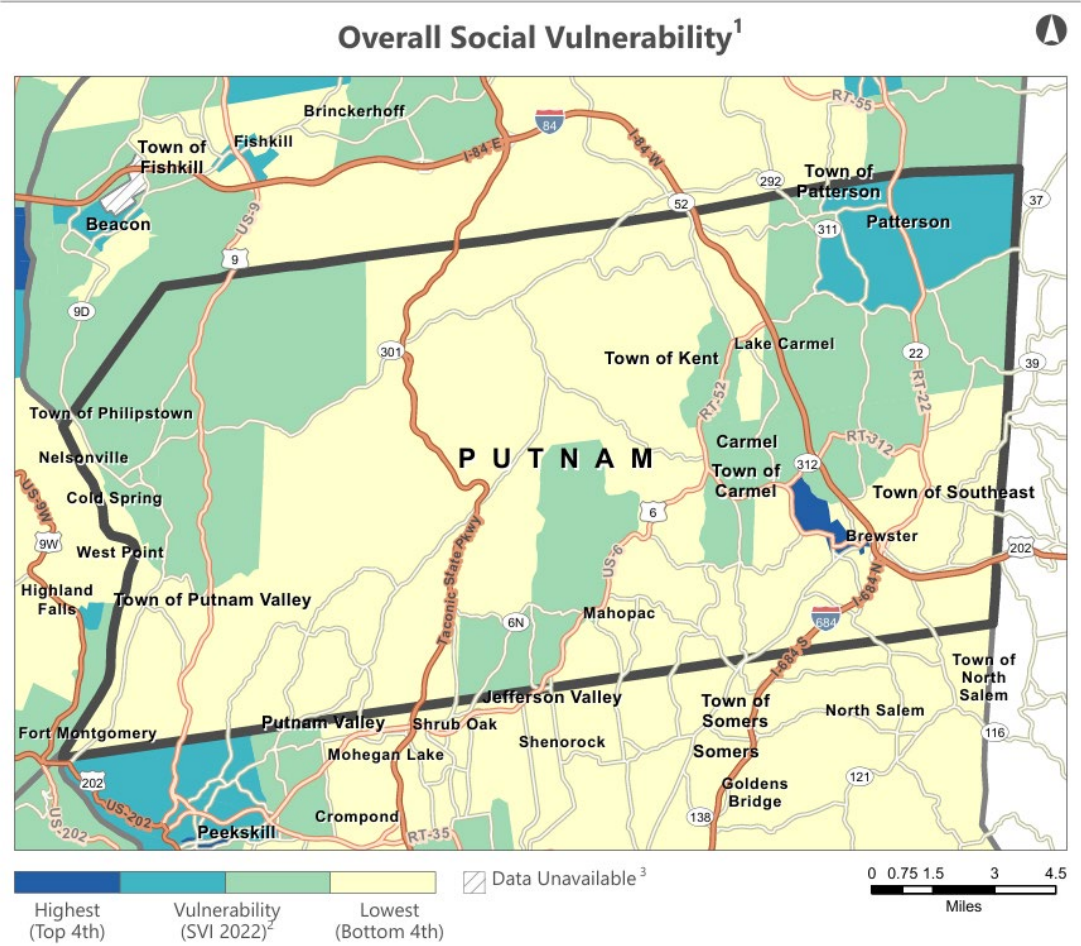


Figure 41: CDC/ATSDR Social Vulnerability Index in Putnam County. The index includes data on "socioeconomic status," "household characteristics," "racial and ethnic minority status," and "housing type/transportation." Areas most vulnerable in Putnam County include Brewster and Patterson. | [CDC](#)

Survey Results

Supporting vulnerable communities was generally ranked as a **medium-high priority** for County resiliency planning based on a stakeholder survey. A breakdown of participant prioritization levels can be found below for vulnerable communities.

	High	Medium	Low
Supporting vulnerable communities	67.8%	18.9%	13.3%

When asked about personal experiences with disruptions due to climate hazards, six respondents described experiences related to vulnerable communities. An example of the stories shared:

- *"I have young kids and when they were babies, I would check the air quality every day before taking them outside. This became more common for me to do after the wildfires in Canada happened when my daughter was born. I was shocked at how frequently (3+ days a week) the air quality was poor."*

Exposure

Vulnerable communities can be impacted by all climate hazards, including **rising temperatures, changing precipitation patterns, and rising sea levels.**

Sensitivity

Climate hazards can have numerous, cross-cutting impacts on vulnerable populations. As such, information about the susceptibility of vulnerable populations is included under many assets in the Climate Vulnerability Assessment. General trends are also summarized below, drawing heavily from the New York Climate Impacts Assessment.

Low- and moderate-income households may have fewer resources to prepare for and to respond to damage from climate hazards. As such, they may face more severe impacts from hazard events and/or take longer to recover from events. Climate change can also exacerbate existing economic challenges. For example, rising AC demand could increase energy costs, and power outages could spoil refrigerated foods, consequently worsening food insecurity (See "Energy + Power" and "Food Access + Food Security" sections).²⁹¹ In Putnam County, ~6.8% of the population lives in poverty, based on 2024 data.²⁹²

Language barriers can also impact the ability to access and interpret warnings or communications about extreme heat, storms, or other hazards.²⁹³ Emergency events often require complex coordination, and ensuring all residents can be reached is critical for safety. Language barriers can also limit access to outreach materials about expected climate impacts and how to proactively prepare. According to data from the 2024 American Community Survey 1-Year Estimate, approximately 8.1% of Putnam County residents speak English "less than very well."²⁹⁴ While Putnam County does publish some information in Spanish, language accessibility was identified as an area for improvement.

Both youth and older adults can face increased sensitivity to climate change. Older adults may experience higher health impacts from climate hazards, like extreme heat, and may have greater levels of isolation, which can increase vulnerability. For example, within

Putnam County, over 85% of older adults own their own home. For older adults with limited mobility, evacuation and power outages can pose particular challenges.²⁹⁵ For example, access to personal transportation to evacuate may be limited, and power could impact medical equipment/medicine refrigeration. Approximately 27.6% of the population in Putnam County is over the age of 60.²⁹⁶

For younger children, extreme temperatures (hot or cold) can pose health challenges, and, for older children, there can be associations between climate change and mental health outcomes.^{297 298} Availability of mental health resources, particularly for youth, has been identified as a challenge in the County. Approximately 19.1% of the population in Putnam County is under the age of 18 and 4.8% of the population is under the age of 5.²⁹⁹ (See [“Resources for Youth and Older Adults”](#) section).

Populations with disabilities may also face increased vulnerability to climate hazards. In Putnam County, 9.6% of the population has a disability, 5.4% have ambulatory difficulty, 4.6% have independent living difficulty, 3.5% have cognitive difficulty, 2.8% have hearing difficulty, 2.4% have self-care difficulty, and 1.4% have vision difficulty.³⁰⁰

Outdoor workers, including “bike delivery workers, construction and utility service workers, and agricultural workers, as well as public service workers such as police, firefighters, and emergency responders” can face direct impacts from climate hazards while working outside.³⁰¹ This could particularly impact the agricultural, emergency response, and construction employees in Putnam County.

Flood Risk to Roads & Facilities Serving Vulnerable Communities Putnam County, NY

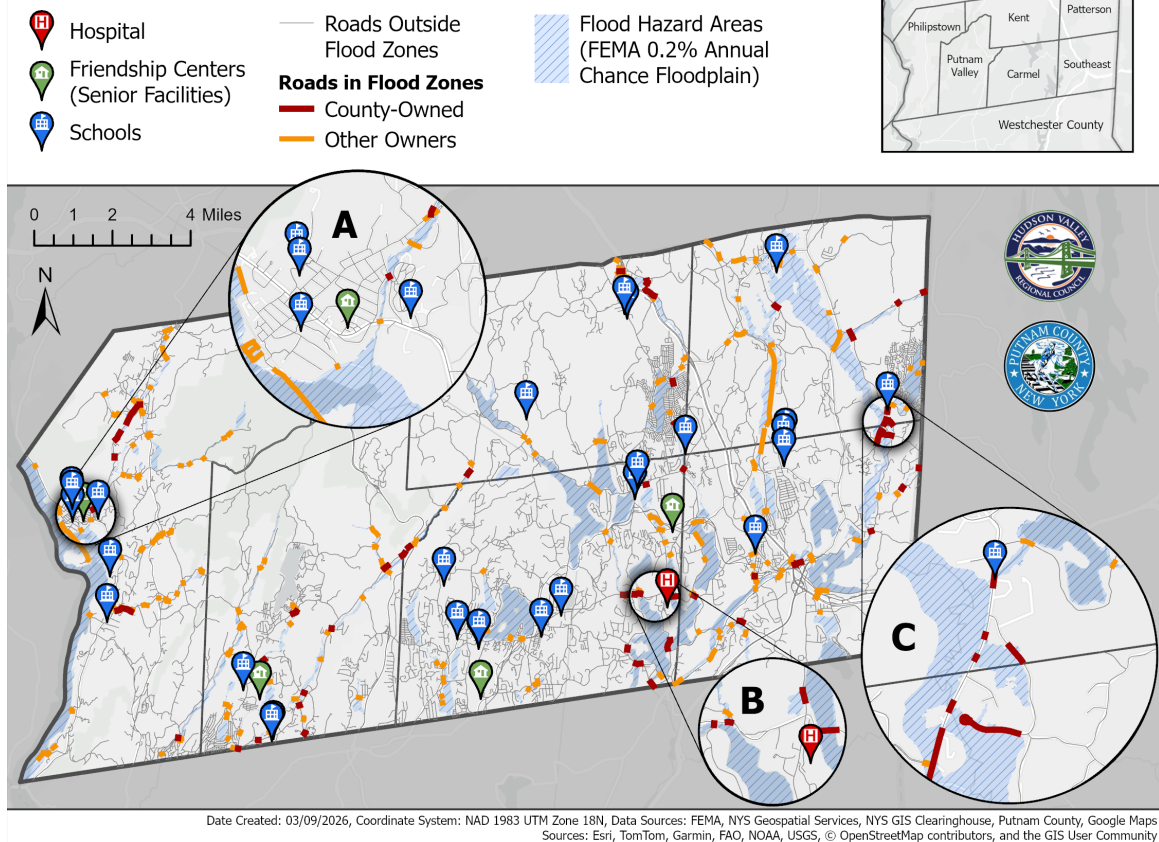


Figure 42: The map above highlights places where vulnerable populations may be located in relationship to flood zones. Specifically, schools, Friendship Centers, and the Putnam Hospital are mapped relative to the FEMA 0.2% Annual Chance Floodplain in Putnam County. Road networks (separated by County and non-County ownership) are also mapped to highlight where routes to and from these facilities fall within the floodplain. Flood zones were last updated in 2013 for Putnam County and are likely underestimated, suggesting the flood boundaries shown may have greater than a 0.2% chance of occurrence per year.^{302 303}

Callout A (left) enlarges a dense cluster of facilities in Cold Spring for clarity. Callout B (center) shows the Putnam Hospital.

While the hospital is not in the floodplain, several nearby roads are at risk of flooding. Callout C (right) shows the Green Chimneys School, which is the only school in Putnam located within the FEMA 0.2% annual chance floodplain boundary. Map callouts do not obstruct floodplains or facilities.

Adaptive Capacity

Adaptive capacity for supporting vulnerable communities is **high** in Putnam County. The County has existing efforts to reach vulnerable populations through departments like the Office for Senior Resources, Department of Social Services, Mental Health, & Youth Bureau, and Department of Planning and Transportation. Supporting vulnerable populations through outreach, programs, and proactive emergency response planning can further build adaptive capacity.

Food Access & Food Security

Asset Description

Access to affordable and nutritious food is critical for maintaining health and wellbeing. **Within Putnam County, there are a variety of resources to support equitable access to food and nutrition. However, climate change can pose risks to both food systems and services.** These disruptions could be especially impactful for vulnerable communities. According to a 2025 Putnam County News Release, “there are approximately 2,900 SNAP-eligible individuals in Putnam County, including nearly 950 seniors.”³⁰⁴ Cornell Cooperative Extension reports that ~28% of residents in the County “struggle to meet their basic daily needs.”³⁰⁵

Food assistance is currently available through local organizations and churches, including at soup kitchens and food pantries.³⁰⁶ Cornell Cooperative Extension, in partnership with Second Chance foods, offers a “Bountiful Meals” programs that provides free meals with locally produced food, available in community freezers to fill the food access gaps in food security for older adults and those that do not qualify for food assistance.³⁰⁷ ³⁰⁸designated locations around Putnam County.³⁰⁹ Some local farms and CSA programs in the County accept SNAP EBT. On a county level, the Department of Social Services manages the Supplemental Nutrition Assistance Program (SNAP) for the County. The Office of Senior Resources also provides free lunch through their congregate sites and runs a home-delivered meal program for homebound clients. Maintaining these programs requires access to reliable power for refrigeration, safe transportation routes to transport foods, and an adequate climate for growing food locally.

Survey Results

Stakeholders generally ranked ensuring food access and food security as a **high priority** for county resilience planning. A breakdown of participant prioritization levels can be found below for food access and security.

	High	Medium	Low
Ensuring food access and food security	72.7%	14.7%	12.6%

When asked about personal experiences with disruptions due to climate hazards, eight respondents described experiences related to food access and food security. Examples of stories shared include the following:

- *“Missed many celebrations due to stormy weather, ice, fear of wildfires. Unable to get food to food pantries (little free pantry in Brewster) etc.*

- *"Storms stopped trucks from getting to food bank centers [...]"*

Exposure

Changing precipitation patterns and rising temperatures hold the potential to impact food security and access.

Sensitivity

Food access and food security are susceptible to multiple, compounding climate impacts. Changing precipitation patterns and rising temperatures could negatively impact locally produced agriculture (See "[Agricultural Lands + Soils](#)" section). Power outages from brownouts from storms or extreme heat could disrupt food storage and refrigeration (see Power and Energy section). Following power outages, costs associated with replacing spoiled food could create an economic barrier for low-income residents (see "[Vulnerable Populations](#)" section). Flooding or damage on roadways could also prevent residents from reaching grocery stores or food assistance programs and/or disrupt the ability to transport goods to stores/food pantries.

Adaptive Capacity

Adaptive capacity for food access and food security in the County is generally **medium**. There are existing programs in the County that offer support relevant to food security through the Department of Social Services, Office of Senior Resources, and Cornell Cooperative Extension of Putnam County. Additionally, the Department of Health offers education about when to throw away food following a power outage event to reduce risks from spoiled foods. Furthermore, resilient transportation routes and options can support residents in reaching stores and food pantries. However, food security programs run by outside organizations are not under Putnam County's management—although partnerships and collaboration may be possible.

Historic Preservation

Asset Description

Historic buildings add to the sense of place and identity in Putnam County, yet their aging materials could be particularly vulnerable to climate impacts. The National Register of Historic Places Database compiles "historic places worthy of preservation" in the United States.³¹⁰ Putnam County has 49 locations currently included in the Register.³¹¹ Examples of listed sites include the old Putnam County Courthouse, Cold Spring Historic District, Garrison Landing Historic district, West Point Foundry Archeological Site, Castle Rock, and the Boscobel House and Gardens.³¹² Putnam County has also taken an active role in preserving and communicating about its history through programs like the "Old House

Program” and through the County Historian records, archives, and library.³¹³ Building resilience while maintaining historic assets requires strategic planning and creative solutions.

Additionally, the Putnam County Historian manages historic governmental/judicial records through the County Archives, which includes records back to 1812, and nongovernmental records through the Historian’s Collection, which includes important documents like letters, diaries, memoirs, and other artifacts preserving the history of Putnam County. The records in the County Archives and Historian’s Collection are critical resources for informing future decision-making.

Survey Results

Supporting historic preservation received mixed support based on stakeholder survey feedback and was generally ranked as a **lower priority** for County resilience planning. Notably, survey responses commented only on historic preservation broadly and did not specifically address the County Archives and Historian’s Collection. A breakdown of participant prioritization levels can be found below for historic preservation.

	High	Medium	Low
Supporting historic preservation	37.1%	49.7%	13.3%

Exposure

Climate hazards to Putnam County’s historic preservation include **rising temperatures, increasing precipitation, and sea level rise**.

Sensitivity

Historic properties face variable sensitivity to climate change depending on their locations, building materials, and management. According to the New York Climate Impacts Assessment, heat can warp building materials, flooding and sea level rise can harm foundations, and changing moisture levels can impact building material longevity.³¹⁴ While relevant to all buildings, these climate impacts could impact historic properties in the County.

The County Archives and Historian Records are also vulnerable to changing precipitation, especially related to heavy rain events. These resources are stored on the ground floor of the Records Building in Brewster, which is located near the East Branch of the Croton River. There have already been instances of water seeping inside following significant rain events. Aging dams connected to the New York City reservoir system upstream of the center also pose significant risks should they fail (see “[Dams](#)” section). Only a small portion of the records and archives are digitized, photocopied, or otherwise preserved. As such, flooding from precipitation or dam failure could jeopardize the information and knowledge stored in these important resources.

Adaptive Capacity

Adaptive capacity for historic preservation is **variable** for the County. Specifically, the County has limited capacity to influence the preservation of individual buildings and historic properties. While Putnam County can provide relevant outreach and educational materials, management of individual properties is not a function of Putnam County, unless the property is specifically owned by the County. On the other hand, adaptive capacity for the County Archives and Historical Records is **high**, because they are assets managed by the County within a County-owned facility.

Resources for Youth and Older Adults

Asset Description

Youth and older adults are among Putnam County's most vulnerable residents, and climate hazards could pose a risk to the services that meet their transportation, caretaking, and medical needs. As of 2024, 4.7% of Putnam County residents were under the age of 5, 16.3% were between 5 and 19, and 27.6% were over the age of 60.³¹⁵ The older adult population ages 70 and older is expected to increase, and the youth population is expected to decrease.³¹⁶

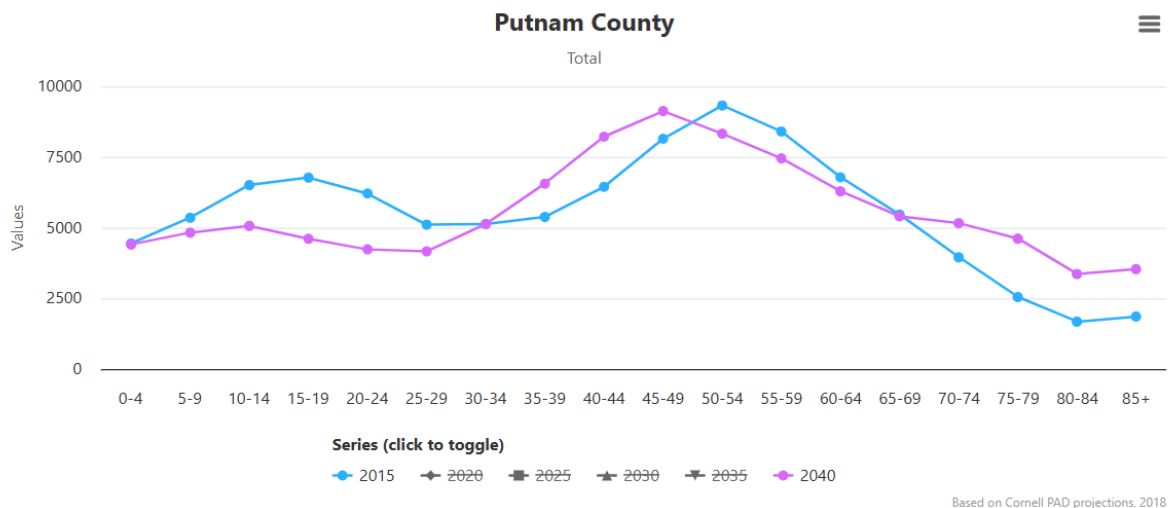


Figure 43 Putnam County age distributions in 2015 and 2040 (projected) | [Cornell Program on Applied Demographics](#)

Within Putnam County, there are a variety of programs and services available for youth and older adults. For example, Putnam County's Office of Senior Resources (OSR) oversees four Friendship Centers that offer congregate meals, wellness classes and activities,

transportation, and additional services. In addition to the Centers, the Office of Senior Resources runs a variety of programs for older adults relevant to resiliency planning including: nutrition and food support, social model adult day services, caregiver support, legal services, transportation to medical appointments, and health insurance counseling. OSR also conducts outreach to isolated and frail individuals to provide information and referrals, and facilitates a volunteer program to further support community needs.³¹⁷

The Putnam County Youth Bureau focuses on supporting youth “at risk of becoming involved or further involved in the juvenile justice or human services system.” The Youth Bureau is located at Tilly Foster Farm in Brewster, NY. Programs include Pegasus, which provides educational programming for children with parents who have an alcohol or drug dependency; Youth Court, which provides a court of peers as an alternative to family court for first-time offenders; services for youth with mental health needs; shelter for runaway and homeless youth; and youth conference and awards events.³¹⁸ Continuing to provide and expand these services under expected climate impacts can be important for supporting youth in the County. Additional resources are also coordinated through partnerships with private organizations.³¹⁹

Many programs and opportunities are also available to older adults and youth that are not coordinated by the County, including schools, sports and recreational opportunities, and healthcare facilities.

Survey Results

Stakeholder survey respondents generally ranked providing services for older adults and youth as a **medium-high** priority for county-resilience planning. A breakdown of participant prioritization levels can be found below for resources for older adults and youth.

	High	Medium	Low
Providing resources and services for older adults	58%	35.7%	6.3%
Providing resources and services for youth	55.9%	33.6%	10.5%

When asked about personal experiences with disruptions due to climate hazards, four respondents described experiences related to resources for youth or older adults. One participant noted:

- *"Too many to list! But I'll say that the importance for both seniors and children to be able to access services during periods of extreme weather is essential."*

Exposure

Youth and older adults can be impacted directly and indirectly by all climate hazards, and the resources they access are vulnerable to **rising temperatures, changing precipitation patterns, and rising sea levels.**

Sensitivity

Climate hazards could disrupt resources for older adults and youth by directly impacting the services offered or by limiting access to resources. Youth and older adults share an increased need for mobility and care support, which may increase their sensitivity to climate impacts. For example, older adults with chronic health conditions may require oxygen supplies, regular medication, and access to healthcare providers that could be impacted by disruptions to power and energy or travel and transportation.³²⁰ None of Putnam County's four Friendship Centers are located within floodplains, although several are located relatively proximate to flood zones,³²¹ and road flooding could impact access to the facilities for staff, services, and visitors to reach the centers (See "[Travel + Transportation](#)" and "[Healthcare Facilities + Services](#)" sections).

Climate hazards could potentially disrupt access to transportation services dedicated to youth and older adults. In these cases, there may be reduced alternative transportation options in the event of cancellations or delays.^{322 323} For example, Putnam County's volunteer medical transportation program for older adult-residents who lack other options to reach their medical appointments could be disrupted by road closures due to flooding or debris.

Many families rely on childcare providers and schools to care for youth. Childcare providers and teachers may not be able to get to work as travel becomes dangerous during severe weather events.³²⁴ Schools are managed at the district level, and school facilities experience varying exposure across Putnam County.

Youth and older adult community members' sensitivity to climate change may be compounded when they also belong to other vulnerable demographics. For example, school closures are particularly impactful for children from low-income families who rely on free or reduced-price school breakfast and lunch.³²⁵

Adaptive Capacity

Adaptive capacity for resources for youth and older adults is **medium** in Putnam County. The County may take advantage of its pre-existing offices dedicated to providing services for youth and older adults. Through the Office for Senior Resources, the County already works to provide transportation and targeted outreach and can build the resilience of these resources during severe weather events. However, the adaptive capacity of county-run

services is tied to other assets, including those listed in the Travel and Transportation and Healthcare Facilities and Services sections.

Cultural Resources, Tourism, & Community Events

Asset Description

Beyond directly impacting physical assets and services, climate hazards have the potential to disrupt resources, experiences, and events that contribute to making Putnam County a unique place to live and visit. Disruptions to cultural resources, tourism, and community events can impact social experiences and economic outcomes in the area. For example, tourism contributes to Putnam County's local economy. According to the New York State Tourism Association, tourists and visitors spent over \$88 million at businesses in Putnam County in 2024.³²⁶ Tourists are drawn to the region due to its outdoor recreation; local businesses; and historic, cultural, and artistic sites.

Putnam County contains ample cultural resources that serve locals and visitors alike, including:

- Eight libraries (Brewster Public Library, Julia L. Butterfield Memorial Library, Reed Memorial Library, Alice Curtis Desmond and Hamilton Fish Library, Kent Public Library, Mahopac Public Library, Patterson Library, and Putnam Valley Free Library),³²⁷
- Spiritual centers like the Chuan Yang Monastery, Garrison Institute, and Graymoor.
- Museums/art centers like the Boscobel House & Garden, Maniotoga, Magazzino Italian Art, and Hudson Valley Shakespeare.³²⁸

Events, festivals, and farmers' markets are also present across the villages and towns in Putnam County, and a schedule of activities is maintained on the Tourism page of Putnam County's website.³²⁹

Survey Results

Overall, cultural resources, tourism, and community events were ranked as a **lower priority** than other social assets for county resiliency planning based on stakeholder feedback. Within this category, access to cultural centers like libraries and museums was a higher priority whereas supporting tourism and holding community events were lower priorities. A breakdown of participant prioritization levels can be found below for cultural resources, tourism, and community events.

	High	Medium	Low
Access to cultural centers and resources (libraries, museums, etc.)	42%	36.4%	21.7%
Supporting tourism and visitors to the County	14%	49.7%	36.4%
Holding community events or festivals	4.7%	54.4%	30.8%

When asked about personal experiences with disruptions due to climate hazards, 15 participants described experiences related to cultural resources, tourism, or events.

Exposure

Cultural resources, tourism and community events can be impacted by **rising temperatures, sea level rise, and increasing precipitation.**

Sensitivity

Cultural resources, events, and tourism can be impacted through compounding climate impacts and hazards. Potential impacts to tourism include, but are not limited to, the following:

- Flooding on roads or rail lines could impact travel to the area (see "[Travel and Transportation](#)" section).
- Visitors seeking Putnam County's recreational opportunities may be impacted by severe heat events (see "[Recreation](#)" section).
- Historic buildings can face additional risks from heat, sea level rise, and increasing precipitation (See "[Historic Preservation](#)").

Artistic and cultural resources can also be negatively impacted by hazards.

- Rising temperatures will require more air conditioning at museums, which can impact operating costs.³³⁰
- Furthermore, libraries are used as cooling shelters during extreme heat events, which may require more frequent use under rising temperatures (see "[Cooling/Warming Centers](#)").

Community events and festivals could also face cancellations or complications due to extreme heat and/or severe precipitation events.

Adaptive Capacity

Adaptive capacity for cultural resources, tourism, and community events is **medium**. While infrastructural upgrades to museums and cultural centers would likely be addressed at the facility level, there are actions the County could take to improve the adaptive capacity of these assets. For example, maintaining safe transportation options or conducting outreach related to hazards preparedness could build resilience for assets in this section.

Environmental Assets

Drinking Water

Asset Description

Safe and adequate drinking water is necessary for the health and wellbeing of Putnam County residents, and climate change poses risks for the County's drinking water supplies. Putnam County has a mixture of public and private water supplies for their potable water. These sources include some surface water, but most drinking water comes from underground aquifers accessed through wells.³³¹ Aquifers can either be located in bedrock, which underlies all of Putnam County, or surficial sand and gravel formations, which exist in specific locations within the County.³³² Most wells in Putnam County are deep, targeting bedrock.^{333 334}

Well depth in the County ranges from 10 to 1330 feet, with most between ~150 and ~800 feet.³³⁵

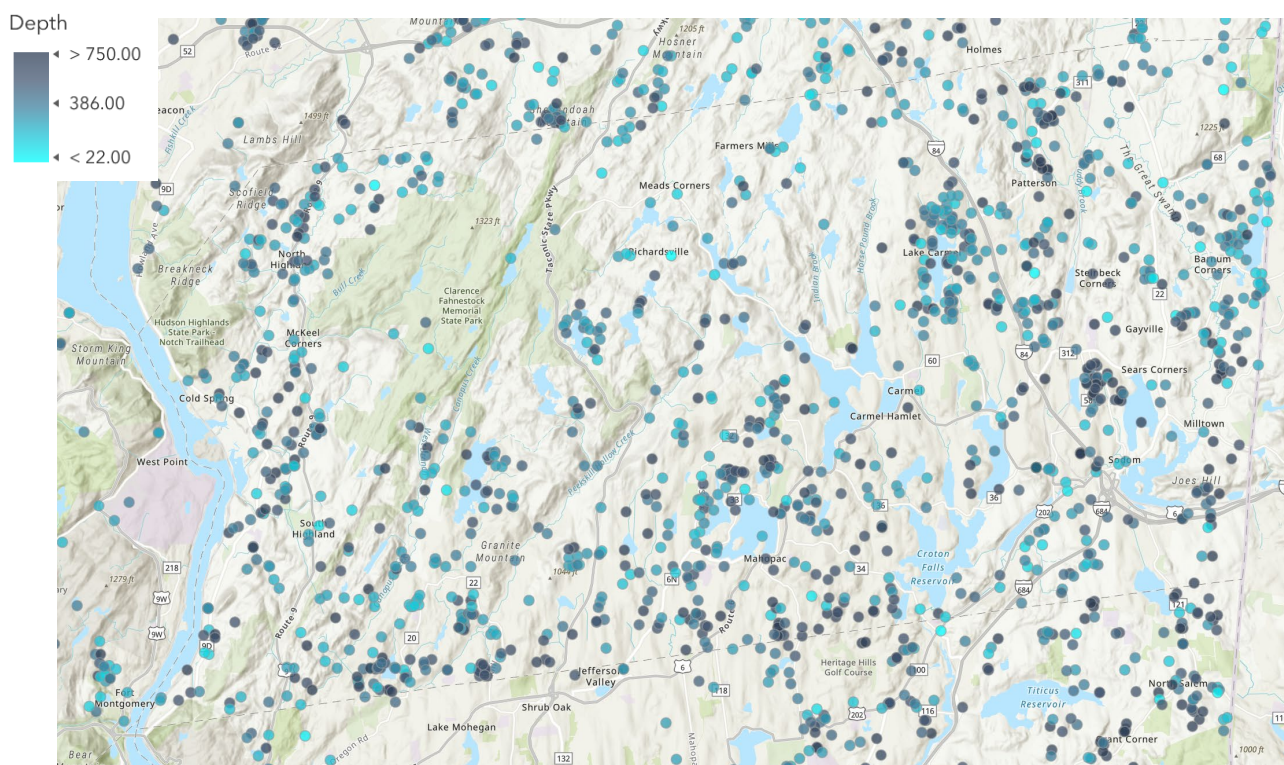


Figure 44: Wells in Putnam County, depth in feet | [NYS DOS GIS](#)

Under New York law, the Putnam County Department of Health is responsible for regulatory oversight of any system with at least 5 service connections or that services at least 25 people daily for at least 60 days a year. Even if privately or municipally owned, systems which meet

these qualifications are considered public by definition. There are 129 community water systems for which the Department of Health “reviews and provides surveillance.”^{336 337}

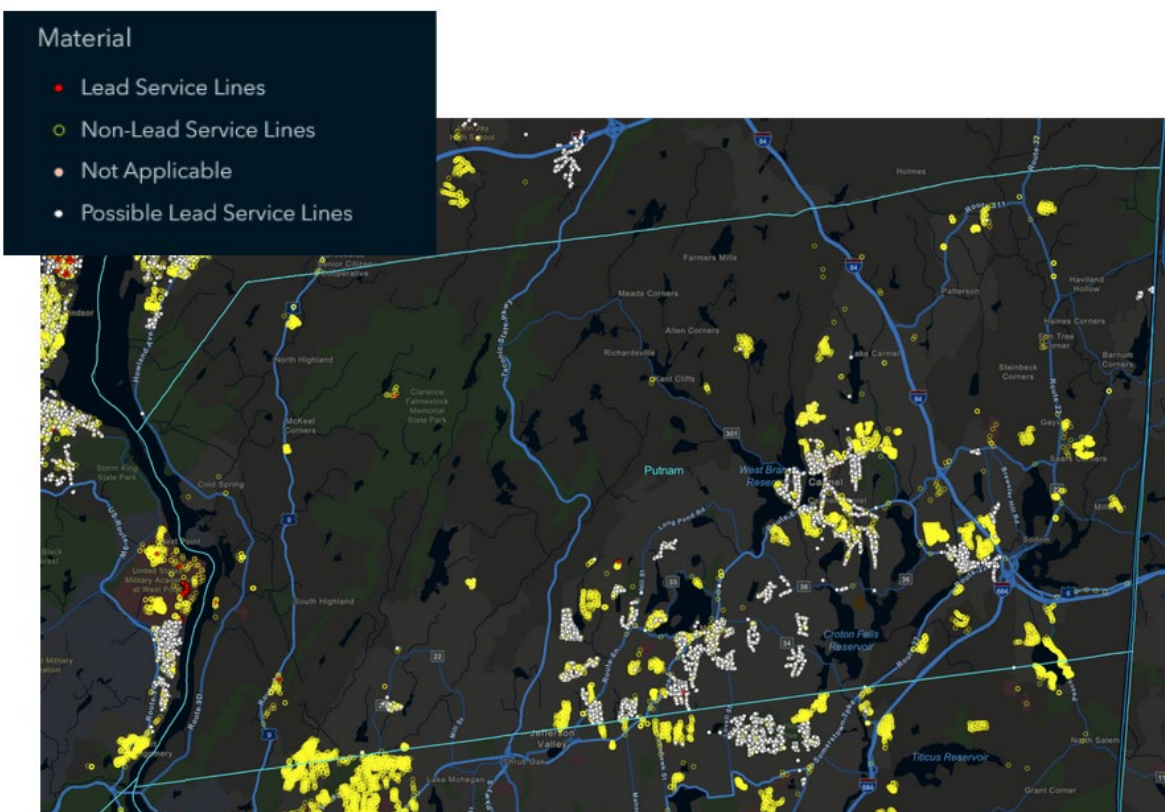


Figure 45: Water service lines in Putnam County | [NYLCVEE](#)

Many surface water bodies in the County are owned by New York City. Water from these reservoirs are channeled through the Delaware Aqueduct in Putnam County, or the Croton and Catskill Aqueducts downstream, to provide a portion of the city's drinking water.³³⁸ More information can be found in the Place Narrative.

Survey Results

Generally, survey participants ranked protecting safe drinking water as a **high priority**. **Of all the environmental assets in the County, protecting safe drinking water was ranked as the highest priority for county resiliency planning based on a stakeholder survey.** A breakdown of participant prioritization levels can be found below for safe drinking water.

	High	Medium	Low
Protecting safe drinking water	90.2%	6.3%	3.5%

When asked about personal experiences with disruptions due to climate hazards, seven respondents described experiences related to water.

Exposure

Surface waters and wells have the potential to be impacted by climate hazards, including **changing precipitation and increasing temperatures.**

Sensitivity

Climate hazards could lead to lower groundwater levels and contamination of both well and surface water supplies. Groundwater is maintained by rainwater and snowmelt which seeps through the ground, and it can be depleted by overextraction or a lack of supply.³³⁹ Deep wells dug into bedrock are less vulnerable to contaminants and less sensitive to droughts than shallow wells targeting permeable surficial deposits.^{340 341} Although most of Putnam County's wells are in more resilient bedrock aquifers, if water is depleted without being restored during drought conditions, there may still be a drop in groundwater elevation. This can cause reduced yield in wells. Drought conditions may also lead to increasing sediment and contaminant concentrations if groundwater needs to be carried from farther distances to reach wells.³⁴² While not one of the top three climate hazards for Putnam County, the County's Hazard Mitigation Plan does note that New York State can anticipate an increase in drought frequency that may impact water supplies.³⁴³

Furthermore, flood water—including from flooded roads—can contaminate drinking water, and flooding from downpours can contaminate wells. As temperatures rise, and precipitation patterns alter, Putnam County can also anticipate an increase in harmful algal blooms.³⁴⁴ Harmful algal blooms impact surface water bodies—although most of Putnam County sources its water from wells, some residents do retrieve their water from surface supplies.³⁴⁵ Harmful algal blooms may also be more widely impactful for the network of reservoirs in Putnam County which are connected to New York City's water supply. Treatment may mitigate the impact of harmful algal blooms on drinking water, but this is dependent on choosing the correct process at each treatment stage, and some toxins may still escape after a full treatment process.³⁴⁶

Figure 4.6-4. Potable Water Facilities in Putnam County

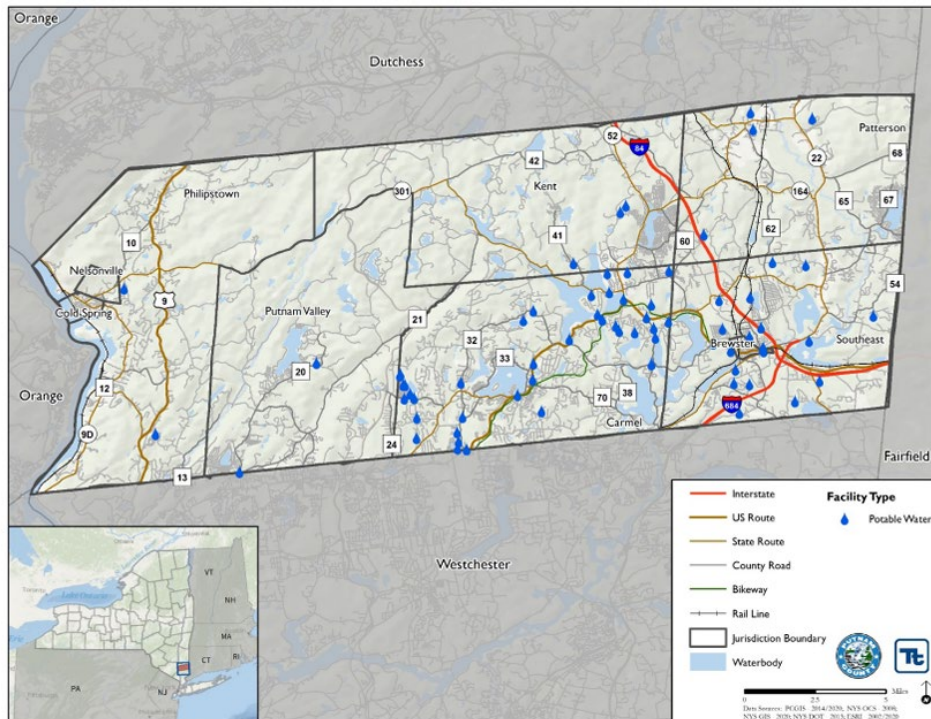


Figure 46: Potable Water Facilities in Putnam County | Putnam County Hazard Mitigation Plan [Section 4](#) p. 44

Adaptive Capacity

Adaptive capacity for drinking water is **medium**. The Putnam County Department of Health, “reviews operations, provides surveillance..., responds to problems such as low pressure and outages, and performs special surveys to ensure compliance with New York State codes” for all public water systems. There are also preexisting programs to annually monitor the operation of community water supplies, monitor non-community water supplies every three years, and conduct required sampling for small non-community supplies.³⁴⁷ The County may take advantage of these systems to monitor and address water quality and water supply issues in the face of climate hazards. However, the County has more limited capacity to address drinking water issues for the 55% of the County’s population that does not rely on public supplies.

The Department of Health offers two additional tools/programs that can support clean and safe water. Specifically, the Department offers assistance related to drinking water advising, inspections, and monitoring. It also has a [webpage](#) about harmful algal blooms with a phone number to report occurrences, which can aid in education and tracking.³⁴⁸

Clean Air

Asset Description

Protecting clean air is a particularly complex resiliency challenge, because air quality can be impacted by hazard events both within and outside of the County. For example, smoke from wildfires can travel far distances and impede access to clean air. Nonetheless, identifying solutions to promote clean air is important for health and safety in the County, especially for vulnerability communities like youth, older adults, and people with pre-existing medical conditions.

Survey Results

Generally, stakeholder survey participants ranked protecting clean air has a **high priority** for County resilience planning. A breakdown of participant prioritization levels can be found below for safe clean air.

	High	Medium	Low
Protecting clean air	81.1%	12.6%	6.3%

When asked about personal experiences with disruptions due to climate hazards, 32 respondents described experiences related to clean air/air quality. Examples of stories shared include the following:

- *"In the past two summers we've had a notable increase in days with poor air quality related to high temps and wildfires (some of which originate far beyond Putnam County and are of course beyond control). As someone with limited cooling (air conditioning) in the home, this is a significant concern."*
- *"The growing frequency of days with poor air quality resulting from wildfires is a real concern for me [...]"*

Exposure

Increasing temperatures could impact air quality in Putnam County.

Sensitivity

Putnam County's susceptibility to wildfire and conditions that promote fires are increasing by ~10-30% due to rising temperatures.³⁴⁹ Increases in wildfires in other locations have also impacted air quality in the past. For example, a press release from August 2025 indicates poor air quality in Putnam County due to Canadian wildfires.³⁵⁰

Adaptive Capacity

Adaptive capacity for clean air is generally **medium** in the County. Adaptive capacity is limited primarily to outreach and education, because the County has less control over air pollutants, particularly those originating from outside the County's borders.

Ecosystems, Habitats, and Biodiversity

Asset Description

Many of the ecosystems in Putnam County are vulnerable to climate impacts. Protecting the health of ecosystems, habitats, and biodiversity can mitigate these risks and also contribute to climate adaptation and mitigation. Putnam County is home to diverse ecosystems including forests, rivers, lakes, wetlands, and estuaries. Detailed information about the ecosystems in Putnam County is available in the Place Narrative. These ecosystems provide important habitat for numerous species of plants and animals, including a variety of rare species.³⁵¹ Some significant natural communities in Putnam County include chestnut oak forests, Appalachian oak hickory forests, oak-tulip tree forests, pitch pine-oak-heath rocky summits, and red maple-hardwood swamps.³⁵² The Great Swamp, in northeastern Putnam County, is particularly significant for the rare and diverse array of species that inhabit its varied habitats.

Survey Results

Protecting ecosystems, habitats, and biodiversity was generally deemed a **high priority** for county resilience planning by survey respondents. A breakdown of participant prioritization levels can be found below.

	High	Medium	Low
Protecting ecosystems and habitats	74.1%	21%	4.9%
Protecting biodiversity	67.8%	24.5%	4.9%

Survey respondents also indicated that pests, insects, and invasive species are a concern relevant to this section.

- 62.9% of survey respondents indicated that they have had experiences with pests, insects, and invasive species in the past 5-10 years.
- Looking 10-15 years into the future, 44.8% of survey respondents reported that they were highly concerned about pests, insects, and invasive species; 35.1% reported a medium level of concern; 22.4% reported a low level of concern; and 1.4% reported that they were unsure.

Throughout survey responses, participants identified a variety of invasive species, insects, and pests of concern, including ticks, spotted lantern flies, stink bugs, Japanese beetles, Japanese knot weed, spongy moths, jumping worms, and Beech Tree Disease.

When asked about personal experiences with disruptions due to climate hazards, 15 respondents described experiences related to ecosystems, habitats, and biodiversity. An example of a story shared includes the following:

- *"Diversity of wild flowers on the rail trail has dropped drastically due to invasive species."*

Exposure

Putnam County's ecosystems, habitats, and biodiversity, are susceptible to **sea level rise, increasing precipitation, and increasing temperatures.**

Sensitivity

Ecosystems, habitats, and biodiversity are vulnerable to many climate hazards affecting Putnam County. Potential impacts include, but are not limited to, the following:

- Rising temperatures are increasing susceptibility to invasive species in the state.³⁵³
- Storms can damage wetlands through influxes of water, nutrients, sediment, or toxins, and can potentially bury/damage wetlands near rivers.³⁵⁴ Coastal flooding is projected to be more prevalent under climate change due to sea level rise in conjunction with potentially increasing storm severity.³⁵⁵
- Increasing temperatures can also increase susceptibility to harmful algal blooms in the County's lakes through deoxygenation.³⁵⁶
- Shifting temperature patterns could impact phenology--"the seasonal timing of biological activities as they occur in ecosystems"--which can have wide-ranging impacts on ecosystems.³⁵⁷
- Flooding and changing temperatures may cause species distributions to shift as species seek more favorable habitat, and as species experience die-off from physiological stress, disease, and increased competition.³⁵⁸
- According to the County's HMP, potential increases in summer drought conditions could pose threats to water supplies and soil water, impacting wetlands, triggering wildfires, and further contributing to infestations and disease.³⁵⁹

Furthermore, Putnam County's riverfront location makes it particularly important due to its estuary habitat. The New York Climate Impact Assessment notes that the Hudson River's estuary environment is "one of the most biodiverse in the state" and hosts aquatic species that may be particularly vulnerable to sea level rise due to changing saltwater concentrations in the environment.³⁶⁰

Adaptive Capacity

Adaptive capacity for Putnam County's ecosystems, habitats, and biodiversity is **medium**. The County has existing strengths that impact adaptive capacity. For example, the 2021 HMP indicates that "The Department of Health has undertaken monitoring, warning, and

education about harmful algal blooms in the County.”³⁶¹ The County is also working on projects that could benefit ecosystems in the County including:

- Dam hardening, which reduces flood risk from dam failure.
- Improving fire emergency preparedness capabilities, which enables better fire response.
- Undertaking storm sewer improvement projects, which can prevent flooding.^{362 363}

Additionally, overall development pressure in the County is low, leaving significant room for natural areas.

However, adaptive capacity is potentially impacted by the availability of up-to-date data and plans. Multiple County departments currently use the NY DEC Natural Resource Mapper tool in their planning efforts, but more granular data is not always available. For example, while the County does not have a current Natural Resources Inventory (an inventory was created in the early 2000s), there are local-level NRIs available within towns and villages. The County also has planning-level capacities that could impact adaptive capacity in this section. For example, the County previously created an Open Space Management Plan, although it is no longer in use.

Management of land in the County is also complicated by ownership models. Much of the land in the County is owned by New York City and by nonprofits/land conservation organizations. In these locations, the County has less influence on the management of ecosystems and habitats for climate impacts.

Parks, Open Space + Recreational Sites

Asset Description

Putnam County is home to many parks, open spaces, and recreational sites **which provide locations for outdoor leisure activities, contribute to Putnam County’s tourism industry, and serve as habitats for biodiversity. Climate hazards may both impact these lands and disrupt the services they provide.** Putnam County’s parks, open spaces, and recreational sites include, but are not limited to, the Fred Dill Wildlife Sanctuary and Outdoor Education Center, the Hudson Highland State Park, Veterans Memorial Park, Michael Ciaiola Conservation Area.³⁶⁴ A more complete list of parks, open spaces, and recreational sites can be found within the Place Narrative. The Putnam Trailway and Maybrook Trailway also provide biking and recreational opportunities.^{365 366}

County-owned parks, open spaces, and recreational sites are maintained by Putnam County's Department of Parks and Recreation, which employs staff at each park to patrol and maintain properties year-round.³⁶⁷

Survey Results

Access to high-quality recreation sites and access to parks and open spaces received mixed support for prioritization in county resiliency planning, generally representing a **medium priority** level. A breakdown of participant prioritization levels for parks, open spaces, and recreational sites can be found below.

	High	Medium	Low
Access to high-quality recreational sites	41.3%	39.9%	18.9%
Access to parks and open space	48.3%	38.5%	13.3%

When asked about personal experiences with disruptions due to climate hazards, 18 respondents described experiences related to parks, open space, and recreation. Examples of comments shared include the following:

- "Poor air quality from Canadian wildfires reducing outdoor recreational opportunities. Extreme heat as well."
- "Trail damage / limited access after storms."

Exposure

Putnam County's abundance of parks, open spaces, and recreational sites are vulnerable to **sea level rise, flooding, and rising temperatures**—which can impact the physical sites as well as their use.

Sensitivity

Climate hazards may impact the physical conditions of parks, open spaces, and recreational sites and impede their use. For example, heavy precipitation could wash out trails and flooding from sea level rise could impact riverfront parks in Cold Spring and Philipstown. Wildfires could also pose significant challenges for parks and recreational sites; if ignited, water would need to be trucked in to extinguish a wildfire.

Beyond physical impacts, rising temperatures could also impede the use of parks and recreational sites. Rising temperatures will lead to an increase in extreme heat days and heat waves in Putnam County. Heat exposure can lead to health-related illness or mortality.³⁶⁸ According to the CDC, populations particularly susceptible to heat illness and mortality include: "older adults, young children, and people with chronic medical conditions."³⁶⁹

Visitors may use parks, open space, and recreational sites in part for their biodiversity and ecosystem benefits, including photography, birding, fishing, and hunting, which could be impacted by the harms to ecosystems caused by climate change.³⁷⁰ More information on the harms to ecosystems and biodiversity can be found in the Ecosystems and Habitats section.

Adaptive Capacity

Adaptive capacity for parks, open space, and recreational sites in Putnam County is generally **medium**. Within Putnam County, substantial open space and conservation land is owned by nonprofit and land conservation organizations, and each town within Putnam County has its own Parks and Recreation department. Additionally, due to its location in the New York City Watershed, some land is owned by New York City. This variety of ownership models impacts how and if the County can operate different portions of the land. Additional details on specific landowners in Putnam County can be found within the Place Narrative.

Agricultural Lands + Soils

Asset Description

Agricultural lands and soils can contribute to County resilience by supporting sustainable, local food systems; supporting local jobs; protecting open space; and buffering flood impacts. As of 2025, the County has 172 farm parcels in the Agricultural District, which, combined, represent 5,642.5 acres.³⁷¹ The County owns farmland through its Tilly Foster Farm property, which serves as an asset both for community members and for tourists.³⁷² Putnam County's Agriculture and Farmland Protection Plan (2004) identifies key farming functions in the area including: "equine and livestock operations, greenhouses, nurseries, orchards, maple syrup, hay and corn production."³⁷³

Agriculture contributes economic, social, and environmental benefits to Putnam County due to its economic impact, connection to agritourism, creation of scenic beauty and open space, provisioning of ecosystem services, and generation of food/food products.³⁷⁴ However, agricultural lands, and the agricultural industry more generally, can face significant impacts from climate change. As such, building resilient agricultural lands and soils can benefit not only farmers, but also residents, local economies, and ecosystems.

Survey Results

Survey respondents primarily ranked protecting agricultural land and soils as a **high priority** for county resiliency planning. A breakdown of participant prioritization levels for agricultural land and soils can be found below.

	High	Medium	Low
Protecting agricultural land and soils	68.5%	26.6%	4.9%

When asked about personal experiences with disruptions due to climate hazards, three respondents described experiences related to agricultural lands/soils. An example of a comment shared includes the following:

- *"Extreme / unexpected weather conditions impact the crops we grow, the timing for planting & harvesting and overall production. Additionally, it's challenging to recruit ppl to work at the farm with the heat and air quality issues during the summer."*

Exposure

Changing precipitation and increasing temperatures have the potential to impact agriculture in the County in intersecting and compounding ways.

Sensitivity

Agricultural lands and soils are susceptible to multiple, compounding climate impacts.

Changing precipitation patterns and rising temperatures can damage crops.³⁷⁵ Rising temperatures can lead to increased pest/invasive species concerns, impact the growing cycles of plants, and pose health concerns for farmers and farm animals.³⁷⁶ As noted by one survey respondent, climate hazards could also impact farm hiring/recruitment due to poor climate conditions.

Adaptive Capacity

Adaptive capacity for agricultural lands and soils is **medium**. While most farmland is not owned or operated by the County, there are ways Putnam County can impact the adaptive capacity of agricultural lands and soils. The County currently does not conduct outreach to farms or farmers about resiliency planning, but it has implemented resilience measures at the County-owned Tilly Foster Farm including installing ponds, swales, and rain gardens. Putnam County has plans to update its 2004 Agricultural and Farmland Protection Plan, pending funding availability.

Identify Community Unknowns or Uncertainties

The above Climate Vulnerability Assessment employs a “moderate scope” approach. According to the Climate Smart Communities program, a moderate scope Climate Vulnerability assessment reviews “one to three climate hazards for the entire geographic area of the community.”³⁷⁷ To determine the primary hazards of concern to Putnam County, the CCARP Leadership Team focused on the top climate hazards identified by the New York State Climate Impact Assessment: changing precipitation, increasing temperatures, and rising sea levels.

An analysis of stakeholder survey feedback indicates that there are additional hazards of concern for residents/staff in Putnam County. Survey participants were asked to indicate if they have a high, medium, or low level of concern about each of the hazards listed in Table 3. Participants could also select that they were unsure.

Aggregate survey responses rank the following hazards in descending order of priority: heat waves; extreme heat; precipitation; drought; pests, insects, and invasive species; poor air quality; flooding; severe winter storms; wildfires; hurricanes; and tornadoes. This ranking is based on the percentage of survey respondents that indicated a high level of concern about each hazard 10-15 years into the future.

	High	Medium	Low	Unsure
Heat waves	51%	27.3%	20.3%	1.4%
Extreme heat	49.7%	27.3%	20.3%	2.8%
Severe Storm: Precipitation	49%	29.4%	20.3%	1.4%
Drought	46.2%	34.3%	18.9%	0.7%
Pests, insects, + invasive species	44.8%	31.5%	22.4%	1.4%
Poor air quality	44.1%	32.2%	22.4%	1.4%
Flooding	41.3%	32.9%	24.5%	1.4%
Severe winter storms	37.8%	38.5%	23.8%	0%
Wildfires	32.2%	38.5%	26.6%	2.8%

Severe Storm: Hurricanes	24.5%	36.4%	36.4%	2.8%
Severe Storm: Tornadoes	14.7%	29.4%	51%	4.9%
None of the Above	7%	2.1%	24.5%	66.4%

Table 3: Percentage of stakeholder survey respondents that reported high, medium, low, or unsure level of concerns about hazards 10-15 years into the future.

Many participants also noted prior experiences with relevant hazards in the past 5-10 years. The graph below illustrates the number of survey respondents (out of 143) that noted prior experience with relevant hazards.

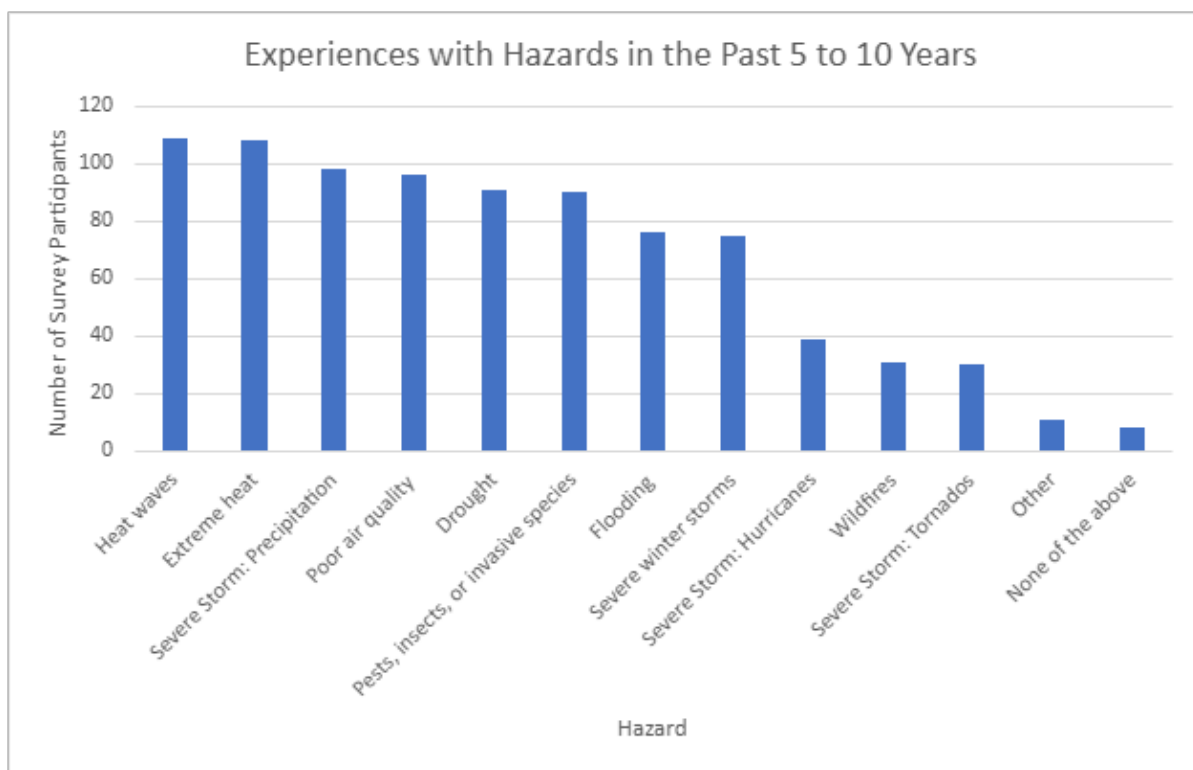


Figure 47: Number of survey participants who noted prior experience with relevant hazards out of 143 total survey participants.

Evaluating the potential impacts of additional hazards on county assets could be a possible area for future research.

Throughout the assessment process, data gaps and uncertainties were uncovered. For example,

- Within Putnam County, up-to-date information on dams was identified as a potential data gap and challenge.
- Putnam County does not have an up-to-date natural resources inventory or parks and open space plan. Additional assets related to ecosystems, biodiversity, or habitat may be present in the community, and not reflected in this assessment.

Additionally, some information was excluded from the Climate Vulnerability Assessment analysis because of the availability of public data, relevance to County-level planning and decision-making, or capacity/timeline constraints. For example:

- A complete analysis of all public buildings and their flood risk was not completed for this assessment due to limitations of publicly available data.
- This assessment focuses on the vulnerability of healthcare facilities within Putnam County due to the scale and scope of the assessment, although there are other facilities in neighboring communities that may be relevant to County residents.
- The planning team did not review data or plans for lands owned by nonprofits, conservation organizations, or other, non-County entities due to lack of County-level control over these areas.
- A resilience assessment was not completed as part of the climate vulnerability assessment process due to capacity/timeline constraints but could be a meaningful next step in future updates. Guidance on conducting a resilience assessment is available in the CCARP template.

Furthermore, this assessment recognizes the uncertainty related to specific climate outcomes for the County. High and low climate projections were included within the “Observed and Projected Physical Effects of Climate Change in New York State and Putnam County” section. The vulnerability of assets in the community will ultimately be impacted by the experienced trajectory of climate effects.

Vulnerability Assessment Matrix

The below table summarizes the relevant climate hazards; level of exposure, sensitivity, and adaptive capacity; and level of stakeholder prioritization for each asset explored in this assessment.

Asset	Sea Level Rise	Changing Precipitation	Rising Temperatures	Exposure	Sensitivity	Adaptive Capacity	Stakeholder Survey Prioritization
Infrastructural Assets							
Energy + Power		x	x	High	High	High	High

Travel + Transportation	x	x	x	High	High	High	Medium-High
Cooling + Warming Shelters		x	x	Medium	Medium	High	Medium
Storm Shelters	x	x	x	Medium	Low	Medium	Medium-High
Stormwater Infrastructure		x		High	High	High	High
Dams		x		High	High	Medium	High
Septic Infrastructure	x	x		Medium	High	Medium	High
Homes + Residential Properties	x	x	x	Medium	Medium	Medium	High
Public Buildings	x	x	x	Medium	Low	High	Low
Waste		x	x	Low	Low	Low	Medium-High
Social Assets							
Healthcare Facilities + Services	x	x	x	Medium	High	Medium	High
Local Jobs + Businesses	x	x	x	Medium	Medium	Medium	High
Vulnerable Communities	x	x	x	High	High	High	Medium-High
Food Access + Food Security		x	x	Medium	High	Medium	High
Historic Preservation	x	x	x	Medium	High	Variable	Low
Resources for Youth and Older Adults	x	x	x	Low	Medium	Medium	Medium-High
Cultural Resources, Tourism, and Community Events	x	x	x	Medium	Medium	Medium	Low
Environmental Assets							
Drinking Water		x	x	Medium	Medium	Medium	High
Clean Air			x	High	High	Medium	High
Ecosystems, Habitats, and Biodiversity	x	x	x	High	High	Medium	High

Parks, Open Space, and Recreational Sites	x	x	x	High	High	Medium	Medium
Agricultural Lands + Soils		x	x	High	High	Medium	High

Table 4: Exposure, sensitivity, and adaptive capacity summary table for Putnam County's Climate Vulnerability Assessment

Climate Impact Chains

Although the above Climate Vulnerability Assessment addresses infrastructure, social, and environmental assets separately, disruptions due to climate hazards often have compounding impacts on multiple, interconnected assets. In order to map the relationship between hazards and multiple assets, Climate Impact Chains were created as part of the Climate Vulnerability Assessment process. Climate Impact Chains are a visualization tool used to demonstrate the cascading impacts of climate hazards, directly and indirectly. The Climate Impact Chains created for this plan drew heavily from the research in the "Exposure, Sensitivity, and Adaptive Capacity" section of this Climate Vulnerability Assessment. They map impacts resulting from rising temperatures, changing precipitation, and sea level rise. The visualizations highlight that addressing vulnerabilities in Putnam County will require a holistic approach that considers the multiple, downstream effects of climate hazards. See [Appendix L](#) for copies of the Climate Impact Chains created.

Community Plans Consistency Assessment

Climate vulnerabilities and adaptive capacity are impacted by existing plans, policies, and procedures in Putnam County. As a first step in the Climate Vulnerability Assessment process, the CCARP Leadership Team elected to complete a [Climate Smart Resilience Planning \(CSRP\)](#) process to assess existing resilience and opportunities for growth in the County, aligning with guidance from the [CSC PE7 Action: Evaluate Policies for Climate Resilience](#). The CSRP process involved compiling all relevant policies and plans in the County and inventorying their resiliency measures using the [CSRP Tool](#)—a spreadsheet-based inventory with over 300 metrics to systematically assess policies for potential climate resilience measures. The inventory is organized across five categories: Vulnerability and Risk Assessment, Public Outreach, Plans Integration, Preparedness and Recovery, and Hazard Mitigation.

The CSRP process was completed from September 2025-January 2026 through a combination of research, and a review process. As part of the process, the following plans and documents were reviewed, and additional plans were discussed:

- [Putnam County Hazard Mitigation Plan \(2021\)](#)
- Hurricane Emergency/Tropical Storm Action Plan (2024)
- Putnam County Comprehensive Emergency Management Plan Revision 2 (2023)
- Putnam County [Six Year \(FY 2025-FY 2030\)](#) (FY 2025-FY 2030) and [One Year Capital Plans \(FY 2025\)](#)
- Disaster Debris Management and Removal Plan
- Public Health Emergency Preparedness and Response Plan (Revised 2024)
- Putnam County Department of Health Integrated Preparedness Plan (2025)
- [Comprehensive Economic Development Plan for the Mid-Hudson Region \(2025-2030\)](#)
- [Moving Forward 2055: New York Metropolitan Transportation Council Regional Transportation Plan \(2026-2055\)](#)
- [2004 Agriculture and Farmland Protection Plan \(2004\)](#)
- [Draft Local Solid Waste Management Plan \(2025-2034\)](#)
- [Lower Hudson Coalition of Conservation District's Flood Preparedness and Response Guide \(2014\).](#)

A Summary Report outlining the process, contributors, existing strengths, and opportunities for growth as well as the completed CSRP Tool can be found in [Appendix B](#). The process and findings helped inform the Climate Vulnerability Assessment and were used in subsequent planning efforts to identify potential adaptation strategies.

Community Future Scenarios

Exploratory Future Scenario Planning

As part of its CCARP process, Putnam County and HVRC hosted two exploratory scenario planning workshops on February 9, 2026, and March 9, 2026. Exploratory scenario planning is a stakeholder engagement strategy used to support planning in light of uncertainties into the future. The workshops served three purposes:

- To convene stakeholders in discussions about potential future conditions,
- To prioritize and brainstorm adaptation strategies, and
- To inform a Resilience and Adaptation Vision Statement for the County.

Summaries of each workshop and outcomes can be found below:

Scenario Planning Workshop Part 1:

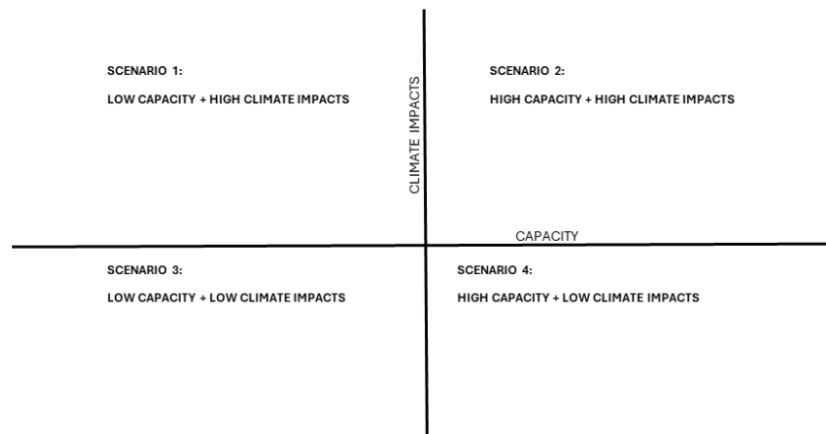
Date/Time: February 9,
2026: 2:00-3:00 pm

Location: Planning Dept.
Conference Room - 841 Fair
St., Carmel, NY 10512

Participants: 12, including
facilitators (See [Appendix E](#)
for list of participants)

Summary: During the first workshop, members of the CCARP Working Group met to discuss four possible futures (scenarios) for Putnam County. To guide this exercise, participants imagined the County under varying degrees of climate impacts and County capacity. In this context:

- **Climate impacts** referred to whether increasing temperatures, changing precipitation, and rising sea levels follow high or low climate projections.
- **County capacity** referred to the availability of funding, staff time, community buy-in, competing priorities, and volunteer support (see Scenario Planning Matrix below).



The workshop included a short presentation, an activity with two discussion groups, and time to discuss next steps. During the small group activities, each group discussed what life in Putnam County would look like in 2035 under two of the above scenarios.

Throughout these conversations, participants were encouraged to imagine the future from three possible perspectives. Specifically, they were prompted to consider how various combinations of climate impacts and capacity would impact their work/offices; their day-to-day lives; and/or stakeholders in the community (i.e. local businesses, other residents, community organizations etc.). This step drew inspiration from the CCARP guidance to incorporate participatory simulations.^x

Goals: The goals of this first workshop were:

^x [CCARP Template](#) p. 43.

- To generate meaningful conversations amongst different stakeholders,
- To consider how potential uncertainties could affect climate adaptation planning in Putnam County, and
- To encourage future adaptation planning efforts to anticipate and plan for multiple potential outcomes.

Outcomes: Following the first workshop, stakeholder feedback was synthesized to create four narrative scenarios. The narratives outlined descriptions of possible future conditions under each of the four scenarios discussed. These narratives were not intended to be predictive but rather inform conversations about adaptation strategies and community visioning during the second scenario planning workshop.

Scenario Planning Workshop Part 2:

Date/Time March 9, 2026: 2:00-4:00 pm	Location: Donald B Smith Campus, 110 Old Route 6, Carmel, Bureau of Emergency Services Classroom #1	Participants: 14, including facilitators (See Appendix E)
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Summary: During the second scenario planning workshop, participants completed activities to inform the CCARP's adaptation strategies and vision statement. The workshop included a short presentation to provide an update on the CCARP process, define resilience and adaptation, review climate projections for Putnam County, summarize the previous workshop, and introduce this workshop's activities and goals.

Following the presentation, participants broke into four groups to complete two small group activities. Each group was assigned one scenario to discuss.

- During the first activity, participants used their assigned scenarios to prioritize and provide feedback on a list of adaptation strategies generated/identified throughout the CCARP process. These include recommendations from the CSRP process and relevant goals from the County's Hazard Mitigation Plan, as well as additional ideas that emerged during the planning process.
- During the second activity, participants used their assigned scenarios to brainstorm additional adaptation strategies to recommend for inclusion in the CCARP.

At the conclusion of the workshop, participants reconvened to provide feedback on the County's resilience and adaptation vision through two, word cloud exercises.

Goals: The goals of the second workshop were to:

- Prioritize and generate adaptation planning strategies that are cognizant of potential uncertainties in the future.
- To provide input on Putnam County's Resilience & Adaptation Vision Statement.

Outcomes: Following the workshop, an updated list of adaptation strategies was created that removed, modified, and/or added adaptation strategies and actions. The new list of adaptation strategies was circulated for further feedback via a stakeholder survey. Additionally, themes from the word cloud exercise were analyzed to help update/inform Putnam County's Adaptation & Resilience Vision Statement.

A Shared Community Vision

Putnam County is committed to leading by example in preparing for and adapting to current and projected climate trends. We strive to strengthen our resilience while planning for future conditions through thoughtful innovation and collaboration. Using data-driven solutions and public outreach, we will work to protect and support the communities, livelihoods, infrastructure, ecosystems, and natural resources that we value today. We recognize that this vision requires us to work together and provide the necessary resources for all of our community members, particularly those most vulnerable. By leveraging support at the local, state, and federal levels and fostering strong community partnerships, Putnam County will maintain a healthy, safe, and resilient future for generations to come.

Recommendations for Action

The following section compiles a list of adaptation strategies and recommended actions to further Putnam County's resilience and adaptive capacity. These strategies and recommendations were developed through a participatory process. (See the ["CCARP Leadership Team, Participatory Engagement Process, and Framework"](#) section for more information.)

Strategies and recommended actions are accompanied by information about potential co-benefits, costs, and relevant assets.^{xi} A lead entity and recommended timeline is also proposed for each action.

^{xi} Co-benefits and icons are modeled from the co-benefits icons within HVRC's CVAAP Template.

Symbol	Co-Benefit
	High potential to save money
	High potential to enhance resource security
	High potential to create jobs
	High potential to improve public health
	High potential to deliver benefits to vulnerable communities
	High potential to lower greenhouse gas (GHG) emissions and/or sequester carbon

Table 5: Co-benefits icons for adaptation strategies. Derived from HVRC's Climate Vulnerability Assessment & Adaptation Plan Template (CVAAP).

Category	Timeframe
Near-term	1-2 year timeline
Medium-term	2-7 year timeline
Long-term	7-10 year timeline

Table 6 Proposed timelines are included for each recommended action, using the above categories

Infrastructure

Strategy 1: Secure and incentivize backup power at critical facilities to address potential power outages.			
Co-Benefits:  		Relevant Assets: Power & Energy; Cooling Centers	
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Work with all cooling centers to ensure backup power is available.	\$-\$\$	Department of Public Works	Near/Medium-term
b. Identify critical facilities that would benefit from additional solar/backup power to protect against power outages.	\$-\$\$\$\$	Bureau of Emergency Services	Medium/Long-term

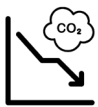
Strategy 2: Reduce flood risks by assessing the stormwater infrastructure in the County and right-sizing infrastructure when needed.

Co-Benefits:     Relevant Assets: Stormwater Infrastructure			
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Continue assessing all culverts for potential flood risks.	\$-\$\$	Department of Public Works	Ongoing
b. Continue exploring FHWA, Bridge NY, and other funding opportunities for stormwater projects.	\$	Department of Public Works	Ongoing
c. Encourage any new County infrastructure projects to incorporate green infrastructure to reduce flooding, when relevant.	\$\$-\$\$\$	Department of Public Works	Medium/Long-term

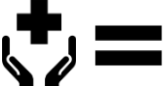
Strategy 3: Assess and address risks related to dams, such as dam failure and flooding.

Co-Benefits:    Relevant Assets: Dams			
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Seek out State funding for dam improvements, repairs, or removals.	\$-\$\$\$	Department of Planning, Development, & Public Transportation	Medium/Long-term
b. Map potential flood impacts for all dams in the County, separating out which dams are owned by County and by non-County entities.	\$	GIS/IT	Near-term
c. Increase information about dam-related risks by continuing communications with non-County landowners about the condition and maintenance of their dams.	\$	Department of Public Works	Long-term
d. Assess and prioritize dams for potential dam removal and decommissioning projects.	\$\$-\$\$\$	Department of Public Works	Ongoing/Long-term
e. Encourage dams, culverts, and bridges to be built to accommodate 200- or 500-year storms, higher than the State requirement for designing to accommodate 100-year storms.	\$\$-\$\$\$	Department of Public Works	Ongoing

Strategy 4: Expand public transportation to increase connectivity and mobility options for Putnam County residents.

Co-Benefits:   Relevant Assets: Travel and Transportation			
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Increase public transportation options to increase connectivity to trains, healthcare, and food resources, and to increase transportation options during emergencies.	\$\$\$	Department of Planning, Development & Public Transportation	Long-term

Strategy 5: Assess and protect buildings in Putnam County from potential flood and water damage.

Co-Benefits:   Relevant Assets: Homes and Residential Properties; Public Buildings; Ecosystems, Habitat, and Biodiversity			
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Assess options for the County Records Building, which currently floods frequently.	\$-\$\$	Department of Public Works	Medium-term
b. Repair or upgrade County buildings susceptible to water damage (i.e. Health Department Building).	\$\$	Department of Public Works	Medium-term
c. Map public buildings and lands in relationship to flood risks to identify priority areas.	\$	GIS/IT	Near-term
d. Continue County-level land conservation strategies for properties in vulnerable areas.	\$-\$\$\$	Parks Department	Ongoing
e. Encourage local municipalities to identify and assess areas suitable for relocating or building housing outside of the floodplain.	\$	Bureau of Emergency Services; Department of Planning, Development & Public Transportation	Long-term

Strategy 6: Expand outreach, education, and programs for Putnam County communities to support proper septic system maintenance.

Co-Benefits: 		Relevant Assets: Septic Infrastructure; Homes and Residential Properties; Drinking Water; Ecosystems, Habitats, and Biodiversity	
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Continue and expand community outreach/education about septic maintenance.	\$	Department of Health	Near-term
b. Establish a program to support funding or incentives for septic replacement projects.	\$\$\$\$	Department of Health	Long-term

Strategy 7: Increase cooling center program awareness and accessibility.

Co-Benefits: 		Relevant Assets: Cooling Centers; Vulnerable Communities	
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Continue to publicize information about cooling centers and advertise transportation options for accessing centers.	\$	Department of Health, Department of Planning, Development & Public Transportation	Ongoing
b. Prioritize high-need census tracts for future cooling center projects and outreach	\$	Department of Health	Medium-term
c. Coordinate with Putnam Lake to establish a cooling center. ^{xii}	\$	Department of Health	Near-term
d. Publicize information about criteria for opening cooling centers to increase public awareness.	\$	Department of Health	Near-term

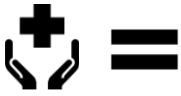
Strategy 8: Expand storm and emergency shelters for pets and animals to increase the accessibility of cooling centers.

Co-Benefits: 		Relevant Assets: Storm Shelters; Vulnerable Communities	
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Identify at least one location in the eastern and western portions of the County for	\$\$	Bureau of Emergency Services	Medium-term

^{xii} Putnam Lake currently does not have a cooling center.

people with pets, service animals, and/or farm animals to shelter during a disaster.			
b. Explore collaborations with veterinary networks to identify existing facilities that can be used to shelter pets and animals.	\$	Bureau of Emergency Services	Medium-term

Strategy 9: Expand evacuation planning to address potential increases in severe weather events and flood risks to road infrastructure.

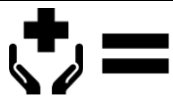
Co-Benefits: 		Relevant Assets: Travel & Transportation; Vulnerable Communities; Healthcare Facilities & Services	
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Plan evacuation strategies for vulnerable communities that may need assistance while evacuating.	\$-\$\$	Bureau of Emergency Services	Medium-term
b. Map evacuation routes in relationship to flood risks to assess potential challenges.	\$	GIS/IT	Near-term
c. Expand existing evacuation planning efforts by creating an Emergency Transportation Plan.	\$\$	All	Medium-term
d. Increase outreach and education about evacuation routes.	\$	Bureau of Emergency Services	Near-term
e. Update evacuation planning for the County, drawing from the insights in the Indian Point Emergency Guide.	\$-\$\$	Bureau of Emergency Services	Medium-term
f. Collaborate with neighboring counties to ensure evacuation routes have appropriate capacity for all counties.	\$-\$\$\$	Bureau of Emergency Services	Medium-term
g. Collaborate with health facilities and emergency services on evacuation planning.	\$	Bureau of Emergency Services & Department of Health	Medium-term
h. Provide evacuation options for residents reliant on public transportation.	\$-\$\$\$	Department of Planning, Development & Public Transportation	Long-term

Social

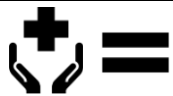
Strategy 10: Further a resilient food system that supports local food production and food security.

Co-Benefits:  Relevant Assets: Vulnerable Communities; Food Access and Food Security			
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Expand/encourage dialogue between County departments, local organizations, and food pantries to identify and address resiliency gaps.	\$	Agriculture & Farmland Protection Board, Department of Health, Cornell Cooperative Extension of Putnam County	Medium-term
b. Collaborate with local organizations on preserving the network of farms in the County.	\$	Agriculture & Farmland Protection Board	Ongoing

Strategy 11: Collaborate with schools, daycares, preschools, and summer camps on resiliency and emergency preparedness planning.

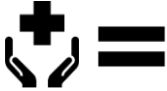
Co-Benefits:  Relevant Assets: Resources for Seniors and Youth			
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Increase coordination with daycares, camps, and preschools.	\$	Department of Health, Youth Bureau	Medium-term

Strategy 12: Expand outreach and programs related to resiliency for County residents, including those who may be particularly vulnerable to the impacts of a changing climate.

Co-Benefits:  Relevant Assets: Vulnerable Communities; Resources for Seniors and Youth			
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Expand effective outreach efforts to vulnerable communities, including older adult populations.	\$	Office of Senior Resources	Ongoing
b. Improve accessibility of outreach materials by offering all resilience-related outreach in multiple languages.	\$	All	Ongoing
c. Encourage participation in the County's existing "Are You Okay" program through campaigns, outreach, giveaways, or additional strategies.	\$	Office of Senior Resources	Ongoing/Near-term

d. Encourage community-led “Are You OK” programs, in addition to the County program, that provide support for older adults in neighborhoods or apartment complexes.	\$	Office of Senior Resources	Medium-term
e. Explore resiliency outreach and emergency alert options for residents without access to the internet. Potential options include creating booklets/print materials, conducting outreach by phone, etc.	\$-\$\$	Bureau of Emergency Services, Information Technology (IT) Department	Medium-term

Strategy 13: Coordinate with healthcare facilities on resilience and emergency preparedness planning.

Co-Benefits:  Relevant Assets: Healthcare Facilities and Services; Vulnerable Communities			
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Collaborate with Putnam Hospital, Danbury Hospital, urgent care, medical offices, and pharmacies to support emergency planning, particularly for people with at-home medical equipment, modular equipment, or injuries.	\$-\$\$\$	Department of Health	Medium-term

Strategy 14: Coordinate with local employers and businesses to promote a resilient economy.

Co-Benefits:  Relevant Assets: Local Jobs and Businesses			
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Expand conversations with land developers in Putnam County to promote future job growth and resiliency.	\$	Department of Planning, Development & Public Transportation	Medium-term

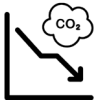
Strategy 15: Protect County Archives and Historical Records from flood risks.

Co-Benefits:  Relevant Assets: Historic Preservation; Public Buildings			
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline

a. Identify a location to relocate the County Archives and Historical Records to reduce flood risk/exposure	\$-\$\$	County Historian & Department of Public Works	Near/Medium-term
b. Seek resources to support digitizing the County Archives & Records to ensure long-term preservation of historical memory.	\$-\$\$	County Historian, Information Technology (IT) Department	Near-term

Environmental

Strategy 16: Reduce risks from wildfires and wildfire smoke exposure.

Co-Benefits:  Relevant Assets: Parks, Open Space, and Recreational Sites; Ecosystems, Habitats, and Biodiversity; Clean Air 			
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Work with land trusts, nonprofit organizations, DEC, DEP, and other partners on forest management for fire resilience.	\$\$-\$\$\$	Bureau of Emergency Services	Medium-term
b. Create an inventory of equipment available in the County, region, and state to fight forest fires in order to identify potential gaps.	\$-\$\$	Bureau of Emergency Services	Medium-term
c. Coordinate with New York State, villages, and towns to assess wildfire risks and vulnerabilities. Work to identify roles and responsibilities prior to emergency events, drawing from lessons learned from the Sedgewood fire.	\$-\$\$	Bureau of Emergency Services	Medium-term

Strategy 17: Support resilient agriculture in Putnam County through outreach and planning.

Co-Benefits:  Relevant Assets: Agricultural Lands and Soils; Local Jobs and Businesses			
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline

a. Collaborate with partners and local organizations on outreach to farmers about climate resilience and to understand farmers' existing concerns and challenges.	\$	Agriculture & Farmland Protection Board	Near-term
b. Explore including climate resilience considerations in the anticipated update of the Putnam County Farmland Protection Plan.	\$	Agriculture & Farmland Protection Board	Near-term

Strategy 18: Increase ecosystem management & data collection for climate resilience.

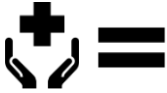
Co-Benefits:   		Relevant Assets: Parks, Open Space, and Recreational Sites; Ecosystems, Habitats, and Biodiversity	
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Update the Comprehensive Park and Open Space Plan and/or the County-level Natural Resources Inventory.	\$\$	Department of Planning, Development & Public Transportation	Near/Long-term
b. Increase public-facing educational materials about nature-based solutions to flooding, potentially leveraging existing resources from the NY DEC.	\$	Bureau of Emergency Services	Near-term
c. Increase community outreach about identifying and responsibly removing invasive species.	\$	Department of Parks and Recreation	Near-term

Cross-Cutting

Strategy 19: Expand partnerships for climate resilience.

Co-Benefits:   		Relevant Assets: Cross-cutting	
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Connect with local organizations to align and coordinate adaptation/resilience services and programs.	\$	All	Medium-term
b. Inventory resources at community centers across the County and support resource sharing across communities	\$	Bureau of Emergency Services	Medium-term

Strategy 20: Increase storm & emergency preparedness education.

Co-Benefits: 		Relevant Assets: Cross-cutting	
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Continue and expand existing, proactive outreach efforts about storm/emergency preparedness through website, social media, mailings, newsletters, and/or TV ads.	\$	Bureau of Emergency Services & Department of Health, Office of County Executive	Ongoing
b. Implement an early flood warning system, potentially using Kingston as an example.	\$\$\$	Bureau of Emergency Services	Medium-term
c. Tailor existing storm/emergency preparedness outreach materials to reflect the particular challenges and opportunities in Putnam County.	\$	Bureau of Emergency Services & Department of Health	Near-term
d. Install high-water mark signs to illustrate flood risks. Assess locations like Peekskill Hollow, Cold Spring, and, if relevant, local camps as potential options.	\$	Department of Public Works	Medium-term
e. Assess flash flood risks and need for a flash flood warning system.	\$\$	Bureau of Emergency Services	Medium-term
f. Increase outreach & educational programming for County residents and businesses about resilience, flood/erosion risks, climate trends, and emergency preparedness.	\$	Bureau of Emergency Services	Near-term
g. Offer NY DHS Citizen Preparedness Corps Trainings in Putnam County to increase community outreach and education. ^{xiii}	\$	Bureau of Emergency Services	Near-term

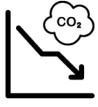
Strategy 21: Increase volunteer capacity.

Co-Benefits: 		Relevant Assets: Cross-cutting	
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Include volunteers in advancing County-level resilience by working with existing volunteer networks and relationships with non-County organizations.	\$	All	Near-term

^{xiii} The [trainings](#) are free and taught by the NY National Guard.

b. Collaborate with school districts to recruit volunteers and/or expand community outreach and education.	\$	All	Near-term
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Strategy 22: Align internal processes and plans.

Co-Benefits:  	Relevant Assets: Cross-cutting
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Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Collaborate across departments and partner organizations to continuously review potential grant funding opportunities for hazard mitigation and/or resilience-related projects.	\$	All	Ongoing
b. Expand succession planning procedures for retiring or departing staff to reduce loss of institutional knowledge.	\$	All	Near-term
c. Continue dialogue with towns and villages, including in relation to comprehensive planning, zoning, and land use related to climate risks.	\$	Department of Planning, Development & Public Transportation	Ongoing
d. Consider County-level comprehensive planning, inclusive of climate considerations.	\$\$-\$\$\$	Department of Planning, Development & Public Transportation	Long-term
e. Formalize a procedure for sharing climate-related vulnerability and risk assessment projects with relevant stakeholders, including the Department of Planning and Transportation and Department of Public Works.	\$	Bureau of Emergency Services; Department of Planning, Development & Public Transportation; & Department of Public Works	Near-term
f. Explore the feasibility and need for new plans relevant to resiliency planning, such as a Local Waterfront Revitalization Plan, Climate Action Plan, Floodplain Management Plan, Short- and Long-Term Recovery Plan, and Natural Resources	\$\$-\$\$\$	Department of Planning, Development & Public Transportation	Near-Long-term

Inventory. Prioritize planning efforts based on the availability of implementation funding opportunities.			
g. Continue encouraging Continuity of Operations Plans across County departments.	\$\$	Bureau of Emergency Services	Near-term

Strategy 23: Expand timely outreach & education capacity.

Co-Benefits:  Relevant Assets: Cross-cutting			
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Across relevant departments, develop outreach materials/press releases about emergency preparedness, climate resilience, or related topics that are preapproved and can be distributed as needed.	\$	Department of Health; Bureau of Emergency Services; & Department of Planning, Development & Public Transportation	Near-term
b. Create department-specific social media pages, as needed, where information about climate resilience can be shared.	\$	Bureau of Emergency Services; Department of Planning, Development & Public Transportation; Department of Health	Ongoing

Strategy 24: Increase staff capacity for adaptation & resilience planning.

Co-Benefits:  Relevant Assets: Cross-cutting 			
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Fund a dedicated engineer to assess county infrastructure and support towns.	\$\$	Department of Public Works	Long-term
b. Explore hiring a dedicated grant writer or working with a grant firm to increase capacity and funding opportunities.	\$\$	Department of Planning, Development, and Public Transportation	Long-term

Strategy 25: Expand data & data collection related to county resilience planning.			
Co-Benefits: 		Relevant Assets: Cross-cutting	
Description & Recommended Actions	Costs	Lead Entity/ies	Timeline
a. Map County infrastructure, vulnerable populations, buildings, cultural resources, and natural resources in relationship to the County's top climate hazards.	\$	GIS/IT	Near-term
b. Incorporate climate projections into County Planning, including emergency response plans, capital plans, and infrastructure planning, when relevant.	\$	All	Ongoing
c. Expand open-source GIS mapping resources related to climate resiliency.	\$	GIS/IT	Ongoing
d. Compile local zoning maps along the Hudson River for a County-wide view of land uses near a high flood-risk area.	\$	Department of Planning, Development & Public Transportation; Information Technology (IT) Department	Near-term
e. Share relevant data and maps with town councils to increase climate resilience education and awareness.	\$	All	Near-term
f. Incorporate NY DEC's sea level rise projections into planning efforts, when relevant.	\$	All	Ongoing

Summary of Community Priorities

The following table summarizes Putnam County community priorities related to adaptation strategies based on 16 survey responses to the Putnam County Lunch & Learn: Public Engagement Survey (See [Appendix I](#)).

Infrastructure	High	Medium	Low
Secure backup power at critical facilities to address potential power outages.	75%	25%	0%

Reduce flood risks by assessing the stormwater infrastructure in the County and right-sizing infrastructure when needed.	68.75%	31.25%	0%
Assess and address risks related to dams, such as dam failure and flooding.	68.75%	18.75%	12.5%
Expand public transportation to increase connectivity and mobility options for Putnam County residents.	62.5%	18.75%	18.75%
Assess and protect buildings in Putnam County from potential flood and water damage.	43.75%	50%	6.25%
Expand septic outreach, education, and programs for Putnam County community members to support proper maintenance.	43.75%	18.75%	12.5%
Increase cooling center program awareness and accessibility to increase use during high heat events.	37.5%	43.75%	18.75%
Expand storm and emergency shelters for pets and animals to increase the accessibility of shelters.	37.5%	18.75%	43.75%
Expand evacuation planning to address potential increases in severe weather events and flood risks to road infrastructure.	31.25%	50%	18.75%
Social	High	Medium	Low
Further a resilient food system that supports local food production and food security.	68.75%	31.25%	0%
Collaborate with schools, daycares, preschools, and summer camps on resiliency and emergency preparedness planning.	62.5%	37.5%	0%
Expand outreach and programs related to resiliency for County residents, including those particularly vulnerable to the impacts of a changing climate.	56.25%	37.5%	6.25%
Coordinate with healthcare facilities on resilience and emergency preparedness planning.	56.25%	37.5%	6.25%
Coordinate with local employers and businesses to promote a resilient economy.	43.75%	37.5%	18.75%
Protect the County Archives and Historical Records from flood risks to preserve local history.	18.75%	68.75%	12.5%
Environmental	High	Medium	Low
Reduce risks from wildfires and wildfire smoke exposure.	68.75%	31.25%	0%
Support resilient agriculture in Putnam County through outreach and planning.	62.5%	31.25%	6.25%
Increase ecosystem management and data collection for climate resilience.	37.5%	56.25%	6.25%
Cross-Cutting	High	Medium	Low
Expand partnerships for climate resilience.	68.75%	25%	6.25%

Increase storm and emergency preparedness education within the County.	62.5%	25%	12.5%
Increase volunteer capacity for resilience and adaptation projects.	56.25%	37.5%	6.25%
Align internal processes within Putnam County to support climate resilience and planning.	56.25%	31.25%	12.5%
Increase staff capacity for adaptation and resilience planning.	43.75%	50%	6.25%
Expand data and data collection related to County resiliency planning.	25%	62.5%	12.5%

Assessment of Potential Maladaptations

While climate adaptation strategies have the potential to create many co-benefits, careful planning is required to avoid the possibility of maladaptation. Maladaptation occurs when adaptation strategies lead to unintended consequences. Specifically, this report uses the IPCC 2022 definition of maladaptation, included in the “Key Terms” section of this report:

Maladaptation: “Actions that may lead to increased risk of adverse climate-related outcomes, including via increased greenhouse gas (GHG) emissions, increased or shifted vulnerability to climate change, inequitable outcomes, or diminished welfare, now or in the future. Most often, maladaptation is an unintended consequence” (IPCC 2022).³⁷⁸

With this definition in mind, this report includes a maladaptation analysis for each of the strategies proposed in the CCARP. The maladaptation analysis seeks to identify potential avenues for maladaptation so that the implementation of the CCARP can proactively avoid unintended consequences and maximize positive outcomes into the future. To complete the maladaptation analysis, each strategy was evaluated using six questions, closely adapted from the CCARP Template’s sample maladaptation matrix:

Could the proposed strategy:

1. Increase emissions?
2. Redirect vulnerabilities to other communities or transfer vulnerabilities to future generations?
3. Impact vulnerable communities?
4. Encourage path dependency or reduce long-term adaptive capacity?
5. Degrade ecosystems, biodiversity, or ecosystem services?

6. Become ineffective due to uncertainties about the future?^{xiv}

A matrix evaluating each strategy for maladaptive potential is included in [Appendix N](#). It is important to note that although maladaptation is possible, it is not a guaranteed outcome. Planning enables the likelihood and risks of maladaptation to be reduced in order to successfully adapt to climate change.

Monitoring & Evaluation Approach & Plan

Indicators and Metrics

The strategies outlined in this plan are intended to be actionable and reduce Putnam County's vulnerabilities to potential climate impacts. Assessing progress will require clear goals and mechanisms for tracking progress. The following section includes a list of indicators and metrics that Putnam County could track to evaluate progress on increasing county-level resilience and adaptive capacity.

According to definitions from Resilience Metrics, cited in the CCARP template:

- "An **indicator** is a quality, trait, or state of a system that suggests ("indicates") or hints at something one is interested in. More specifically, an indicator is a sign that a particular set of adaptation actions are yielding the desired result and/or making progress in the right direction."
- "A **metric** is a variable that can be measured (if quantitative) or otherwise tracked (if qualitative) that represents the indicator."³⁷⁹

The following indicators and metrics aim to support the County in assessing progress toward building its resilience and adaptive capacity. While providing a general guideline, some data may require collaboration with non-County organizations, which could impact data accessibility.

Infrastructure		
Indicator	Metrics	Relevant Data Sources
Reduce vulnerable dams, culverts, and bridges.	Number of high hazard dams with unsound or deficient condition ratings.	• NYSGIS Clearinghouse: NYS DEC Inventory of Dams

^{xiv} [CCARP Template](#) p. 52.

	Percent of dams with condition ratings less than "no deficiencies noted."	• NYS GIS Clearinghouse: NYSDOT Large Culverts • NYS GIS Clearinghouse: NTSDOT Bridges • DPW Records/Internal tracking • Collaborations with NYS
	Number of culverts replaced.	
Expand transportation options to increase access to storm shelters, evacuation routes, etc.	Percent of roads vulnerable to flooding, including evacuation routes.	• FEMA's National Flood Hazard Area • NYS GIS Clearinghouse: NYS Streets
	Number of public transportation routes available outside of areas vulnerable to flooding.	• Data.NY.Gov MTA Rail Branches Map • Putnam County Public Transit
Increase access to cooling during high heat days.	Number of cooling centers with backup power.	• Department of Health
	Number of visits to cooling centers.	• Coordinate with local libraries
	Number of visits to Putnam Hospital for heat-related illness.	• Coordinate with Putnam Hospital
Improve accessibility and awareness of storm shelters.	Number of "clicks" or views for online outreach about storm shelter locations.	• Internal tracking
Reduce flood vulnerability in homes/residential properties.	Number of homes in the floodplain.	• Putnam County Tax Parcels • NYS Building Footprints • FEMA's National Flood Hazard Layer • FEMA Flood Map Service Center
	Number of people living in the floodplain.	• Data previously reported in the County's Hazard Mitigation Plan
	Number of public buildings located in the floodplain.	• FEMA's National Flood Hazard Layer • FEMA Flood Map Service Center
Improve access to reliable power and energy.	Annual number of power outages.	• Real-time tracking/collaboration with power companies
	Percent of critical facilities with backup power.	• Internal tracking

Social		
Indicator	Metric	Relevant Data Sources
Outreach to vulnerable communities.	Percentage of older adults that the County can reach.	• Tracked by OSR
	Participation rates in County "Are You Okay" program.	• OSR and "Are You Ok?" Registration Data
Support food systems resiliency.	Number of farms/acres of farmland in Putnam County.	• Agriculture & Farmland Protection Board / Internal tracking

Continuous access to healthcare and services.	Wait times at Putnam Hospital.	Putnam Hospital
Continuity of tourism/cultural events.	Annual tourism spending.	Empire State Development
Maintain local jobs and businesses.	Lost workdays or closures due to storms/natural disasters.	Internal tracking

Environmental		
Indicator	Metric	Relevant Data Sources
Improve water quality.	Annual number of harmful algal blooms.	NYS DEC - Explore potential data options for private lakes
Enhance forest/ecosystem management and response.	Explore available data sources related to wildfire containment in Putnam County.	
Support resiliency of parks and open space.	Explore available data sources related to damage from natural hazards within County-owned trails and parks.	

Plan Implementation Strategy

Governance and Management Structure

This plan will be considered before actions are made by the Putnam County Capital Planning Committee. Specific strategies and actions will be the responsibility of the department designated as the “Lead Entity” under the “Recommended Actions” section of this plan.

When relevant, outside stakeholders will be engaged in the implementation of specific strategies and actions by leveraging new and existing partnerships with local organizations. Putnam County will also explore opportunities to bridge the CCARP with the County’s P.I.L.O.T. (Putnam Invests in Leaders of Tomorrow) program to work with local high school and college students. To support adequate resources to enact the plan, the County will continue to pursue funding opportunities from state, federal, and additional, external funding sources.

Implementation Methods

The implementation of the CCARP will include a mixture of public outreach and internal collaboration to ensure progress on the plan over time.

Public Outreach: The CCCARP webpage will continue to serve as a central place for storing and sharing information about the CCARP. As progress is made on the plan's implementation, the County may explore creating a dashboard to visualize progress on the CCARP's Recommended Actions. The County will also continue to share information about the CCARP through strategies like adapting existing flyers and outreach materials to share information about the CCARP.

Internal Collaboration: Updates about the CCARP may be shared in a variety of settings to promote progress on the Plan including at Capital Committee Meetings, Safety Committee Meetings, Department Head Meetings, and Climate Smart Task Force Meetings. On an as needed basis, the Climate Smart Coordinator will also coordinate with departments about the CCARP Strategies and Recommended Actions.

Budget and Funding Options

The anticipated budget for this CCARP may vary based on specific implementation decisions. Initial costs estimates are included in the Recommended Actions portion of the CCARP using a high (\$\$\$), medium (\$\$), and low (\$) scale. For the purpose of this analysis:

- **Low-cost actions** are those that may be able to be accomplished with existing funding or that will likely require minimal costs. Relevant costs could include printing outreach materials, leveraging staff time, or continuing existing programs/projects. Low-cost actions also include those where the County could partner or encourage non-County entities to take on projects, but where the County would not be the lead implementor (i.e. Recommended Action 22(c)).
- **Medium-cost actions** are those that may require more substantial investments in terms of time and/or financial resources. Relevant costs could include more significant staff time, hiring consultants, purchasing equipment, implementing modest scope repairs/upgrades, etc.
- **High-cost actions** are those that may require significant external funding and staff time. Relevant costs could include, but are not limited to, large-scale infrastructure upgrades or investing in new infrastructure projects.

All costs are preliminary estimates and will require more in-depth budgetary considerations prior to implementation. In order to implement these projects, Putnam County can consider a variety of funding sources at the state and federal level. Examples of past and current funding opportunities can be found below:

NYS DEC: Climate Smart Communities Grants program: The [Climate Smart Communities Grants Program](#) can support climate mitigation and adaptation projects, with awards spanning \$50,000-\$2,000,000. [Eligible projects](#) related to this CCARP could include:

- Addressing flooding through nature-based solutions,
- Relocating or retrofitting infrastructure,
- Addressing heat exposure,
- Preparing feasibility studies, and
- Furthering emergency preparedness.

NYS: Clean Water, Clean Air and Green Jobs Environmental Bond Act of 2022: Funding opportunities through the Bond Act, and additional sources, can be easily searched using the ["Fund My Project" tool](#). Specific funding opportunities will vary based on project timelines. For example, the NYS EFC: [Green Resiliency Grants Program](#) had funding opportunities related to stormwater infrastructure with a close date of June 12, 2026. Similarly, the NYS EFC and [NYS DEC: Resilient Watersheds Grant \(RWG\) Program Round 2](#) provided grant funding opportunities spanning \$150,000-\$10,000,000 to support communities implementing flood mitigation actions. Projects funded by this program must have been recommended within a Resilient NY flood study or DEC-approved flood study. This opportunity had an application deadline of June 26, 2026.

NYS DOT: BRIDGE NY Program: The NYS DOT: [BRIDGE NY Program](#) has provided funding opportunities for bridge and culvert replacements, with a total of \$200 million available per funding year.

US DOT: Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT): The US DOT: [PROTECT](#) grant program was previously offered through the Bipartisan Infrastructure Law to support climate resilient transportation projects related to "planning, resilience improvements, community resilience and evacuation routes, or at-risk coastal infrastructure."

Hudson River Estuary Program (HREP) Local Stewardship Planning Grants: The entirety of Putnam County falls within the "[Hudson River Estuary Grants Program Boundary](#)." HREP has [previously funded](#) relevant projects like Natural Resources Inventories and Open Space Plans through Local Stewardship Planning Grants.

U.S. Department of Transportation FHWA: Investment Program (BIP): The [BIP](#) grant program, created through the Infrastructure Investments and Jobs Act (IIJA), has offered

competitive funding for improving the “safety, efficiency, and reliability” of bridges. A portion of the overall, annual BIP funding (5%) can be used for projects dedicated to “culvert replacement or rehabilitation of bridge-sized culverts.”

USDA: National Resources Conservation Service (NRCS): The NRCS hosts several programs which provide money to eligible local governments to help protect agricultural land and watersheds. For example, the [Watershed Protection and Flood Prevention Operations \(WFPO\) Program](#) provides financial and technical assistance to local public sponsors for projects that help protect and restore watersheds. Other programs support recovery from natural disasters, as well as dam rehabilitation and water supply construction. These programs can be searched using the [NRCS Programs and Initiatives page](#).

FEMA: Building Resilient Infrastructure and Communities (BRIC) and the Flood Mitigation Assistance Grant Program: [BRIC](#) is a selective program that offers funds to government entities for hazard mitigation activities, e.g., “school safe rooms, utility hardening, relocating critical facilities out of flood areas, and securing pump stations.” The [Flood Mitigation Assistance program](#) provides funds for projects which “reduce or eliminate the risk of repetitive flood damage” to buildings covered by the National Flood Insurance Program, focusing on Severe Repetitive Loss and Repetitive Loss properties.

The Nature Conservancy (TNC) in New York: Climate Resilience Grant Program (CRGP): TNC in New York offers the [CRGP](#), which provides up to \$50,000 for land acquisition projects, and \$25,000 for planning and capacity projects which help conserve resilient lands and/or waters. In the 2025 fiscal year, TNC awarded funds to the Hudson River Watershed Alliance for flood resilience planning.

NYS DEC: Water Quality Improvement Program (WQIP): The [WQIP](#) program offers reimbursement grants for construction or implementation projects. The grant supports projects that “directly improve water quality or habitat, promote flood risk reduction, restoration, and enhanced flood and climate resilience, or protect a drinking water source.” Potentially relevant funding opportunities include dam safety repair, rehabilitation, and removal. Local match of 25% is required for this program.

Conclusion

The completion of this CCARP represents a significant milestone in Putnam County's ongoing commitment to climate resilience. The Climate Vulnerability Assessment establishes a clear understanding of how climate hazards affect the County's infrastructure, social, and environmental assets, while the Climate Adaptation Plan sets forth a structured framework of strategies and recommended actions to reduce those vulnerabilities and strengthen adaptive capacity. Together, these components provide a foundation for informed, coordinated, and proactive decision-making.

With this foundation in place, the County now transitions from planning to implementation. Putnam County plans to begin advancing recommended actions in partnership with designated lead entities, County departments, and community stakeholders, guided by the priorities and timelines established herein and supported by state, federal, and external funding opportunities. Implementation will be accompanied by continued monitoring and periodic review, as detailed in the preceding sections, ensuring that the Plan remains responsive to advances in climate science and the evolving needs of the community. Through this sustained and collaborative effort, Putnam County reaffirms its commitment to safeguarding the health, safety, and well-being of its residents and to foster a resilient future for generations to come.

Process for Updating the CCARP

The CCARP will be updated on a routine basis to reflect advances in scientific data and climate projections. Putnam County intends to update the CCARP, including the Climate Vulnerability Assessment and Adaptation Plan, every 10 years. Plan updates will be completed in alignment with CSC Guidelines.

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Appendix

Putnam County CCARP

Draft July 2026



Appendix A: Meetings with the CCARP Leadership Team

Meeting #	Date	Meeting Participants	Meeting Agendas
1	9/26/25	Barbara Barosa—<i>Commissioner and Climate Smart Task Force (CSTF) Member, Putnam County Planning Department</i> Matthew Covucci—<i>Deputy Commissioner, Putnam County Planning Department</i> Ilona Campo—<i>Planner/Climate Smart Communities Coordinator, Putnam County Planning Department</i> Sofie diTommaso—<i>former Resilience & Adaptation Coordinator, HVRC</i> Mary Lambert—<i>former Climate Action Planning Manager, HVRC</i>	Agenda • Project Overview ○ Climate Smart Communities PE7 Requirements • Project Components ○ Evaluate policies for climate resilience ○ Climate Vulnerability Assessment ○ Climate Adaptation Plan • Proposed Timeline • Framework for Collaboration ○ Roles and Expectations • Aligning Processes ○ Hazard Mitigation Plan • Next Steps
2	10/6/25	Barbara Barosa Matthew Covucci Ilona Campo Sofie diTommaso Mary Lambert	Agenda • Requirements ○ CSC Stakeholder Engagement Requirements • Stakeholder Engagement Overview ○ Benefits and Key Considerations • Strategies ○ “Spectrum of Community Engagement and Outreach” • Project Planning ○ Public Outreach and Engagement Template

3	10/20/25	Barbara Barosa Matthew Covucci Ilona Campo Sofie diTommaso Mary Lambert	Agenda • Check Ins ○ Forming a Working Group ○ Presenting at a Council/Legislative Meeting ○ Website Updates • Climate Vulnerability Assessment ○ Purpose ○ Requirements • Revisit Stakeholder Engagement Plan ○ Add vulnerability assessment stakeholder engagement dates • Next Steps ○ Work Plan ○ Website ○ Survey ○ Adaptation Strategies
4	11/3/25	Barbara Barosa Matthew Covucci Ilona Campo Sofie diTommaso	Agenda • CSRP Workshop (11/20) ○ Confirm schedule and invitations ○ Walkthrough of CSRP Tool ○ Agenda and Format • Vision Statement Process • Planning CVA Stakeholder Engagement • Working Group ○ Updates • Next Steps ○ CSRP Review and Event logistics ○ Survey research
5	11/17/25	Barbara Barosa	Agenda

		Matthew Covucci Ilona Campo Sofie diTommaso	• CSRP Workshop (11/20) ○ Materials walkthrough • Survey ○ CVA Survey Draft 1 Walkthrough ○ Purposed Timeline • Stakeholder Engagement ○ Introduction to Scenario Planning ○ Calendar for Nov-Feb events
6	12/26/25	Barbara Barosa Matthew Covucci Ilona Campo Sofie diTommaso Spencer Greenfield— <i>former Resilience & Adaptation Intern, HVRC</i>	Agenda • Introductions ○ Climate Adaptation & Resilience Intern • Evaluate Policies for Climate Resilience Next Steps ○ Draft & Next Steps • CVA Process • Adaptation Working Group ○ Schedule first meeting ○ Plan Scenario Planning 2-Part Workshop • Partnerships ○ Partner Survey and Distribution
7	1/5/26	Barbara Barosa Matthew Covucci Ilona Campo Sofie diTommaso Spencer Greenfield	Agenda • Working Group Kick-Off Meeting + Scenario Planning Part 1 • Scenario Planning Part 2 • Climate Vulnerability Assessment • Survey Next Steps • Partnership Survey • Photos • CSRP Tool Complete + Evaluate Policies for Climate Resilience

8	1/26/26	Barbara Barosa Matthew Covucci Ilona Campo Sofie diTommaso Spencer Greenfield	Agenda • Evaluate Policies for Climate Resilience ○ Updates and next steps • Climate Vulnerability Assessment ○ Draft 1 and Next Steps • CCARP Webinar ○ Proposed Agenda and Format • Scenario Planning Part 1 ○ Proposed Agenda and Intended Participants • Partnerships ○ Additional Outreach Strategies/Extending Deadline
9	2/24/26	Barbara Barosa Matthew Covucci Ilona Campo Sofie diTommaso	Agenda • Scenario Planning Part 2 ○ Draft Agenda and Workshop Logistics • Climate Vulnerability Assessment ○ Draft 1 + Review Process
10	3/16/26	Barbara Barosa Ilona Campo Matt Covucci Sofie diTommaso	Agenda • Vision Statement Survey ○ Logistics and Next Steps • CVA Check-In • Scenario Planning and Climate Adaptation Plan ○ CCARP components • Next Steps
11	3/23/26	Barbara Barosa Matthew Covucci Ilona Campo Sofie diTommaso Spencer Greenfield	Agenda • Public Engagement Event(s) • Indicators & Metrics Overview and Next Steps • Working Meeting on Adaptation Plan Sections ○ CCARP Governance Structure

			○ Process for Updating the CCARP
12	4/6/26	Barbara Barosa Matthew Covucci Ilona Campo Victoria DiLonardo— <i>Public Health Educator, Putnam County Department of Health</i> Sofie diTommaso Spencer Greenfield Nancy Montgomery— <i>Legislator (District 1), Putnam County Legislator</i> Joseph Montuori— <i>Executive Director, Sustainable Putnam</i> Gary Redlon— <i>Coordinator of Engineer Projects, Putnam County Department of Public Works</i>	Agenda • Public Engagement Session: April 21, 2026 • CCARP Indicators and Metrics <i>* The CCARP Working Group was invited to attend this meeting.</i>
13	4/20/26	Barbara Barosa Matthew Covucci Ilona Campo Sofie diTommaso Spencer Greenfield	Agenda • Lunch & Learn Pre-Event Check-Ins • Adaptation Plan Next Steps • Public Engagement • Vision Statement
14	5/5/2026	Barbara Barosa Matthew Covucci Ilona Campo Sofie diTommaso Spencer Greenfield	Agenda • Previous Meeting Follow Ups • Lunch & Learn Next Steps • CCARP Implementation Meeting • Vision Statement • Stakeholder/Public Engagement next steps
15	5/18/2026	Matthew Covucci Ilona Campo Sofie diTommaso	Agenda • Adaptation Plan Progress To-Date • Implementation & Monitoring

		Amanda Peçanha Hickey, <i>Deputy Executive Director, HVRC</i> Gary Redlon	Indicators and Metrics <i>* The CCARP Working Group was invited to attend this meeting.</i>
16	6/4/2026	Barbara Barosa Matthew Covucci Ilona Campo Sofie diTommaso	Agenda - Updates - Draft CCARP Walkthrough - Next Steps - Website Updates
17	6/15/2026	Barbara Barosa Matthew Covucci Ilona Campo Sofie diTommaso Amanda Hickey	Agenda - Public Comment - Remaining Next Steps (Future) Meeting scheduling

Appendix B: Climate Smart Resiliency Planning Workshop Supplemental Information



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Climate Smart Resiliency Planning Summary Report: Putnam County

March 2026

Prepared by Hudson Valley Regional Council & Putnam County



Background

Putnam County participates in the [New York Climate Smart Communities](#) (CSC) program and is currently a [bronze certified](#) community. As part of its ongoing climate work, Putnam County signed a resolution in September 2025 to partner with Hudson Valley Regional Council (HVRC) to create a county-level [Climate Change Adaptation and Resilience Plan](#), inclusive of a Climate Vulnerability Assessment and Climate Adaptation Plan. This project is funded by the New York State Department of Environmental Conservation as part of the Climate Smart Communities Coordinator Services Program. As a first step in the process, Putnam County and HVRC conducted a [Climate Smart Resiliency Planning](#) (CSRP) process in order to assess existing policies and plans in the County for climate resilience.

The CSRP process involves compiling plans and policies in the County and inventorying their resiliency measures using a spreadsheet-based tool. Specifically, the [CSRP Tool](#) asks communities to compile relevant plans using a Plans Checklist and to assess them using a series of resiliency metrics across five categories: (1) Vulnerability and Risk Assessment, (2) Public Outreach, (3) Plans Integration, (4) Preparedness and Recovery, and (5) Hazard Mitigation. The tool is designed to be a “self-assessment,” completed through facilitated conversations with relevant stakeholders.

Rationale for Climate Smart Resilience Planning

The [Climate Smart Resiliency Planning guidance document](#) highlights that the purpose of this planning tool is to foster conversation amongst stakeholders and to locate opportunities to improve resiliency planning within communities (p. 5). Putnam County and HVRC elected to facilitate a CSRP planning process in order to align ongoing planning efforts with the County’s existing plans and policies. The CSRP process also provided a valuable opportunity to bring together stakeholders across the County for discussions and shared learning about resiliency planning opportunities.

Climate Smart Resiliency Planning Process

Putnam County completed the Climate Smart Resiliency Planning (CSRP) assessment process from September 2025-February 2026. A final draft was completed in March 2026. The assessment process included background research, a collaborative workshop, opportunities for email feedback, and 1:1 meetings/emails. The [CSRP Tool](#) and [Guidance Document](#) were used to organize the assessment process, in accordance with guidance from the New York State CSC program.

Specifically, the County collaborated with HVRC to complete the CSRP Tool. Core members of the CSRP Assessment Team included:

- Barbara Barosa, Commissioner/CSTF Member, Putnam County Planning Department, Putnam County
- Ilona Campo, Planner/Climate Smart Communities Coordinator, Putnam County Planning Department, Putnam County
- Matthew Covucci, Deputy Commissioner, Putnam County Planning Department, Putnam County

- Sofie diTommaso, (Former) Resilience & Adaptation Coordinator, HVRC
- Mary Lambert, (Former) Climate Action Planning Manager, HVRC

Background research was completed on existing plans, documents, and resources in the County. Research included publicly available documents. Additional documents were also requested from County staff/departments. HVRC completed an initial draft of the CSRP Tool using this research, which was subsequently shared with the Putnam County Team for revisions.

As a next step, a Climate Smart Resiliency Planning Workshop (“the Workshop”) was held on November 20th from 2:00-4:00 pm in a hybrid format at the Bureau of Emergency Services Classroom at the Donald B. Smith Campus in Carmel, NY. The workshop was attended by:

- Barbara Barosa, Commissioner/CSTF Member, Putnam County Planning Dept.
- Marlene Barrett, Director, Putnam County Office of Senior Resources
- Joseph Bellucci, Deputy Commissioner/CSTF Member, Putnam County Dept. Of Public Works
- Ilona Campo, Planner/Climate Smart Communities Coordinator, Putnam County Planning Dept.
- Jennifer Caruso, Director of Compliance & Intergovernmental Relations/CSTF, Putnam County Executive’s Office
- Matthew Covucci, Deputy Commissioner, Putnam County Planning Dept.
- Robert Cuomo, Director of EMS, Putnam County Bureau of Emergency Services
- Sofie diTommaso, (Former) Resilience & Adaptation Coordinator, Hudson Valley Regional Council
- Ralph Falloon, Deputy Commissioner, Putnam County Bureau of Emergency Services
- Brian Hildenbrand, Engineer/Supervisor of Planning & Design, Putnam County Dept of Public Works
- Mary Lambert, (Former) Climate Action Planning Manager, Hudson Valley Regional Council
- Thomas Lannon, Director of I.T./Fire Chief-Brewster, Putnam County I.T./Brewster Fire Department
- Nancy Montgomery, Legislator—District 1, Putnam County Legislature
- Joe Montouri, Executive Director, Sustainable Putnam
- Rian Rodriguez, Public Health Director, Putnam County Health Department
- Shanna Siegel, Supervising Public Health Educator/Public Information Officer, Putnam County Health Dept.
- Neal Tomman, Project Manager/CSTF Member, Putnam County Dept. of Public Works
- John Tully, Director of Purchasing, Putnam County Purchasing Dept.
- Savannah Usher, Solid Waste Program Manager, Putnam County Dept. of Health

The Workshop started with opening remarks from the County Executive, Kevin Byrne, who joined virtually at the start of the workshop. Next, HVRC presented on the CSRP process, its connection to additional adaptation and resilience projects in the County, and the key climate hazards facing the County. The [presentation format](#) drew from the four steps outlined in the [CSRP Guidance Document](#) (p. 5).

Following the presentation, HVRC facilitated a collaborative discussion on each of the six sections of the CSRP Tool. Feedback was tracked in real time on the CSRP tool, and additional meeting minutes were collected. Following the workshop, participants had the option to share additional comments until Dec 3, 2025. During this feedback window, one meeting was scheduled for additional feedback on Dec 1, 2025.

A second draft of the CSRP tool was circulated amongst the Workshop participants for feedback on December 8, 2025, with the feedback window open until December 19, 2025. One participant provided written feedback.

During this time, email outreach was conducted to the Health Department to inquire about additional plans and a resource mentioned at the workshop. HVRC also met with the Bureau of Emergency Services and the GIS/IT Department for follow-up. Dates and times for 1:1 meetings are below:

- Bureau of Emergency Services: December 15, 2025: 2-2:30 pm
- GIS/IT Department: December 18, 2025: 11-11:30 am

These meetings were to follow up on questions/comments raised during the Workshop, to discuss current resiliency-related resources and potential resiliency planning efforts moving forward, as well as to identify resources that could support both the CSRP tool and subsequent resiliency planning efforts in the County.

An updated draft of the CSRP tool was completed in January 2026 and was shared with the core members of the CSRP Assessment Team for final review. Additional revisions were incorporated into a final draft.

Summary of Findings

The CSRP process resulted in the identification of existing resiliency strengths as well as opportunities for growth within Putnam County. The following section summarizes key findings and a list of potential opportunities based on gaps identified in the CSRP process. Additional notes for each section can be found within the CSRP tool itself.

Plans Checklist

Putnam County has many existing plans, policies, and documents relevant to resilience planning, including the following. Links are provided for documents that are publicly available online.

- [Putnam County Hazard Mitigation Plan \(2021\)](#)
- Hurricane Emergency/Tropical Storm Action Plan (2024)
- Putnam County Comprehensive Emergency Management Plan Revision 2 (2023)
- Putnam County [Six Year \(FY 2025-FY 2030\)](#) (FY 2025-FY 2030) and [One Year Capital Plans \(FY 2025\)](#)
- Disaster Debris Management and Removal Plan

- Public Health Emergency Preparedness and Response Plan (Revised 2024), and
- Putnam County Department of Health Integrated Preparedness Plan (2025).

On a regional-level, Putnam County is included in the [Comprehensive Economic Development Plan for the Mid-Hudson Region \(2025-2030\)](#), and the [Moving Forward 2055: New York Metropolitan Transportation Council Regional Transportation Plan \(2026-2055\)](#).

Additional plans that are either upcoming or in-progress will potentially influence county resilience. There are current intentions to create Continuity of Operations Plans on a department-by-department basis. An update to the [2004 Agriculture and Farmland Protection Plan \(2004\)](#) is an objective, pending funding availability; and the [Local Solid Waste Management Plan \(2025-2034\)](#) and Stormwater Management Plan are pending final approval, with adoption anticipated in 2026. Furthermore, the [Hazard Mitigation Plan \(2021\)](#) is in the process of being updated.

While many existing plans further county-level resilience, there are opportunities to expand resilience planning through additional plans and documents. For example, the County does not currently have a Local Waterfront Revitalization Plan, Climate Action Plan, or Comprehensive Plan. While the County created a Comprehensive Park and Open Space Plan in 1988 and a Natural Resources Inventory in the early 2000s, the plan and inventory have not been updated and are no longer in use. The County also does not have a Floodplain Management Plan, although it references the [Lower Hudson Coalition of Conservation District's Flood Preparedness and Response Guide \(2014\)](#).

Based on these findings, potential opportunities to expand resilience planning in Putnam County include:

- Updating the Comprehensive Park and Open Space Plan and/or the County-level Natural Resources Inventory.
- Exploring the feasibility and need for new plans relevant to resiliency planning, such as a Local Waterfront Revitalization Plan, Climate Action Plan, or Floodplain Management Plan.

Vulnerability & Risk Assessment

Putnam County has taken a number of steps to assess its vulnerability and risks resulting from climate hazards. For example, the most recent version of the Hazard Mitigation Plan includes extensive climate information on climate hazards, expected climate impacts, and assets at risk. The County also has access to many maps and map layers that can support planning and assessment projects. However, there are potential opportunities to expand mapping projects to better identify risks and vulnerabilities, including by mapping vulnerable populations, buildings, infrastructure, natural resources, and cultural resources in relationship to projected climate hazards.

Putnam County staff also have access to skillsets and data that can support risk and vulnerability assessment capacities. For example, the County has [HAZUS-MH](#) capacity and staff familiar with mapping tools like the [DEC Natural Resources Mapper](#) and [NY State Department of Health Heat Vulnerability Indices](#). In general, staff are aware of locations prone to flooding the County, particularly

in Philipstown and Cold Spring. The Hazard Mitigation Plan also currently cites expected sea level rise using data from NYDEC and NYSED (Section 5.4.5 p. 13-14).

While Putnam County has many existing strengths related to vulnerability and risk assessment capacities, data gaps were uncovered through the CSRP process. For example, the County does not currently track repetitive loss properties and has identified information on dams as a potential data limitation. The County also does not currently have a build-out analysis of potential development. Furthermore, while county departments may be aware of and reference the results of risk and vulnerability assessments, there is not currently a formalized process for sharing this information across County departments.

Based on these findings, potential opportunities to expand vulnerability and risk assessment capacities in Putnam County include:

- Expanding vulnerability and risk assessment mapping projects to map county infrastructure, vulnerable populations, buildings, cultural resources, and natural resources in relationship to the County's top climate hazards.
- Implementing a procedure for sharing vulnerability and risk assessment projects with relevant stakeholders, including the Department of Planning and Transportation and Department of Public Works.
- Conducting a build-out analysis for Putnam County and comparing results to projected climate hazards.
- Starting to track data on repetitive loss properties.
- Incorporating [NY DEC sea level rise projections](#) into relevant planning efforts.

Public Outreach

Putnam County has conducted stakeholder and public outreach, including by leveraging participatory mapping, public meetings, and stakeholder meetings. Current outreach strategies focus on project-related engagement (i.e. public outreach for the Hazard Mitigation Plan) or on responding after an emergency event. While the County employs some proactive outreach and communications strategies through its [PREADY website](#), Putnam County staff noted that there is often a window of opportunity for outreach following a hazard event, and less engagement at other times. Proactive communication about storm preparedness and resilience could be an area for continued growth.

During the CSRP process, outreach in Spanish was also identified as an area for improvement. Approximately 15.5% of people in Putnam County speak Spanish according to the [2024 American Community Survey one-year estimates](#). While Putnam County does conduct some outreach in Spanish, additional outreach could be implemented.

Based on these findings, potential opportunities to expand public outreach in Putnam County include:

- Sharing [FEMA's "Are You Ready Guide"](#) with residents through the County website.
- Increasing outreach materials about storm preparedness and hazard mitigation.

- Potential strategies include sharing information on evacuation kits; FEMA’s guidance for storm and wind damage prevention; and [ASPCA's disaster preparedness steps](#) for domesticated animals.
- Increasing public-facing educational materials, including information about flood mitigation and on “the beneficial functions of floodplains, wetlands, and green infrastructure.”
- Exploring the possibility of installing a high-water mark sign in riverfront communities.
- Expanding effective outreach efforts to vulnerable communities, as recommended in the CSC’s [Inclusive Engagement Primer](#).

Plan Integration

According to the [Climate Smart Resilience Planning Guidance Document](#), “municipal planners should ensure that their local planning documents reflect existing vulnerability and risk assessments. Additionally, planning efforts should coincide with one another by including the insight of various planning documents, previous hazard-mitigation recommendations and stakeholder input” (p. 32). Many of Putnam County’s existing plans and policies integrate resiliency considerations and/or building off insights from other planning documents or stakeholder feedback. For example, Putnam County’s Hazard Mitigation Plan references other plans and documents in the County, involved collaboration with other local governments, and includes resilience-related data and recommendations.

Using the CSRP Tool, additional areas for plan integration were identified. For example, the County currently does not have a certified floodplain manager on staff, which could provide a valuable planning perspective in planning efforts across county departments. There are also additional areas where resilience planning considerations could be more thoroughly incorporated into planning documents. For example, Putnam County’s Hazard Mitigation Plan could consider adding information on the cost effectiveness of past hazard mitigation projects or including recommendations on transportation for vulnerable populations.

Based on these findings, potential opportunities to expand plans integration in Putnam County include:

- Exploring the feasibility of hiring a certified floodplain manager or training existing staff within Putnam County to support planning efforts across departments.
- Increasing resilience-related considerations in Capital Planning efforts by incorporating climate hazard data into decision-making processes.
- Encouraging new and or updated plans—such as the Hazard Mitigation Plan—to integrate climate resilience components and reference existing plans and documents.

Disaster Preparedness & Recovery

Putnam County has ongoing strengths in its disaster preparedness and response efforts. For example, it has an Emergency Operations Center to coordinate disaster responses and has access to a variety of warning systems including Putnam County Storm Watch, NY-Alert, Code Red, and the Emergency Alert System. The County has formed relationships with many organizations to potentially offer storm shelters when needed. It also has the ability to share preparedness and recovery information via social media, including through the Bureau of Emergency Services and Health Department.

The CSRP process also identified opportunities for continued growth in disaster preparedness and responses, primarily related to evacuation, storm preparedness, outreach, and data/planning. Based on these findings, potential opportunities to expand disaster preparedness and recovery in Putnam County include:

- Becoming a [Storm Ready Community](#).
- Expanding existing evacuation planning efforts by mapping evacuation routes in relationship to risks, planning evacuation strategies for vulnerable communities, collaborating with neighboring counties, and planning options for residents reliant on public transportation.
- Maintaining a special needs registry to support disaster preparedness planning. According to Westchester County, a [special needs registry](#) is “a list of county residents who may require additional assistance, transportation and/or sheltering in the event of a major emergency or disaster.”
- Consider implementing an early flood warning system for locations along the Hudson River.
- Collecting data on whether and where routes to waste-disposal facilities are prone to flooding.
- Creating a Short- and Long-Term Recovery Plan.
- Collaborating with farmers and landowners on disaster preparedness strategies.
- Incorporating climate projections into emergency response plans.

Hazard Mitigation

Putnam County has taken existing steps to support hazard mitigation in the County. For example, it is a Bronze certified community through the New York State CSC program; and The Department of Public Works has ongoing projects to retrofit and/or harden infrastructure. Putnam County has previously considered collaborating with municipalities to prepare for the relocation of housing out of the floodplain as a goal within its Hazard Mitigation Plan, but that project has been discontinued, and there are no current projects focus on relocation strategies. Putnam County has previously received grant funding through FEMA’s pre-disaster Mitigation Grant Program and the Federal Highway Administration for resilience-related projects.

There are potential areas to improve hazard mitigation in Putnam County. The County currently does not run programs related to transfer of development rights, purchase of development rights, land acquisition, or buyout programs to acquire or manage land in vulnerable locations—although it does sometimes acquire vulnerable properties during foreclosure. Notably, New York City and conservation organizations own and manage a significant amount of property in Putnam County, which impacts land management in vulnerable areas.

Based on these findings, potential opportunities to expand hazard mitigation efforts in Putnam County include:

- Exploring opportunities to support the relocation of buildings/infrastructure out of vulnerable areas.
- Assessing the feasibility or need for County-level land acquisition strategies for properties in vulnerable areas.

- Creating a strategy to address invasive species, prioritizing locations near the Hudson River or flood prone areas.
- Continuing to review potential grant funding opportunities for hazard mitigation and/or resilience-related projects.

Next Steps

The CSRP tool represents the first step in a broader resilience planning effort. Reviewing existing plans, policies, and projects will help identify gaps and vulnerabilities and ensure that all relevant materials are considered before climate-related changes to local government operations are recommended.

The findings of this Climate Smart Resiliency Planning process will be used to inform Putnam County's [Climate Change Adaptation & Resilience Plan](#), inclusive of a Climate Vulnerability Assessment and Climate Adaptation Plan. The findings uncovered through this process will be used to inform potential adaptation planning strategies.

Supplemental Information: Supporting Outreach and Engagement Materials

I. CSRP Workshop Invitation

The following invitation to the CSRP workshop was sent to 35 people, including the core CSRP planning team.

Good Morning,

As part of Putnam County's commitment as a Climate Smart Community (CSC), please join us for a Climate Smart Resiliency Planning Workshop on November 20th from 2:00-4:00 pm.

The workshop will work to identify resiliency progress and gaps in existing plans and policies across the County by hosting active conversations across Putnam County's departments. By participating in this workshop, you will be invited to share your departmental expertise, learn from colleagues about work in other departments, and play a pivotal role in shaping ongoing adaptation and resiliency planning in Putnam County.

- Date: November 20, 2025
- Time: 2:00-4:00
- Location: Hybrid Option: Bureau of Emergency Services Classroom or Virtually on Microsoft Teams
- RSVP: Kindly either accept the Teams invite or if attending in person, please email [REDACTED] by November 14th at
- Purpose: Putnam County is currently a Bronze certified community through the NY State Climate Smart Communities (CSC) Program. The outputs from this workshop will be used to complete the PE7 Evaluate Policies for Climate Resilience action through the Climate Smart Communities program. By completing this action, Putnam County will further its existing climate progress, generate insights to inform the County's upcoming Climate Change Adaptation & Resilience Plan (CCARP), and work towards a Silver certification.

To learn more about this workshop and the agenda, please see the attachment.

We are looking forward to seeing you!

Summarize

Follow up ▾

 Chat

You accepted on 11/7/2025 9:05 AM

 Reply
  Reply all
  Forward
 

Thu 11/6/2025 9:32 AM

Barbara Barosa sent a meeting request

Climate Resiliency Workshop...

Good Morning,

As part of Putnam County's commitment as a Climate Smart Community (CSC), please join us for a Climate Smart Resiliency Planning Workshop on November 20th from 2:00-4:00 pm.

The workshop will work to identify resiliency progress and gaps in existing plans and policies across the County by hosting active conversations across Putnam County's departments. By participating in this workshop, you will be invited to share your departmental expertise, learn from colleagues about work in other departments, and play a pivotal role in shaping ongoing adaptation and resiliency planning in Putnam County.

- Date: November 20, 2025

- Time: 2:00-4:00

- Location: Hybrid Option: Bureau of Emergency Services Classroom or Virtually on Microsoft Teams

- RSVP: Kindly either accept the Teams invite or if attending in person, please email Ilona Campo by November 14th at Ilona.Campo@putnamcountyny.gov.

- Purpose: Putnam County is currently a Bronze certified community through the NY State Climate Smart Communities (CSC) Program. The outputs from this workshop will be used to complete the PE7 Evaluate Policies for Climate Resilience action through the Climate Smart Communities program. By completing this action, Putnam County will further its existing climate progress, generate insights to inform the County's upcoming Climate Change Adaptation & Resilience Plan (CCARP), and work towards a Silver certification.

To learn more about this workshop and the agenda, please see the attachment.

We are looking forward to seeing you!

Best Regards,

Barbara



Barbara Barosa, AICP

Commissioner, Department of Planning, Development & Public Transportation

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"Empowering Putnam County through dedicated service."

The below one-pager was sent as part of the CSRP Workshop Invitation.

Climate Smart Resiliency Planning Workshop

November 20, 2025: 2:00-4:00 pm

Hybrid (In person and on Teams)

Agenda

- Opening Remarks from the County Executive
- Overview of the Climate Change Adaptation & Resiliency Planning Process in Putnam County
- Interactive Discussion: Evaluating Policies for Climate Resilience
- Reflections & Debrief

Background

Putnam County has earned recognition as a [Certified Bronze Community](#) as part of the New York state [Climate Smart Communities \(CSC\) program](#). The CSC program is designed to support communities mitigate and adapt to climate change by completing actions for credit. By completing actions, communities can earn points toward certification levels and can increase competitiveness for grant funding.

In September 2025, Putnam County signed a resolution to work with Hudson Valley Regional Council on a [Climate Change Adaptation & Resilience Plan](#) (CCARP). This project will involve the completion of three CSC Actions: creating a [Climate Vulnerability Assessment](#), writing a [Climate Adaptation Plan](#), and [Evaluating Policies for Climate Resilience](#).

This workshop is designed to facilitate the completion of the CSC [Evaluate Policies for Climate Resilience](#) action. During this workshop, participants will be invited to share plans, policies, and projects in their respective departments. Through collaborative group discussions, participants will support the completion of an inventory-based tool, called the [Climate Smart Resiliency Planning \(CSRP\) Tool](#), that evaluates existing resiliency progress and gaps across the county.

Following this workshop, feedback will be incorporated into the CSRP tool and a summary report. The workshop's findings will also be incorporated into the county's upcoming [Climate Change Adaptation and Resilience Plan](#).

By participating in this workshop, you will be invited to share your departmental expertise, learn from colleagues about work in other departments, and play a pivotal role in shaping ongoing adaptation and resiliency planning in Putnam County. No prep work is required prior to the workshop, although it will be helpful to be familiar with the plans and policies relevant to your department or office.

II. CSRP Workshop Presentation Slides

See [Slides](#) on [Putnam County's Climate Change Adaptation & Resilience Plan](#) website.

III. CSRP Workshop Photos



IV. CSRP Tool

Section 1: Community Plan Checklist	Yes	No	Adoption Year	Update Frequency	Notes*
1.1 Municipal Master Plan		x			The Putnam County Vision 2010 Plan (2003) includes a relevant vision and plan for the County, but it is not a current document. Putnam County created a Comprehensive Plan in 1984, but it was not formally adopted. There are some local-level comprehensive plans within the County.
1.2 Zoning Ordinance		x			Zoning is completed at the local-level.
1.3 Subdivision Ordinance		x			Land use decisions are made at the local-level.
1.4 Open Space Plan	x		1988	N/A	Putnam County Comprehensive Park & Open Space Plan
1.5 Natural Resource Conservation Plan		x			Putnam County does not have a Natural Resources Conservation Plan, although it does have a Natural Resources Inventory from the early 2000s. Individual municipalities within the County also have Natural Resources Inventories: https://www.putnamcountyny.gov/climatesmart?highlight=WyJrZW50liwibmFodXJhbCIsInJlc291cmNlcylsImIudmVudGgyeSjd#/Natural-Resource-Inventories-(NRIs) .
1.6 Stormwater Management Plan		x		In Progress	Putnam County has not adopted a current Stormwater Management Plan, but does have a draft plan. Draft plans are not included in this analysis.
1.7 Coastal Plan or Element in Other Plan		x			
1.8 Shoreline Restoration Plan		x			
1.9 Coastal Erosion Hazard Area Ordinance		x			
1.10 Multi-Hazard Mitigation Plan	x		2021	5 years; update in progress	Putnam County Hazard Mitigation Plan: https://www.putnamcountyny.gov/pcbcs
1.11 Floodplain Management Plan		x			While not a Floodplain Management Plan, Putnam County references the "Flood Preparedness & Response: A Guide for Municipalities" in its Hazard Mitigation Plan: https://www.lhccd.net/uploads/7/7/6/5/7765286/flood_guide_2014_v2.pdf .
1.12 Flood Damage Prevention Ordinance		x			
1.13 Evacuation Plan	x		2024		Hurricane Emergency/Tropical Storm Action Plan
1.14 Emergency Response & Short-term Recovery Plan	x		2023	Annually	Putnam County Comprehensive Emergency Management Plan Revision 2
1.15 Continuity of Operations Plan		x		In progress	There are current intentions to create COOPs on a department-by-department basis.
1.16 Disaster Recovery Plan		x			While the County does not have a separate Disaster Recovery Plan, the Hazard Mitigation Plan, Comprehensive Emergency Management Plan, and Public Health Emergency Preparedness Plan contain relevant information.
1.17 Long-term Recovery Plan		x			While the County does not have a separate Long-term Recovery Plan, the Hazard Mitigation Plan, Comprehensive Emergency Management Plan, and Public Health Emergency Preparedness Plan contain relevant information.

1.18 Economic Development Plan/Strategy	x		2025	Every 5 years by HVRC	At the regional-level, Putnam County is included in the Comprehensive Economic Development Strategy for the mid-Hudson, created by Hudson Valley Regional Council: https://hudsonvalleyregionalcouncil.org/wp-content/uploads/2025/10/2025-2030HVRC-CEDS-Adopted20250917.pdf .
1.19 Capital Improvements Plan	x				Putnam County: Six Year Capital Plan FY 2025-2030: https://county-putnam-ny-budget-book.cleargov.com/16373/capital-improvements/capital-plan-six-year-plan Putnam County: One Year Capital Plan FY 2025: https://county-putnam-ny-budget-book.cleargov.com/16373/capital-improvements/capital-plan-one-year-plan
1.20 Metropolitan Transportation Plan	x				At a regional level, Putnam County is part of the draft Moving Forward 2055: New York Metropolitan Transportation Council Regional Transportation Plan: https://www.nymtc.org/movingforward2055/ .
1.21 Historic Preservation Plan		x			
1.22 Local Waterfront Revitalization Plan		x			There is no County-level LWRP. Within Putnam County, Cold Spring has a LWRP from 2011.
1.23 Climate Action Plan		x			
1.24 Other: Agriculture & Farmland Protection Plan for Putnam County	x		2004	There are plans to update this document; currently awaiting grant to open for funding	Putnam County Agriculture & Farmland Protection Plan: https://www.putnamcountyny.gov/images/Departments/Planning_Dev_Transport/kpf/pdf/PC%20Farming%20Plan%202004.pdf
1.25 Other: Disaster Debris Management Plan	x				While not a formally adopted plan, Putnam County has standard operating procedures outlined in their Disaster Debris Management and Removal Plan.

Section 2: Vulnerability & Risk Assessments		Yes	No	Notes	Definitions	References
2.1	Does the municipality have a localized hazard risk and vulnerability assessment?	x		Putnam County's HMP (2021) Section 5.3 assesses risk and vulnerability for a variety of hazards in the County using multiple methodologies. Severe storms and severe winter storms received the highest risk score (p. 7), although the plan specifies that there will be varying impacts from hazards amongst different locations (p. 1). Putnam County's CEMP Revision 2 (2023) Attachment 1 references the Comprehensive Emergency Preparedness Assessment (CEPA) completed in 2021. Relevant hazards in the risk assessment include ice storms, severe wind/tornadoes, severe winter snowstorms, hurricanes/tropical storms, wildfires, flooding, landslides, extreme temperature, and drought (listed in descending risk level based on likelihood and consequence) (p. 18). The Public Health Emergency Preparedness Plan also references the 2021 CEPA risk assessment (p. 19).		
2.2	Have current and future climate hazards been identified?	x		Putnam County's HMP (2021) Section 5.3 evaluates both climate risk and adaptive capacity for a variety of potential hazards (p. 3-4 include methods & p. 7 includes climate hazard scoring results). Climate Adaptive Capacity for the County is also summarized in Putnam County's HMP (2021) Section 9.1 (p. 9).	Climate hazards include higher temperatures, heavy precipitation, sea-level rise, storm surge & flooding, disruption of natural resource life cycles and a variety of human health risks.	Impacts of climate change
2.3	Have potential risks been prioritized as follows?					
2.3.1	Likelihood of a given effect, e.g. virtually certain/already occurring, high, moderate, low	x		Putnam County's HMP (2021) Section 5.3, Table 5.3-5, indicates the likelihood of different hazards. Flood, harmful algal blooms, severe storms, and severe winter storms are ranked as the most probable hazards in the County (p. 4-5). Putnam County's CEMP Revision 2 (2023) Attachment 1 ranks different hazard based on their likelihood (High, Medium, and Low) and consequence (p. 18).		
2.3.2	Magnitude of consequence, e.g., disruption of internal operations, capital and operating costs, number of people affected, public health, economy, and environment.	x		Putnam County's HMP (2021) Section 5.3, Table 5.3-6, includes a weighted table of potential hazard impacts based on the affected population, property impacts, and economic ramifications (p. 6). The weighted calculation methodology is available on p. 2-3. Severe storms and severe winter storms have the highest impact score when factoring in all three categories (p. 6). Putnam County's CEMP Revision 2 (2023) Attachment 1 ranks different hazards based on their potential consequences (High, Medium, or Low) (p. 18).		
2.3.3	Are conditions identified that could amplify the effect of a hazard, e.g. storm surge inundation at a high tide or erosion of stabilized shorelines?	x		Putnam County's HMP (2021) includes information on "Cascading Impacts" for different hazard areas including: Drought (Section 5.4.2 p. 7), Extreme Temperature (Section 5.4.4 p. 10), Flood (Section 5.4.5 p. 27), Severe Storms (Section 5.4.7 p. 22), Severe Winter Storm (Section 5.4.8 p. 11), and Wildfire (Section 5.4.10 p. 16).		
2.4	Have municipal employees utilized any of the following vulnerability assessment modalities?					
2.4.1	HAZUS-MH	x		Putnam County's HMP (2021) Section 5.1 states that "Hazus was used to estimate potential impacts to the flood, wind, and seismic hazards" (p. 4). Putnam County's HMP (2021) Section 5.3.1 also mentions that HAZUS-MH supported hazard risk ranking throughout the assessment (p. 1).	HAZUS-MH is a tool developed by FEMA to help communities estimate potential losses from natural disasters.	HAZUS-MH
2.4.2	Other:		x			
2.5	Are municipal employees trained in the use of FEMA's HAZUS-MH?	x		Putnam County's HMP (2021) Section 9.1 indicates that the County has capacities for "GIS and/or Hazard United States (HAZUS)--Multi-Hazards (MH) applications" (p. 8).		
2.6	Have adaptation strategies been identified and categorized as follows:					

2.6.1 Type	x	Putnam County's HMP (2021) Section 9.1, Table 9.1-12 categorizes mitigation actions based on the specific goal they support (p. 23-28).		
2.6.2 Administration	x	Putnam County's HMP (2021) Section 9.1, Table 9.1-12 lists the "Lead Agency" for each proposed action (p. 23-28).		
2.6.3 Condition	x	Putnam County's HMP (2021) Section 9.1, Table 9.1-12 categorizes mitigation actions based on their "Mitigation Category" and Community Rating System Category ("CRS Category") (p. 23-28). The key for categorization acronyms can be found on p. 29.		
2.6.4 Timing	x	Putnam County's HMP (2021) Section 9.1, Table 9.1-12 lists an "estimated timeline" for each proposed action (p. 23-28).		
2.6.5 Geography	x	Putnam County's HMP (2021) Section 9.2-9.10 includes hazard mitigation strategies separated by local community. Section 9.1 details county-level strategies for Putnam County.		
2.7 Have adaptation strategies been evaluated and prioritized as follows:				
2.7.1 Strategy cost	x	Putnam County's HMP (2021) Section 9.1, Table 9.1-12 includes a list of potential Hazard Mitigation Strategies. Within the table, costs are evaluated by using direct estimates, a "High, Medium, Low" scoring system, or qualitative descriptors (p. 23-28). Benefits are also included using qualitative descriptors (p. 23-28). Putnam County's HMP (2021) Section 6.5.4 includes methodological information for the CBA analysis (p. 39-40) and mentions "cost-effectiveness" as a prioritization consideration (p. 38).		
2.7.2 Strategy feasibility	x	Putnam County's HMP (2021) Section 6.5.3 indicates that technical considerations related to feasibility and project prioritization were considered in assessing potential strategies. Additional feasibility considerations were also assessed such as political will, legal capabilities, potential barriers, and presence of a "local champion" (p. 38). Putnam County's HMP (2021) Section 9.1, Table 9.1-12 includes information on whether potential strategies raise concerns about Environmental Planning & Historic Preservation, whether critical facilities are involved, and potential funding options (p. 23-28). Putnam County's CEMP Revision 2 (2023) Section II (C) mentions that feasibility is considered in risk reduction strategies (not necessarily just adaptation related) (p. 16).		
2.7.3 Timing of Implementation	x	Putnam County's HMP (2021) Section 6.5.3 lists "timeline" as a prioritization metric (p. 38). Putnam County's HMP (2021) Section 9.1, Table 9.1-12 includes an estimated timeline for proposed strategies (p. 23-28).		
2.7.4 Efficacy	x	Putnam County's HMP (2021) Section 6.5.3 mentions that potential strategies were evaluated based on their ability to "protect[] lives and prevent[] injuries" (p. 38). Putnam County's CEMP Revision 2 (2023) Section II (C) mentions that resulting outcomes are considered in risk reduction strategies (not necessarily just adaptation-related) (p. 16).		
2.7.5 Co-benefits	x	Putnam County's HMP (2021) Section 6.5.3 mentions that potential strategies were evaluated based on their alignment with "other local objectives" (p. 38).		
2.8 Have stakeholders linked adaptation strategies to the capital budget and rehabilitation cycles?	x	Putnam County: Six Year Capital Plan FY 2025-2030 includes budget line items for some resiliency-related actions (i.e. "Ludingtonville Rd. Reconstruction & Resiliency Improvements (2026-2030 TIP)," "Repair and Replacement of Various Bridges & Culverts/BRIDGENY Program Local Match," etc.) The Department of Public Works works with the Capital Review Process to align any hardening efforts/critical infrastructure replacement projects with all the new local laws.		

2.9 Are maps used to spatially define the following vulnerabilities in relationship to risks?				
2.9.1 Populations, e.g., elderly, children, poor, disabled	x	Putnam County's HMP (2021) does not include maps that highlight vulnerable populations in relationship to risks. However, Putnam County's HMP (2021) Section 4 includes maps of relevant factors. For example, Figure 4.6-1 includes spatial locations for schools and senior facilities (p. 32). Figure 4.4-5 also includes maps illustrating the "distribution of vulnerable populations in Putnam County" including children, seniors, people with disabilities, low-income populations, and non-English speaking populations (p. 15).		
2.9.2 Buildings, e.g., business and residential	x	Putnam County has GIS maps of buildings in the County, but they are not mapped in relationship to risk.		
2.9.3 Infrastructure, e.g. roads, schools, wastewater treatment facilities, hospitals, public works, power plants, drinking water treatment facilities	x	Putnam County's HMP (2021) Sections 5.4.5 (Flood) and 5.4.10 (Wildfire) map hazard risks in comparison to expected new development (see p. 28 and p. 17 respectively). Putnam County's HMP (2021) Sections 5.4.5 (Flood); 5.4.6 (Harmful Algal Bloom); and 5.4.10 (Wildfire) document hazard exposure in relationship to roads, rail lines, and bike paths (see p. 7, p. 8, and p. 6 respectively). While not on a county-scale, maps are available for municipalities within Putnam County that illustrate roads, schools, drinking water, medical and additional facilities in relation to flood risk. For example, Putnam County's HMP (2021) Section 9.6 (Nelsonville) includes a map on p. 33.		
2.9.4 Natural resources, e.g. wetlands, critical habitats, rare species, dunes, beaches, bluffs	x	Putnam County has GIS maps of natural resources in the County, but not in relationship to risk.		
2.9.5 Cultural resources, e.g., historic districts, properties, and landmarks, libraries, museums, recreational areas	x	This information is available through the State Clearing House, but is not publicly available. Facilities are not currently mapped in relationship to risk.		
2.10 Have the following been identified as climate risks to the community?				
2.10.1 Extreme precipitation and riverine flooding	x	Putnam County's HMP (2021) Section 5.4.5.1 identifies "coastal, riverine, flash, stormwater/urban, ice jam, and dam failure" as potential sources of flooding in the county (p. 1). Further details on riverine flooding are available on p. 2. Putnam County's CEMP Revision 2 (2023) Attachment 1 lists flooding as a hazard with medium risk and consequence levels for the county based on a 2021 Risk Assessment. Specific references to riverine flooding and extreme precipitation are not present. This report does not look specifically at climate-related risks (p. 18).		

2.10.2 Landslides	x	Putnam County's HMP (2021) Section 5.4.3 addresses earthquakes and mentions that climate change could lead to increased landslide risk (p. 22). Putnam County's CEMP Revision 2 (2023) Attachment 1 lists landslides as a hazard with medium risk and medium consequence levels for the County based on a 2021 Risk Assessment. This report does not look specifically at climate-related risks (p. 18). While not mentioned in these plans, extreme storms and construction have caused sinkholes in the County.		
2.10.3 Sea-level rise	x	Putnam County's HMP (2021) Section 5.4.5 identifies flooding as a risk and includes information on sea level rise under "coastal flooding" (p. 1).		
2.10.4 Coastal storms, storm surge, and coastal flooding	x	Putnam County's HMP (2021) Section 5.4.5.1 identifies "coastal, riverine, flash, stormwater/urban, ice jam, and dam failure" as potential sources of flooding in the County (p. 1). Further details on coastal flooding are available on p. 1-2. However, Putnam County's Hurricane Emergency/Tropical Storm Action Plan (2024) mentions that storm surge is not as severe of a concern in the County compared to "other coastal communities" (p. 9). Putnam County's Hurricane Emergency/Tropical Storm Action Plan (2024) does mention hurricanes as a risk to the community, especially during hurricane season from June 1-Nov 30 (p. 9).		
2.10.5 Extreme temperatures and heat waves	x	Putnam County's HMP (2021) Section 5.4.4 addresses "Extreme Temperature" and includes a section on climate change on p. 6. Putnam County's CEMP Revision 2 (2023) Attachment 1 lists extreme temperatures as a hazard with medium risk and medium consequence levels for the county based on a 2021 Risk Assessment. This report does not look specifically at climate-related risks (p. 18).		
2.10.6 High winds	x	Putnam County's HMP (2021) Section 5.4.7 addresses "Severe Storms" and mentions that climate change will increase wind-related concerns (p. 23). Putnam County's CEMP Revision 2 (2023) Attachment 1 lists severe wind/tornadoes as a hazard with high risk and high consequence levels for the county based on a 2021 Risk Assessment. This report does not look specifically at climate-related risks (p. 18). Putnam County's Hurricane Emergency/Tropical Storm Action Plan (2024) mentions high winds from hurricanes/tropical storms as a hazard facing the County (p. 9).		
2.10.7 Heavy snow and/or ice storms	x	Putnam County's HMP (2020) Section 5.4.8 addresses "Severe Winter Storms" and mentions that climate change impacts on p. 7-8. Putnam County's CEMP Revision 2 (2023) Attachment 1 lists ice storms as a hazard with high risk and high consequence levels for the County based on a 2021 Risk Assessment. This report does not look specifically at climate-related risks (p. 18).		
2.11 Are municipal planners and emergency managers trained in the use of the following risk-mapping tools?				
2.11.1 Flood insurance rate maps	x	Putnam County's HMP (2021) Section 9.1 highlights that "management and regulation of the regulatory floodplains are done at the local level" (p. 10).	Flood Insurance Rate Maps, or FIRMS, are official maps produced by FEMA that identify areas at risk of flooding, as well as National Flood Insurance risk premium zones in a community.	FIRMS

2.11.2 Sea, Lake and Overland Surges from hurricanes		x	Information Not Found	Storm Surge is an abnormal rise of water generated by a storm, often a hurricane.	SLOSH
2.11.3 Shoreline change analysis		x	N/A	Shoreline changes through erosion or accretion can be analyzed in geographic information system (GIS).	NOAA Shoreline website
2.11.4 Cumulative risk assessments		x		A tool to assist communities in understanding the aggregation of risks from multiple environmental stressors.	USEPA Cumulative Risk Assessment Framework
2.11.5 Sea level rise inundation maps		x		Mapping tools to help communities visualize impacts from coastal flooding and sea-level rise.	NOAA Sea Level Rise Viewer
2.11.6 Other:		x	Department of Public Works frequently uses the DEC Environmental Resource Mapper for mapping streams, species, land use, wetland boundaries etc. The Department of Public Health uses the NY State Department of Health Heat Vulnerability Indices.		
2.12 Have vulnerability and risk assessments been directly shared with municipal planners, public work officials, transportation planners, and other appropriate municipal, county or state officials?		x	There is no formal process for sharing county-level vulnerability and risk assessment outcomes across County departments.		
2.13 Has inland (riverine) flooding been identified as a hazard in this community? If yes, complete the following:		x	Putnam County's HMP (2021) Section 5.4.5 addresses flooding, including riverine flooding (p. 1).		
2.13.1 Are emergency managers and planners aware of potential riverine flooding extents in the community?		x	Within Putnam County, staff are aware of the areas along the Hudson River most prone to flooding, especially in Cold Spring & Philipstown.		
2.13.2 Are local planners, emergency managers and public works officials aware of the location of riverine repetitive loss properties?		x	Putnam County's HMP (2021) Section 9.1 highlights that there are opportunities to increase awareness of repetitive loss properties. For example, Table 9.1-12 states: "Enhancements and capacity building are needed to advance professional development and local officials' education about flooding and other hazards. Municipal officials reported being unaware of repetitive loss properties in their jurisdictions and their locations." (p. 27).		
2.13.3 Does the community track riverine repetitive loss properties within the National Flood Insurance Program ?		x	Putnam County's HMP (2021) Section 9.1 states that "Management and regulation of the regulatory floodplains are done at the local level" for the National Flood Insurance Program (p. 10). Adjacent to this topic, Putnam County staff are aware that there are challenges related to dams and culverts. However, many dams in the area do not fall under Putnam County jurisdiction and access to records, maps, or information about private dams can be limited. This can make tracking potential impacts on dams difficult. Dam-related problem areas are not tracked through a formal record keeping process.	National Flood Insurance Program , or NFIP, a federally-subsidized insurance program aimed at reducing the impact of flooding on private and public structures.	NFIP

2.13.4 Do any plans or reports describe the damage and cost of previous storms, riverine floods, or erosion?	x	Putnam County's HMP (2021) Section 5.4.7, Table 5.4.7-2 details property and crop damage from severe storms (p. 10). Putnam County's HMP (2020) Section 5.4.5, Table 5.4.5-4, details costs resulting from flashfloods, floods, dam failures, and ice jams between 1950-2019 (p. 11). In the same section, Table 5.4.5-6 qualitatively describes flood damage between 2015-2019 (p. 12). Putnam County's HMP (2021) Section 5.4.7 also includes information on storm damage costs between 1950-2020 (p. 10).		
2.13.5 Do any plans or reports estimate future financial losses that may result from riverine flooding?	x	Putnam County's HMP (2021) Section 5.4.5 includes tables of potential costs associated with buildings under 1% flood events (p. 20-21).		
2.14 Have sea-level rise, coastal storms, storm surge and coastal flooding been identified as hazards? If so, answer the following:	x	Putnam County's HMP (2021) Section 5.4.5-1 lists coastal flooding as a hazard and includes information about expected sea level rise and potential for impacts from storm surge (p. 1-2). Putnam County's HMP (2021) Section 9.1 also includes resources about sea level rise and mentions its importance in County projects (p. 10). Putnam County's Hurricane Emergency/Tropical Storm Action Plan (2024) mentions that storm surge is less of a concern, but that Hurricane's pose a risk to the community (p. 9).		
2.14.1 Are emergency managers and planners aware of potential coastal flooding extents in the community?	x	N/A		
2.14.2 Are local planners, emergency managers and public works officials aware of the location of coastal repetitive loss properties?	x	Putnam County's HMP (2021) Section 5.4.5 states that "specific locations of repetitive loss properties were not made available for this Plan," but there are goals to improve data access (p. 21).		
2.14.3 Does the community track riverine coastal loss properties within the National Flood Insurance Program?	x			
2.14.4 Do any plans or reports describe the damage and cost of previous coastal storms, floods, or erosion?	x	Putnam County's HMP (2020) Section 5.4.5, Table 5.4.5-4 includes data on the damage caused by flooding between 2050-2019 (p. 11).		
2.14.5 Is a significant part of the community in a V-zone or A-zone as defined on a FEMA flood insurance rate map?	x	Based on maps on FEMA's Flood Map Service Center, there are areas classified as Zone A within Putnam County: https://msc.fema.gov/portal/search?AddressQuery=Putnam%20County%2C%20NY .		
2.14.6 Does the community contain lands within the Coastal Erosion Hazard Area?	x	Putnam County is not mapped as being within a Coastal Erosion Hazard Area: https://extapps.dec.ny.gov/fs/projects/coastal/ .	Coastal Erosion Hazard Areas are coastal shoreline areas that are vulnerable to erosion, and are identified in maps produced by NYS DEC. Coastal Erosion Hazard Areas are regulated and permits are required for construction and other activities.	NYS DEC Coastal Erosion Hazard Management Program
2.14.7 Have areas of the coastline most prone to erosion hazards been identified?	x			
2.14.8 Has the community used all available authorities to restrict or prohibit any activities, development or other actions in such erosion hazard areas, in order to minimize damage to property, and to prevent the exacerbation of erosion hazards?	x			
2.14.9 Has the community developed a build-out analysis using existing zoning ordinances? If so, answer the following:	x	Putnam County's HMP (2021) does not include a build-out analysis. However, Putnam County's HMP (2021) Section 5.1 indicates that new development was evaluated in the hazard mitigation process (p. 3).		

2.14.9.1 Has the build-out analysis been compared to the extent of storm surge scenarios?	x	N/A		
2.14.9.2 Has the build-out analysis been compared to projected sea-level rise scenarios?	x	N/A		
2.14.10 Do any plans or reports describe the damage and cost of previous coastal storms, floods, or erosion?	x	Putnam County's HMP (2021) Section 5.4.5, Table 5.4.5-4 includes data on the damage caused by flooding between 1950-2019 (p. 11).		
2.14.11 Are emergency managers and planners aware of potential storm-surge heights in the community?	x	Putnam County's Hurricane Emergency/Tropical Storm Action Plan (2024) mentions that storm surge is not as severe of a threat in the County as in "other coastal communities" (p. 9).		
2.14.12 Do any plans or reports estimate future financial losses that may result from sea-level rise?	x			
2.14.13 Has the community undertaken a vulnerability and risk assessments using the Department of State Asset Inventory Worksheet and Risk Assessment Tool?	x	Reference to the Department of State Asset Inventory Worksheet and Risk Assessment Tool were not present in planning documents. However, Putnam County's HMP (2021) Section 5.1.1 provides an overview of an asset inventory process used in the HMP process.		Governor's Office of Storm Recovery
2.14.14 Has the community adopted the projections of sea-level rise from the State Sea Level Rise Task Force report or more recent studies for planning purposes?	x	No direct references to the State Sea Level Rise Task Force report was found. However, Putnam County does include SLR projections within the Putnam County HMP (2021) Section 5.4.5 using data from the NYDEC (p. 13). Projections for "increase in acreage in the floodplain due to Sea Level Rise" are also included using information from NYSERDA (p. 14). It is not clear if these projections have been formally adopted by the community.	NYS has adopted official sea-level rise projections.	NYS DEC Official SLR Projections
				NYS Sea Level Rise Task Force Report

Section 3: Public Outreach and Engagement	Yes	No	Notes	Definitions	References
3.1 Has the public been involved in the identification of historic storm effects, such as storm-surge elevations, flood-prone streets, beach erosion and over wash, or property loss through any of the following means?					
3.1.1 Participatory mapping	x		Participatory mapping has been used by the County. For example, mapping exercises were used for engineers assessments and a participatory mapping exercise was used at a meeting on Continental Village dam rehabilitation.	Participatory mapping is a process in which stakeholders create maps that indicate important environmental, cultural social and economic features. Often used in land use decision-making.	NOAA Participatory Mapping Guide
3.1.2 Public surveys	x		A survey that assesses community perspectives on climate hazards and vulnerable assets was distributed during Putnam County's current Climate Adaptation and Resilience Planning process. Survey analysis is in progress. Putnam County's Hazard Mitigation Plan (2021) also included citizen and stakeholder surveys as part of the planning process (see Appendix D-Public & Stakeholder Outreach).		
3.1.3 Stakeholder meetings	x		Putnam County has conducted stakeholder meetings, including those listed in Section 3.1.2. A full list of meetings conducted for Putnam County's Hazard Mitigation Plan (2021) can be found in Appendix C.		
3.2 Does the municipality have publicly visible high water mark signs ?		x		High Water Mark signs are a public awareness tool that indicate how high the water reached on a building, bridge or other infrastructure under flood conditions.	NOAA High Water Mark signs
3.3 Has the public been involved in defining an overall acceptable level of natural-hazard risk?		x	Putnam County has conducted outreach adjacent to this topic. For example, Putnam County's HMP (2021) Section 3.3.3 indicates that the County fostered public participation throughout their Hazard Mitigation planning process through a website, meetings available to the public, and a "Citizen Survey" designed to understand public hazard vulnerability and mitigation awareness (p. 14). See Putnam County's HMP (2021) Appendix D p. 7-95 for additional information and results. Putnam County's HMP (2021) planning process also included a "Stakeholder Survey" to gauge "general needs for hazard mitigation and resiliency" and "identify specific projects that may be included in the mitigation plan," although this was sent to a targeted group of stakeholders rather than to the public (Section 3.3.3 p. 10). See Putnam County's HMP (2021) Appendix D p. 96-163 for additional information and results. Within the County, there is often a window of opportunity to engage the community about natural hazards directly following a storm/emergency and less engagement at other times.		
3.4 Does the municipality provide the public with information on the natural and beneficial functions of floodplains, wetlands and green infrastructure?	x		This information is available through the Putnam County Soil and Water Conservation District, although it is not currently advertised on the website.		
3.5 Does the municipality provide access to floodplain maps?	x		This information is available through the Putnam County Soil and Water Conservation District, although it is not currently advertised on the website.		
3.6 Does the municipality publicize the availability of floodplain information to property owners and businesses?	x		This information is available through the Putnam County Soil and Water Conservation District, although it is not currently advertised on the website.		
3.7 Does the municipality publicize the availability of floodplain information to insurance agents, real estate agents, and lenders?	x		This information is available through the Putnam County Soil and Water Conservation District, although it is not currently advertised on the website.		

3.8 Does the municipality conduct storm-preparedness outreach to floodplain residents and businesses using the following methods?					
3.8.1 Website	x		Putnam County's PREADY webpage provides public-facing guidance on disaster preparedness, but it is not geared specifically to floodplain residents and businesses.		
3.8.2 Brochures and newsletters	x				
3.8.3 Community meetings	x		Putnam County Bureau of Emergency Services webpage mentions that: "The (TOPS) Training and Operations building also hosts a variety of Emergency Management training courses, planning workshops and informational events aimed at enhancing citizen preparedness and community resilience" https://www.putnamcountyny.gov/pcbes .		
3.8.4 Television or radio		x			
3.8.5 Other:		x	The Putnam County Bureau of Emergency Services Facebook page includes weather-related outreach, although it is not specifically geared toward floodplain residents and businesses. The Health Department can conduct outreach via social media.		
3.9 Does the community provide easy access to coastal erosion area hazard maps?		x	N/A: The DEC has a link to CEHA maps on its "Coastal Areas Regulated By The CEHA Permit Program" webpage: https://dec.ny.gov/environmental-protection/water/water-quantity/dam-safety-coastal-flood-protection/coastal-management/areas-regulated-by-ceha . Maps are available by County here: https://extapps.dec.ny.gov/fs/projects/coastal/ . No maps for Putnam County were found.		
3.10 Does the community provide residents with guidance on the development of personal or family evacuation plans?	x		Putnam County's PREADY webpage provides public-facing guidance for emergency preparedness. The website does not include detailed evacuation planning guidance, but it does recommend creating a family emergency and a community emergency plan.		
3.11 Does the municipality provide property owners information on what to include in the following?					
3.11.1 At-home emergency kit	x		Putnam County's PREADY webpage "12 Ways to Prepare Before a Disaster" subsection includes recommendations for an emergency kit under the "Assemble or Update Supplies" tab: https://putnamcountyny.gov/pready . The Putnam County Department of Health Website also links to Ready.gov's Basic Disaster Supplies Kit webpage: https://www.ready.gov/kit .		

3.11.2 Emergency supplies	x		Putnam County's PREADY webpage includes a checklist with recommended emergency supplies: https://form.jotform.com/233344895103153 .		
3.11.3 Evacuation kit		x	Putnam County's Indian Point Emergency Guide includes an Emergency Supplies Checklist for evacuation or shelter in place needs, but this plan is no longer in use (p. 20).		
Section 3 – Public Outreach and Engagement					
3.12 Does the community have public-information plans in place to provide residents with the following information prior to the threat of a storm?					
3.12.1 Expected inundation areas	x		NY ALERT system provides this information.		
3.12.2 Evacuation routes	x		Putnam County's Hurricane Emergency/Tropical Storm Action Plan (2024) indicates that the County will inform residents of storms/potential impacts and provide information on transportation that could support evacuation decisions (p. 8).		
3.12.3 Evacuation bus pick-up locations		x	Putnam County's CEMP Revision 2 (2023) states that if a Public Information Officer role is created, they can provide information about "appropriate protective actions to be taken by the public, to the broadcast media and press, including specific information about the accessibility of evacuation transportation options and shelters" (p. 31). Putnam County's Hurricane Emergency/Tropical Storm Preparedness Plan (2024) also indicates that the County will share information about "mechanisms to support evacuation (transportation/shelters)" to assist residents in their decision to/not to evacuate (p. 8).		
3.12.4 Location of severe weather shelters	x		The County sends alerts about warming and cooling shelters. All Senior Centers are warming centers. The Donald B Smith Campus has a designated storm shelter, although it is not a full-time shelter. Most shelters are available through partnerships with towns and organizations. Specific shelter locations with partner organizations are coordinated by the Red Cross and Putnam County.		
3.12.5 Location of pet shelters		x	Putnam County's HMP (2021) Section 9.1, Table 9.1-12 indicates that the County has goals to improve pet facilities in an emergency through a facility at Tilly Foster Farm (p. 26). Currently the County has a trailer that can be deployed to a shelter if needed, during a storm/emergency event.		
3.13 Has the community informed residents of ASPCA's disaster preparedness steps for domesticated animals?		x	While information about ASPCA's disaster preparedness steps is not provided, the Health Department links to information on Ready.gov about emergency preparedness and mentions pets as a consideration in planning for emergencies. See https://www.putnamcountyny.gov/health/community-health#Emergency . There is an animal rescue trailer for bare necessities that can be deployed to shelters.	Tips for including pets in your family's disaster preparedness efforts.	ASPCA Disaster Preparedness
3.14 Has the community informed residents of FEMA's "Are You Ready?" Guide?		x	While Putnam County does not directly refer residents to the "Are You Ready Guide," Putnam County's Department of Health's website links to a page on Ready.gov, the website houses the "Are You Ready Guide."		FEMA "Are You Ready?" Guide

3.15 Does the community actively inform property owners of FEMA suggested means to protect their homes against storm and wind damage ?		x	While direct references to FEMA's guidance on preparing for storms and wind damage was not found, Putnam County's PREADY website does have information on preparing for storms and wind. This information is not specifically about protecting homes from damage.		FEMA Guidance on Protecting Homes from Storms
3.16 Does the municipality provide the public with flood mitigation information?		x			
3.17 Does the municipality refer home builders to FEMA's coastal construction manual ?		x			FEMA Guidance on Coastal Construction
3.18 Does the municipality employ multilingual and culturally sensitive approaches while providing residents with essential information?		x	While Putnam County provides some information in Spanish, there are opportunities for improving outreach with Spanish brochures/postures. Putnam County's CEMP Revision 2 (2023) Section III (B) mentions that emergency preparedness education materials should be designed for accessibility, including by having copies available in multiple languages (p. 21). Putnam County's CEMP Revision 2 (2023) mentions that warnings delivered through pamphlets/posters should be translated when appropriate (p. 31).		

Section 4: Integration of Municipal Plans	Yes	No	Notes	Definitions	References
4.1 Has the community adopted a comprehensive plan?		x	Putnam County's HMP (2021) Section 9.1-4 indicates that the County does not have a Comprehensive Plan. According to the HMP, the Putnam County Vision 2010 Plan (2003) includes relevant goals for the County (p. 4). Putnam County did create a Comprehensive Plan in 1984, but it was not formally adopted. There are some Comprehensive Plans available on the local-level within Putnam County.		
4.1.1 Does the comprehensive plan reference the local multi-hazard mitigation plan and disaster recovery plans?		x	N/A--Putnam County does not have a Comprehensive Plan.		
4.1.2 Does the comprehensive plan explain the support and involvement of emergency managers, floodplain managers, coastal managers and public works officials?		x	N/A		
4.1.3 Does the planning process documentation describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information, e.g., the multi-hazard mitigation plan, capital improvement plan?		x	N/A		
4.1.4 Did the preparation of the comprehensive plan involve a broad base of the community, such as public officials, civic organizations, businesses, and citizens?		x	N/A		
4.1.5 Does the comprehensive plan provide a clear explanation of participation techniques used in its development?		x	N/A		
4.1.6 Does the comprehensive plan identify resilience within its mission, vision, or goals?		x	N/A		
4.1.7 Are hazards addressed among the elements of the municipal master plan?		x	N/A		
4.1.8 Does the plan identify potential coastal-hazard effects on infrastructure, land uses, housing and community facilities?		x	N/A		
4.1.9 Does the plan make recommendations to reduce hazard vulnerability through land-use planning?		x	N/A		
4.1.10 Does the plan identify how often it should be updated?		x	N/A		
4.1.11 Does the comprehensive plan identify flood-prone areas and discourage development in those areas or require strategies to reduce flood damage to buildings?		x	N/A		
4.1.12 Does the comprehensive plan encourage using green infrastructure techniques to help prevent flooding?		x	N/A		
4.1.13 Does the comprehensive plan emphasize non-structural pre-disaster mitigation measures such as acquiring flood-prone lands and adopting No Adverse Impact flood plain regulations?		x	N/A		

4.1.14 Does the comprehensive plan or hazard mitigation plan discuss strategies to determine whether to relocate structures that have been repeatedly flooded, including identifying an equitable approach for community involvement in relocation decisions and potential funding sources?		x	N/A		
4.2 Is the community planning for development (e.g. parks, river-based recreation) along the river's edge that will help connect people to the river AND accommodate water during floods?	x		While not a County-run project, the Hudson Highland Fjord Trail is planned along a portion of the Hudson River, including areas within Putnam County.		
4.2.1 Are floodways and other frequently flooded areas zoned for open space or recreation?		x	N/A: Zoning is not completed at the county-level.		
4.2.2 Does the community use subdivision regulations to ensure low densities within the floodplain?		x	N/A: Zoning is not completed at the county-level.		
4.2.3 Have non-conforming use and structure standards been revised to encourage safer rebuilding in flood-prone areas?		x	N/A: Zoning is not completed at the county-level.		
4.2.4 Do zoning or floodplain regulations require elevation of two or more feet above Base Flood Elevation?		x	N/A: Zoning is not completed at the county-level.		
4.2.5 Has the community adopted the International Building Code or American Society of Civil Engineers (ASCE) standards that promote flood-resistant building?		x	N/A		
4.2.6 Does the community plan for costs associated with the follow-up inspection and enforcement of land development regulations and building codes?		x	N/A		
4.2.7 Does the local comprehensive plan or hazard mitigation plan clearly identify safer growth areas in the community?		x	Putnam County's HMP (2021) Section 4.5.3 highlights where growth is expected in the County, but it does not outline safer growth areas (28-29). The plan indicates that there are not major concerns about safety and development patterns due to the expected location of development, local-level regulations, NFIP participation, and state requirements (p. 28-30).		
4.2.8 Has the community adopted policies to encourage development in these areas?		x	N/A: Putnam County's HMP (2021) does not identify safer growth areas.		
4.2.9 Has the community planned for new development in safer areas to ensure that it is compact, walkable and has a variety of uses?		x	N/A: Putnam County's HMP (2021) does not identify safer growth areas.		
4.2.9.1 Has the community changed its land-use codes and regulations to allow for this type of development?		x	N/A		
4.2.9.2 Have land development regulations been audited to ensure that development in safer areas meets the community's needs for off-street parking requirements, building height and density, front yard setbacks and that these regulations do not unintentionally inhibit development in these areas?		x	N/A		

4.2.9.3 Do capital improvement plans and budgets support development in preferred safer growth areas (e.g., through investment in wastewater treatment facilities and roads)?		x	N/A: Putnam County's HMP (2021) does not identify safer growth areas.		
4.2.9.4 Have building codes been upgraded to promote more flood-resistant building in safer locations?		x	N/A		
Section 4 – Integration of Municipal Plans					
4.3 Has the community adopted the concepts of No Adverse Impact of the Association of State Floodplain Managers?		x		No Adverse Impact , or NAI, is a floodplain management approach recommended by the Association of State Floodplain Managers that aims to help coastal communities achieve disaster resilience. "NAI is an approach by which the action of any community or property owner, public or private, is not allowed to adversely affect coastal resources or the property rights of others."	NAI Handbook
4.3.1 Does the community have a local ordinance to protect dunes, bluffs or eroding cliffs from development or disturbance?		x	N/A		
4.3.2 Does the community have a local ordinance to protect wetlands?		x	N/A		
4.4 Does the community have an open space or other natural resources management plan?		x	A significant amount of open space in Putnam County is managed by NYC DEP and by organizations like the Open Space Institute and Scenic Hudson. This impacts the level to which the County is involved in Open Space planning. Putnam County does have a Comprehensive Parks and Open Space Plan (1988). However, Putnam County's HMP (2021) Section 9.1 specifies that the County does not have a Open Space Plan, suggesting that the plan may no longer be in use/up-to-date (p. 5).		
4.4.1 If so, does the plan identify floodplain management as a priority?		x	N/A: The Comprehensive Parks and Open Space Plan (1988) focuses primarily on parks and open space protection in light of increased use/population. Floodplain management is not included as a main priority (p. 1). However, Chapter 4 mentions that protecting floodplains is a potential benefit of and motivation for open space conservation (p. 48).		
4.4.2 Is actively managed open space maintained in a manner that provides flood protection?		x	N/A: The Comprehensive Parks and Open Space Plan (1988) does not include open space management goals specifically related to flood protection in Chapter 4: Open Space & Park Development Plan (p. 39-54).		
4.4.3 Is the plan adopted as part of the municipal comprehensive plan?		x	N/A: Putnam County does not have a Comprehensive Plan.		
4.4.4 Is the local open space plan updated in coordination with the state open space plan?		x	N/A: The Comprehensive Parks and Open Space Plan (1988) has not been updated.		NYS Open Space Plan
4.4.5 Does the community participate in the state open space plan updates?	x				

4.5 Does the municipality have a FEMA-approved multi-hazard mitigation plan ?	x	Putnam County's HMP (2021) can be found on the Bureau of Emergency Services webpage: https://www.putnamcountyny.gov/pcbes?highlight=WyJoYXphcmQilCJtaXRpZ2FoaWguliwicGxhbjJd#miti .	FEMA Hazard Mitigation Plan , or HMP, formalizes community efforts to reduce loss of life and property from natural disasters. A FEMA-approved HMP is a condition for receiving certain types of non-emergency disaster assistance.	FEMA Hazard Mitigation Planning
4.5.1 Does the multi-hazard mitigation plan cross-reference with the local comprehensive plan?		x N/A: Putnam County's HMP (2021) Section 9.1 specifies that the County does not have a Comprehensive Plan (p. 4).		
4.5.2 Was a certified floodplain manager included in the hazard-mitigation planning process?		x Putnam County does not have a Certified Floodplain Manager. Putnam County's HMP (2021) Section 9.1 indicates that the County is interested in furthering its floodplain management capabilities, and intends to offer trainings like the Floodplain Manager (CFM) Training and Certification (p. 10).		
4.5.3 Does the multi-hazard mitigation plan describe the support and involvement of local government departments and offices?	x	Putnam County's HMP (2021) Section 3 indicates that multiple departments and officers were represented in the HMP Steering Committee (p. 3; p. 7-8).		
4.5.4 Does the multi-hazard mitigation plan provide a clear explanation of public participation used during its development?	x	Putnam County's HMP (2021) Section 3.3.4 includes information about public participation (p.14). Additional information about public participation is available in Appendix D: Public & Stakeholder Outreach.		
4.5.5 Does the multi-hazard mitigation plan identify critical facilities and infrastructure that are located in vulnerable areas and should be protected, repaired or relocated (e.g., town facilities, bridges, roads, and wastewater facilities)?		x Putnam County's HMP (2021) Section 9.1, Table 9.1-1 includes a critical facility at risk of flooding, although does not explicitly state that it should be repaired, relocated, or protected (p. 13).		
4.5.6 Does the multi-hazard mitigation plan identify projects that could be included in pre-disaster grant applications and does it expedite the application process for post-disaster Hazard Mitigation Grant Program acquisitions?		x Putnam County's HMP (2021) Section 9.1 identifies projects that could be funded using the Hazard Mitigation Grant Program in Table 9.1-12, although they are geared toward hazard mitigation/preparation rather than expediting post-disaster application processes (p. 23-28).		
4.5.7 Does the multi-hazard mitigation plan describe past mitigation efforts e.g., shoreline stabilization and land acquisition, along with their costs and effectiveness?		x Putnam County's HMP (2021) Section 9.1, Table 9.1-11 summarizes past/ongoing mitigation activities. Costs associated with projects are not listed (p. 15-21). While some qualitative information related to effectiveness is included in the table, a formal evaluation of effectiveness is not included in the report.		
4.5.8 Does the multi-hazard mitigation plan provide a general explanation of the environmental, social and economic consequences of failing to address natural hazards?	x	Putnam County's HMP (2021) Section 1.1.2 summarizes the "Benefits of Mitigation Planning" (p. 2).		
4.5.9 Does the multi-hazard mitigation plan include municipal maps that indicate local hazard risks, such as flood zones, storm-surge inundation and erosion rates?		x Putnam County's HMP (2021) Section 5.4.5 includes maps depicting 1% and 0.2% chance flood events in relation to different community features (i.e. roads, stream gauges, dams, development) on p. 7, p. 8, p. 11, and p. 28.		
4.5.10 Does the plan consider inland riverine erosion as a hazard?		x		

4.5.11 Does the plan identify shoreline erosion as a hazard?		x			
4.5.12 Does the plan identify sea-level rise enhanced storm surges as hazards?		x			
4.5.12.1 Are zoned land uses compatible with coastal hazards?		x	N/A: Land use planning occurs at the local level.		
4.5.13 Does the plan identify landslides as a hazard?		x			
4.5.14 Does the multi-hazard mitigation plan consider high winds and tornadoes as hazards?	x		Putnam County's HMP (2021) Section 5.2.3 identifies severe storms as a hazard (p. 10). Section 5.4.7 provides more in depth information on storm-related risks including high winds and tornadoes.		
4.5.15 Does the plan identify drought as a hazard?	x		Putnam County's HMP (2021) Section 5.2.3 identifies drought as a hazard (p.10). Section 5.4.2 provides more in depth information on drought risks.		
4.5.15.1 Does the plan identify specific conservation measures for acknowledged drought thresholds?		x			
4.5.16 Does the plan identify extreme temperatures and heat waves as hazards?	x		Putnam County's HMP (2021) Section 5.2.3 identifies extreme temperatures as a hazard (p. 10). Section 5.4.4 provides more in depth information on temperature-related risks.		
4.5.17 Does the plan identify heavy snowfall as a hazard?	x		Putnam County's HMP (2021) Section 5.2.3 identifies severe winter storms as a hazard (p. 10). Section 5.4.8 provides more in depth information on severe winter storm risks.		
4.5.18 Does the plan identify tropical storms, hurricanes and Nor'easters as hazards?	x		Putnam County's HMP (2021) Section 5.2.3 identifies severe storms as a hazard (p. 10). Section 5.4.7 provides more in depth information on storm-related risks including hurricanes and tropical storms.		
4.5.19 Does the plan address transportation and other needs of particularly vulnerable populations, such as homeless, low income, elderly, special needs and disabled?		x			
4.5.20 Does the plan specify timelines for completing projects and achieving goals?	x		Putnam County's HMP (2021) Section 9.1 Table 9.1-12 includes a timeline for recommended actions by indicating a year number, year range, or qualitative descriptor (i.e. short) (p. 23-28).		
4.5.20.1 Do mitigation goals correspond with measurable mitigation objectives?	x		Putnam County's HMP (2021) Section 6 outlines high-level goals and specific objectives to support hazard mitigation in the County (p. 4-5). Specific projects in Putnam County's HMP (2021) Section 9.1 are organized by which goal(s) they support (p. 23-28).		
4.5.21 Is a process for intergovernmental coordination explained for mitigating natural hazards?	x		Putnam County's HMP (2021) Section 6.4 includes a capabilities assessment that indicates roles, responsibilities, and capacities at the local, county, state, and federal levels (p. 5-28).		
4.5.22 Does the plan identify critical facilities and infrastructure that are located in vulnerable areas and should be protected, repaired or relocated?	x		Putnam County's HMP (2021) Section 9.1, Table 9.1-9 lists a facility under "potential flood losses to critical facilities" (p. 13).		
4.5.23 Have neighboring local governments been consulted to coordinate disaster responses and hazard-mitigation strategies?	x		Putnam County's HMP (2021) Section 3 indicates that Putnam County completed a "Neighboring County Survey" during its planning process (p. 13).		

Section 4 – Integration of Municipal Plans				
4.5.24 Does the plan identify opportunities to incorporate hazard mitigation into existing planning mechanisms, e.g., land-use planning, capital investments, shoreline restoration projects?	x		Yes: See Putnam County's HMP (2021) Section 6.4.1 (p. 6-8).	
4.5.25 Does the multi-hazard mitigation plan identify projects that could be included in pre-disaster grant applications and does it expedite the application process for post-disaster Hazard Mitigation Grant Program acquisitions?		x	No: See 4.5.6	
4.6 Does the municipality have an adopted floodplain management plan?		x	Putnam County does not have a formally adopted floodplain management plan. However, the Putnam County's HMP (2021) Section 9.1 identifies the Lower Hudson Coalition of Conservation Districts' "Flood Preparedness and Response" Guide as it's Floodplain Management Plan (p. 4). The Guide is available here: https://www.lhccd.net/uploads/7/7/6/5/7765286/flood_guide_2014_v2.pdf	
4.6.1 Is it incorporated as an element of the comprehensive plan?		x	N/A: Putnam County's HMP (2021) Section 9.1 indicates that the county does not have a Comprehensive Plan (p. 4).	
4.6.2 Is the floodplain plan incorporated in the open space plan?		x	N/A: Putnam County's HMP (2021) Section 9.1 indicates that the county does not have an Open Space Plan (p. 5).	
4.6.3 Is it incorporated in the stormwater management plan?		x		
4.6.4 Is it incorporated in the multi-hazard mitigation plan?	x		Putnam County's HMP (2021) Section 9.1 references the Coalition of Conservation Districts' Flood Preparedness and Response Guide as its Floodplain Management Plan (p. 4).	
4.6.5 Does the municipality have a certified floodplain manager on staff?		x	Putnam County does not have a certified floodplain manager on staff.	Certified Floodplain Manager , or CFM, is a program of the Association of State Floodplain Managers that recognizes continuing education and professional development of floodplain management professionals. CFM Program Information
4.6.6 Was a certified floodplain manager included in the planning process?		x	N/A: Putnam County does not have a floodplain management plan.	
4.6.7 Was a licensed professional planner included in the planning process?		x	N/A	
4.6.8 Does the municipality participate in the National Flood Insurance Program ?	x		Putnam County's HMP (2021) Section 6.4.2 states that "all municipalities in Putnam County actively participate in the NFIP" (p. 9).	NFIP
4.6.9 Does the municipality have a flood damage prevention ordinance?		x	Putnam County's HMP (2021) Section 9.1 indicates that it does not have a flood damage prevention ordinance (p. 3).	
4.7 Does the municipality have a stormwater management plan		x	Putnam County participates in the MS4 program. A stormwater management plan has not been adopted recently. Putnam County's HMP (2021) Section 9.1 indicates the status of its plan to "Complete and adopt a Countywide Stormwater Management Plan" as "Discontinue."	NYS Stormwater Management Design Manual

4.7.1 Was a certified floodplain manager included in the planning process?		x	N/A		
4.7.2 Does the stormwater management plan include green infrastructure and low-impact development regulations to decrease runoff, e.g., tree protection ordinances, impervious cover limits, riparian buffers, vegetated drainage channels and cluster development?		x			
4.7.3 Does the plan identify runoff and drainage problems due to impervious surfaces?		x			
4.7.4 Has the community implemented strategies to reduce storm water runoff from roads, driveways, and parking lots?		x			
4.7.5 Does the plan identify constraints if the municipality reaches impervious coverage levels allowed by land-use and zoning designations?		x			
4.7.6 Has the community coordinated with neighboring jurisdictions to explore a watershed-wide approach to storm water management?		x			
4.7.7 Do storm water management regulations apply to areas beyond those that are regulated by federal or state storm water regulations?		x			
4.7.8 Does the plan describe the municipal responsibilities for inspection and maintenance of stormwater facilities?		x			
4.7.9 Has the community developed a storm water utility to serve as a funding source for storm water management activities?		x			
4.7.10 Does the plan identify how often it should be updated?		x			
4.8 Does the community have a capital improvements plan?	x		Putnam County has a Capital Plans with 1 and 6-year planning horizons. See Putnam County: Six Year Capital Plan FY 2025-2030 and Putnam County: One Year Capital Plan FY 2025.		
4.8.1 Were a licensed professional planner, engineer, and certified floodplain manager involved in the planning process?		x	Putnam County does not have a Certified Floodplain Manager.		
4.8.2 Does the plan consider the risk of flooding and coastal hazards and sea level rise when upgrading existing municipal infrastructure?		x			
Section 4 –Integration of Municipal Plans					
4.8.3 Does the capital improvement plan consider the risk of flooding and coastal hazards and sea-level rise on proposed infrastructure projects?		x			
4.8.4 Does the capital improvement plan incorporate projections of flooding and sea-level rise into risk assessments over the expected service life of municipal infrastructure?		x			
4.8.5 Does the plan incorporate, if appropriate, existing plans, studies, reports, and technical information?		x			

4.8.6 Does the plan identify how often it should be updated?	x		While not explicitly stated, the Putnam County: Six Year Capital Plan FY 2025-2030 and Putnam County: One Year Capital Plan FY 2025 are created using 6 and 1-year planning horizons respectively.		
4.9 Does the municipality have an economic development plan or strategy?	x		While not at the county-level, Putnam County is included in the Comprehensive Economic Development Strategy (CEDS) (2025) produced by the Hudson Valley Regional Council.		
4.9.1 Does the plan identify economic vulnerabilities due to coastal hazards?	x		The CEDS (2025) identifies "coastal flooding from storm surge" as a "regional risk" within the mid-Hudson region (p. 56).		
4.9.2 Does the plan incorporate sea level rise and other climate change effects into its assessment of economic vulnerabilities?		x			
4.10 Does the community have a local waterfront revitalization plan , special area management plan, beachfront management plan or shoreline management plan?		x		Local waterfront revitalization plan , or LWRP, is a plan devised by a community for preferred and accepted land uses on their waterfront. This program is supported by NYS Department of State.	LWRP
4.10.1 Do these plans identify the threat of coastal storms and erosion?		x	N/A		
4.10.2 Do these plans identify the threat of sea level rise and other climate related hazards?		x	N/A		
4.10.3 Do these plans identify the vulnerability of wildlife and habitat to coastal hazards?		x	N/A		
4.11 Has the municipality developed a coastal resilience plan?		x	N/A		
4.11.1 Has the municipality strived to reduce vulnerability in coastal zones through non-structural measures wherever possible?		x	N/A		
4.11.2 Have areas of significant public investment, water dependent uses and critical infrastructure that require structural protection because options for relocation, elevation or employment of non-structural measures are not feasible been identified?		x	N/A		

Section 5: Disaster Preparedness and Recovery	Yes	No	Notes	Definitions	References
5.1 Is the municipality recognized as a Storm Ready Community?		x		Storm Ready is a program offered through the National Weather Service to help communities to take a proactive approach to preparing for extreme weather and natural disasters.	https://www.weather.gov/stormready/
5.2 Does the community have a general emergency warning system?	x		Putnam County's HMP (2021) Section 9.1, Table 9.1-4 indicates that the County has multiple warning systems (p. 7). Putnam County's CEMP Revision 2 (2023) also includes information about warning systems and methods (p. 30-32). For example, the County has access to media broadcast, phone, text, email, and door-to-door alert communications methods. Emergency service vehicles can be used for "siren and public address capabilities." While not county-specific, NOAA Weather Ready also broadcasts weather information/warnings, and Putnam County participates in the NY Alert system (p. 31).		
5.3 If the community is located along a river, does it have an early flood-warning system?		x	Putnam County does not have early detection river flooding sensors. Putnam County's HMP (2021) Section 9.1, Table 9.1-4 indicates that the County has multiple warning systems, although it does not specify if the warning systems are for river communities (p. 7). The Putnam County Alert System has the ability to sign up for flood and additional warnings: https://www.putnamcountyny.gov/pca .		
5.4 Are emergency responders aware of real-time ocean and estuarine observing systems and stream gauging information?		x	NOAA has stations with current maps but the County does not control any storm gauges and no information is directly shared with County staff.		
5.5 Does the community relay weather related threats to the public in at least two forms of communication?	x		Putnam County's HMP (2021) Section 9.1, Table 9.1-4 lists multiple warning systems and services, including Putnam County Storm Watch, NY-Alert, Code Red, and the Emergency Alert System (p. 7). There are standard procedures for how to communicate about hazards. For example, the Bureau of Emergency Services and Health Departments both indicated an ability to post on social media (https://www.facebook.com/PutnamNYEmergencyServices/ and https://www.instagram.com/putnamhealthny/). For more severe events, there are procedures for reverse 911, Emergency Alert System (EAS) communication etc.		
5.6 Does the community have an emergency response and short-term recovery plan and/or a flood response plan that includes coastal flooding?		x	Putnam County's CEMP Revision 2 (2023) includes response information for hazards, but is not specific to coastal flooding (p. 24-44). It does mention flooding as a risk (p. 18).		
5.6.1 Does the plan describe a hierarchy of authority during emergencies?	x		Putnam County's CEMP Revision 2 (2023) includes information about the hierarchy of authority during emergencies (p. 22-28)		
5.6.2 Does the plan identify first responders?		x			
5.6.3 Does the plan include a list of contacts for operators of municipal facilities?		x			
5.6.4 Is the plan a municipal plan (rather than county or state)?		x	N/A: Putnam County is a county.		
5.6.5 Does the plan indicate the required update frequency?		x	While certain aspects of Putnam County's CEMP Revision 2 (2023) include information about update frequency, the "Response" and "Recovery" sections do not have a mandated update timeline. The "Response" section does require that updated personnel lists for those assigned to work on the EOC must be submitted on a yearly basis at minimum/whenever there is a relevant update (p. 28).		
5.6.6 Does the plan include steps for emergency protective measures e.g., sandbagging, erecting warning devices, and search and rescue?		x	Putnam County's CEMP Revision 2 (2023) does not focus on flooding in particular and does not include recommendations related to sandbagging. The CEMP does include an intention to "test readiness of warning and communications equipment" under Section III-Preparedness (p. 20). The CEMP also indicates that the Fire Service is responsible for search and rescue responsibilities under Section IV-Response, but does not outline concrete steps (p. 26).		
5.6.7 Does the plan include organizational framework to conduct a preliminary damage assessment?	x		Putnam County's CEMP Revision 2 (2023) Section V--Recovery outlines Damage Assessment responsibilities. In Putnam County, local governments are responsible for damage assessments, but the plan outlines steps for how the County will support these assessments (p. 38).		
5.6.8 Are the best available projections concerning the frequency and severity of extreme storm events incorporated into the municipality's emergency response/operations plan?		x			

5.6.9 Does the emergency response/operations plan include coordination and communication among critical stakeholders such as community-based organizations, local businesses, local health departments, utilities and local government leaders?	x		Putnam County's HMP (2021) included a stakeholder survey as part of its process (See Appendix D).		
5.7 Does the community have a designated emergency operations center?	x		Putnam County's HMP (2021) Section 9.1 indicates that prior goals related to the Emergency Operation Center (EOC) have been completed (p. 16). Putnam County's Bureau of Emergency Services website includes additional information about the EOC: https://www.putnamcountyny.gov/pcbes . Putnam County's CEMP Revision 2 (2023) Section IV describes the EOC (see p. 22-28).		
5.7.1 Is it located outside of flood-hazard areas?	x		Putnam County's HMP (2021) Section 9.1 does not list the EOC as a critical facility at risk of flooding (p. 13). Putnam County's CEMP Revision 2 (2023) Section IV includes the EOC address (p. 27), which is not in a flood zone according to the FEMA Flood Map Service Center.		
5.7.2 Is it designed to withstand high winds?	x				
5.7.3 Does it have elevated back-up power?	x				
5.8 Does the community have adequate designated storm shelters?	x		Putnam County has an emergency shelter in their Donald B. Smith Campus and trailers available. Additional shelters are coordinated with towns, villages, and community organizations (see 5.8.1)		
Section 5 – Disaster Preparedness and Recovery					
5.8.1 If the community does not have a designated storm shelter within the community, is there an established memorandum of agreement with a neighboring community or county to provide constituents shelter?	x		Putnam County can enter into agreements with organizations to have storm shelters. The County has agreements with many organizations in the County including the German American Club, St. James, Brewster Cares Group, Carmel Knights of Columbus, and the Red Cross. It also agreements with several agencies and consortiums of churches. The County can provide generators to shelters at partner organizations, but the County does not have control over these storm shelters. There may be restrictions on operating times and who can use shelters at shelters run by partner organizations.		
5.8.2 Are storm shelters located outside flood-hazard areas, including storm-surge inundation areas?	x		At least a portion of the storm shelters are located outside of flood-hazard areas.		
5.8.3 Are storm shelters designed to withstand high-wind effects?	x		Information not found.		
5.9 Does the community have an evacuation plan?	x		While Putnam County does not have a general evacuation plan, it does have an evacuation plan for hurricanes and tropic storms. Specifically, Putnam County's Hurricane/Tropical Storm Emergency Action Plan (2024) includes information about evacuation, responsibilities, and communications (see p. 33, p. 37, p. 39, p. 42, p. 44). Additionally, Putnam County has designated evacuation routes. Within Putnam County's HMP (2021) Section 9.1, Table 9.1-12 there is a goal to create an "Emergency Transportation Plan," furthering evacuation planning in the County (p. 27). Furthermore, the County's past Putnam County Indian Point Emergency Guide contains evacuation-related information, although the plan is no longer in use and the services described are no longer available.		
5.9.1 Are responsibilities for municipal evacuation clearly defined?	x		Detailed information about evacuation procedures is available in Putnam County's Hurricane/Tropical Storm Emergency Action Plan (2024), but specific roles are not defined.		
5.9.2 Does the plan identify the necessary time frame to evacuate residents and vacationers from storm-hazard areas?	x				
5.9.3 Does the plan identify where evacuation routes are prone to flooding?	x				
5.9.4 Is there more than one route identified to evacuate the community?	x		See Putnam County HMP (2021) Section 9.1 p. 11		
5.9.5 Does the evacuation plan consider the possibility of evacuation of neighboring jurisdictions occurring concurrently?	x				
5.9.6 Does the evacuation plan identify and provide for groups that rely on public transportation (or lack private vehicles) for emergency evacuations?	x		Putnam County's Hurricane/Tropical Storm Emergency Action Plan (2024) recognizes people without access to private transportation in their evacuation planning. For example, the plan includes the following as a "pre-Hurricane Watch activity:-" "Advise the following residents to consider evacuation based on anticipated post-storm conditions [...] People without private vehicle transportation" (p. 37).		
5.9.7 Does the plan identify the conditions that would initiate a traffic lane reversal?	x				

5.9.8 Does the plan identify local and state evacuation assistance programs for the following special needs?		x	References to some of the following groups is included in the County Hurricane/Tropical Storm Emergency Action Plan. Specific evacuation assistance programs are not identified.		
5.9.8.1 Hospitals		x			
5.9.8.2 Nursing Homes		x			
5.9.8.3 Prisons		x			
5.9.8.4 Residents without personal transportation		x	No relevant local/state evacuation assistance programs found: The Putnam County Hurricane/Tropical Storm Emergency Action Plan (2024) indicates that within 36 hours or less time prior to an expected hurricane, the County should "advise [certain] residents to consider evacuation based on anticipated post-storm conditions" including those without access to personal transportation (p. 37).		
5.9.8.5 Elderly		x	No relevant local/state evacuation assistance programs found: The Putnam County Hurricane/Tropical Storm Emergency Action Plan (2024) indicates that "DOH receives "vulnerable client" lists from Home-based Care Agencies" (p. 33). The Office of Senior Resources can currently reach about ~10% of the senior population in Putnam County, although no programs specifically related to evacuation identified.		
5.9.8.6 Disabled		x	No relevant local/state evacuation assistance programs found. Putnam County's Hurricane/Tropical Storm Emergency Action Plan (2024) indicates that within 36 hours or less time prior to an expected hurricane, the County should "advise [certain] residents to consider evacuation based on anticipated post-storm conditions" including people with disabilities (p. 37). The County also maintains some relevant data through the Department of Planning and Transportation and Department of Social Services, but there are opportunities to improve.		
5.9.8.7 Schools		x	No relevant local/state evacuation assistance programs found. Putnam County's Hurricane/Tropical Storm Emergency Action Plan (2024) includes information about school closure announcements prior to a storm event, but there is no specific information about evacuation assistance (p. 36). However, in general, Putnam County has strong communication with schools while they are in session. The County also previously maintain information on all daycare centers as part of the Indian Point Evacuation Guide, but this is no longer in place.		
5.10 Does the community maintain and promote a special needs registry?	x				
5.11 Does the municipality inform residents of the NY-Alert program?	x		The NY-Alert program is mentioned in Putnam County's HMP (2021) Section 9.1 (p. 7), on Putnam County's Bureau of Emergency Services website, and in Putnam County's CEMP Revision 2 (2023) (p. 31).	NY-Alert is a service offered by NYS to alert citizens of hazards and emergencies via email or telephone.	https://www.nyalert.gov/
5.12 Does the municipality have a volunteer community emergency response team?	x		Putnam County's Medical Reserve Corp "front-line volunteers" take part in CERT training: https://www.putnamcountyny.gov/mrc .	Community emergency response teams, or CERT is a program offered by FEMA to train volunteers in basic response skills so that they can assist others in their communities following a disaster when professional emergency responders are not immediately available to help.	https://www.fema.gov/community-emergency-response-teams
5.13 Does the community have a portable communications system that can operate under poor weather conditions and when electrical power is not available?	x		Putnam County's Hurricane/Tropical Storm Emergency Action Plan (2024) indicates that essential employees should prepare a "Hurricane Kit" equipped with a "portable radio/batteries" prior to a hurricane watch (approximately 72-48 hours prior to a watch)" (p. 34).		
5.14 Is there an adequate heat-warning system in place?	x		Heat warning information is available through NOAA. If there is a heat concern, information can be posted through social media. If the warning is more severe, additional avenues can be used to push the message.		

5.15 Is a cooling-center program established that considers potential problems such as transportation obstacles, effects of power outages or flooding and other needs of vulnerable populations/communities?	x	<u>Cooling Center Program:</u> Putnam County's HMP (2021) Section 5.4.4.1 indicates that cooling shelters are provided when needed (p. 1). However there may be places to improve. For example, Putnam Lake is a community that experiences moderate heat vulnerability according to the New York State Department of Health's Heat Vulnerability Index map, but does not have a cooling center. According to the map, Putnam Lake's heat vulnerability is 4 out of a possible 7 on the Heat Vulnerability Index Scale: https://www.health.ny.gov/environmental/weather/vulnerability_index/docs/nys_hvi.pdf. <u>Power Outages:</u> A 2023 News and Press Release from the Department of Public Health indicates that there were two cooling centers that could withstand power outages during a particular heat event. The current status of backup power sources at cooling centers was not found: https://www.putnamcountyny.gov/component/zoo/item/get-ready-hot-weather-will-soon-be-here?Itemid=101. <u>Vulnerable Populations:</u> A 2025 News and Press Release from the County Executive indicates that senior centers serve as cooling shelters: https://www.putnamcountyny.gov/county-executive-articles/item/byrne-to-declare-state-of-emergency-in-putnam-due-to-extreme-heat. Cooling facilities at senior centers are typically intended for senior populations. <u>Transportation:</u> Putnam County's Climate Smart Community's profile indicates that there are public transportation stops near cooling centers: https://climatesmart.ny.gov/actions-certification/participating-communities/certification-report/?tx_sjcert_certification%5Bcertification%5D%5B__identity%5D=224&tx_sjcert_certification%5Baction%5D=show&tx_sjcert_certification%5Bcontroller%5D=Certification&cHash=a69ec2d35bd73f68aa4f1abd826c0c34. <u>Flooding:</u> Information not found.		
5.16 Does the community have a continuity of operations plan?	x	There are current intentions to create COOPs on a department-by-department basis.		
5.16.1 Does the plan provide guidance on post-disaster waste management and debris removal?	x	Putnam County has a Disaster Debris Management and Removal Plan that operates like standard operating procedures.		
5.16.1.1 Is machinery for debris removal located outside of flood hazard areas?	x	Machinery and stockpiles are located outside of the floodplain.		
5.16.1.2 Are routes to waste-disposal facilities passable in the event of a flood?	x	N/A: There are no County-run waste disposal or transfer stations. The three town-owned transfer stations in Patterson, Kent, and Philipstown are not located within the floodplain, although it is unknown if transportation routes to the facilities are passable during flood events.		
5.16.1.3 Are temporary waste-disposal staging areas identified in the event of a disaster?	x	Yes, in designated areas.		
Section 5 – Disaster Preparedness and Recovery				
5.17 In the event of a disaster, are procedures defined to conduct habitability and substantial damage assessments?	x	Habitability and substantial damage assessments are not mentioned. However, Putnam County's CEMP Revision 2 (2023) outlines responsibilities for damage assessments more broadly (p. 37).		
5.18 Does the community store FEMA elevation certificates outside of flood-hazard areas?		Information not found.	FEMA elevation certificates provide documentation that buildings located in Special Flood Hazard Areas are properly elevated. Elevation certificates can be used by the property owner to obtain flood insurance.	https://www.fema.gov/elevation-certificate
5.19 Does the community have a long-term recovery plan?		Information not found.	A long-term recovery plan provides guidelines on steps the community will take to re-establish a pre-disaster condition or better, and enable to community to sustain itself.	http://www.dhss.ny.gov/planning/cemp/documents/NYS-CEMP-Vol.3-Long-Term-Recovery-2017.pdf
5.19.1 Does the plan identify redevelopment opportunities outside of flood-hazard areas?	x	N/A		
5.19.2 Does the plan advocate the use of advisory flood maps to define post-disaster redevelopment building elevations?	x	N/A		
5.19.3 Does the plan identify opportunities to retrofit or relocate existing structures or infrastructure in hazard-prone areas?	x	N/A		
5.19.4 Does the plan utilize risk and vulnerability mapping to determine the location of future development?	x	N/A		

5.19.5 Has the community identified the lines of coordination in transitioning from short-term to long-term recovery?		x	N/A		
5.19.6 Does the plan include an organizational framework that facilitates the effective coordination and use of state, federal, and NGOs resources in a manner that provides maximum benefit for the disaster area?		x	N/A		
5.19.7 Does the plan identify roles and functions of elected and appointed officials, state and federal agencies, and NGOs?		x	N/A		
5.19.8 Does the recovery plan include provisions to reduce greenhouse gas emissions from reconstructed areas through improved energy efficiency, use of renewable sources of energy and application of smart-growth principles?		x	N/A		
5.20 Has the community adopted floodplain development limits that prohibit or reduce any new encroachment and fill in river corridors and fluvial erosion hazard areas?		x	N/A: land use decisions are made at the local level		
5.21 Has the community encouraged agricultural and other landowners to implement pre-disaster mitigation measures, such as the following?					
5.21.1 Storing hay bales and equipment in areas less likely to be flooded?		x	The County does not do outreach to farms about implementing pre-disaster mitigation measures.		
			The "Agricultural & Farmland Protection Plan For Putnam County" (2004) report does not included pre-disaster mitigation measures.		
5.21.2 Installing ponds or swales to capture storm water?		x	The County does not do outreach to farms about implementing pre-disaster mitigation measures. However, on the Tilly Foster Farm property (County-owned), the County has installed ponds, swales, and rain gardens.		
			The "Agricultural & Farmland Protection Plan For Putnam County" (2004) report does not included pre-disaster mitigation measures.		
5.21.3 Planting vegetation that can tolerate inundation?		x	The County does not do outreach to farms about implementing pre-disaster mitigation measures.		
			The "Agricultural & Farmland Protection Plan For Putnam County" (2004) report does not included pre-disaster mitigation measures.		
5.21.4 Using land management practices to improve the capability of the soil on their lands to retain water?		x	The County does not do outreach to farms about implementing pre-disaster mitigation measures.		
			The "Agricultural & Farmland Protection Plan For Putnam County" (2004) report does not included pre-disaster mitigation measures.		
5.21.5 Have long-term recovery plans been developed for areas vulnerable to flooding and coastal storms?		x	There are not specific long-term recovery plans for areas vulnerable to flooding. However, related information is available in the Putnam County Hazard Mitigation Plan (2020), Putnam CEMP Revision 2 (2023), and Public Health Emergency Preparedness and Response (PHEPR) Plan (2024)		
5.22 Does the local government have the authority to establish a temporary post-disaster building moratorium?		x	N/A		

Section 6 – Hazard Mitigation Implementation	Yes	No	Notes	Definitions	References
6.1 Has the municipality taken the Climate Smart Communities Pledge ?	x		Putnam County's Climate Smart Communities profile indicates that it is "bronze" certified. Putnam County's HMP (2021) Section 9.1, Table 9.1-7 indicates that it took the CSC pledge in 2019 (p. 9).	Climate Smart Communities is a network of NY communities engaged in reducing greenhouse gas emissions and improving climate resilience.	http://www.dec.ny.gov/energy/so&c.html
6.2 Has the municipality created a local Climate Action Plan ?		x		A Climate Action Plan describes the policies and measures that a local government will enact to reduce greenhouse gas emissions and increase the community's resilience to climate change.	http://www.dec.ny.gov/energy/57203.html
6.3 Is the municipality active in the National Flood Insurance Program's Community Rating System ?		x	Putnam County's HMP (2021) Section 9.1, Table 9.1-7 indicates that the county does not participate in the CRS program (p. 9).	The FEMA Community Rating System is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceeds the minimum National Flood Insurance requirements.	https://www.fema.gov/national-flood-insurance-program-community-rating-system
6.4 Has the municipality proposed the relocation of public buildings, critical facilities, or infrastructure out of flood hazard areas as a result of the multi-hazard mitigation plan or other planning tools?		x	Putnam County's HMP (2021) Section 9.1, Project PCBES-12 indicates that the County had a plan to work with municipalities to prepare for the relocation of houses out of the floodplain, but the project status is "discontinue[d]" (p. 18). Within the HMP, Putnam County does not include a specific goal pertaining to relocation of "public buildings, critical facilities or infrastructure."		
6.5 Has the municipality used its multi-hazard mitigation plan to propose retrofitting public buildings, critical facilities and other infrastructure to withstand flood damage?	x		Putnam County's HMP (2021) Section 9.1 states that the "County Department of Highway and Facilities continues to undertake risk reduction projects such as retrofits and hardening of existing structures, including bridges, roads, and abutments" (p. 10).		
6.6 Do municipal building codes exceed the state's 2-foot freeboard above base flood elevation requirement?		x	N/A: Building Codes are not completed at the county-level		
6.7 Have building and permitting officials completed training on retrofitting flood-prone residential buildings?		x	N/A	Training on retrofitting flood-prone buildings is available through FEMA.	https://training.fema.gov/lemicourses/crsdetail.aspx?cid=E279&ctype=R
6.8 Have building and permitting officials completed training in FEMA's Coastal Construction Manual ?		x	N/A	Training on Residential Coastal Construction is available through FEMA.	Coastal Construction Manual
6.9 Have community officials completed post-flood stream intervention training?		x			
6.10 Does the community provide property owners with guidelines to retrofit existing development for flood and wind risks?	x		The Soil and Water Conservation District can support property owners with flooding concerns by conducting an inspection and providing advice on how to improve.		
6.11 Does the municipality utilize any of the following tools to manage development in hazard-prone areas?					
6.11.1 Transfer of development rights or purchase of development rights		x	"An Agricultural & Farmland Protection Plan for Putnam County" (2004) Goal 5 recommends using "purchase of development rights" tools. However, this recommendation does not necessarily aim to address hazard prone areas, instead focusing on agricultural protection (p. 6).		
6.11.2 Conservation overlay districts or cluster development		x	N/A: Overlay districts and cluster development not determined at the county-level.		
6.11.3 Zoning for open or recreational space		x	N/A: Zoning is not completed at the county-level.		
6.11.4 Protective coastal, riparian and/or wetland buffer ordinances		x	N/A: Not determined at the county-level.		
6.11.5 Rolling easements		x	N/A: Not determined at the county-level.		

6.11.6 Buyouts of vulnerable properties		x	While the County does not conduct buyouts, vulnerable properties are sometimes acquired during foreclosure.		
6.11.7 Other:	x		The NYCDEP owns a substantial amount of land in Putnam County for the purpose of watershed protection.		
6.12 Does the municipality use land-acquisition programs to purchase land-conservation easements in hazard-prone areas?		x	While the County does not use land-acquisition programs, NY DEP, nonprofits (i.e. Scenic Hudson, Open Space Institute, Friends of the Great Swamp), and land trusts (i.e. Hudson Highlands & Putnam Land Trust) do acquire land in hazard-prone areas.		
6.13 Does the community utilize impact fees, accommodation taxes or user fees to acquire properties in hazard areas?		x			
6.14 Does the municipality have a plan for shoreline stabilization?		x	Putnam County's HMP (2021) Section 9.1 indicates that the County does not have a Shoreline Management Plan (p. 5).	Shoreline stabilization - protecting or restoring natural shorelines have many ecological and resilience benefits.	http://www.dec.ny.gov/permits/50934.html
Section 6 – Hazard Mitigation Implementation					
6.15 Is the automatic replacement of hardened structures prohibited?		x	Putnam County's County Code does not include provisions prohibiting the replacement of hardened structures.		
6.16 Are sustainable enhanced methods of shoreline protection encouraged through incentives or regulation?		x	N/A: Putnam County's HMP (2021) Section 9.1 indicates that a Shoreline Management Plan is "not applicable" to the County (p. 5).		
6.17 Does the community inform property owners of preferred sustainable shoreline protection techniques, including non-structural and ecologically enhanced methods?		x	N/A: see 6.16		
6.18 Does the municipality have a plan in place to control invasive plant species, especially near the shoreline?		x			
6.19 Does the community engage in dune, wetland or shoreline restoration?		x	There are wetland restoration projects in Putnam County including at the Putnam County Golf Course in Mahopac and Lake Gleneida in Carmel.		
6.20 Has the community established special area ordinances for habitat preservation?		x	N/A: Zoning is not completed at the county-level.		
6.21 Does the community utilize impact fees, accommodation taxes or user fees to pay for shoreline protection and restoration, wetland restoration or riparian buffers?		x			
6.22 Are community flood control or other protective structures (e.g., levees, flood or sea walls) inspections on schedule?		x	N/A		
6.23 Has the community used any of the following grant programs to implement mitigation projects?					
6.23.1 FEMA Hazard Mitigation Grant Program		x	The HMGP program was identified as a potential source of funding. For example, Putnam County's HMP (2021) Section 9.1 lists the HMGP program as a potential funding source for a highways generator project (p. 33), a materials storage project (p. 41), a gas station generators project (p. 23), and a capacity-building project (p. 27) within its "Proposed Hazard Mitigation Initiatives."	The purpose of the FEMA Hazard Mitigation Grant Program is to help communities implement hazard mitigation measures following a Presidential major disaster declaration.	https://www.fema.gov/hazard-mitigation-grant-program
6.23.2 FEMA Pre-disaster Mitigation Grant Program		x	Putnam County has been awarded a grant to complete a 5-year update of their Hazard Mitigation Plan with Tetra Tech. Putnam County's HMP (2021) Section 3 mentions that FEMA Pre-disaster Mitigation funding "supported the development of this update of this multi-jurisdictional HMP" (p. 2).	The FEMA Pre-disaster Mitigation Grant Program is designed to assist States, U.S. Territories, Federally-recognized tribes, and local communities in implementing a sustained pre-disaster natural hazard mitigation program.	https://www.fema.gov/pre-disaster-mitigation-grant-program
6.23.3 FEMA Flood Mitigation Assistance Program		x	Putnam County is not typically a partner on the types of projects funded by this source.	The FEMA Flood Mitigation Assistance Grant Program provides resources to assist states, tribal governments, territories and local communities in their efforts to reduce or eliminate the risk of repetitive flood damage to buildings and structures insurable under the National Flood Insurance Program.	https://www.fema.gov/media-library-data/645726453101-1a8d6d6c-98093b30cd64a082a0c3f716_FMA_Fact_Sheet.pdf
6.23.4 HUD Community Development Block Grants		x	No projects found funded by this source. Putnam County is typically not eligible for this funding source.	The Community Development Block Grant, or CDBG, program provides annual grants on a formula basis to 1209 general units of local government and States.	https://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/pgrmams
6.23.5 Other:		x	Federal Highway Administration (FHWA) grants are often used for infrastructure projects and are designed with flooding and resilience in mind.		

Appendix C: Putnam County Partnership Survey

Background Information

A partner organization survey was sent to local organizations and community groups in Putnam County. The survey was also available on Putnam County's CCARP webpage for organizations to fill out. The survey collected information on the existing resilience capacities within organizations in Putnam County and how/if organizations would like to be included in the CCARP process. See below for information on the survey and outreach conducted.

Survey Questions



Putnam County Partnership Survey

Putnam County is currently working on a Climate Change Adaptation & Resilience Plan that will include the following components:

- The Climate Vulnerability Assessment will evaluate the climate hazards impacting the County and the social, environmental, and infrastructural assets at risk. Climate hazards are the physical climate effects that Putnam County is facing, such as extreme heat, changing precipitation, and sea level rise.
- The Climate Adaptation Plan will outline strategies for the County to address these hazards and to build safer, more resilient communities as these hazards increase in the future.

While developing these plans, the County will rely on community input in order to:

- Prioritize the local assets and climate hazards the community finds most important.
- Develop a shared community vision for a climate resilient Putnam County.
- Ensure that recommendations for climate adaptation support County priorities and work toward the community vision.

Community partners are a core part of our process. This 5-minute survey is intended to provide a chance for you to tell us whether and how your organization may want to be involved.

Involvement might include sharing information with your network, filling out surveys, and/or participating in events. Participation is flexible, and we welcome involvement at the level you are most comfortable with.

We particularly encourage organizations that are not directly related to climate and resilience topics to fill out this survey. Please share as much information as you are comfortable.

1. Organization name *

Enter your answer

2. Are you a resident of Putnam County, or does your organization conduct work within Putnam County? *

☐ Yes

☐ No

3. Please share a few words about your organization (50 words max.): *

Enter your answer

4. This question will help us assess how your organization's work intersects with climate resiliency planning. Mark your organization's functions below, if any apply.

Note: Climate adaptation planning aims to reduce risks from climate hazards and build resilience to those hazards. It requires practitioners and knowledge across many areas, including emergency preparedness, connecting with and providing services to stakeholders, understanding the local environment/infrastructure, etc.

Climate hazards can also impact many parts of community life. For example, hazards can disproportionately impact vulnerable communities, affect local jobs, influence health and well-being, etc. As such, resiliency planning touches on many focus areas, not just those directly related to the environment. *

	Primary part of our organization's work	Regular part of our organization's work	Minor part of our organization's work	Not a function of our organization
Targeted social services for underserved community members (e.g., case management, outreach, or advocacy on behalf of low-income households, people with disabilities, people facing language barriers, etc.)	☐	☐	☐	☐
Emergency preparedness, response, or long-term recovery (including warming/cooling centers or other shelter during extreme weather)	☐	☐	☐	☐
Food or other basic needs assistance	☐	☐	☐	☐
Residential services for unhoused people or animals	☐	☐	☐	☐
Residential healthcare or rehabilitation services	☐	☐	☐	☐
Crisis shelter, safety, or survivor support services	☐	☐	☐	☐
Public health, physical health, or mental health services	☐	☐	☐	☐

Environmental conservation, restoration, or maintenance	☐	☐	☐	☐
Sustainability or climate mitigation initiatives	☐	☐	☐	☐
Education or youth services	☐	☐	☐	☐
Spiritual guidance or faith-based support	☐	☐	☐	☐
Career assistance or job training	☐	☐	☐	☐
Utilities (e.g., home electricity, water)	☐	☐	☐	☐
Research or data analysis related to environmental, social, infrastructural, or community resilience	☐	☐	☐	☐
Historic preservation	☐	☐	☐	☐
Artistic preservation or art-related community activities	☐	☐	☐	☐

5. Please mark your interest in the following, so we can reach out to you with relevant opportunities. Responses are non-binding and will be used to inform the planning process; you may opt in or out at any time. *

	Very interested	Potentially interested	Not interested/Don't have the capacity to support
Receive information about the climate adaptation & resilience planning process	☐	☐	☐
Share information about the Climate Change Adaptation & Resilience Plan with your network.	☐	☐	☐
Share links/information about surveys and upcoming events with your network.	☐	☐	☐
Provide technical feedback on specific aspects of the plan.	☐	☐	☐
Provide input through county-hosted virtual events and workshops.	☐	☐	☐
Provide input through county-hosted in-person events and workshops.	☐	☐	☐

Provide input on drafts of the plan.	☐	☐	☐
Partner on events/projects (i.e., tabling at events, handing out flyers, or directly co-hosting events).	☐	☐	☐

6. Do you have any upcoming events where information about the Climate Change Adaptation & Resilience Plan process could be shared? *

- ☐ Yes, please provide information that we can hand out at the event
- ☐ Yes, we are open to inviting the adaptation and resilience planning team to table at the event
- ☐ No
- ☐ Not sure

7. Please describe the event and provide the scheduled date and time, if available.

Enter your answer

8. Organizations are invited to submit a letter of support for the Climate Change Adaptation & Resilience Plan. Would your organization be interested in contributing a letter of support? If so, the planning team will follow up with a letter template. *

- ☐ Yes, we would be interested in contributing a letter
- ☐ Not sure, please follow up with more information
- ☐ Not at this time

If you are interested in staying in touch about the Climate Change Adaptation & Resilience Plan, who at your organization is best to contact? Please provide:

9. Name and title

Enter your answer

...

10. Email

Enter your answer

11. Phone number (if preferred)

Enter your answer

Thank you for taking the time to fill out this survey. If you marked you are interested in getting involved with the Climate Change Adaptation & Resilience Plan, we will reach out soon.

If you are interested in providing feedback for our Resilience & Adaptation Vision, we appreciate your input through the survey

here: https://forms.office.com/Pages/ResponsePage.aspx?id=8YPyw7HV9kWvsGjwYo29sMiilCgvU_JCjZcbA5dHwaBURTYxQjM2Q1c3VDUyUFk2VzVDUjZXTVNZWl4u

 Add new question

List of Organizations

The following organizations were invited to participate in the Partner Organization Survey by email.

Organization
Putnam Service Dogs Inc
Pegasus Therapeutic Riding Inc
Saw Mill River Kennel Club
Putnam Humane Society
SNARR Northeast Animal Rescue
Putnam Felines Inc.
Haldane Arts Alliance
Arts on the Lake
Garrison Art Center
Magazzino Italian Art
Hudson Valley Interarts
Town of Southeast Cultural Arts Coalition
Tomkins Corner Cultural Center

Cold Spring Fire Co No 1
Philipstown Volunteer Ambulance Corps Inc
Patterson Fire Department No 1
Putnam Lake Fire Department
Putnam Valley Volunteer Fire Department
Putnam Valley Volunteer Ambulance Corp Inc
Brewster Fire Department
Brewster Cares Inc
United Way of Westchester and Putnam County
Carmel Volunteer Ambulance Corp
Continental Village Fire Department
Garrison Volunteer Fire Company, Inc
Kent Volunteer Fire Department
Lake Carmel Fire Department
Carmel Fire Department
Mahopac Volunteer Fire Department
Mahopac Falls Volunteer Fire Department
North Highlands Engine Company #1
CoveCare Center
Red Cross
St. Christopher's Inn
Prevention Council of Putnam
Walter Hoving Home
Putnam Highlands Audubon Society
Protect the Highlands
Kent Conservation Foundation
Hudson Valley Trust Inc
Putnam County Land Trust
Constitution Marsh Audubon Sanctuary
Hudson Highlands Land Trust
Rotary Club of Patterson
Rotary of Southeast
Stonecrop Gardens Inc
East of Hudson Watershed Corporation
Lake Oscawana Civic Association Inc
Cornell Cooperative Extension Putnam County
Little Stony Point Citizens Association
Philipstown Garden Club
Putnam Community Action partnership
Putnam Valley Community Food Pantry Ltd

Brewster Food Pantry
Second Chance Foods
Glynwood Center for Regional Food and Farming
Cold Spring Farmers Market
Philipstown Behavioral Health Hub
Orentreich Foundation for the Advancement of Science
The Putnam Valley Historical Society
Landmarks preservation society of Southeast
Putnam History Museum
Southeast Museum
Boscobel House and Gardens
Julia L Butterfield Memorial Library
Patterson Library
Putnam Valley Free Library
Reed Memorial Library
Brewster Public Library
Mahopac Public Library
Kent Public Library
Friends of Kent Library
Desmond-Fish Public Library
Putnam Valley Boosters
Holmes Camp and Retreat Center
Camp Herrlich
Chuang Yen Monastery
Reform Temple of Putnam Valley
Grace Life Community Church
Gilead Presbyterian Church
First Presbyterian Church of Philipstown
Patterson Community Church
St. Luke's Lutheran Church
Franciscan Friars of the Atonement
Franciscan Sisters of the Atonement
Sustainable Putnam County
Garrison Institute
Knights of Columbus (Our Lady of the Lakes - Council No. 631)
German American Club of Peekskill
Hamlet of Carmel Civic Association
Hastings Center for Bioethics
Longview School

Putnam Area Arts Council
Child Care Council of Dutchess and Putnam Inc.
CAREERS Support Solutions
ARC of Putnam/Mid-Hudson
Putnam Independent Living Services
Putnam/Northern Westchester Women's Resource Center
Putnam/Northern Westchester Boards of Cooperative Educational Services (BOCES)
Drew Thrift Shop
Green Chimneys Brewster Campus (Main office)
St. John the Evangelist Catholic Church
Table of Grace Community Food Kitchen at First United Methodist Church
CasaServir
People USA Putnam Rose House
Open Door Family Medical Center
Affiliated Home Care of Putnam, Inc.
Putnam County Housing Corporation
Hudson Valley Regional Community Health Centers
Putnam Hospital Center
Hudson Valley Cerebral Palsy Association
Mental Health Association in Putnam County, Inc.
NAMI (National Alliance on Mental Illness) Putnam Chapter
Carmel Recreation & Parks Department
Kent Recreation & Parks
Philipstown Recreation Department
Putnam Valley Parks & Recreation Department
Town of Patterson Recreation & Parks
Town of Southeast Parks & Recreation
Girl Scouts Heart of the Hudson
Central Hudson
NYSEG
Child Advocacy Center of Putnam County
Nelsonville Village Historian
Philipstown Town Historian
Carmel Town Historian
Kent Town Historian
Patterson Town Historian
Putnam Valley Town Historian
Southeast Town Historian
St. Mary's Episcopal Church
Friends of the Great Swamp

Partnership Survey on County CCARP Website

The partnership survey was also advertised on the Putnam County CCARP Website.



Outreach

Partner organizations were contacted throughout the development of the CCARP to share outreach materials and event information. Examples of outreach strategies/materials are included below:

- March 12, 2026: Emailed an outreach flyer to three partner organizations and asked them to share at upcoming events based on survey responses to question 7.
- March 30, 2026: Emailed an outreach flyer to two partner organizations and asked them to share at upcoming events based on survey responses to question 7.

Putnam County is developing a **CLIMATE ADAPTATION AND RESILIENCE PLAN (CCARP)**

Putnam County is partnering with the Hudson Valley Regional Council (HVRC) to create a CCARP that assesses risks from a changing climate and identifies **targeted adaptation strategies** to prepare for these risks.

Projections suggest that the County could see **higher temperatures, more intense & frequent precipitation, and rising sea levels** in the coming decades. Planning for these possibilities can help Putnam County remain safe and resilient under a range of future conditions.

THE PUTNAM COUNTY CCARP

- Analyzes Putnam County's current plans and policies related to emergency preparedness, operations, management of County assets, etc.
- Reviews temperature, precipitation, and sea level projections.
- Identifies risks to physical infrastructure, people, local economies, and environmental resources.
- Provides recommendations to improve county-wide resilience and adaptive capacity.

The plan will be created through stakeholder input, public feedback, and research.

Timeline: The planning process started in September 2025 and is expected to be completed in Summer 2026.



Putnam County, NY | Image from NYG&B

CCARP AND CLIMATE SMART COMMUNITIES

Climate Smart Communities (CSC) is a New York State certification program to support communities to mitigate and adapt to a changing climate. Putnam County can submit the completed CCARP for credit through the CSC program. Doing so will increase Putnam County's competitiveness for grant funding and build on its existing leadership as a CSC Bronze Certified community.

GET INVOLVED & LEARN MORE

Visit the CCARP website for additional information about the CCARP project and current engagement opportunities:

<https://putnamcountyny.gov/ccarp>

For questions, contact:

sditommaso@hudsonvalleyrc.org



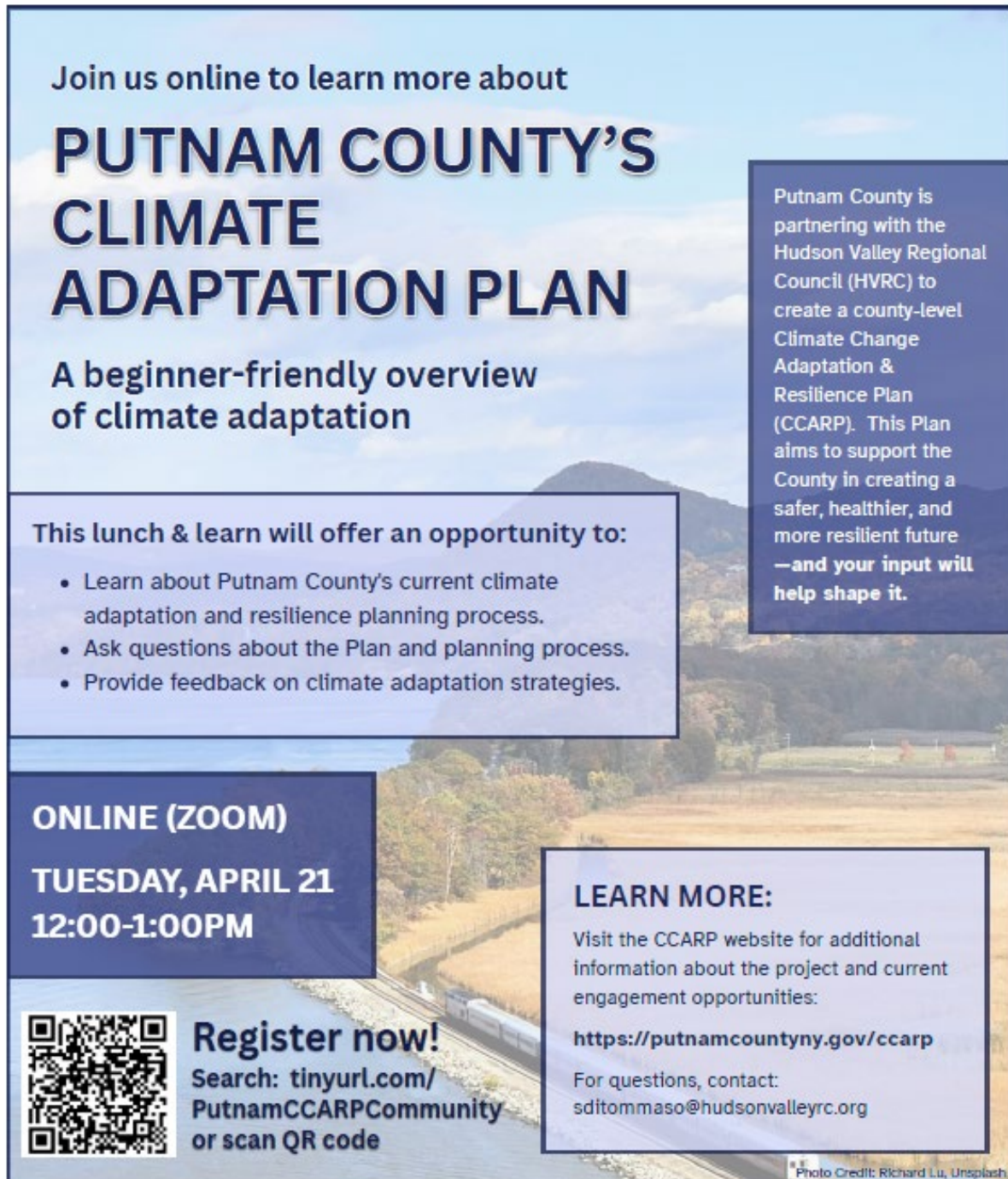
Department of
Environmental
Conservation



Climate Smart
Communities

The CCARP is fully funded by the New York State Department of Environmental Conservation as part of the Climate Smart Communities Coordinator Services Program.

- April 6, 2026: Email outreach to 14 organizations to invite them to either attend the CCARP Lunch & Learn on April 21st, share information about the event with their networks, or both, depending on their survey responses to Question 5.



Join us online to learn more about

PUTNAM COUNTY'S CLIMATE ADAPTATION PLAN

A beginner-friendly overview of climate adaptation

Putnam County is partnering with the Hudson Valley Regional Council (HVRC) to create a county-level Climate Change Adaptation & Resilience Plan (CCARP). This Plan aims to support the County in creating a safer, healthier, and more resilient future —and your input will help shape it.

This lunch & learn will offer an opportunity to:

- Learn about Putnam County's current climate adaptation and resilience planning process.
- Ask questions about the Plan and planning process.
- Provide feedback on climate adaptation strategies.

ONLINE (ZOOM)
TUESDAY, APRIL 21
12:00-1:00PM

Register now!
Search: tinyurl.com/PutnamCCARPCommunity
or scan QR code

LEARN MORE:
Visit the CCARP website for additional information about the project and current engagement opportunities:
<https://putnamcountyny.gov/ccarp>
For questions, contact:
sditommaso@hudsonvalleyrc.org

Photo Credit: Richard Lu, Unsplash



Department of
Environmental
Conservation



Climate Smart
Communities

The CCARP is fully funded by the New York State Department of Environmental Conservation as part of the Climate Smart Communities Coordinator Services Program.

Appendix D: CCARP Working Group

CCARP Working Group Members

Name	Affiliation	Title
Ilona Campo	Putnam County Planning Dept.	Planner / Climate Smart Coordinator
Barbara Barosa	Putnam County Planning Dept.	Commissioner / CSTF Member
Matt Covucci	Putnam County Planning Dept.	Deputy Commissioner
Sofie diTommaso	Hudson Valley Regional Council (HVRC)	Resilience & Adaptation Coordinator
Mary Lambert	Hudson Valley Regional Council (HVRC)	Climate Action Planning Manager
Ralph Falloon	Putnam County Bureau of Emergency Services (BES)	Deputy Commissioner
Joe Bellucci	Putnam County Dept. of Public Works (DPW)	Deputy Commissioner / CSTF Member
Gary Redlon	Putnam County Dept. of Public Works (DPW)	Coordinator of Engineering Projects
Shanna Siegel	Putnam County Health Dept.	Supervising Public Health Educator / Public Information Officer
Marlene Barrett	Putnam County Office of Senior Resources (OSR)	Director
Nancy Montgomery	Putnam County Legislature	Legislator – District 1 (Philipstown, Cold Spring, Garrison, Continental Village, Nelsonville, North Highlands, Putnam Valley)
Joe Montuori	Sustainable Putnam	Executive Director / CSTF Member

CCARP Working Group Kick-Off at Scenario Planning Workshop Part 1 (Feb 9, 2026)

The CCARP Working Group was assembled to support the adaptation plan component of the CCARP. The first official meeting of the CCARP working group occurred on February 9, 2026 as part of Putnam County's Scenario Planning Workshop Part 1 on February 9, 2026.

The slide below was used to introduce the CCARP Working Group during the Workshop on February 9th. Additional documentation about the meeting can be found in [Appendix E](#).

CCARP Working Group Intro

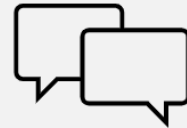
What is the CCARP Working Group?



Provide input on the Climate Adaptation & Resilience Plan



Share expertise from respective departments & organizations



Support engagement & getting the word out



Hudson Valley Regional Council



Department of
Environmental
Conservation



Climate Smart
Communities

CCARP Working Group & Scenario Planning (March 9, 2026)

Members of the CCARP Working group were invited to join the second Scenario Planning Part 2 Workshop on March 9, 2026, along with additional participants. Members of the CCARP Working

Group in attendance include the following:

- Barbara Barosa, Commissioner, Putnam Planning Dept.
- Marlene Barrett, Director, Putnam Office of Senior Resources
- Ilona Campo, Planning/CSC Coordinator, Putnam Planning Dept.
- Matt Covucci, Deputy Commissioner, Putnam Planning Dept.
- Sofie diTommaso, (Former) Resilience & Adaptation Coordinator, HVRC
- Nancy Montgomery, Legislator—District 1, Putnam County Legislature
- Gary C. Redlon II, Coordinator of Engineering Projects, Putnam Dept. Of Public Works

A full list of the Scenario Planning Part 2 Workshop Participants can be found in [Appendix E](#).

Indicators & Metrics Internal Meeting

Members of the CCARP Working Group were invited to participate in a meeting to discuss the Indicators and Metrics Section of the CCARP on April 6, 2026 from 2:00-3:00 pm. Members in attendance included: Barbara Barosa, Ilona Campo, Matt Covucci, Victoria DiLonardo, Sofie diTommaso, Spencer Greenfield, Joe Montuori, Nancy Montgomery, Gary Redlon.

- Additional information about this meeting can be found in [Appendix A](#) (See Meeting 12).

CCARP Implementation Internal Meeting

Members of the CCARP Working Group were invited to participate in a meeting to discuss the Implementation and Monitoring sections of the CCARP on May 18, 2026 from 10:30-11:30 am. Working Group members in attendance included: Ilona Campo, Matthew Covucci, Sofie diTommaso, and Gary Redlon II.

- Additional information about this meeting, and the full attendance list, can be found in [Appendix A](#) (See Meeting 15).

Additional Outreach & Engagement

April 6, 2026: The CCARP Working Group was encouraged to spread the word about Putnam County's CCARP Lunch & Learn Event by email (See [Appendix I](#) for additional information about the Lunch & Learn).

Appendix E: Exploratory Scenario Planning Workshop Documentation

Scenario Planning Workshop Part 1

Logistics:

- **Date + Time:** February 9, 2026, 2:00-3:00 pm (in-person)
- **Location:** In-person: Planning Dept. Conference Room - 841 Fair St., Carmel, NY 10512

Event Details:

The Scenario Planning Workshop Part 1 opened with a short presentation by HVRC. The presentation included:

- A project overview and update on the CCARP process;
- An introduction to the CCARP working group and purpose;
- An overview of exploratory scenario planning;
- A summary of the climate hazards facing Putnam County; and
- An introduction to the workshop activity.

Following the presentations, participants broke into two small group discussions, each with an HVRC facilitator and a notetaker. Each group discussed two potential future scenarios for Putnam County. Scenarios included various combinations of high/low climate impacts and high/low County capacity—referring to staff time, funding availability, community buy-in, competing priorities, and volunteer support.

A copy of the worksheet/discussion prompts used to guide the conversations can be found below under “Sample Worksheet Packet.” The workshop concluded with a short debrief and overview of next steps. A link to the County’s Resilience & Adaptation Vision Statement Survey was also shared. At the end of the workshop, participants were given a copy of the County’s Draft Climate Smart Resilience Planning Summary Report as optional pre-reading before the next scenario planning workshop.

Following the workshop, comments/feedback were synthesized to write four, narrative scenarios. The narratives generated can be found below under “Scenario Narratives.” The narrative scenarios will be used in the subsequent scenario planning workshop.

Workshop Invitation

Dear CCARP Working Group Members,

As part of Putnam County's commitment as a Climate Smart Community (CSC), please join us for **Part 1 of the Scenario Planning Workshop series** on **Monday, February 9, from 2:00-3:00 pm**.

The purpose of this workshop is to generate a set of scenarios through collaborative discussions. The outputs will be used in a subsequent workshop (tentatively scheduled for March 9th) to evaluate potential adaptation strategies for inclusion in Putnam County's CCARP.

Scenario planning is a tool that will be used to evaluate potential adaptation strategies for inclusion in Putnam County's Climate Change Adaptation and Resilience Plan (CCARP). **The scenario planning process involves crafting narrative-based "scenarios" that outline possible futures for the County.** These scenarios will be used to generate and assess potential adaptation strategies in order to evaluate their effectiveness under a variety of conditions.

· **RSVP: Please accept or decline this calendar invite.**

· Date: Monday, February 9, 2026

· Time: 2:00-3:00pm

· Location: Planning Dept. Conference Room, 841 Fair St., Carmel, NY 10512

Looking forward,



Iiona Campo

Planner / Climate Smart Coordinator
Department of Planning, Development, and Public Transportation

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PUTNAM COUNTY GOVERNMENT NEW YORK

Think green before printing your screen!

Workshop Agenda Slide



The slide features a dark blue header with the title "Workshop Agenda" in white. Below the header, a blue box contains the word "Agenda:" in white. Underneath, a bulleted list of three items is shown. At the bottom, there are four logos: the Hudson Valley Regional Council seal, the New York State Office of General Services logo, the New York State Department of Environmental Conservation logo, and the New York State Climate Smart Communities logo.

Workshop Agenda

Agenda:

- Overview of Scenario Planning and Purpose
- Scenario Planning Exercise and Small Group Discussions
- Debrief and Next Steps

 Hudson Valley Regional Council

 NEW YORK
Office of
General Services

 Department of
Environmental
Conservation

 NEW YORK
STATE
Climate Smart
Communities

Attendance List + Sign-In Sheet

- Barbara Barosa, Commissioner, Putnam Planning Dept.
- Marlene Barrett, Director, Putnam Office of Senior Resources
- Joe Bellucci, Deputy Commissioner, Putnam Dept. of Public Works
- Ilona Campo, Planning/CSC Coordinator, Putnam Planning Dept.
- Matt Covucci, Deputy Commissioner, Putnam Planning Dept.
- Victoria DiLonardo, Health Educator, Putnam Dept. of Health
- Sofie diTommaso, Resilience & Adaptation Coordinator, HVRC
- Spencer Greenfield, Resilience & Adaptation Intern, HVRC
- Mary Lambert, Climate Action Planning Manager, HVRC
- Joseph Montuori, Executive Director, Sustainable Putnam
- Eleanor Peck, Deputy Director, HVRC
- Gary C. Redlon II, Coordinator of Engineering Projects, Putnam Dept. Of Public Works

Sign-in Sheet

Exploratory Scenario Planning Workshop Part 1—February 9, 2026

Name	Department	Title
Barbara Bansa	Putnam Planning Dept.	Commissioner
Matt Covucci	Putnam Planning Dept.	Deputy Commissioner
Joe Bellucci	Putnam DPW	Deputy Commissioner
Ilona Campo	Putnam Planning Dept.	CSC / Planner
Gary C. Becken II	Putnam DPW	Coordinator of Eng. & Projects
Eleanor Beck	HVRC	Deputy Director
Sofie di Tommaso	HVRC	Resilience + Adaptation
Victoria DiLeonardo	Health	Health Educator
Joseph Mantuoni	Sustainable Putnam	Exec Director
Marlene Barrett	Office for Senior Resilience	Director
Spencer Greenfield	HVRC	Resilience + Adaptation Intern
Mary Lambert	HVRC	Climate Action Planning Manager

Sample Worksheet Packet

Scenario #1

Scenario Title: _____

Overview: This worksheet packet is designed to facilitate the creation of exploratory future scenarios for Putnam County's Climate Change Adaptation and Resiliency Planning process. It includes (1) background information on your assigned scenario, (2) a list of prompts and questions to consider, (3) a copy of the exploratory scenario planning matrix, (4) a handout on climate projections, and (5) places to take notes.

Instructions: Spend 15-20 minutes discussing your assigned scenario with your group. During the discussion, you are encouraged to take notes and jot down comments. The more feedback provided, the more robust the scenario planning process will be. You are also encouraged to give your scenario a creative title.

This worksheet is designed to provide inspiration for your conversation. You are not required to fill out every section of this worksheet, and your conversation does not need to be limited to just the questions listed below.

- As you craft your scenarios, consider this key question: How do future conditions related to the **degree of expected climate impacts** and **Putnam County capacity** influence climate resilience and adaptation in Putnam County, NY?

Scenario 1 Background: It's 2035 in Putnam County. In this version of the future, the degree of expected climate impacts is high. This means that expected sea level rise, changes to precipitation patterns, and increases in temperatures have followed high climate projections. At the same time Putnam County capacity is low. This means that funding availability, staff time, and volunteer support is low. There may also be a lot of competing priorities within Putnam County or a lack of buy-in from the community.

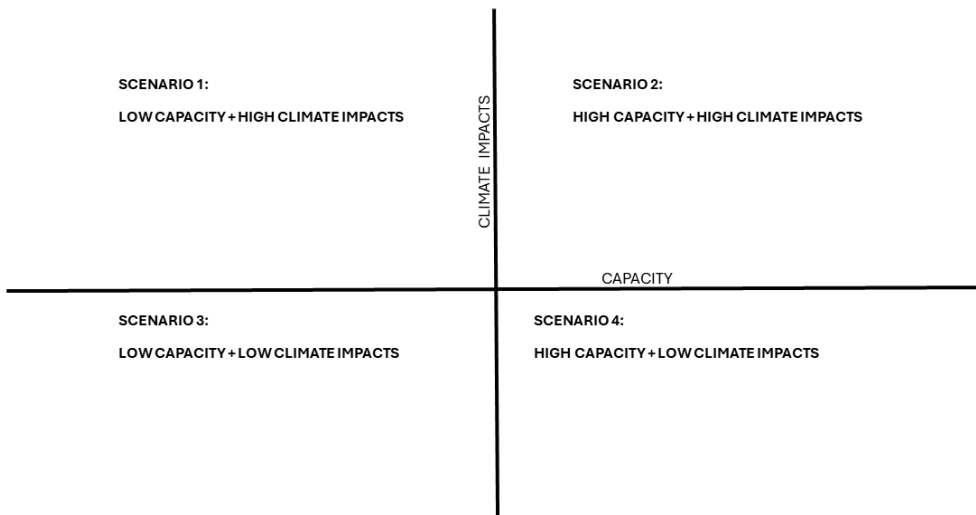
Questions to Consider

Prompt	Questions	Notes
A: You are determining your office's priorities...	What are the main conversations happening in the office? What challenges are you facing? Which are the highest priority challenges? What resources do you have? What do you need? Who are you collaborating with? What is your #1 priority?	
B: Assess County conditions in your future scenario & describe your day-to-day observations.	How does this combination of climate impacts + capacity affect the County? What do you notice about the infrastructure, environmental resources, or social conditions in Putnam County?	
C: You are hearing from residents, businesses, board members, & organizations.	What are they concerned/excited about? Who is benefiting from current conditions? Who is most impacted?	

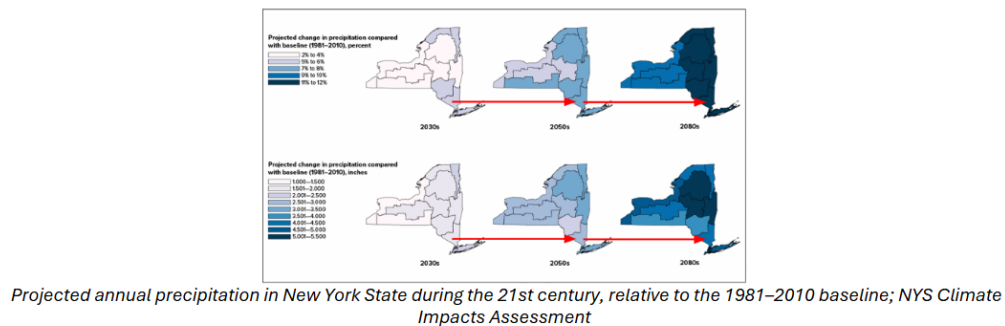
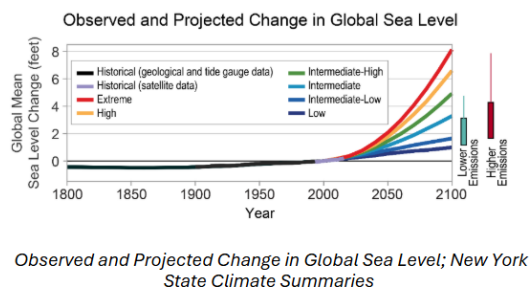
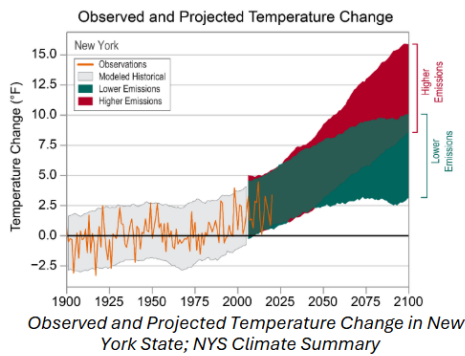
Team Name: _____

Additional Notes:

Scenario Planning Matrix



Climate Projections: Increasing Temperatures, Rising Sea Levels, Changing Precipitation



Workshop Photos



Scenario Narratives

Scenario 1: Doing more with less... (High Climate Impacts, Low Capacity)

It's 2035 in Putnam County... Daily life has been heavily impacted by climate change. Rising sea levels, increasing temperatures, and changing precipitation patterns have all followed the highest projections forecasted by climate models. Sea level rise has caused substantial flooding along the Hudson River; several severe storms have passed through the County, with increasing force and intensity; summer temperatures have become warmer; and overall temperatures have risen. At the same time Putnam County capacity is low. Funding opportunities have dwindled locally and in the state. Project lists of necessary infrastructure upgrades, ecosystem restoration projects, and social programs are growing, but it is not clear how they will be implemented. Staff members are juggling many competing priorities and needs. Time available to allocate to individual projects is limited.

With limited resources and many competing priorities, the County is on "triage mode." Efforts are made to prioritize projects based on expected impacts: the more damage expected, the higher the priority. County staff are skilled at navigating lower resourced situations but must manage shifting schedules and priorities. Fortunately, many actions have already been put in place to help the County navigate this moment. The County is also collaborating with external organizations and building relationships to try to stretch scarce resources further.

While County staff and organizations are dedicated to finding creative solutions, climate impacts are still impacting residents, businesses, and local organizations. Flooding has led to mold exposure in homes. Power outages are becoming more frequent. Heavy rains and sea level rise have saturated soils, causing some septic systems to fail and residents to face costly repairs. The County is increasingly worried about the condition of its dams and their ability to withstand precipitation levels. Following a 2032 fire in Fahnestock Park, water infrastructure has also become a topic of concern. The fire started small. However, because water needed to be brought in, hundreds of acres burned. Residents were advised to evacuate, and many were confused about where to go and which roads to take. People without access to personal transportation relied on neighbors and friends to help with evacuation.

High heat days have caused increased rates of heat exposure and heat related illnesses. Putnam County's single hospital is facing high wait times, and some residents are starting to turn to health facilities in surrounding communities. Costly home repairs, physical stressors, and resource scarcity are taking a toll on mental health. Nonetheless, Putnam County is faring better than other places in the country. Climate migration is driving residents from the south to Putnam's cooler climate, causing a population increase and a shifting social/political environment.

The effects of these changes are not evenly distributed. For example, some residents in more isolated areas do not have access to the internet to receive communications and warnings on the County website/social media. Seniors express concern about power outages, and some, with limited mobility, are concerned about evacuation plans. Costs from home repairs and health impacts reduce the amount County residents can spend on other topics, particularly impacting low-income communities. The County is grappling with how to reach every community, prioritize necessary projects, and stay within limited budgets.

Scenario 2: Full Steam Ahead! (High Climate Impacts, High Capacity)

It's 2035 in Putnam County... Daily life has been heavily impacted by climate change. Rising sea levels, increasing temperatures, and changing precipitation patterns have all followed the highest projections forecasted by climate models. Sea level rise has caused substantial flooding along the Hudson River. Several severe storms have passed through the County, with increasing force and intensity. Summer temperatures have become warmer and overall temperatures have risen substantially. At the same time, Putnam County has high capacity to work on climate resilience. It has secured millions of dollars in grant funding to upgrade infrastructure, invest in social programs and services, and enhance or restore parks and ecosystems. Community residents, organizations, and local businesses are excited by the opportunities they see in their community and frequently reach out to volunteer their time and support.

With abundant resources and serious risks, infrastructure upgrades have become a top priority for the County. Due to increasing precipitation, culverts are frequently overwhelmed, and increased attention is being directed to dams at risk of overtopping or failing. County staff are particularly concerned about flooding potential downstream of dams and must navigate working with both County and non-County dam owners. Following a 2032 fire in Fahnestock Park, water infrastructure has also become a topic of concern. The initial fire started small. However, because water needed to be brought in, hundreds of acres ended up burning. Residents nearby were advised to evacuate, and many were confused about where to go and which roads to take. People without access to personal transportation relied on neighbors and friends to help with evacuation.

With so many assets at risk and so many resources available, prioritization has become a challenge. County staff currently use grant funding schedules and timelines to help organize and prioritize projects. If there are assets particularly at risk or directly impacted by a climate event, they are also prioritized. While the County is facing significant roadblocks, it also has

existing strengths. For example, the County's storm shelter systems, coordinated with partner organizations, has been tremendously valuable in navigating the new frequency of events.

Amongst Putnam County residents, the frequency of storms, high heat days, and other climate events has become a common talking point, especially amongst vulnerable populations. For example, the majority of seniors live at home in the County, and are concerned about disruptions to services, power, and access to evacuation routes. Frequent power outages have made providing alerts over telecommunications or online more difficult. The County has been spending some of its abundant resources to try to understand where vulnerable populations live, and how to provide accessible resources. Additionally, some industries have been particularly impacted. Local farmers face challenges from changing weather patterns, and tourism has become more sporadic as tourists try to plan around heat, storms, and changing winter conditions. Despite these challenges, residents and local businesses are optimistic about the future. They are invested in the County implementing projects to build resilience to climate hazards and are eager to help where they can. The County is working to determine the most impactful way to use its ample resources to build resilience.

Scenario 3: Out of sight...Out of mind... (Low Climate Impacts, Low Capacity)

It's 2035 in Putnam County... The County is adjusting to a changing climate with slight increases in temperatures, sea level rise, and precipitation. Storms are continuing to impact Putnam County, with noticeable increases in frequency and intensity, but the climate has not changed drastically. While climate impacts are currently modest, they are expected to increase in the future. At the same time Putnam County capacity is low. Funding opportunities have dwindled locally and in the state. Project lists of necessary infrastructure upgrades, ecosystem restoration projects, and social programs are growing, but it is not clear how they will be implemented. Staff members are juggling many competing priorities and needs. Time available to allocate to individual projects is limited. Residents, organizations, and local businesses are noticing these impacts and have raised concerns.

With lower climate impacts and resources, the County is in "planning" mode, and is focused on understanding its vulnerabilities, updating plans and policies, and identifying strategies that could be implemented once resources increase. Since capacity is low, external partners and volunteers have become particularly important. For example, the County is actively working to further its relationships with the United Way, Red Cross, National Guard, FEMA, and schools. It is also considering leveraging County assets—like senior centers—for emergency preparedness.

Because climate impacts are lower, keeping climate top of mind can often be challenging. Efforts often involve keeping existing services running—like cooling centers and public transportation. Given limited resources, recruiting volunteers has also become a priority. However, because climate impacts are not as imminent as other needs, interest in volunteering for resiliency programs is low.

In general, attitudes toward climate resilience are mixed. Some communities are already experiencing the impacts of climate change, especially in lake communities and areas near the Hudson River. Some vulnerable populations, including seniors, have also expressed concern about the climate impacts already being felt. Yet, for most of the County, climate change is not a top concern. Many are invested in other topics like affordability, food security, public health, and providing resources for seniors/youth. Climate change is expected to worsen in the future. As such, Putnam County must strike a balance between spending its scarce resources on proactive preparation and meeting immediate needs.

Scenario 4: Lots of resources...but where to start? (Low Climate Impacts, High Capacity)

It's 2035 in Putnam County... The County is adjusting to a changing climate with slight increases in temperatures, sea level rise, and precipitation. Storms are continuing to impact Putnam County, with noticeable increases in frequency and intensity, but the climate has not changed drastically. While climate impacts are currently modest, they are expected to increase in the future. At the same time, Putnam County has high capacity to work on climate resilience and related topics. It has secured millions of dollars in grant funding to upgrade infrastructure, invest in social programs and services, and enhance or restore parks and ecosystems. Community residents, organizations, and local businesses are excited by the opportunities they see in their community and frequently reach out to volunteer for their time and support.

Within Putnam County, this windfall of funding provides opportunities and challenges. Since climate impacts have followed a more gradual progression, the County can implement proactive rather than reactive strategies. Staff discuss leveraging the opportunity to invest in major infrastructural upgrades and transportation projects; participate in larger-scale public health projects; and/or leverage staff time to expand outreach and education.

The County also has the capacity to work on projects with co-benefits that could build future resilience while advancing social, health, economic, infrastructure, and clean energy goals. While this presents exciting opportunities, prioritization becomes a major challenge for the County as it navigates the best use for the abundant funding. Since climate impacts are lower,

keeping climate resilience top of mind can also be challenging, even though climate impacts are projected to increase, and many projects are still needed to build short and long-term resilience.

Within the community, attitudes toward climate resilience are mixed. Vulnerable populations are facing disproportionate impacts from the climate effects that are already occurring. Additionally, lake communities are affected by rising temperatures and flooding from precipitation. Areas along the Hudson River are already facing impacts from rising sea levels. Some industries have also started to experience challenges from changing temperatures. For example, ski slopes are impacted by rising temperatures, consequently affecting winter tourism, and local farms are contending with changing weather conditions that impact soil and crops.

Yet, for most of the County, climate change is not a top concern, and there may even be some pushback to prioritizing resiliency projects over other priorities. Emergency preparedness, safety, food security, transit, walkable communities, and other priorities are frequently discussed amongst residents and stakeholders. In this context, Putnam County must balance the competing objectives of addressing community concerns, spending funding in the most effective way, building long-term resilience, and juggling short-term needs.

Scenario Planning Workshop Part 2

Logistics:

- **Date/Time:** March 9, 2026, 2:00-4:00 pm
- **Location:** In-person, Donald B Smith Campus, 110 Old Route 6, Carmel, Bureau of Emergency Services Classroom #1

Event Details

The Scenario Planning Workshop Part 2 opened with a short presentation by HVRC. The presentation included:

- A project overview and update on the CCARP process;
- An overview of adaptation, resilience, and mitigation
- A summary of the climate trends facing Putnam County;
- An introduction to scenario planning and scenario narratives from Part 1; and
- An introduction to the workshop activities.

Following the presentations, participants broke into four small group discussions, each with an HVRC facilitator and a notetaker. Each group participated in two guided discussions using one of the scenarios created following the Scenario Planning Workshop Part 1.

- During the first discussion, participants used the scenario narratives generated to prioritize a list of adaptation strategies that were already identified throughout the CCARP process.
- During the second conversation, participants used their assigned scenario to brainstorm additional adaptation strategies for inclusion in the CCARP.

To conclude, participants regrouped for a full-group Vision Statement exercised and were asked to provide input on the Resilience & Adaptation Vision Statement for Putnam County. To capture feedback, participants completed two, word cloud exercises, included below. A QR code to the Vision Statement survey was also shared.

Workshop Invitation

Good Afternoon,

As part of Putnam County's commitment as a Climate Smart Community (CSC), please join us for **Part 2 of the Scenario Planning Workshop series** on Monday, March 9th from 2:00-4:00 pm.

Scenario planning is a tool that will be used to evaluate potential adaptation strategies as they relate to extreme weather events for inclusion in Putnam County's Climate Change Adaptation and Resilience Plan (CCARP). The scenario planning process involves crafting narrative-based "scenarios" that outline possible futures for the County. **The purpose of this workshop will be to generate and assess potential adaptation strategies in order to evaluate their effectiveness under a variety of conditions.**

Draft Agenda:

- Introductory presentation
- Two facilitated exercises:
 - Activity 1: Prioritize existing adaptation strategies
 - Activity 2: Generate additional adaptation strategies
- Visioning exercise
- Debrief/next steps

• **RSVP: Please accept or decline this calendar invite.**

• Date: Monday, March 9th, 2026

• Time: 2:00-4:00pm

• Location: BES Classroom #1

Thank you and looking forward,



Ilona Campo
Planner / Climate Smart Coordinator
Department of Planning, Development, and Public Transportation
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PUTNAM COUNTY GOVERNMENT NEW YORK
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Workshop Agenda Slide

Workshop Agenda

Agenda:

- Intro to Adaptation & Resilience Planning in Putnam County
- Scenario Planning Exercises:
 - Activity 1: Prioritize Pre-Identified Strategies
 - Activity 2: Generate Adaptation Strategies
- Resilience & Adaptation Visioning Exercise
- Debrief and Next Steps



Hudson Valley Regional Council



Department of
Environmental
Conservation



Climate Smart
Communities

Attendance List + Sign-In Sheet

- Barbara Barosa, Commissioner, Putnam Planning Dept.
- Marlene Barrett, Director, Putnam Office of Senior Resources
- Ilona Campo, Planner/CSC Coordinator, Putnam Planning Dept.
- Matt Covucci, Deputy Commissioner, Putnam Planning Dept.
- Victoria DiLonardo, Health Educator, Putnam Dept. of Health
- Sofie diTommaso, Resilience & Adaptation Coordinator, HVRC
- Ruby Koch-Fienberg, Agriculture & Food Systems Coordinator, Cornell Cooperative Extension
- Nancy Montgomery, Legislator—District 1, Putnam County Legislature
- Eleanor Peck, Deputy Director, HVRC
- Gary C. Redlon II, Coordinator of Engineering Projects, Putnam Dept. Of Public Works
- Liz Sun, Clean Energy & Climate Smart Communities Coordinator, HVRC
- Neal Tomman, Project Manager, Putnam County Dept. of Public Works
- Brandon Toye, Climate Smart & Clean Energy Communities Coordinator, HVRC
- Savannah Usher, Solid Waste Program Manager, Putnam County Dept. of Health

Sign-In Sheet
Exploratory Scenario Planning Workshop Part 2—March 9, 2026

Name	Department	Title
Ilana Campo	Planning Dept.	Planner/CSC
Ruby Kach-Konzak	CCE Putnam	Ag + Food Systems
Vicki DiLanardo	Health	Health Educator
Sofie di Tommaso	HVRC	Resilience + Adaptation

Sign-In Sheet
Exploratory Scenario Planning Workshop Part 2—March 9, 2026

Name	Department	Title
Madone Barrett	OSR	Director
Rebecca Peck	HVRC	Deputy Director
Nancy Montgomery	PC Legislature	Legislator

Sign-In Sheet
Exploratory Scenario Planning Workshop Part 2—March 9, 2026

Name	Department	Title
Savannah Usher	Health	Solid Waste Program Manager
Matt Coviucci	Planning	Deputy Commissioner
HAZLOMAN	DPW	Project Mgr
LIZ JUN	HVRC	CECC

Sign-In Sheet
Exploratory Scenario Planning Workshop Part 2—March 9, 2026

Name	Department	Title
Barbara Bussa	Planning	Commissioner
Gary C. Becken II	DPW	Coordinator of Eng.
Brian Talc	HVRC	Facilitator

Sample Worksheet Pack

Scenario Planning Workshop Activity 1

March 9, 2025

Scenario 1: Doing more with less... (High Climate Impacts, Low Capacity)

Group Names _____

Instructions: The tables in this packet list potential infrastructure, social, environmental, or cross-cutting strategies to further resilience and adaptive capacity in Putnam County. Each strategy includes a list of example actions that the County could implement in the subsequent column. These strategies and example actions were sourced from Putnam County's Evaluation of Policies for Climate Resilience or Hazard Mitigation Plan. Additional strategies were also generated based on meetings/conversations held throughout the CCARP process.

In groups of 2-3, review each strategy and the example actions. Indicate if the strategy should be a high, medium, or low priority for the County. In the notes column, add any comments, including considerations about how the strategy would function in a scenario with **high climate impacts** and **low capacity**. For instance, if a strategy would be beneficial for County resilience but has high costs, this could be beneficial to note.

If there are any example actions that you think the County should *not* consider, or that are already in place, please cross them out on your worksheet and add a note. If you would recommend modifying the strategy, please also include comments on the proposed changes.

Note that this activity will focus just on evaluating strategies that have already been identified. The next activity will provide space to propose new strategies for inclusion in the CCARP.

Infrastructure					
Strategy	Example Actions	Priority			Notes
General description	Cross out any actions/portions of actions that you recommend omitting or that are already in place in the County.	H	M	L	In this scenario, climate hazards are high and capacity is low . - Would this strategy be feasible/successful in this scenario? - What are the benefits? What are the challenges? - Should any strategies be modified?
I.1 Secure & Incentivize Backup Power at Critical Facilities	a. Create an incentives program to support fuel distributors/gas stations secure backup power for emergency situations.* b. Secure backup power at the Carmel Friendship Center. c. Work with all cooling centers to ensure backup power is available.				b. The Carmel Friendship Center currently does not have backup power.
I.2 Expand Evacuation Planning	a. Expand existing evacuation planning efforts by creating an Emergency Transportation Plan.* b. Map evacuation routes in relationship to flood risks. c. Plan evacuation strategies for vulnerable communities. d. Collaborate with neighboring counties to coordinate evacuation routes. e. Provide evacuation options for residents reliant on public transportation. f. Get pre-approval from the NY State bus system to use buses during emergencies. g. Maintain a current list of volunteer drivers to support evacuation/emergency transportation needs.				c. Example: Coordinate with schools, daycares, and senior centers to plan evacuation strategies for youth/seniors.

I.3 Build out Cooling Center Program	a. Coordinate with Putnam Lake to establish a cooling center. b. Ensure all cooling centers are registered with NY State Department of Health.				a. Putnam Lake is one of the highest heat exposed areas in the County, but it does not have a cooling center.
I.4 Expand Storm & Emergency Shelters	a. Create a location for people with pets and service animals to shelter during a disaster through preparations at the Tilly Foster Farm property.*				
I.5 Assess & Right-Size Stormwater Infrastructure	a. Continue assessing all culverts for potential flood risks. b. Seek funding opportunities to replace/right-size culverts.				
I.6 Assess + Mitigate Dam-Related Risks	a. Map potential flood impacts for all dams in the County, including dams owned by the County and outside entities. b. Establish regular channels of communication with non-County landowners about the status of dam maintenance & condition. c. Build on existing emergency preparedness to address potential response and recovery to dam failure events.				
I.7 Improve Septic Maintenance and Education	a. Provide outreach/education to community members about septic maintenance and remediating poor drainage.				a. Saturated soils from increasing precipitation/sea level rise can negatively impact septic drain fields, leading to pollution and site contamination.

I.8 Assess & Protect Building Stock	a. Start tracking repetitive loss properties* b. Work with local municipalities to identify and assess areas suitable for relocating or building housing outside of the floodplain.* c. Conduct a build-out analysis for Putnam County and compare results to projected climate hazards. d. Assess the feasibility or need for County-level land acquisition strategies for properties in vulnerable areas. e. Map public buildings and lands in relationship to flood risks to identify priority areas.				b. Strategy discontinued in Putnam County's Hazard Mitigation Plan
I.9 Assess waste management concerns	a. Map potential flooding on routes to waste disposal facilities.				a. While Putnam County does not own active waste disposal facilities or operate waste collection services, flooding on County roads could potentially disrupt waste pick-up routes.

* Strategies with an asterisk align with existing or discontinued goals in Putnam County's Hazard Mitigation Plan.

Social					
Strategy	Example Actions	Priority			Notes
General description	Cross out any actions/portions of actions that you recommend omitting or that are already in place in the County.	H	M	L	In this scenario, climate hazards are high + capacity is low . • Would this strategy be feasible/successful in this scenario? • What are the benefits? What are the challenges? • Should any strategies be modified?
S.1 Expand Outreach + Programs for Vulnerable Communities	a. Maintain a special needs registry to support disaster preparedness planning. b. Improve accessibility of outreach materials by offering all resilience-related outreach in multiple languages. c. Expand effective outreach efforts to vulnerable communities. d. Expand outreach to seniors and people with disabilities by establishing an "Are You Okay" program.				a. A special needs registry is "a list of county residents who may require additional assistance, transportation and/or sheltering in the event of a major emergency or disaster." (Westchester County). d. Are You Okay programs typically set up a regular way to check-in with vulnerable populations to ensure they are safe. Example programs are available in Dutchess County and Hastings-On-Hudson, NY .

* Strategies with an asterisk align with existing or discontinued goals in Putnam County's Hazard Mitigation Plan.

Environment					
Strategy	Example Actions	Priority			Notes
General description	Cross out any actions/portions of actions that you recommend omitting	H	M	L	In this scenario, climate hazards are high + capacity is low . • Would this strategy be feasible/successful in this scenario? • What are the benefits? What are the challenges? • Should any strategies be modified?
E.1 Reduce Poor Air Quality Exposure	a. Open clean air centers during low air quality days. b. Create an inventory of equipment available to the County to fight forest fires in order to identify potential gaps.				a. Clean air centers are similar to cooling centers. They are climate controlled and seek to minimize smoke exposure (NYS Dept of Health).
E.2 Increase Ecosystem Management + Data Collection for Climate Resilience	a. Create a strategy to address invasive species, prioritizing locations near the Hudson River or flood prone areas. b. Increase public-facing educational materials about nature-based solutions to flooding. c. Update the Comprehensive Park and Open Space Plan and/or the County-level Natural Resources Inventory. d. Work with State Parks to clear underbrush in order to proactively address wildfire risks.				c. This action could increase the availability of data/information about ecosystems in the County, consequently improving the ability to assess potential climate risks.
E.3 Enhance Agricultural Resilience	a. Collaborate with farmers and landowners on disaster preparedness/climate resilience strategies. b. Include climate resilience considerations in the anticipated update of the Putnam County Farmland Protection Plan.				

* Strategies with an asterisk align with existing or discontinued goals in Putnam County's Hazard Mitigation Plan.

Cross-Cutting Strategies						
Strategy	Example Actions	Priority			Notes	
General description	Cross out any actions/portions of actions that you recommend omitting or that are already in place in the County.	H	M	L	In this scenario, climate hazards are high + capacity is low . • Would this strategy be feasible/successful in this scenario? • What are the benefits? What are the challenges? • Should any strategies be modified?	
C.1 Increase Storm + Emergency Preparedness + Education	a. Expand proactive outreach about storm/emergency preparedness through website, social media, mailings, and/or newsletters. b. Install a high-water mark sign in riverfront communities. c. Implement an early flood warning system for locations along the Hudson River. d. Become a Storm Ready Community .				a. Potential outreach materials include: information on evacuation kits; FEMA's guidance for storm and wind damage prevention; ASPCA's disaster preparedness steps for domesticated animals; and FEMA's "Are You Ready Guide" . d. The StormReady community program is run by the National Weather Service. Registered communities must implement a series of steps that help prepare for storm impacts.	
C.2 Expand Data + Data Collection	a. Adopt the NY DEC sea level rise projections . b. Incorporate climate projections into County Planning, including emergency response plans + capital plans. c. Map county infrastructure, vulnerable populations, buildings, cultural resources, and natural resources in relationship to the County's top climate hazards. d. Compile local zoning maps along the Hudson River for a County-wide view of land uses near a high flood-risk area.					

C.3 Align Internal Processes + Plans	a. Establish a group to continue to review potential grant funding opportunities for hazard mitigation and/or resilience-related projects. b. Implement a procedure for sharing vulnerability and risk assessment projects with relevant stakeholders, including the Department of Planning and Transportation and Department of Public Works. c. Explore the feasibility and need for new plans relevant to resiliency planning, such as a Local Waterfront Revitalization Plan, Climate Action Plan, Floodplain Management Plan, Short- and Long-Term Recovery Plan.					
C.4 Increase Volunteer Capacity	a. Recruit additional volunteers to support in the event of an emergency. b. Collaborate with school districts to recruit volunteers and/or expand community outreach and education.					

* Strategies with an asterisk align with existing or discontinued goals in Putnam County's Hazard Mitigation Plan.

Scenario Planning Workshop Activity 2

March 9, 2026

Scenario 1: Doing more with less... (High Climate Impacts, Low Capacity)

Name: _____

Instructions: Adaptation strategies aim to proactively prepare for expected climate impacts. They can address vulnerabilities related to infrastructure, social/economic conditions, or environmental assets. Spend a few minutes reviewing your assigned scenario. Use the scenario to generate a list of adaptation strategies that you would recommend for the County. For inspiration, consider reviewing the DRAFT Climate Vulnerability Assessment matrix to gauge which assets/services may be vulnerable to a changing climate.

Strategy	Priority			Notes
	<i>H</i>	<i>M</i>	<i>L</i>	
<i>Recommendations for CCARP</i>				<i>Consider capacity + climate hazards</i>

Additional Notes:

Word Cloud Exercise

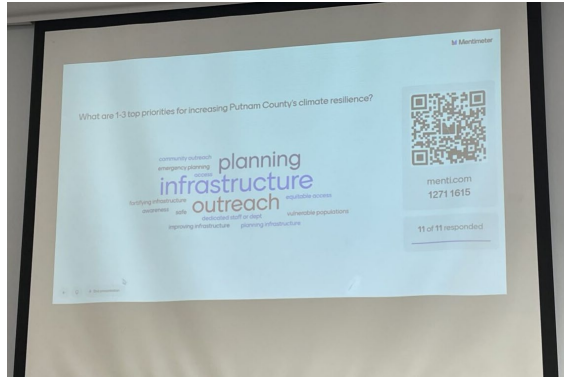
What are the top 3 words you would use to describe a resilient and adaptive future for Putnam County?



What are 1-3 top priorities for increasing Putnam County's climate resilience?



Workshop Photos



Post-Scenario Planning Workshop Survey



Post-Scenario Planning Workshop Part 2 Survey

* Required

Prioritizing Adaptation Strategies

Thank you for participating in Putnam County's Scenario Planning Workshop on March 9th, 2026! The workshop started conversations about the adaptation strategies that will be included in Putnam County's Climate Change Adaptation & Resilience Plan (CCARP).

As a recap, the workshop included two adaptation planning activities and a short visioning exercise.

- During Activity 1, participants reviewed and prioritized a pre-identified list of potential adaptation strategies.
- During Activity 2, participants brainstormed additional adaptation strategies.

Following the workshop, all feedback was synthesized to create an updated list of potential strategies to further Putnam County's resilience and adaptive capacity. This involved removing, adding, or modifying strategies discussed during the workshop. Additional feedback will help narrow the resulting list of potential strategies and ensure that the recommendations in the CCARP align with County priorities.

Please complete this survey to provide additional input on the proposed adaptation strategies. Responses will play an important role in determining which strategies will be included in the CCARP.

Note: Putnam County staff are encouraged to complete this survey, regardless of whether you participated in the scenario planning workshop.

Thank you in advance for your participation!

1. Name

2. Department/Organization/Municipality

3. Did you participate or were you invited to participate in at least one of Putnam County's Scenario Planning Workshops on February 9, 2026 and March 9, 2026. *

☐ Yes

☐ No

4. If not, do you work for Putnam County? *

☐ Yes

☐ No

5. If not, what is your affiliation? *

Infrastructure

The following questions list potential adaptation strategies and actions for Putnam County related to infrastructure. When relevant, notes or comments shared during the Scenario Planning workshop are included in italics to provide additional clarity/context. At the end of this section, there is also space to add comments/notes if you would like to explain or add additional information to your selections.

Please select the strategies and actions you think Putnam County should include in its CCARP related to infrastructure.

6. Secure & Incentivize Backup Power at Critical Facilities

- ☐ Support backup power for fuel distributors and gas stations by directly providing backup power/alternative fuels or by providing incentives for private entities to secure backup power.
- ☐ Work with all cooling centers to ensure backup power is available.

7. Expand Evacuation Planning

Notes: It was noted that many of the actions recommended under this strategy could be included within an Emergency Transportation Plan.

- ☐ Expand existing evacuation planning efforts by creating an Emergency Transportation Plan.
- ☐ Map evacuation routes in relationship to flood risks.
- ☐ Plan evacuation strategies for vulnerable communities.
- ☐ Collaborate with neighboring counties to ensure evacuation routes have appropriate capacity for all counties.
- ☐ Provide evacuation options for residents reliant on public transportation.
- ☐ Secure prior approval to use Putnam County Office of Senior Resources buses for emergencies and recruit volunteer drivers with CDL licenses with passenger endorsement.
- ☐ Collaborate with health facilities and emergency services on evacuation planning.
- ☐ Increase outreach and education about evacuation routes.
- ☐ Update evacuation planning for the County, drawing from the insights in the Indian Point Emergency Guide.

8. Increase Cooling Center Program Awareness and Accessibility

- ☐ Coordinate with Putnam Lake to establish a cooling center.
- ☐ Continue to publicize information about cooling centers and advertise transportation options for accessing centers.
- ☐ Prioritize high-need census tracts for future cooling center projects/outreach.

9. Expand Storm & Emergency Shelters for Pets/Animals

Notes: The Dutchess County animal response team, mentioned in the third option below, was created to support emergency response and proactive preparation related to pets/livestock during disaster events—coordinated by the Dutchess County Medical Reserve Corps.

- ☐ Identify locations for people with pets, service animals, and/or farm animals to shelter during a disaster, prioritizing at least one shelter in the eastern and one shelter in the western side of the County.
- ☐ Explore collaborations with veterinary networks to identify existing facilities that can be used to shelter pets and animals.
- ☐ Explore the feasibility of creating an animal response team, similar to Dutchess County's program, which supports emergency response and proactive preparation related to pets/livestock during disaster events.

10. Expand on Existing Storm & Emergency Shelter Programs

- ☐ Coordinate with storm shelters to offer food, water, and ice pick-up points post-storms/natural disasters.

11. Assess & Right-Size Stormwater Infrastructure

- ☐ Continue assessing all culverts for potential flood risks.
- ☐ Continue exploring FHWA, Bridge NY, and other funding opportunities for stormwater projects.
- ☐ Encourage any new County infrastructure projects to incorporate green infrastructure to reduce flooding, when relevant.

12. Assess & Mitigate Dam-Related Risks

Notes: In general, many comments during the workshop supported including dams as a resiliency priority, but challenges were raised related to the feasibility of working with non-County dams and implementing response/recovery emergency preparedness efforts.

- ☐ Map potential flood impacts for all dams in the County, separating out which dams are owned by County and by non-County entities.
- ☐ Establish regular channels of communication with non-County landowners about the status of dam maintenance & condition.
- ☐ Build on existing emergency preparedness to address potential response and recovery to dam failure events.
- ☐ Encourage dams, culverts, and bridges be built to accommodate 200- or 500-year storms, higher than the State requirement for designing to accommodate 100-year storms.
- ☐ Assess and prioritize dams for potential dam removal/decommissioning projects.
- ☐ Seek out State funding for dam improvements, repairs, or removals.

13. Expand Septic Outreach, Education, & Programs

- ☐ Continue and expand community outreach/education about septic maintenance.
- ☐ Establish a program to support funding or incentives for septic replacement projects.

14. Assess & Protect Building Stock

Notes: There was some uncertainty about whether the County is already exploring land acquisition strategies.

- ☐ Start tracking repetitive loss properties.
- ☐ Work with local municipalities to identify and assess areas suitable for relocating or building housing outside of the floodplain.
- ☐ Continue County-level land conservation strategies for properties in vulnerable areas.
- ☐ Map public buildings and lands in relationship to flood risks to identify priority areas.
- ☐ Assess options for the County Records Building, which currently floods frequently.
- ☐ Repair or upgrade County buildings susceptible to water damage.

15. Expand Public Transportation

- ☐ Increase public transportation options—particularly on the west side of the County—to increase connectivity to trains, healthcare, and food resources, and to increase transportation options during emergencies.

16. Please provide any feedback on the above adaptation strategies and actions related to infrastructure.

Potential questions to consider: Are any of these programs already in place? Are there additional strategies missing from this list or should any strategies be modified? Do any actions stand out as particularly important to include or exclude?

Social

The following questions list potential adaptation strategies and actions for Putnam County related to people and local economies. When relevant, notes or comments shared during the Scenario Planning workshop are included in italics to provide additional clarity/context. At the end of this section, there is also space to add comments/notes if you would like to explain or add additional information to your selections.

Please select strategies and actions you think Putnam County *should include* in its CCARP related to people & local economies.

17. Expand Outreach & Programs for Vulnerable Communities

- ☐ Expand effective outreach efforts to vulnerable communities, including senior populations.
- ☐ Improve accessibility of outreach materials by offering all resilience-related outreach in multiple languages.
- ☐ Encourage participation in the County's existing "Are You Okay" program through campaigns, outreach, giveaways, or additional strategies.
- ☐ Encourage community-based "Are You Okay" programs to provide support for seniors within neighborhoods or apartment complexes in order to augment the existing County program.
- ☐ Support internet connectivity across the County to ensure residents can access timely warnings and updates. Explore offering incentives to or collaborating with private companies.

18. Further Food System Resilience

- ☐ Collaborate with local organizations on preserving the network of farms in the County.
- ☐ Expand/encourage dialogue between County departments, local organizations, and food pantries to identify and address resiliency gaps.

19. Coordinate with Healthcare Facilities

- ☐ Collaborate with Putnam Hospital, Danbury Hospital, urgent care, medical offices, and pharmacies to support emergency planning, particularly for people with at-home medical equipment, modular equipment, or injuries.

20. Coordinate with Local Employers & Businesses

Notes: During the workshop, it was noted that local jobs can reduce traffic associated with commuting, and potentially lead to positive air quality benefits. This could reduce underlying environmental/health vulnerabilities to other climate impacts.

- ☐ Expand conversations with local businesses to support job growth and resiliency.

21. Please provide any feedback on the above adaptation strategies and actions related to people and local economies.

Potential questions to consider: Are any of these programs already in place? Are there additional strategies missing from this list or should any strategies be modified? Do any actions stand out as particularly important to include or exclude?

Environmental

The following questions list potential adaptation strategies and actions for Putnam County related to the environment. When relevant, notes or comments shared during the Scenario Planning workshop are included in italics to provide additional clarity/context. At the end of this section, there is also space to add comments/notes if you would like to explain or add additional information to your selections.

Please select strategies and actions you think Putnam County should include in its CCARP related to the environment.

22. Reduce Poor Air Quality Exposure

Notes:

- *Purchasing air purifiers or creating shared service agreements for air purifiers were mentioned as potential additions or alterations to opening clean air centers.*
- *Challenges related to opening clean air centers were also mentioned. For example, older buildings may not be equipped to handle the filtration needed for smoke.*
- *Putnam County currently offers reduced-cost composting bins, which could provide a model for the third option below.*

- ☐ Open clean air centers during low air quality days due to wildfire smoke, potentially leveraging existing cooling centers.
- ☐ Create an inventory of equipment available in the County, region, and state to fight forest fires in order to identify potential gaps.
- ☐ Create or collaborate on an air filter incentives program for residents, potentially by offering reduced cost HEPA filters.

23. Increase Ecosystem Management & Data Collection for Climate Resilience

- ☐ Increase community outreach about identifying and removing invasive species.
- ☐ Increase public-facing educational materials about nature-based solutions to flooding, potentially leveraging existing resources from the NY DEC.
- ☐ Update the Comprehensive Park and Open Space Plan and/or the County-level Natural Resources Inventory.
- ☐ Work with land trusts, nonprofit organizations, DEC, DEP, and other partners on forest management for fire resilience.
- ☐ Expand and collaborate on native planting programs.

24. Enhance Agricultural Resilience

- ☐ Collaborate with partners and local organizations on outreach to farmers about climate resilience and to understand farmers' existing concerns/challenges.
- ☐ Explore including climate resilience considerations in the anticipated update of the Putnam County Farmland Protection Plan.

25. Please provide any feedback on the above adaptation strategies and actions related to the environment.

Potential questions to consider: Are any of these programs already in place? Are there additional strategies missing from this list or should any strategies be modified? Do any actions stand out as particularly important to include or exclude?

Cross Cutting Strategy

The following questions list additional, cross-cutting adaptation strategies and actions for Putnam County. When relevant, notes or comments shared during the Scenario Planning workshop are included in italics to provide additional clarity/context. At the end of this section, there is also space to add comments/notes if you would like to explain or add additional information to your selections.

Please select cross-cutting strategies and actions you think Putnam County should include in its CCARP.

26. Increase Storm & Emergency Preparedness Education

Notes:

- *Workshop participants highlighted that some storm/emergency preparedness education is already occurring in the County.*
- *Installing high water mark signs received mixed support during the workshop.*
- *The StormReady Communities program is run through the National Weather Service to help communities prepare for extreme weather events. The program has a set of requirements related to hazardous weather planning, community outreach, monitoring, and warning systems.*

- ☐ Continue and expand existing, proactive outreach efforts about storm/emergency preparedness through website, social media, mailings, newsletters, and/or TV ads.
- ☐ Tailor existing storm/emergency preparedness outreach materials to reflect particular challenges and opportunities in Putnam County.
- ☐ Install a high-water mark sign in areas susceptible to flooding. Potentially prioritize a location near Peekskill Hollow, Cold Spring, and/or at local sleepaway camps.
- ☐ Implement an early flood warning system, potentially using Kingston as an example.
- ☐ Become a Storm Ready Community (see notes above).
- ☐ Assess flash flood risks and need for a flash flood warning system.

27. Expand Data & Data Collection

- ☐ Incorporate NY DEC's sea level rise projections into planning efforts, when relevant.
- ☐ Incorporate climate projections into County Planning, including emergency response plans, capital plans, and infrastructure planning, when relevant.
- ☐ Map County infrastructure, vulnerable populations, buildings, cultural resources, and natural resources in relationship to the County's top climate hazards.
- ☐ Compile local zoning maps along the Hudson River for a County-wide view of land uses near a high flood-risk area.
- ☐ Share relevant data and maps with town councils to increase climate resilience education and awareness.
- ☐ Expand open-source GIS mapping resources related to climate resiliency.

28. Align Internal Processes & Plans

- ☐ Collaborate across departments and partner organizations to continuously review potential grant funding opportunities for hazard mitigation and/or resilience-related projects.
- ☐ Formalize a procedure for sharing climate-related vulnerability and risk assessment projects with relevant stakeholders, including the Department of Planning and Transportation and Department of Public Works.
- ☐ Explore the feasibility and need for new plans relevant to resiliency planning, such as a Local Waterfront Revitalization Plan, Climate Action Plan, Floodplain Management Plan, Short- and Long-Term Recovery Plan, and Biodiversity Study. Prioritize planning efforts with availability of implementation funding opportunities.
- ☐ Expand succession planning procedures for retiring or departing staff to reduce loss of institutional knowledge.
- ☐ Consider County-level comprehensive planning, inclusive of climate considerations.
- ☐ Continue dialogue with towns and villages, including in relation to comprehensive planning, zoning, and land use related to climate risks.
- ☐ Continue encouraging Continuity of Operations Plans across County departments.

29. Increase Volunteer Capacity

Notes: During the workshop, participants mentioned the potential to work with existing volunteers and leverage existing partnerships with local organizations. Staff time may also be necessary to support volunteer coordination.

- ☐ Include volunteers in advancing County resilience by working with existing volunteer networks and relationships with outside organizations.
- ☐ Collaborate with school districts to recruit volunteers and/or expand community outreach and education.

30. Increase Staff Capacity for Adaptation & Resilience Planning

Notes: Increasing staffing for climate resilience was mentioned as a potentially impactful, but resource intensive strategy.

- ☐ Hire a dedicated staff member for resiliency.
- ☐ Fund a dedicated engineer to assess County infrastructure and support towns.
- ☐ Hire a dedicated grant writer to increase capacity and funding opportunities.

31. Expand Partnerships for Climate Resilience

- ☐ Connect with local organizations to align and coordinate adaptation/resilience services and programs.
- ☐ Inventory resources at community centers across the County and support resource sharing across communities

32. Expand Timely Outreach & Education Capacity

- ☐ Across relevant departments, develop outreach materials/press releases about emergency preparedness, climate resilience, or related topics that are preapproved and can be distributed as needed.
- ☐ Create department-specific social media pages, as needed, where information about climate resilience can be shared.

33. Please provide any feedback on the above, cross-cutting adaptation strategies and actions.

Potential questions to consider: Are any of these programs already in place? Are there additional strategies missing from this list or should any strategies be modified? Do any actions stand out as particularly important to include or exclude?

Post-Scenario Planning Workshop Survey Invitation

Good morning,

As a follow-up to our Scenario Planning Workshop series, and as part of the [CCARP](#) process, we invite you to participate in the following survey by **Friday, April 3rd** even if you were not able to attend the workshops.

This survey plays an important role in helping us narrow down the list of feasible strategies under consideration for the CCARP. It also ensures that all staff members and partner organizations, especially those who could not attend the workshops, have an opportunity to provide input. Additionally, it allows us to gather feedback on strategies that were refined or newly introduced based on stakeholder discussions.

While the survey is somewhat detailed, it should take approximately **10–15 minutes** to complete. Your perspective is extremely valuable, and we greatly appreciate your time and thoughtful participation in shaping this process.

You can access the survey here: https://forms.office.com/Pages/ResponsePage.aspx?id=8YPyw7HV9KWysGjwYo29sMiiICgyU_JCjZcbA5dHwaBURUc0NE5KWk0yNDcwRlFaMzE3NlBMN0g3VS4u

Thank you in advance for your engagement and support!



Ilona Campo
Planner / Climate Smart Coordinator
Department of Planning, Development, and Public Transportation
PHONE | (845) 878-3480 EXT | 48104
WEBSITE | PUTNAMCOUNTYNY.GOV
ADDRESS | 841 Fair Street, Carmel, NY 10512
PUTNAM COUNTY GOVERNMENT NEW YORK
Think green before printing your screen!

Appendix F: CCARP Webpage on Putnam County's Website

The Putnam County CCARP Website can be found here: <https://putnamcountyny.gov/ccarp>



Putnam County is increasingly vulnerable to flooding, extreme heat, and severe storms—hazards that can pose a threat to communities, health, property, and local businesses. **To proactively address and plan for these challenges, the County is partnering with the Hudson Valley Regional Council (HVRC) to develop a Community Climate Adaptation and Resilience Plan (CCARP).** This County-wide Plan will encompass both a [Climate Vulnerability Assessment](#) and [Adaptation Plan](#), integrating data analysis, community input, and strategic recommendations. Once complete, the CCARP will provide a framework for action to support the County in creating a safer, healthier, and more resilient future.



Graphic: Southern New Hampshire Planning Commission

Background



In September 2025, Putnam County passed and signed a [Resolution](#) to partner with HVRC on creating a Climate Vulnerability Assessment & Climate Adaptation Plan.

These plans are foundational actions in the DEC CSC program. As a first step, the County and HVRC will research and evaluate current County policies and plans for climate resilience. These projects build on Putnam County's legacy of climate progress as a Bronze Certified Community through the Climate Smart Communities (CSC) Program. Specifically, throughout this collaboration, Putnam County will complete three CSC Actions that can earn points toward the CSC program.

1. Producing a [Climate Vulnerability Assessment](#)
2. [Evaluating Policies for Climate Resilience](#)
3. Crafting a [Climate Adaptation Plan](#)

HVRC will facilitate the completion of these deliverables **free of charge** for the County through New York State Department of Environmental Conservation grant funding.

Learn more about the CSC Program and Putnam County's ongoing work [here](#).

Vision Statement

Putnam County Resilience & Adaptation Draft Vision Statement:

"Putnam County is committed to leading by example in preparing for and adapting to a changing climate. We strive to bolster our resilience to the impacts of climate change that are already occurring while planning for future conditions through innovation, collaboration, and care for our natural and built environments. Together, we will build a vibrant, thriving community that protects what we cherish today and ensures a sustainable future for generations to come."

Feedback

Please share any feedback, ideas, or recommendations about the Draft Vision Statement by completing the survey below or at the top of this page.

[CLICK HERE FOR THE DRAFT VISION STATEMENT SURVEY](#)

Appendix G: Vision Statement

Draft Vision Statement

A Draft Vision Statement was created for public input. The initial draft can be found below:

"Putnam County is committed to leading by example in preparing for and adapting to a changing climate. We strive to bolster our resilience to the impacts of climate change that are already occurring while planning for future conditions through innovation, collaboration, and care for our natural and built environments. Together, we will build a vibrant, thriving community that protects what we cherish today and ensures a sustainable future for generations to come."

Vision Statement Survey

A Vision Statement Survey was available on Putnam County's website from November 17, 2025-April 3, 2026 for public feedback on the Draft Vision Statement. The same list of questions was also included as an optional component of Putnam County's Climate Vulnerability Assessment Survey (See [Appendix H](#) for more information on the CVA Survey).

Copies of both surveys can be found below:

Vision Statement Survey

Putnam County Resilience & Adaptation Vision Statement

Background:

Putnam County is currently working on a Climate Vulnerability Assessment & Climate Adaptation Plan. These projects will form the basis of a county-level Climate Change Adaptation & Resilience Plan (CCARP). This plan will include a guiding Vision Statement that will be informed by community input. A draft Vision statement is included below.

Please share any feedback or recommendations about the Draft Vision Statement. Responses to this survey will be anonymous.

Draft Vision Statement

Putnam County is committed to leading by example in preparing for and adapting to a changing climate. We strive to bolster our resilience to the impacts of climate change that are already occurring while planning for future conditions through innovation, collaboration, and care for our natural and built environments. Together, we will build a vibrant, thriving community that protects what we cherish today and ensures a sustainable future for generations to come.

* Required

1. Are there any words or phrases in the Draft Vision Statement that particularly resonate with you, or that you think are important to include in the final Vision Statement?

Please enter at most 600 characters

2. Are there any words or phrases in the Draft Vision Statement that do not resonate with you, or that you think should be altered in the final Vision Statement?

Please enter at most 600 characters

3. Are there any themes, concepts, or words that you feel are missing from the Draft Vision Statement that you think should be considered?

Please enter at most 600 characters

4. Are you a resident of Putnam County *

☐ Yes

☐ No

5. If yes, which Town or Village are you from? *

☐ Town of Carmel

☐ Town of Kent

☐ Town of Patterson

☐ Town of Philipstown

☐ Town of Putnam Valley

☐ Town of Southeast

☐ Village of Brewster

☐ Village of Cold Spring

☐ Village of Nelsonville

☐ Prefer not to answer

Vision Statement Questions within the CVA Survey

Resilience & Adaptation Vision Statement

Putnam County will create a Resilience & Adaptation Vision for the County to guide its Climate Change Adaptation & Resilience Plan. The Resilience & Adaptation Vision will be shaped by community feedback and input. A draft vision statement can be found below.

Draft Vision Statement: Putnam County is committed to leading by example in preparing for and adapting to a changing climate. We strive to bolster our resilience to the impacts of climate change that are already occurring while planning for future conditions through innovation, collaboration, and care for our natural and built environments. Together, we will build a vibrant, thriving community that protects what we cherish today and ensures a sustainable future for generations to come.

26. Would you like to provide feedback on the Draft Vision Statement? *

☐ Yes

☐ No

27. Are there any words or phrases in the Draft Vision Statement that particularly resonate with you, or that you think are important to include in the final Vision Statement?

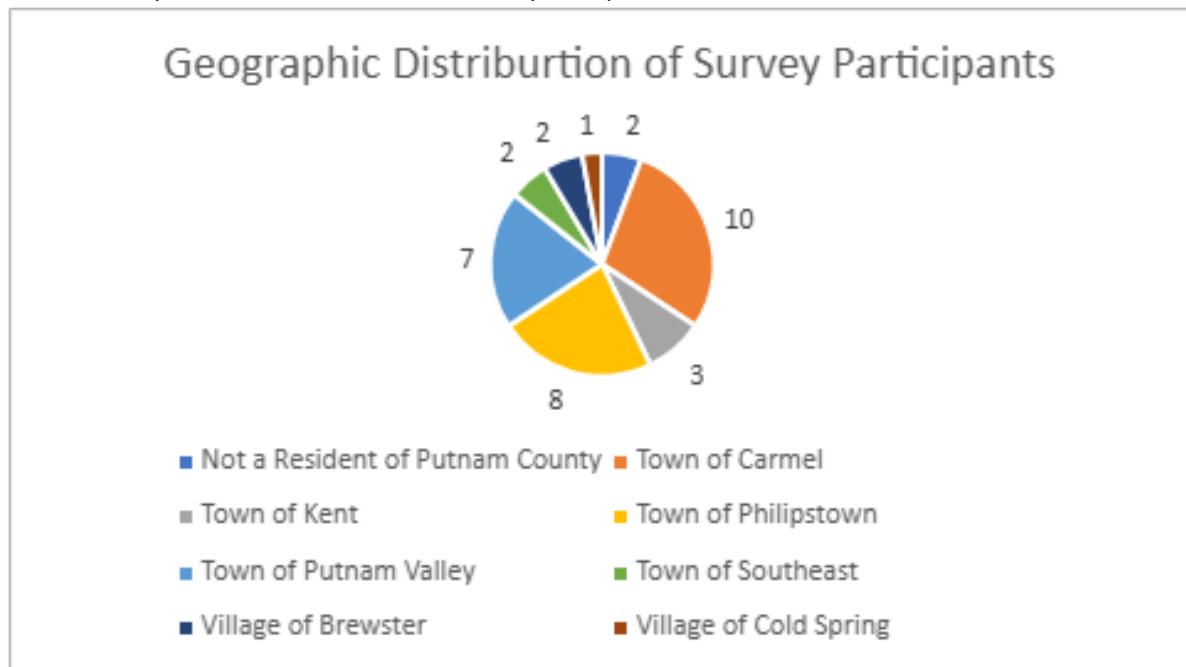
28. Are there any words or phrases in the Draft Vision Statement that do not resonate with you, or that you think should be altered in the final Vision Statement?

29. Are there any themes, concepts, or words that you feel are missing from the Draft Vision Statement that you think should be considered?

Vision Statement Responses

The standalone Vision Statement survey received seven responses, all from Putnam County residents. Within the Climate Vulnerability Assessment survey, 30 participants checked that they would like to provide feedback on the Vision Statement. Of those, 27 left comments/feedback. 25 respondents were residents of Putnam County. Two respondents were not Putnam County residents but did work in the County.

One additional survey response provided feedback following the close of the CVA survey, jointly submitted by 5 individuals (included as one participant in the chart below).



Vision Statement Survey Website Promotion

Website promotion for the Vision Statement Survey



Putnam County Resilience & Adaptation

Draft Vision Statement:

"Putnam County is committed to leading by example in preparing for and adapting to a changing climate. We strive to bolster our resilience to the impacts of climate change that are already occurring while planning for future conditions through innovation, collaboration, and care for our natural and built environments. Together, we will build a vibrant, thriving community that protects what we cherish today and ensures a sustainable future for generations to come."

Feedback

Please share any feedback, ideas, or recommendations about the Draft Vision Statement by completing the survey below or at the top of this page.

[CLICK HERE FOR THE DRAFT VISION STATEMENT SURVEY](#)

Vision Statement Survey Stakeholder Workshop Promotion

CSRP Workshop

Slides advertising the Vision Statement Survey at the CSRP Workshop-Nov 20, 2025

Vision Statement Activity

Draft Vision Statement



"Putnam County is committed to leading by example in preparing for and adapting to a changing climate. We strive to **bolster our resilience to the impacts of climate change** that are already occurring while planning for future conditions through **innovation, collaboration, and care for our natural and built environments**. Together, we will build a vibrant, thriving community that **protects what we cherish today and ensures a sustainable future for generations to come.**"



Hudson Valley Regional Council



Department of
Environmental
Conservation



Climate Smart
Communities

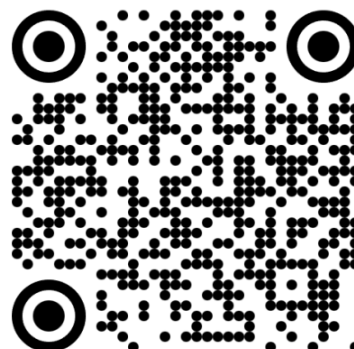
Thank You!

Vision Statement Feedback Form



Hudson Valley Regional Council

Learn More:



Department of
Environmental
Conservation



Climate Smart
Communities

Scenario Planning Workshop Part 1

Slide included in the Scenario Planning Part 1 Workshop on Feb 9, 2026

Thank You!

**Vision Statement
Feedback Form**



Learn More:



Hudson Valley Regional Council



Department of
Environmental
Conservation



Climate Smart
Communities

Scenario Planning Workshop Part 2

The Vision Statement was discussed during the Scenario Planning Workshop Part 2 on March 9, 2026 (See [Appendix E](#) for more information). Participants completed two, word cloud exercises to inform the Draft Vision Statement. The link to the Vision Statement Survey was also shared at the workshops.

Slides included in the Scenario Planning Workshop Part 2 can be found below:

Resilience & Adaptation Vision Statement

"Putnam County is committed to leading by example in preparing for and adapting to a changing climate. We strive to bolster our resilience to the impacts of climate change that are already occurring while planning for future conditions through innovation, collaboration, and care for our natural and built environments. Together, we will build a vibrant, thriving community that protects what we cherish today and ensures a sustainable future for generations to come."

What are the top 3 words you would use to describe a resilient and adaptive future for Putnam County?

- **Menti.com**
- **ID: 2519 9414**



Hudson Valley Regional Council



Department of
Environmental
Conservation



Climate Smart
Communities

Next Steps

Climate Adaptation Plan Process

- ☐ Synthesize feedback into a draft Climate Adaptation Plan
- ☐ Opportunities for revision/feedback
- ☐ Implementation logistics

Vision Statement Feedback Survey



To share additional comments/feedback, email sditommaso@hudsonvalleyrc.org



Hudson Valley Regional Council



Department of
Environmental
Conservation



Climate Smart
Communities

The Vision Statement Word Clouds from the Scenario Planning Workshop Part 2 can be found below:

What are 1-3 top priorities for increasing Putnam County's climate resilience?



What are the top 3 words you would use to describe a resilient and adaptive future for Putnam County?



Vision Statement Survey: Partner Organization Survey Promotion

Section 3

...

Thank you for taking the time to fill out this survey. If you marked you are interested in getting involved with the Climate Change Adaptation & Resilience Plan, we will reach out soon.

If you are interested in providing feedback for our Resilience & Adaptation Vision, we appreciate your input through the survey

here: https://forms.office.com/Pages/ResponsePage.aspx?id=8YPyw7HV9kWWsGjwYo29sMiiICgyU_JCJZcbA5dHwaBURTYxQjM2O1c3VDUyUJFk2VzVDUjZXTVNZW4u

Appendix H: Climate Vulnerability Assessment Survey

Survey Questions

English Version



Putnam County Climate Vulnerability Assessment

Background: Putnam County is currently working on a Climate Vulnerability Assessment and Climate Adaptation Plan.

- The Climate Vulnerability Assessment will evaluate hazards facing the County and the social, environmental, and infrastructural assets at risk.
- The Climate Adaptation Plan will outline strategies for the County to address these hazards and to build safer, more resilient communities.

The assessment and plan will form the basis of a Climate Change Adaptation & Resilience Plan for the County.

Survey: The goal of this survey is to support a safer, more resilient Putnam County. Your contributions will play a pivotal role in shaping the County's Climate Change Adaptation & Resilience Plan and will inform future engagement efforts. This survey is designed to take 10-15 minutes and has three objectives:

1. To collect community feedback on the hazards of highest concern
2. To identify and prioritize social, infrastructural, and environmental assets in the County
3. To collect feedback on a Resilience & Adaptation Vision for Putnam County

Learn more: To learn more about ongoing resilience & adaptation work and to stay up-to-date on engagement opportunities, please visit:
<https://putnamcountynv.gov/ccarp>.

* Required

Identifying Hazards

1. Have you experienced any of the following hazards in Putnam County in the past 5-10 years? Please select all that apply. *

- ☐ Extreme heat (temperature $\geq 90^{\circ}\text{F}$)
- ☐ Heat Waves (3+ days with max temperatures $\geq 90^{\circ}\text{F}$)
- ☐ Severe winter storms
- ☐ Severe Storm: Hurricanes
- ☐ Severe Storm: Tornadoes
- ☐ Severe Storm: Precipitation
- ☐ Wildfires
- ☐ Poor air quality
- ☐ Flooding
- ☐ Drought
- ☐ Pests, insects, or invasive species
- ☐ None of the above
- ☐ Other

2. Please briefly describe the hazard events that you experienced

Please enter at most 1000 characters

3. Please indicate your level of concern about each of the following hazards in Putnam County in the next 10-15 years into the future?
You may also indicate if you are unsure or need more information.

Context: According to the most recent New York State Climate Impacts Assessment, New York can expect a variety of climate impacts. The average annual temperature is projected to increase 4-6 degrees by 2050, and as much as 11 degrees by 2100. Sea levels are projected to increase by 1 to 2 feet by 2050, and up to nearly 6 feet by 2100 under a newly added "rapid ice melt scenario." Average annual precipitation is expected to increase by up to 6 inches by 2050, with up to a 28% increase by 2100.

	High	Medium	Low	Unsure: Need more information
Extreme heat (temperature ≥ 90°F)	☐	☐	☐	☐
Heat Waves (3+ days with max temperatures ≥ 90°F)	☐	☐	☐	☐
Severe winter storms	☐	☐	☐	☐
Severe Storm: Hurricanes	☐	☐	☐	☐
Severe Storm: Tornadoes	☐	☐	☐	☐
Severe Storm: Precipitation	☐	☐	☐	☐
Wildfires	☐	☐	☐	☐
Poor air quality	☐	☐	☐	☐
Flooding	☐	☐	☐	☐
Drought	☐	☐	☐	☐
Pests, insects, or invasive species	☐	☐	☐	☐
None of the above	☐	☐	☐	☐

4. If there are additional hazards you are concerned about, please list the hazards and your level of concern (high, medium, or low). [Example: Hazard A-Low, Hazard B-Medium, etc.]

Defining Community Assets: Social Assets

Hazards can pose challenges to social, infrastructural, and environmental assets in Putnam County. For example, severe heat can threaten health; flooding can block roadways; and severe storms can damage recreational sites. The following questions aim to understand your opinions about which community assets to prioritize in adaptation planning efforts. **Social assets refer to attributes important for communities and economies. They can include people, services, industries, and experiences.**

5. Please indicate if you think the following social assets in Putnam County should be a high, medium, or low priority for the County's adaptation planning efforts. *

	High	Medium	Low
Access to healthcare facilities and services	☐	☐	☐
Access to cultural centers and resources (libraries, museums, etc.)	☐	☐	☐
Maintaining local jobs and businesses	☐	☐	☐
Providing resources and services for seniors	☐	☐	☐
Providing resources and services for youth	☐	☐	☐
Supporting tourism and visitors to the county	☐	☐	☐
Supporting vulnerable communities	☐	☐	☐
Ensuring food access and security	☐	☐	☐
Holding community events or festivals	☐	☐	☐
Supporting historic preservation	☐	☐	☐

6. Are there any additional social/economic assets that you think should be prioritized in Putnam County's adaptation planning efforts? *

☐ Yes

☐ No

7. If yes, please describe. *

Please enter at most 200 characters

8. Have you personally experienced disruptions to any of the above assets due to climate hazards? (i.e. have you experienced cancelled events from extreme heat, disruptions to food supplies from a storm etc.?) *

☐ Yes

☐ No

9. If yes, please describe your experience(s). *

10. Personal stories and experiences can provide valuable information and perspective. Do you give the planning team permissions to use your story from the previous question in Putnam County's Climate Adaptation & Resilience Plan? *

☐ Yes

☐ No

11. If you answered yes to the previous question, please provide your name and email address *

Defining Community Assets: Infrastructural Assets

Hazards can pose challenges to social, infrastructural, and environmental assets in Putnam County. For example, severe heat can threaten health; flooding can block roadways; and severe storms can damage recreational sites. The following questions aim to understand your opinions about which community assets to prioritize in adaptation planning efforts. **Infrastructural assets refer to the built components of a community. They can include roads, energy & power, waste & water systems, and buildings.**

12. Please indicate if you think the following infrastructural assets in Putnam County should be a high, medium, or low priority for the County's adaptation planning efforts. *

	High	Medium	Low
Access to reliable power and energy sources	☐	☐	☐
Access to safe travel and transportation options	☐	☐	☐
Access to public transportation	☐	☐	☐
Access to cooling or warming centers	☐	☐	☐
Availability of evacuation routes	☐	☐	☐
Access to adequate storm/emergency shelters	☐	☐	☐
Maintaining the operation of public buildings	☐	☐	☐
Maintaining reliable waste disposal systems (waste pick up, recycling, etc.)	☐	☐	☐
Maintaining stormwater infrastructure	☐	☐	☐
Protecting homes from property damage	☐	☐	☐
Preventing dam failure	☐	☐	☐
Preventing damage to septic infrastructure	☐	☐	☐

13. Are there any additional infrastructural assets that you think should be prioritized in Putnam County's adaptation planning efforts? *

☐ Yes

☐ No

14. If yes, please describe. *

Please enter at most 200 characters

15. Have you personally experienced disruptions to any of the above assets due to climate hazards? (i.e. have you experienced frequent power outages from storms, noticed roads that flood often etc.) *

☐ Yes

☐ No

16. If yes, please describe your experience(s). *

17. Personal stories and experiences can provide valuable information and perspective. Do you give the planning team permissions to use your story from the previous question in Putnam County's Climate Adaptation & Resilience Plan? *

☐ Yes

☐ No

18. If you answered yes to the previous question, please provide your name and email address *

Defining Community Assets: Environmental Assets

Hazards can pose challenges to social, infrastructural, and environmental assets in Putnam County. For example, severe heat can threaten health; flooding can block roadways; and severe storms can damage recreational sites. The following questions aim to understand your opinions about which community assets to prioritize in adaptation planning efforts. **Environmental assets refer to the ecosystems and environments in a community and the services they provide. They can include natural areas like parks and forests as well as services like clean water and productive soils.**

19. Please indicate if you think the following environmental assets in Putnam County should be a high, medium, or low priority for the County's adaptation planning efforts. *

	High	Medium	Low
Protecting safe drinking water	☐	☐	☐
Protecting clean air	☐	☐	☐
Protecting biodiversity	☐	☐	☐
Protecting ecosystems and habitats	☐	☐	☐
Access to high quality recreation sites	☐	☐	☐
Access to parks and open space	☐	☐	☐
Protecting agricultural land and soils	☐	☐	☐

20. Are there any additional environmental assets that you think should be prioritized in Putnam County's adaptation planning efforts? *

- ☐ Yes
- ☐ No

21. If yes, please describe. *

Please enter at most 200 characters

22. Have you personally experienced disruptions to any of the above assets due to climate hazards? (i.e. have you noticed damage to recreational trails, an increase in days with poor air quality etc.?) *

☐ Yes

☐ No

23. If yes, please describe your experience(s) *

24. Personal stories and experiences can provide valuable information and perspective. Do you give the planning team permissions to use your story from the previous question in Putnam County's Climate Adaptation & Resilience Plan? *

☐ Yes

☐ No

25. If you answered yes to the previous question, please provide your name and email address *

Resilience & Adaptation Vision Statement

Putnam County will create a Resilience & Adaptation Vision for the County to guide its Climate Change Adaptation & Resilience Plan. The Resilience & Adaptation Vision will be shaped by community feedback and input. A draft vision statement can be found below.

Draft Vision Statement: Putnam County is committed to leading by example in preparing for and adapting to a changing climate. We strive to bolster our resilience to the impacts of climate change that are already occurring while planning for future conditions through innovation, collaboration, and care for our natural and built environments. Together, we will build a vibrant, thriving community that protects what we cherish today and ensures a sustainable future for generations to come.

26. Would you like to provide feedback on the Draft Vision Statement? *

☐ Yes

☐ No

27. Are there any words or phrases in the Draft Vision Statement that particularly resonate with you, or that you think are important to include in the final Vision Statement?

28. Are there any words or phrases in the Draft Vision Statement that do not resonate with you, or that you think should be altered in the final Vision Statement?

29. Are there any themes, concepts, or words that you feel are missing from the Draft Vision Statement that you think should be considered?

Demographic Information

30. Are you a resident of Putnam County? *

- ☐ Yes
- ☐ No

31. If not, do you work in Putnam County? *

- ☐ Yes
- ☐ No

32. If so, which town/village do you live in?

- ☐ Town of Carmel
- ☐ Town of Kent
- ☐ Town of Patterson
- ☐ Town of Philipstown
- ☐ Town of Putnam Valley
- ☐ Town of Southeast
- ☐ Village of Brewster
- ☐ Village of Cold Spring
- ☐ Village of Nelsonville

33. Which represents your age bracket?

- ☐ 18-25
- ☐ 26-35
- ☐ 36-45
- ☐ 46-55
- ☐ 56-65
- ☐ 66-75
- ☐ 76+

34. Which of the following best reflects your race or ethnicity?

- ☐ Asian or Pacific Islander
- ☐ Black or African American
- ☐ Hispanic or Latino
- ☐ Native American or Alaska Native
- ☐ White or Caucasian
- ☐ Multiracial or Biracial
- ☐ Other

35. Which of the following best reflects your gender?

- ☐ Male
- ☐ Female
- ☐ Other

Spanish Version

Evaluación de la Vulnerabilidad Climática del Condado de Putnam

Antecedentes: El condado de Putnam está trabajando actualmente en una Evaluación de Vulnerabilidad Climática y un Plan de Adaptación al Clima. La Evaluación de Vulnerabilidad Climática evaluará los peligros que enfrenta el Condado y los activos sociales, ambientales y de infraestructura en riesgo. El Plan de Adaptación al Clima describirá estrategias para que el Condado aborde estos riesgos y construya comunidades más seguras y resilientes. La evaluación y el plan formarán la base de un Plan de Adaptación y Resiliencia al Cambio Climático para el Condado.

Encuesta: El objetivo de esta encuesta es apoyar un condado de Putnam más seguro y resiliente. Tus contribuciones jugarán un papel fundamental en la configuración del Plan de Adaptación y Resiliencia al Cambio Climático del Condado y orientarán los futuros esfuerzos de implicación. Esta encuesta está diseñada para durar entre 10 y 15 minutos y tiene tres objetivos:

1. Recoger opiniones de la comunidad sobre los peligros de mayor preocupación.
2. Identificar y priorizar los activos sociales, infraestructurales y ambientales en el Condado.
3. Recopilar opiniones sobre una Visión de Resiliencia y Adaptación para el Condado de Putnam.

Más información: Para saber más sobre el trabajo continuo de resiliencia y adaptación y para mantenerse al día de las oportunidades de participación, por favor visita: <https://putnamcountyny.gov/ccarp>.

require

Identificación de Peligros

1. ¿Ha experimentado alguno de los siguientes peligros en el Condado de Putnam en los últimos 5-10 años? Por favor, seleccione todo lo que aplique. *

- ☐ Calor extremo (temperatura $\geq 90^{\circ}\text{F}$)
- ☐ Olas de calor (3 días con temperaturas máximas $\geq 90^{\circ}\text{F}$)
- ☐ Severas tormentas de invierno
- ☐ Tormenta Severa: Huracanes
- ☐ Tormenta Severa: Tornados
- ☐ Tormenta Severa: Precipitación
- ☐ Incendio Forestal
- ☐ Mala calidad del aire
- ☐ Inundación
- ☐ Sequía
- ☐ Plagas, insectos o especies invasoras
- ☐ Ninguna de las anteriores
- ☐ Other

2. Por favor describa brevemente los eventos de peligro que experimentó. (Por favor, introduzca como máximo 1000 caracteres)

Please enter at most 1000 characters

3. ¿Por favor, indique su nivel de preocupación por cada uno de los siguientes peligros en el Condado de Putnam en los próximos 10-15 años en el futuro? También puedes indicar si tienes dudas o necesitas más información.

Contexto: Según la más reciente Evaluación de Impactos Climáticos del Estado de Nueva York, Nueva York puede esperar una variedad de impactos climáticos. Se proyecta que la temperatura media anual aumente 4-6 grados para 2050, y hasta 11 grados para 2100. Se proyecta que los niveles del mar aumentarán de 1 a 2 pies para 2050, y hasta casi 6 pies para 2100 bajo un nuevo "escenario rápido de deshielo del hielo". Se espera que la precipitación anual promedio aumente hasta 6 pulgadas para 2050, con un aumento de hasta 28% para 2100. *

	Alto	Mediano	Bajo	Inseguro: Necesita más información
Calor extremo (temperatura $\geq 90^{\circ}\text{F}$)	☐	☐	☐	☐
Olas de calor (3 días con temperaturas máximas $\geq 90^{\circ}\text{F}$)	☐	☐	☐	☐
Severas tormentas de invierno	☐	☐	☐	☐
Tormenta Severa: Huracanes	☐	☐	☐	☐
Tormenta Severa: Tornados	☐	☐	☐	☐
Tormenta Severa: Precipitación	☐	☐	☐	☐
Incendio Forestal	☐	☐	☐	☐
Mala calidad del aire	☐	☐	☐	☐
Inundación	☐	☐	☐	☐
Sequía	☐	☐	☐	☐
Plagas, insectos o especies invasoras	☐	☐	☐	☐
Ninguna de las anteriores	☐	☐	☐	☐

4. Si hay peligros adicionales que le preocupan, por favor enumere los peligros y su nivel de preocupación (alto, medio o bajo). [Ejemplo: Peligro A -Bajo, Peligro B -Medio, etc.]

Definiendo los Activos Comunitarios: Activos Sociales

Los peligros pueden plantear desafíos a los activos sociales, infraestructurales y ambientales en el condado de Putnam. Por ejemplo, el calor severo puede amenazar la salud; las inundaciones pueden bloquear las carreteras; y las tormentas severas pueden dañar los sitios recreativos. Las siguientes preguntas tienen como objetivo comprender sus opiniones sobre qué activos comunitarios priorizar en los esfuerzos de planificación de la adaptación. **Los activos sociales se refieren a atributos importantes para las comunidades y las economías. Pueden incluir personas, servicios, industrias y experiencias.**

5. Por favor indique si cree que los siguientes activos sociales en el Condado de Putnam deben ser una prioridad alta, media o baja para los esfuerzos de planificación de adaptación del Condado. *

	Alto	Mediano	Bajo
Acceso a instalaciones y servicios de salud	☐	☐	☐
Acceso a centros culturales y recursos (bibliotecas, museos, etc.)	☐	☐	☐
Mantenimiento empleos y negocios locales	☐	☐	☐
Proporcionando recursos y servicios para personas mayores	☐	☐	☐
Proporcionando recursos y servicios para jóvenes	☐	☐	☐
Apoyando al turismo y a los visitantes del condado	☐	☐	☐
Apoyando a comunidades vulnerables	☐	☐	☐
Garantizar el acceso y la seguridad alimentaria	☐	☐	☐
Organización de eventos y festivales comunitarios	☐	☐	☐
Apoyando la preservación histórica	☐	☐	☐

6. ¿Hay activos sociales/económicos adicionales que usted cree que deberían ser priorizados en los esfuerzos de planificación de adaptación del Condado de Putnam? *

- ☐ Sí
- ☐ No

7. Si la respuesta es sí, por favor explique. (Por favor, introduzca como máximo 200 caracteres) *

Please enter at most 200 characters

8. ¿Ha experimentado personalmente interrupciones en cualquiera de los activos anteriores debido a los peligros climáticos? (es decir, ¿ha experimentado eventos cancelados por calor extremo, interrupciones en los suministros de alimentos por una tormenta, etc.?). *

- ☐ Sí
- ☐ No

9. En caso afirmativo, por favor describa su experiencia(s)? *

10. Las historias y experiencias personales pueden proporcionar información y perspectiva valiosas. ¿Concede permisos al equipo de planificación para utilizar su historia de la pregunta anterior en el Plan de Adaptación y Resiliencia al Clima del Condado de Putnam? *

- ☐ Sí
- ☐ no

11. Si respondió afirmativamente a la pregunta anterior, proporcione su nombre y dirección de correo electrónico. *

Definiendo los Activos Comunitarios: Activos de Infraestructuras

Los peligros pueden plantear desafíos a los activos sociales, infraestructurales y ambientales en el condado de Putnam. Por ejemplo, el calor severo puede amenazar la salud; las inundaciones pueden bloquear las carreteras; y las tormentas severas pueden dañar los sitios recreativos. Las siguientes preguntas tienen como objetivo comprender sus opiniones sobre qué activos comunitarios priorizar en los esfuerzos de planificación de la adaptación. Los activos de infraestructura se refieren a los componentes construidos de una comunidad. Pueden incluir carreteras, energía, sistemas de aguas residuales, y edificios.

12. Por favor indique si cree que los siguientes activos sociales en el Condado de Putnam deben ser una prioridad alta, media o baja para los esfuerzos de planificación de adaptación del Condado. *

	Alto	Mediano	Bajo
Acceso a fuentes de energía y energía confiables	☐	☐	☐
Acceso a opciones seguras de viaje y transporte	☐	☐	☐
Acceso al transporte público	☐	☐	☐
Acceso a centros de enfriamiento y calentamiento	☐	☐	☐
Disponibilidad de rutas de evacuación	☐	☐	☐
Acceso a refugios adecuados para tormentas/emergencias	☐	☐	☐
Mantenimiento del funcionamiento de los edificios públicos	☐	☐	☐
Mantenimiento de sistemas de eliminación de residuos fiables (recogida de residuos, reciclaje, etc.)	☐	☐	☐
Mantenimiento de la infraestructura de aguas pluviales	☐	☐	☐
Protegiendo las casas de daños a la propiedad	☐	☐	☐
Prevención del fallo de la presa	☐	☐	☐
Prevención de daños en infraestructuras sépticas	☐	☐	☐

13. ¿Hay algún activo de infraestructura adicional que usted cree que debería ser priorizado en los esfuerzos de planificación de adaptación del Condado de Putnam? *

☐ Sí

☐ No

14. Si la respuesta es sí, por favor explique. (Por favor, introduzca como máximo 200 caracteres) *

Please enter at most 200 characters

15. ¿Ha experimentado personalmente interrupciones en cualquiera de los activos anteriores debido a los peligros climáticos? (es decir, ¿ha experimentado frecuentes cortes de energía por tormentas, ha notado carreteras que se inundan a menudo, etc.) *

☐ Sí

☐ No

16. En caso afirmativo, por favor describa su experiencia(s). *

17. Las historias y experiencias personales pueden proporcionar información y perspectiva valiosas. ¿Concede permisos al equipo de planificación para utilizar su historia de la pregunta anterior en el Plan de Adaptación y Resiliencia al Clima del Condado de Putnam? *

☐ Sí

☐ No

18. Si respondió afirmativamente a la pregunta anterior, proporcione su nombre y dirección de correo electrónico. *

Definiendo los Activos Comunitarios: Activos Ambientales

Los peligros pueden plantear desafíos a los activos sociales, infraestructurales y ambientales en el condado de Putnam. Por ejemplo, el calor severo puede amenazar la salud; las inundaciones pueden bloquear las carreteras; y las tormentas severas pueden dañar los sitios recreativos. Las siguientes preguntas tienen como objetivo comprender sus opiniones sobre qué activos comunitarios priorizar en los esfuerzos de planificación de la adaptación. Los activos ambientales se refieren a los ecosistemas y ambientes de una comunidad y los servicios que proporcionan. Pueden incluir áreas naturales como parques y bosques, así como servicios como agua limpia y suelos productivos.

19. Por favor indique si cree que los siguientes activos sociales en el Condado de Putnam deben ser una prioridad alta, media o baja para los esfuerzos de planificación de adaptación del Condado. *

	Alto	Mediano	Bajo
Protección del agua potable	☐	☐	☐
Protección del aire limpio	☐	☐	☐
Mantenimiento de la biodiversidad	☐	☐	☐
Protección de ecosistemas y hábitats	☐	☐	☐
Acceso a sitios de recreación de alta Calidad	☐	☐	☐
Acceso a parques y espacios abiertos	☐	☐	☐
Protección de las tierras agrícolas y los suelos	☐	☐	☐

20. ¿Hay algún activo ambiental adicional que creas que debería priorizarse en los esfuerzos de planificación de adaptación del condado de Putnam? *

- ☐ Sí
- ☐ no

21. Si la respuesta es sí, por favor explique. *

22. ¿Ha experimentado personalmente interrupciones en cualquiera de los activos anteriores debido a los peligros climáticos? (es decir, ¿ha notado daños en los senderos recreativos, un aumento en los días con mala calidad del aire, etc.?) *

☐ sí

☐ no

23. En caso afirmativo, por favor describa su experiencia(s). *

24. Las historias y experiencias personales pueden proporcionar información y perspectiva valiosas. ¿Concede permisos al equipo de planificación para utilizar su historia de la pregunta anterior en el Plan de Adaptación y Resiliencia al Clima del Condado de Putnam? *

☐ sí

☐ no

25. Si respondió afirmativamente a la pregunta anterior, proporcione su nombre y dirección de correo electrónico. *

Declaración de Visión de Resiliencia y Adaptación

El Condado de Putnam creará una Visión de Resiliencia y Adaptación para que el Condado guíe su Plan de Adaptación y Resiliencia al Cambio Climático. La Visión de Resiliencia y Adaptación se determinará a partir de la retroalimentación y las aportaciones de la comunidad. A continuación, se puede encontrar un borrador de declaración de visión.

Borrador de Declaración de Visión: El Condado de Putnam se compromete a liderar con el ejemplo en la preparación y adaptación a un clima cambiante. Nos esforzamos por reforzar nuestra resiliencia a los impactos del cambio climático que ya están ocurriendo mientras planificamos las condiciones futuras a través de la innovación, la colaboración y el cuidado de nuestros entornos naturales y construidos. Juntos, construiremos una comunidad vibrante y próspera que proteja lo que apreciamos hoy y garantice un futuro sostenible para las generaciones venideras.

26. ¿Te gustaría dar tu opinión sobre el borrador de la Declaración de Visión? *

☐ Sí

☐ No

27. ¿Hay palabras o frases en el Borrador de la Declaración de Visión que resuenen particularmente con usted, o que usted cree que es importante incluir en la Declaración de Visión final?

28. ¿Hay palabras o frases en el Borrador de la Declaración de Visión que no resuenen con usted, o que usted piensa que debería ser alterado en la Declaración de Visión final?

29. ¿Hay algún tema, concepto o palabras que usted sienta que falta en el Borrador de la Declaración de Visión que usted piensa que debe ser considerado?

Información Demográfica

30. ¿Eres residente del Condado de Putnam? *

☐ Sí

☐ no

31. Si no, ¿trabajas en el Condado de Putnam? *

☐ Sí

☐ No

32. Si es así, ¿en qué pueblo o pueblo vives?

☐ Pueblo de Carmel

☐ Pueblo de Kent

☐ Pueblo de Patterson

☐ Pueblo de Philipstown

☐ Pueblo de Putnam Valley

☐ Pueblo de Southeast

☐ Aldea de Brewster

☐ Aldea de Cold Spring

☐ Aldea de Nelsonville

33. ¿Cuál representa su grupo de edad?

- ☐ 18-25
- ☐ 26-35
- ☐ 36-45
- ☐ 46-55
- ☐ 56-65
- ☐ 66-75
- ☐ 76+

34. ¿Cuál de las siguientes opciones refleja mejor tu raza o etnia?

- ☐ Isleños Asiáticos o del Pacífico
- ☐ Negro o Afroamericano
- ☐ Hispano o Latinoamericano
- ☐ Nativo Americano o Nativo de Alaska
- ☐ Blanco o Caucásico
- ☐ Multirracial o Biracial
- ☐ Other

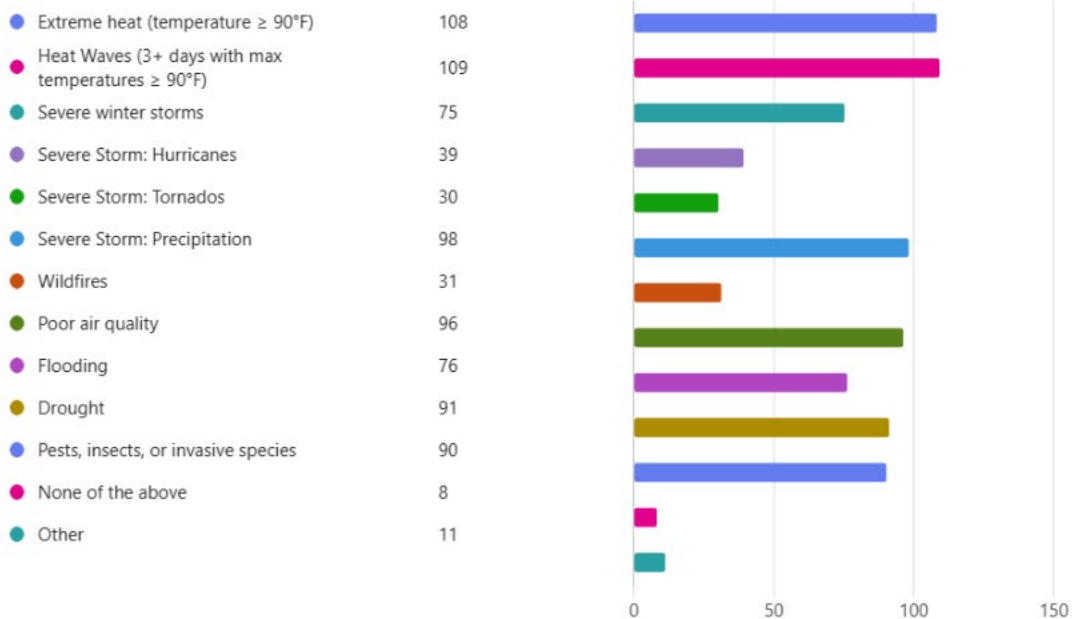
35. ¿Cuál de las siguientes refleja mejor tu género?

- ☐ Hombre
- ☐ Mujer
- ☐ Other

Survey Responses

Survey results for multiple choice questions are included below. All charts and figures were generated by Microsoft Forms. Qualitative responses are excluded from this Appendix to maintain the privacy of survey respondents. Survey participants specifically granted permission to include any long-form responses directly quoted in the Climate Vulnerability Assessment by checking “yes” for the survey question: “Personal stories and experiences can provide valuable information and perspective. Do you give the planning team permission to use your story from the previous question in Putnam County’s Climate Adaptation & Resilience Plan?”

1. Have you experienced any of the following hazards in Putnam County in the past 5-10 years? Please select all that apply. [More details](#)



3. Please indicate your level of concern about each of the following hazards in Putnam County in the next 10-15 years into the future? You may also indicate if you are unsure or need more information.

Context: According to the most recent New York State Climate Impacts Assessment, New York can expect a variety of climate impacts. The average annual temperature is projected to increase 4-6 degrees by 2050, and as much as 11 degrees by 2100. Sea levels are projected to increase by 1 to 2 feet by 2050, and up to nearly 6 feet by 2100 under a newly added "rapid ice melt scenario." Average annual precipitation is expected to increase by up to 6 inches by 2050, with up to a 28% increase by 2100. [More details](#)

● High ● Medium ● Low ● Unsure: Need more information

Extreme heat (temperature $\geq 90^{\circ}\text{F}$)

Heat Waves (3+ days with max temperatures $\geq 90^{\circ}\text{F}$)

Severe winter storms

Severe Storm: Hurricanes

Severe Storm: Tornadoes

Severe Storm: Precipitation

Wildfires

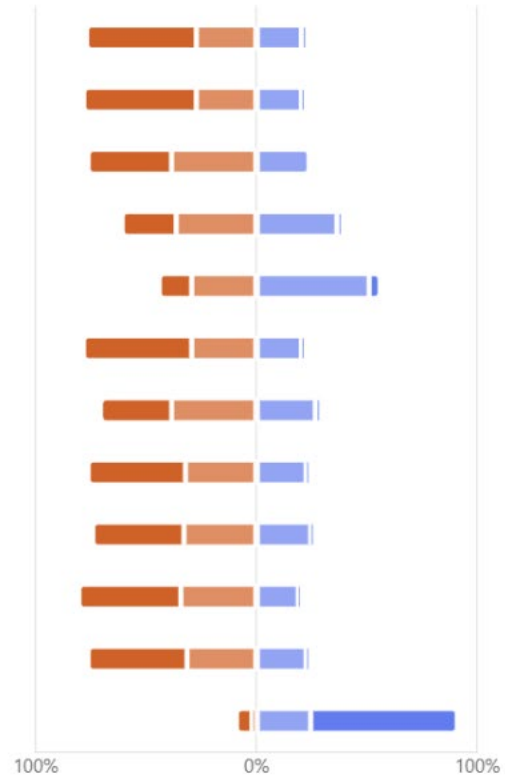
Poor air quality

Flooding

Drought

Pests, insects, or invasive species

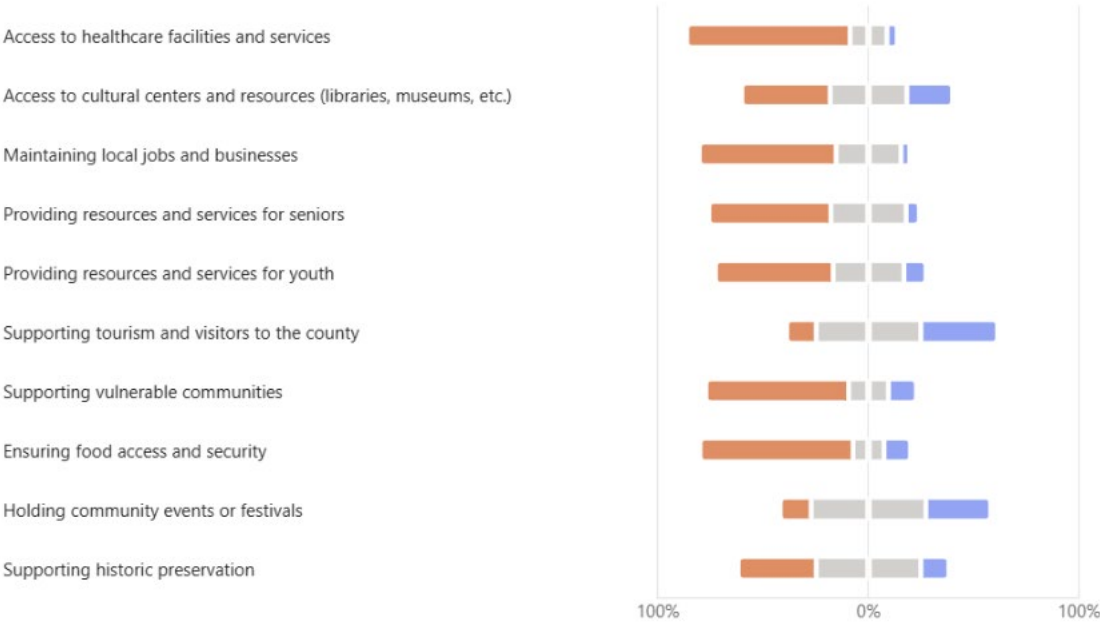
None of the above



5. Please indicate if you think the following social assets in Putnam County should be a high, medium, or low priority for the County's adaptation planning efforts.

[More details](#)

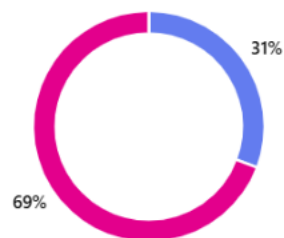
● High ● Medium ● Low



6. Are there any additional social/economic assets that you think should be prioritized in Putnam County's adaptation planning efforts?

[More details](#)

● Yes 44
● No 99



8. Have you personally experienced disruptions to any of the above assets due to climate hazards? (i.e. have you experienced cancelled events from extreme heat, disruptions to food supplies from a storm etc.?)

[More details](#)

● Yes 58
● No 85



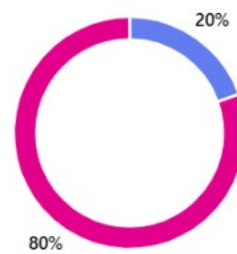
12. Please indicate if you think the following infrastructural assets in Putnam County should be a high, medium, or low priority for the County's adaptation planning efforts. [More details](#)

● High ● Medium ● Low



13. Are there any additional infrastructural assets that you think should be prioritized in Putnam County's adaptation planning efforts? [More details](#)

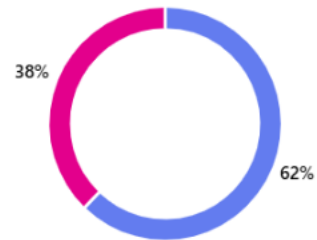
● Yes 28
● No 115



15. Have you personally experienced disruptions to any of the above assets due to climate hazards? (i.e. have you experienced frequent power outages from storms, noticed roads that flood often etc.)

[More details](#)

● Yes 89
● No 54

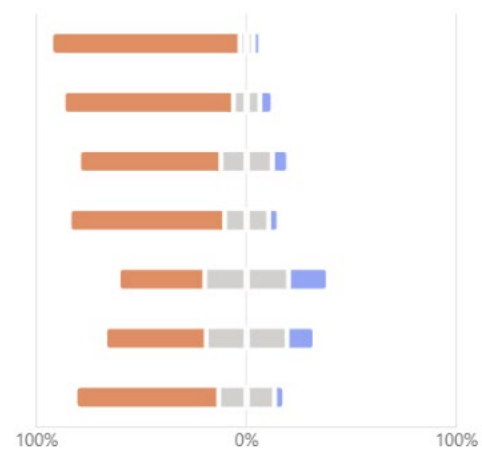


19. Please indicate if you think the following environmental assets in Putnam County should be a high, medium, or low priority for the County's adaptation planning efforts.

[More details](#)

● High ● Medium ● Low

Protecting safe drinking water
Protecting clean air
Protecting biodiversity
Protecting ecosystems and habitats
Access to high quality recreation sites
Access to parks and open space
Protecting agricultural land and soils



20. Are there any additional environmental assets that you think should be prioritized in Putnam County's adaptation planning efforts?

[More details](#)

● Yes 20
● No 123



22. Have you personally experienced disruptions to any of the above assets due to climate hazards? (i.e. have you noticed damage to recreational trails, an increase in days with poor air quality etc.?)

[More details](#)

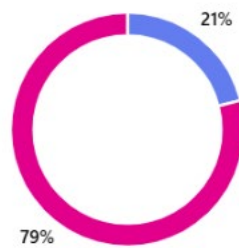
● Yes 55
● No 88



26. Would you like to provide feedback on the Draft Vision Statement?

[More details](#)

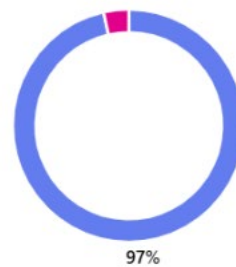
● Yes 30
● No 113



30. Are you a resident of Putnam County?

[More details](#)

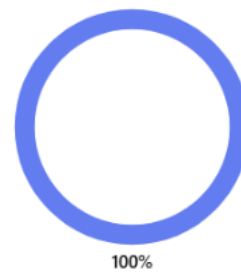
● Yes 138
● No 5



31. If not, do you work in Putnam County?

[More details](#)

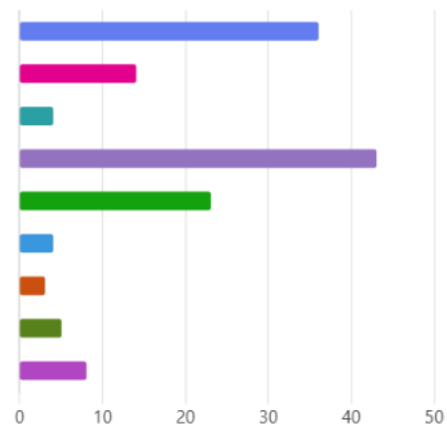
- Yes 5
- No 0



32. If so, which town/village do you live in?

[More details](#)

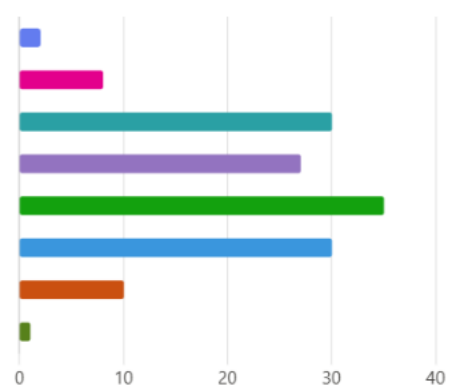
- Town of Carmel 36
- Town of Kent 14
- Town of Patterson 4
- Town of Philipstown 43
- Town of Putnam Valley 23
- Town of Southeast 4
- Village of Brewster 3
- Village of Cold Spring 5
- Village of Nelsonville 8



33. Which represents your age bracket?

[More details](#)

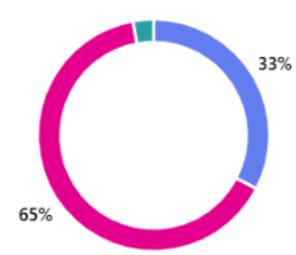
18-25	2
26-35	8
36-45	30
46-55	27
56-65	35
66-75	30
76+	10
Other	1



35. Which of the following best reflects your gender?

[More details](#)

Male	46
Female	91
Other	4



Survey Outreach

Link to CVA Survey on Putnam County's Website



A QR Code to the CVA Survey was included on all Putnam County employee's desktop computers.



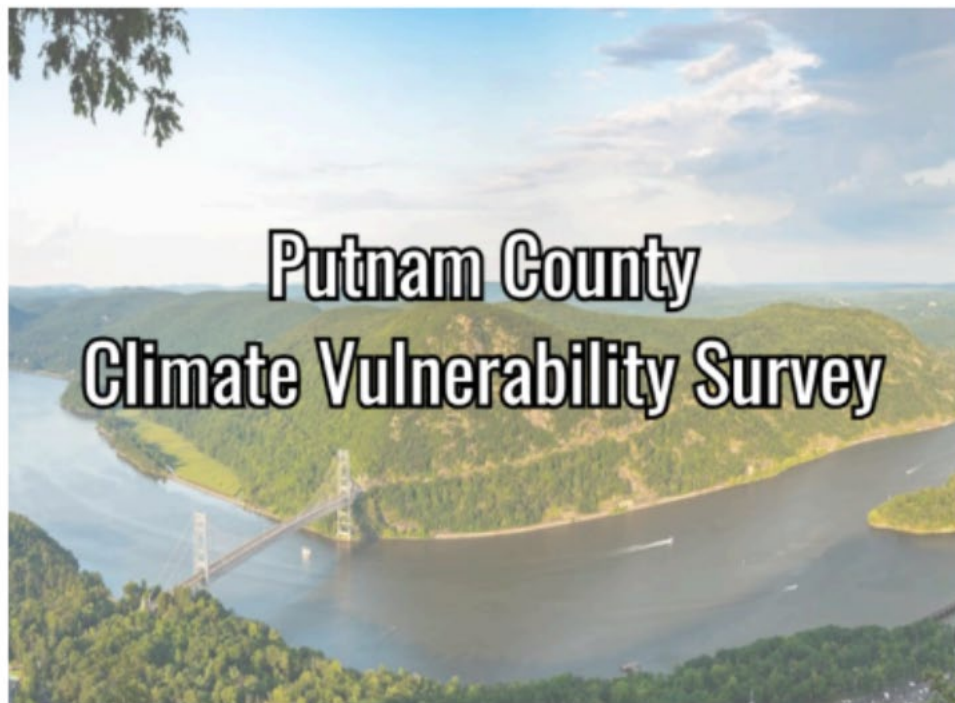
Press Release about Climate Vulnerability Assessment Survey on Putnam County's Website



Planning & Development

News & Press Release

[Back to Previous Page](#)



Department of
Environmental
Conservation



Climate Smart
Communities

Putnam County Urges Residents to take its Climate Vulnerability Assessment Survey

16 December 2025

Putnam County is seeking residents' input regarding the community impact of extreme weather through its Climate Vulnerability Assessment survey. The survey, which takes 10 minutes to complete and is currently posted on the County's website at <https://putnamcountyny.gov/ccarp>, is designed to assess hazards facing the County and the key assets at risk.

This survey is part of a broader effort between the Putnam County Planning Department and the Hudson Valley Regional Council to develop a Community Climate Adaptation and Resilience Plan (CCARP). This County-wide Plan will integrate data analysis, community input, and strategic recommendations in order to provide a framework for action to support the County in creating a safer, healthier, and more resilient future. This partnership is supported with funds provided by the New York State Department of Environmental Conservation (NYSDEC).

In June 2024, Putnam County became a Bronze-certified Climate Smart Community through New York State's Climate Smart Communities (CSC) Program. The County's partnership with the Hudson Valley Regional Council will further its existing climate progress and assist in its efforts towards Silver certification.

Please share your perspectives and experiences by completing the survey, available in English and Spanish at <https://putnamcountyny.gov/ccarp> or scan the QR code posted below. Responses will be accepted until January 5, 2026.



Additional Articles

Post on Putnam County's Department of Health's Facebook Page

← Posts Follow

 putnamhealthny

**Putnam County
Climate Vulnerability Survey**

Be part of the effort to make Putnam County stronger, better informed,
and more resilient to climate change.
Learn more at: <https://putnamcountyny.gov/ccarp>

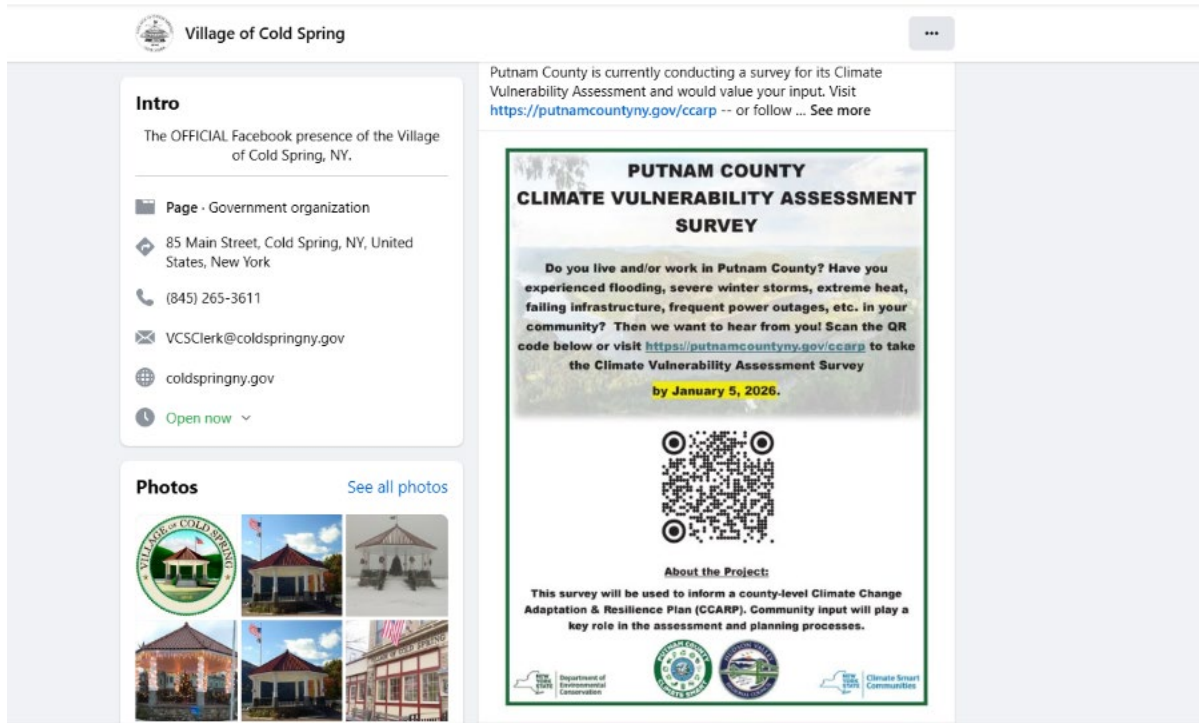
   

1

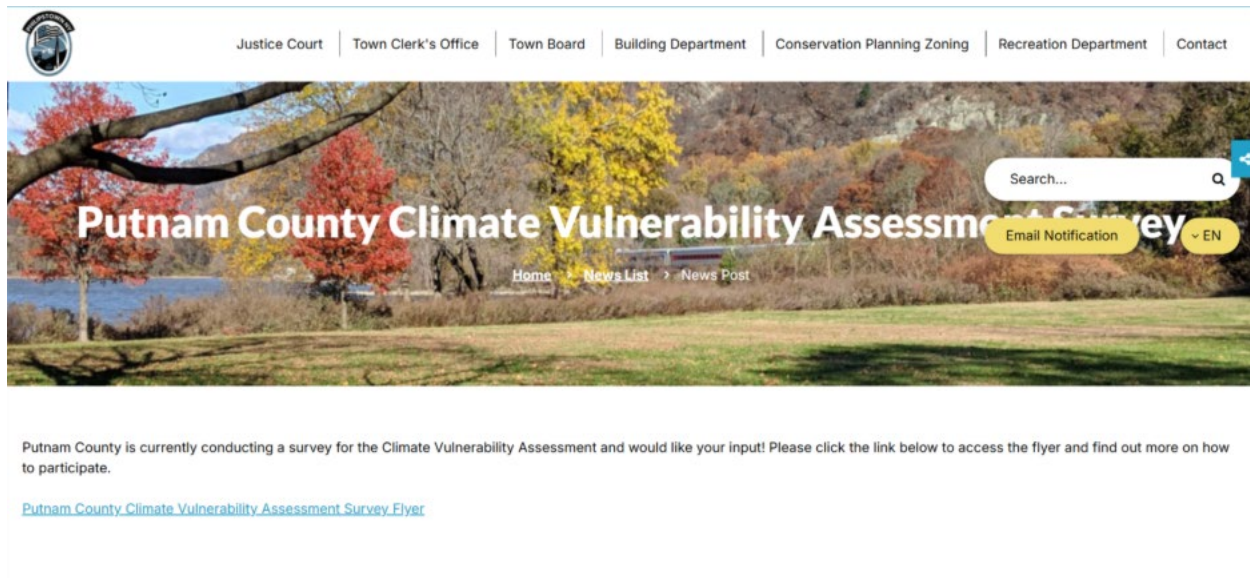
putnamhealthny Do you live and/or work in Putnam County? Have you experienced flooding, severe winter storms, extreme heat, damage to infrastructure, frequent power outages, etc. in your community? Then we want to hear from you! Visit putnamcountyny.gov/ccarp to take the Climate Vulnerability Assessment Survey by January 5, 2026.

With funding from the NYSDEC, the Hudson Valley Regional Council (HVRC) has partnered with Putnam County to create a county-level Climate Change Adaptation & Resilience Plan (CCARP). Once complete, the CCARP will provide a framework for action to support the County in creating a safer, healthier, and more resilient future. Community input will play a key role in the assessment and planning processes. To learn more about the project and stay informed, please continue to visit

CVA Survey posted on the Village of Cold Spring's Social Media



CVA Survey posted on Philipstown's Website



Survey posted through Sustainable Putnam's newsletter

Climate Vulnerability Assessment Survey



Have you experienced flooding, severe winter storms, extreme heat, damage to infrastructure, frequent power outages, etc. in your community?

Take the Climate Vulnerability Assessment Survey by January 5, 2026.

The Hudson Valley Regional Council (HVRC) has partnered with Putnam County to create a county-level Climate Change Adaptation & Resilience Plan (CCARP). Once complete, the CCARP will provide a framework for action to support the County in creating a safer, healthier, and more resilient future.

Learn more and Take the Survey

Putnam County "Keeping Employees Informed" Survey Announcement



Direct outreach email to HVRC's Putnam County contacts

Putnam County Climate Vulnerability Assessment Survey

From Elizabeth Sun <esun@hudsonvalleyrc.org>

Date Mon 12/15/2025 3:26 PM

Cc Sofie diTommaso <sditommaso@hudsonvalleyrc.org>

Hello,

Putnam County, in partnership with HVRC, is currently working on a Climate Vulnerability Assessment and Climate Adaptation Plan. The Climate Vulnerability Assessment will identify climate hazards such as storms, flooding, and severe heat that pose the largest threats to the County and economic, social, and environmental assets most at risk.

The County recently opened a survey to collect community feedback on hazards/vulnerable assets in Putnam County. The findings will be used in the County's Climate Vulnerability Assessment. There are also some questions to provide input on a resilience vision for the County. It is available in both [Spanish](#) and [English](#) on [Putnam County's Climate Change Adaptation & Resilience Plan website](#). The survey is open to residents/anyone working in the County. Please feel free to share it with your networks.



Elizabeth Sun, MPH | CEC & CSC Coordinator

[HVRC](#) | 105 Ann Street #2, Newburgh, NY 12550

Phone: 845-564-4075 | Virtual meeting: Calendly [link](#)

[Check out HVRC's Newsletter & Facebook page!](#)

Appendix I: Lunch & Learn: Putnam County's Adaptation Plan

Background Information

Putnam County and HVRC hosted a virtual Lunch & Learn event on April 21st from 12:00-1:00 pm. The event included a presentation, poll questions, and a Q&A session. In total, 28 people attended the webinar, including participants who lived/worked in Putnam County and interested participants from outside the County.

This included the Putnam County members of the CCARP Leadership Team:

- Barbara Barosa- Commissioner/CSTF Member, Putnam County Planning Department
- Matthew Covucci-Deputy Commissioner, Putnam County Planning Department
- Ilona Campo-Planner & Climate Smart Coordinator, Putnam County Planning Department

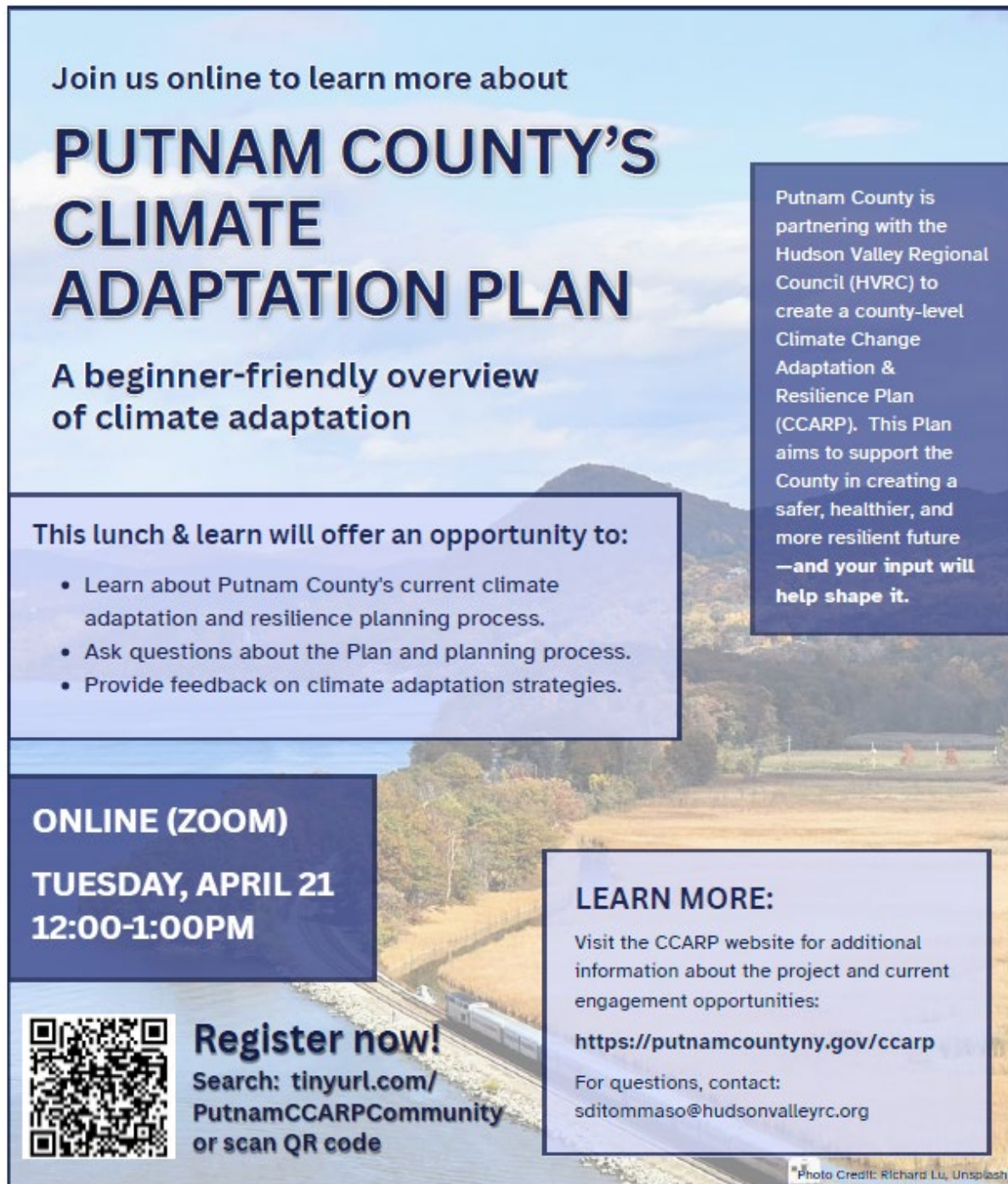
It also included 4 members of HVRC's team

- Sofie diTommaso- (Former) Resilience & Adaptation Coordinator, HVRC
- Liz Sun- Senior Clean Energy & Climate Smart Communities Coordinator, HVRC
- Evelyn Laferriere- Clean Energy & Climate Smart Communities Coordinator, HVRC
- Spencer Greenfield- (Former) Resilience & Adaptation Intern, HVRC

Following the Lunch & Learn event, a version of the presentation was re-recorded and uploaded to the County's CCARP webpage as a resource for the community. A public engagement survey adapted from the poll questions was also posted to allow community members to share their adaptation planning priorities.

Participants who joined the Lunch & Learn and lived/worked in Putnam County were encouraged to fill out the survey by email. Putnam County also shared the survey while tabling at the Boscobel House and Gardens Earthfest on April 25th.

The survey was originally posted from April 23-May 4th. The deadline was then extended to May 11th.



Join us online to learn more about

PUTNAM COUNTY'S CLIMATE ADAPTATION PLAN

A beginner-friendly overview of climate adaptation

Putnam County is partnering with the Hudson Valley Regional Council (HVRC) to create a county-level Climate Change Adaptation & Resilience Plan (CCARP). This Plan aims to support the County in creating a safer, healthier, and more resilient future —and your input will help shape it.

This lunch & learn will offer an opportunity to:

- Learn about Putnam County's current climate adaptation and resilience planning process.
- Ask questions about the Plan and planning process.
- Provide feedback on climate adaptation strategies.

ONLINE (ZOOM)
TUESDAY, APRIL 21
12:00-1:00PM

Register now!
Search: tinyurl.com/PutnamCCARPCommunity
or scan QR code

LEARN MORE:
Visit the CCARP website for additional information about the project and current engagement opportunities:
<https://putnamcountyny.gov/ccarp>
For questions, contact:
sditommaso@hudsonvalleyrc.org

Photo Credit: Richard Lu, Unsplash



Department of
Environmental
Conservation



Climate Smart
Communities

The CCARP is fully funded by the New York State Department of Environmental Conservation as part of the Climate Smart Communities Coordinator Services Program.



Department of
Environmental
Conservation



Climate Smart
Communities

Lunch & Learn: Putnam County Seeks Input at Climate Adaptation Webinar - Tuesday, April 21, 2026 at 12:00pm

06 April 2026

All residents and employees who live and work in Putnam County are invited to attend an educational webinar about Putnam County's Climate Change Adaptation and Resilience Plan (CCARP). The webinar will provide a beginner-friendly overview of climate adaptation and an opportunity to learn more about the Plan, ask questions, and provide feedback on what Putnam County can do to adapt to a changing climate.

After the event, there will be additional ways to share feedback on the CCARP for those who are unable to attend.

The CCARP is a planning effort between Putnam County and the Hudson Valley Regional Council (HVRC); the project is fully funded by the NYS DEC Climate Smart Communities Coordinator Services Program. The CCARP will help the County plan for a safer, healthier, and more resilient future by identifying climate risks and ways to reduce them.

The CCARP builds on Putnam County's existing work through the New York State Climate Smart Communities Program (CSC). The County is currently a Bronze-Certified Climate Smart Community, and once completed, the CCARP will continue the County's progress towards Silver Certification.

Community input is essential to this planning process. The CCARP has already gathered public feedback through a Climate Vulnerability Assessment Survey and Vision Statement Survey, and we need your help to ensure the Plan reflects the community's priorities. Feedback shared during this event will directly shape the strategies included in Putnam County's CCARP.

The meeting will be held **online** on **Tuesday, April 21st**, from **12:00-1:00 pm**. Please register at <https://tinyurl.com/PutnamCCARPCommunity>, or by scanning the QR code below.



Information on Putnam County's CCARP Website



County ExecutiveElected OfficialsLegislatureDepartmentsNotices & LawsTourismCareers

Join us for our upcoming virtual Lunch & Learn webinar!

LUNCH & LEARN: PUTNAM COUNTY'S CLIMATE ADAPTATION PLAN

Join to learn about the Plan and to provide feedback on what Putnam County can do to adapt to a changing climate.

A beginner-friendly overview of climate adaptation

ONLINE (ZOOM)
TUESDAY, APRIL 21
12:00-1:00PM

Register now!
Search: tinyurl.com/PutnamCCARPCommunity
or click on the link in the description.

Photo Credit: Richard Liu, Unsplash

What: This educational webinar will provide an overview of Putnam County's Climate Change Adaptation and Resilience Plan (CCARP). Attendees will have the opportunity to:

- 1 Learn about Putnam County's current climate adaptation and resilience planning process.
- 2 Ask questions about the Plan and planning process.
- 3 Provide feedback on climate adaptation strategies.

Who: Everyone is welcome to attend! Residents, employees, business owners, local elected officials, etc.

When: Tuesday, April 21, 2026 12:00-1:00pm

Where: Online (Zoom) *Pre-registration required*

Register here: <https://tinyurl.com/PutnamCCARPCommunity>





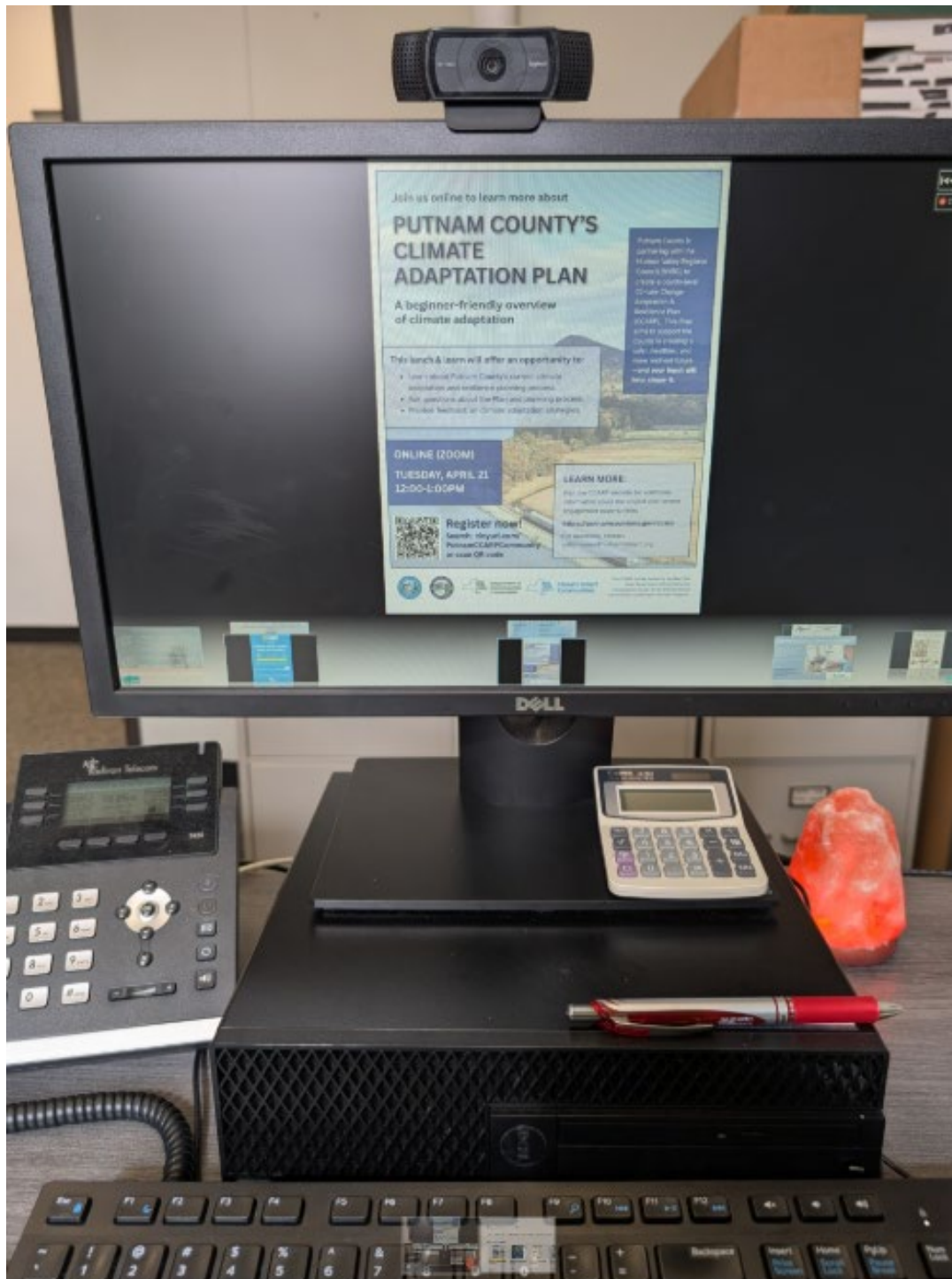
Department of Environmental Conservation

New York State Climate Smart Communities



Putnam County CCARP Appendix p. 328

Flyer Shared via Putnam County Staff Desktop Computers



“Keeping Employees Informed” at Putnam County



PC Communications

[Home](#) ▾ [Departments](#) ▾

☆ Not following

Keeping Employees Informed

This is the place where you will see County Announcements. Any County Announcements you receive via email will now show up here.

All lists are monitored and you should be mindful to only post items which conform to the County's Code of Conduct.

Keeping Employees Informed

			
Title Lunch & Learn Webinar: Putnam C...	Title 2026 Champions for Children's Bre...	Title PCDOH Household Hazardous Was...	Title Putnam County Mental Health For...
Message Content Join us on Zoom on Tuesday, April 21st from 12:00 - 1:00pm to learn more...	Message Content The CAC is happy to share that registration is now open for the 2026...	Message Content Household Hazardous Waste Drop-Off Day for Putnam County residents is on...	Message Content Putnam County Department of Mental Health invites you to the Putnam...
Contact Info Ilona Campo	Contact Info Grace Beach	Contact Info (845) 808-1390	Contact Info Lauren Johnson 914-538-4224

Email Outreach

The flyer and information about the event were emailed to the following contacts:

- Putnam County Climate Partners Listserv
- Town/Village Supervisors
- CCARP Working Group
- Partner Organizations interested in attending events/sharing information with their networks
- HVRC Contacts in Putnam County

Social Media

Putnam County Health Depar...

All
Photos
Reels
Events
Mentions

Putnam County Health Department - NY
1d

Do you live or work in Putnam County? Then please join us for our virtual Lunch & Learn session on Tuesday, April 21st at 12:00pm!... more

LUNCH & LEARN:
PUTNAM COUNTY'S
CLIMATE ADAPTATION PLAN

Join to learn about the Plan and to provide feedback on what Putnam County can do to adapt to a changing climate.
A beginner-friendly overview of climate adaptation

ONLINE (ZOOM)
TUESDAY, APRIL 21
12:00-1:00PM

Register now!
Search: tinyurl.com/PutnamCCARPCommunity or click on the link in the description.

Photo Credit: Richard Lu, Unsplash

Putnam County Government

Department of Environmental Conservation

Climate Smart Communities

6
4

Putnam County Government

All
Photos
Reels
Mentions

Putnam County Government
18h

The Putnam County Department of Planning is welcoming all those who live or work in Putnam County to join them for a virtual Lunch & Learn ... more

LUNCH & LEARN:
PUTNAM COUNTY'S
CLIMATE ADAPTATION PLAN

Join to learn about the Plan and to provide feedback on what Putnam County can do to adapt to a changing climate.
A beginner-friendly overview of climate adaptation

ONLINE (ZOOM)
TUESDAY, APRIL 21
12:00-1:00PM

Register now!
Search: tinyurl.com/PutnamCCARPCommunity or click on the link in the description.

Photo Credit: Richard Lu, Unsplash

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Department of Environmental Conservation

Climate Smart Communities

7
3

Putnam County CCARP Appendix p. 331



putnamhealthny



LUNCH & LEARN: PUTNAM COUNTY'S CLIMATE ADAPTATION PLAN

Join to learn about the Plan and to
provide feedback on what Putnam County
can do to adapt to a changing climate.

A beginner-friendly overview
of climate adaptation

ONLINE (ZOOM)

TUESDAY, APRIL 21
12:00-1:00PM

Register now!

Search: tinyurl.com/PutnamCCARPCommunity
or click on the link in the description.

Photo Credit: Richard Lu, Unsplash



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Conservation



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Communities



5



putnamhealthny Do you live or work in Putnam County?

Then please join us for our virtual Lunch & Learn sess... more

2 days ago

Mid-Hudson News Article

The Mid-Hudson News published an article about the Lunch & Learn. A link to the article is available [here](#). A screenshot is available below.

Putnam's Climate Change Adaptation and Resilience Plan to be reviewed

📅 April 21, 2026 ⌚ 6:16 am 👤 **Mid-Hudson News Staff**



CARMEL – How is Putnam County adapting to a changing climate? That question and others related to climate change will be discussed today at an online seminar sponsored by Putnam County and the Hudson Valley Regional Council.

Putnam Commissioner of Planning, Development and Transportation Barbara Barosa explained the project is fully funded by the State Department of Environmental Conservation Climate Smart Communities Coordinator Services Program that will assist the county plan for a “safer, healthier, and more resilient future by identifying climate risks and ways to reduce them.”

She added that Putnam was currently a Bronze-Certified Climate Smart Community, and once completed, the county will continue its progress towards Silver Certification.

Barosa called community input essential to this planning process. “We need the community’s help to ensure the plan reflects the community’s priorities. Feedback shared during this event will directly shape the strategies included in Putnam County’s proposal,” she said.

Today’s meeting will be held online from 12 p.m. to 1 p.m. Interested individuals may register at: <https://tinyurl.com/PutnamCCARPCommunity>

Lunch & Learn Documentation

The screenshot shows a Google Forms poll titled "Who can see your viewing activity?" with 13 responses submitted. The poll asks respondents to rank three environmental strategies as high, medium, or low priority for the County's CCARP. The strategies are: "Reduce risks from wildfires and wildfire smoke exposure," "Increase ecosystem management and data collection for climate...", and "Support resilient agriculture in Putnam County through outreach...". The poll results are displayed as horizontal bar charts. The first strategy is ranked high by approximately 80% of respondents. The second strategy is ranked high by approximately 70% of respondents. The third strategy is ranked high by approximately 50% of respondents, medium by approximately 30%, and low by approximately 20%.

Scan the QR or use link to join

<https://forms.office.com/r/8Z88JDCpqu>

Copy link

13 responses submitted

Please rank whether you think the following environmental strategies should be a high, medium, or low priority for the County's CCARP.

High Medium Low

Reduce risks from wildfires and wildfire smoke exposure.

Increase ecosystem management and data collection for climate...

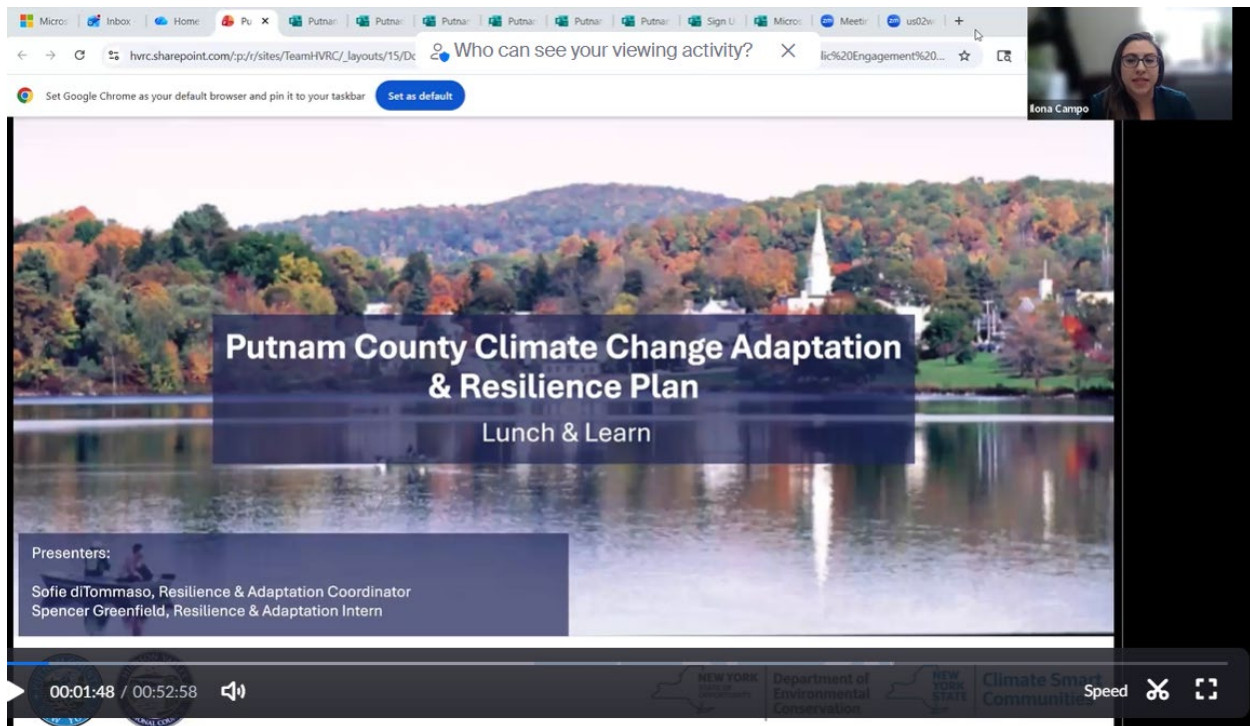
Support resilient agriculture in Putnam County through outreach...

100% 0% 100%

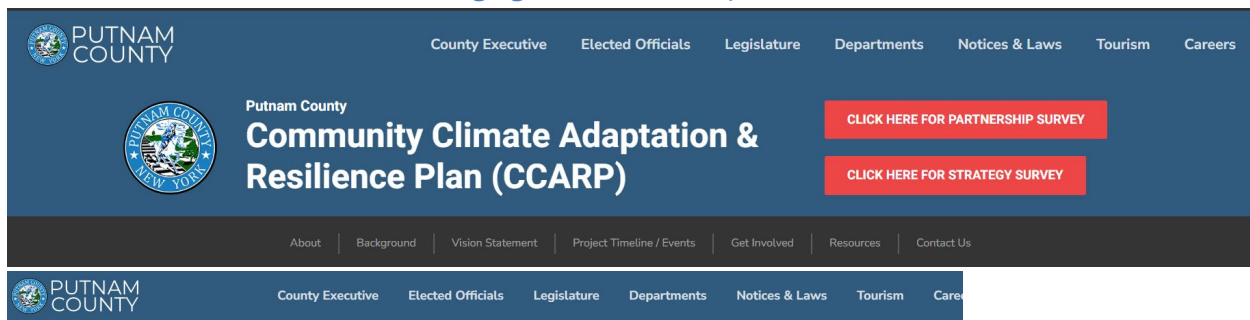
1 of 1

00:30:44 / 00:52:58

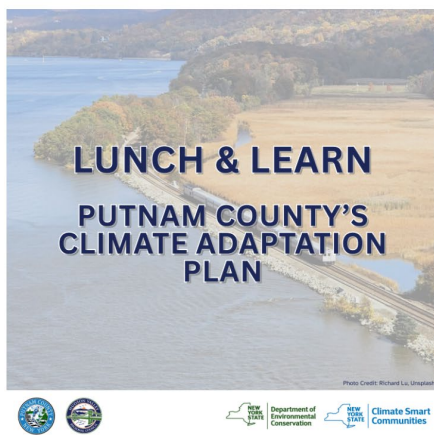
Speed



Post-Lunch & Learn: Public Engagement Survey



Miss Our Lunch & Learn Webinar?



Presentation Recording: Please click this [link](#) to access a recorded version of the presentation.
(Zoom Meeting Passcode: **a1j*W*Hg**)

Public Engagement Survey: Please take our [survey](#) by **May 4th** to share your perspective on key strategies. Your input will directly influence the strategies included in the Plan!

Climate Vulnerability Assessment: Climate hazards like storms, flooding, and severe heat can impact economic, social, and environmental assets across Putnam County. In order to proactively prepare local communities and infrastructure, Putnam County conducted a public Climate Vulnerability Assessment Survey in Winter 2025/2026 to identify the hazards that pose the largest threats to the area and the assets most at risk. Additionally, the County conducted a Draft Vision Statement Survey from November 2025 to April 2026. **The public survey periods for the Climate Vulnerability Assessment Survey and Draft Vision Statement Survey are now closed.** If you are interested in an additional public engagement opportunity, please take our online [Public Engagement Survey](#) to help shape the final strategies included in the CCARP. Stay tuned for future opportunities for public involvement!

Miss Our Lunch & Learn Webinar?



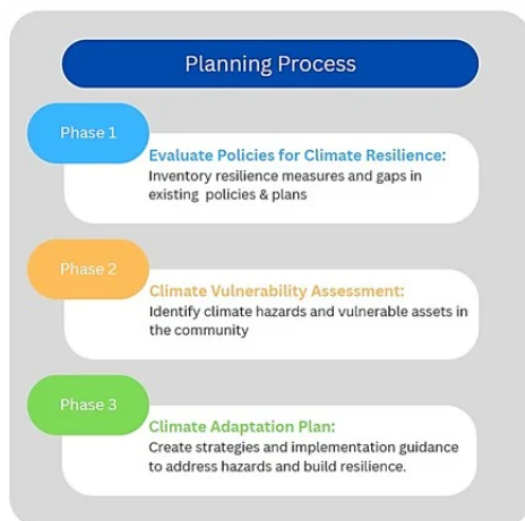
Presentation Recording: Please click this [link](#) to access a recorded version of the presentation.
(Zoom Meeting Passcode: **a1j*W^Hg**)

Public Engagement Survey - Deadline Extension: Please take our [survey](#) by **May 11th** to share your perspective on key strategies. Your input will directly influence the strategies included in the Plan!

UPCOMING EVENTS

Public Engagement Survey: Putnam County's Climate Adaptation Plan Strategies

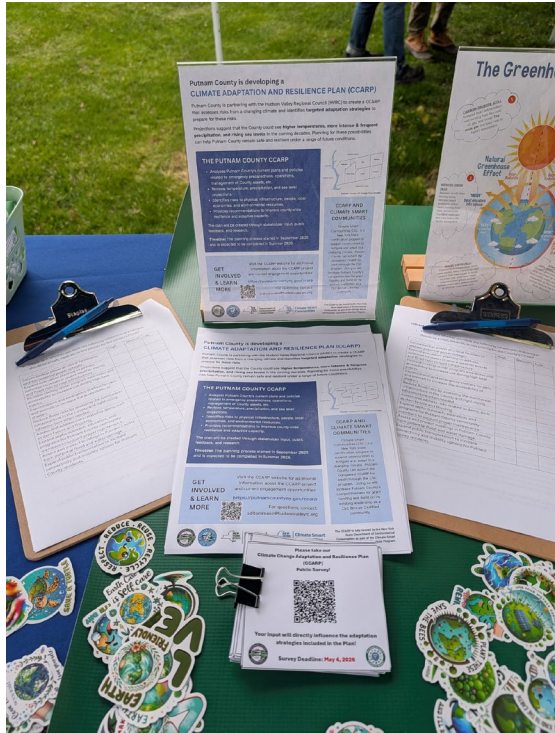
- **When:** Now through May 4, 2026
- **Who:** Everyone is welcome to participate! Residents, employees, business owners, local elected officials, etc.
- **Why:** Please complete this survey to share your perspective on potential strategies for Putnam County's CCARP. **Your responses will play an important role in ensuring the adaptation plan reflects community goals and priorities!**
- **How:** Please click [this link](#) to complete our online survey.



Lunch & Learn: Public Engagement Survey at Earthfest

Putnam County tabled at Earthfest at Boscobel House & Gardens on April 25, 2026 and shared information about the Lunch & Learn Public Engagement Survey.





Appendix J: Public Comment

[To be completed]

Appendix K: History of Extreme Weather Events

Background

Events are categorized by type and source. One weather episode may be logged as multiple distinct events. For example, one extreme storm included in the NCEI may have also been declared as a Disaster or Emergency by FEMA, or it may have also caused flooding and logged in the NCEI as both a Flood and Extreme Storm event.

The source, if a database, for each category of events, is included in the section title. **All descriptions are direct quotes from the titled source unless otherwise cited.**

Most data on events derived from NOAA National Centers for Environmental Information Storm Events Database (NCEI SED) come from the National Weather Service, which retrieves its data from, "county, state and federal emergency management officials, local law enforcement officials, skywarn spotters, NWS damage surveys, newspaper clipping services, the insurance industry and the general public, among others." ¹⁵ SKYWARN is a NWS-hosted national network of over 350,000 trained volunteer spotters who provide, "timely and accurate reports of severe weather," mostly on severe thunderstorms. ¹⁶ Some data may also be collected by, "media, law enforcement and/or other government agencies, private companies, individuals," and others outside of the National Weather Service. ¹⁷

Extreme Storms - National Centers for Environmental Information Storm Events Database

NCEI SED Episode ID	196402
Reported Property Damage	\$0
Description	High Wind
Start Date	8/9/2024
End Date	8/9/2024
Episode Narrative	The pressure gradient tightened over the region as a cold front associated with the remnants of tropical system Debby approached from the west. This produced strong winds over southeastern New York during the afternoon hours of Aug 9, 2024.

¹⁵ "Storm Data FAQ Page," National Oceanic and Atmospheric Administration National Centers for Environmental Information (NOAA NCEI), accessed January 23, 2026, <https://www.ncei.noaa.gov/stormevents/faq.jsp>.

¹⁶ "NWS SKYWARN Storm Spotter Program," National Oceanic and Atmospheric Administration (NOAA) National Weather Service, accessed January 23, 2026, <https://www.weather.gov/skywarn/>.

¹⁷ "Storm Data FAQ Page," National Oceanic and Atmospheric Administration National Centers for Environmental Information (NOAA NCEI), accessed January 23, 2026, <https://www.ncei.noaa.gov/stormevents/faq.jsp>.

Event Narratives	The public reported a tree and wires down with a road closure in both directions on US Route 9, south of Snake Hill Road in Garrison, NY at 3:59 PM Local Standard Time.
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NCEI SED Episode ID	195031
Reported Property Damage	KENT CLIFFS: \$1,000 CRAFTS: \$1,000 CARMEL: \$3,000 DYKEMANS: \$1,000 MILLTOWN: \$1,000
Description	Thunderstorm Wind
Start Date	7/17/2024
End Date	7/17/2024
Episode Narrative	A broad positively tilted upper-level trough approached from the west along with associated surface cold front and pre-frontal trough. The pre-frontal trough moved into an area with high instability (1750-2000 J/kg of MLCAPE). This combined with Effect Bulk Shear values around 25 kt allowed for multiple severe thunderstorms to develop. The storms were able to produce damaging wind gusts across southeast NY, with DCAPE values around 750-1000 J/kg.
Event Narratives	Kent Cliffs: Tree down in Fahnestock State Park blocking the road to campsite. Crafts: Tree down on Shear Hill Road. Carmel: Trees down with wires on Belden Road. Dykemans: Tree down on NY 312 at Garity Boulevard. Milltown: Tree down on NY 312 at Rocco Drive.

NCEI SED Episode ID	191259
Reported Property Damage	BREWSTER: \$1,000
Description	Thunderstorm Wind
Start Date	6/26/2024
End Date	6/26/2024
Episode Narrative	Showers and thunderstorms formed west of our area along a cold front and then moved east towards our area. The storms became severe and continued in a warm and moist environment, producing damaging winds across southeast NY.
Event Narratives	Tree down on NY 22 southbound south of Birch Hill Road. Alternate lanes of 2 lanes blocked.

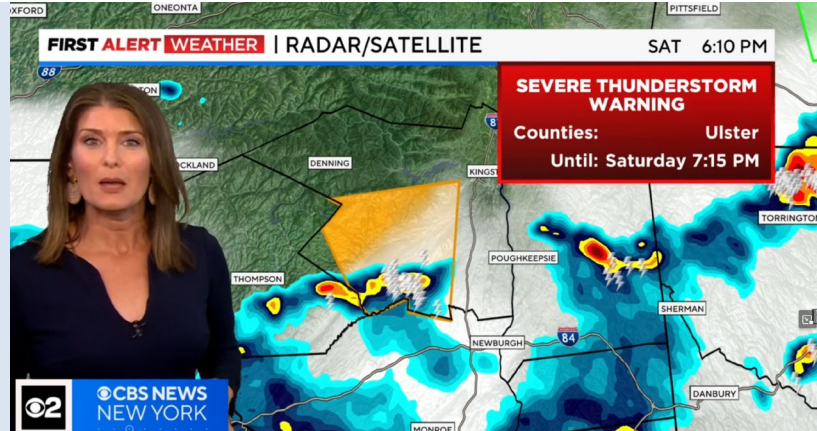
NCEI SED Episode ID	192572
Reported Property Damage	GARRISON: \$3,000 GRAYMOOR: \$2,000

	LAKE MAHOPAC: \$20,000 LAKE MAHOPAC: \$2,000 BREWSTER: \$10,000 SODOM: \$10,000 PUTNAM LAKE: \$10,000
Description	Thunderstorm Wind
Start Date	6/23/2024
End Date	6/23/2024
Injury	1
Episode Narrative	The area started off in the warm sector with an approaching cold front and pre-frontal trough from the west. Diurnal heating led to destabilization, with SBCAPE values reaching 2000-3000 J/kg. Thunderstorms fired up along the approaching pre-frontal trough and moved into the area. Given 40 knots of deep-layer shear, some storms were able to organize and become severe. The storms produced damaging winds across southeast NY.
Event Narratives	Garrison: Tree fell on road and partially brought down power line. Graymoor: Large branch down on power lines. Lake Mahopac: A tree fell on a car with three occupants on Route 6N in Mahopac between Secor Road and Parker Drive. One person was taken to a hospital and the other two refused treatment. Lake Mahopac: Wires down on Indian Hill Road. Brewster: Tree on a house on Maple Road. Sodom: Tree on a house at Vales Grove. Putnam Lake: Tree on a house on Lake Shore Drive.
Additional Information	
Photograph	
NCEI SED Episode ID	190661
Reported Property Damage	CRAFTS: \$5,000
Description	Thunderstorm Wind
Start Date	5/23/2024
End Date	5/23/2024
Episode Narrative	Isolated thunderstorms formed along and head of an approaching pre-frontal trough and cold front in the early morning hours, some were severe and produced damaging winds and large hail. Behind these storms, an MCV moved through and produced more damaging winds and large hail.
Event Narratives	Multiple trees down across the south portion of town on Stoneleigh Avenue, Drewville Road, Weber Hill Road and Seminary Hill Road near Willow Road.

NCEI SED Episode ID	186886
Reported Property Damage	\$0
Description	High Wind
Start Date	12/18/2023
End Date	12/18/2023
Episode Narrative	A strong area of low pressure moved north along the U.S. east coast and passed through the region during the morning of December 18, 2023. The pressure gradient tightened as the center of the storm approached, producing high winds over Southeastern New York during the morning hours.
Event Narratives	The Department of Highways reported downed tree in Patterson, NY at 705 AM Local Standard Time and at Brewster at 717 AM Local Standard Time.

NCEI SED Episode ID	186184
Reported Property Damage	MAHOPAC ARPT: \$10,000
Description	Thunderstorm Wind
Start Date	9/8/2023
End Date	9/8/2023
Episode Narrative	Thunderstorms developed along a stalled boundary and moved through southeast NY in an environment with 3000 to 4000 J/kg of SBCAPE. Some of these storms were severe and produced damaging winds and large hail.
Event Narratives	A tree with large branches fell on a school bus on Agor Lane in Mahopac with 25 children and a driver inside. No injuries. Power company and highway department arrived on scene shortly after.
Additional Information	

Photograph



18

NCEI SED Episode ID	184672
Reported Property Damage	FARMERS MILLS: \$1,000 LUDINGTONVILLE: \$5,000 TOWNERS: \$1,000 LAKE CARMEL: \$1,000
Description	Thunderstorm Wind
Start Date	8/12/2023
End Date	8/12/2023
Episode Narrative	A slow moving front and shortwave trough aloft approached from the west. Surface heating led to moderate instability and a severe thunderstorm was able to develop and produce damaging wind gusts and large hail as it moved through southeastern NY.
Event Narratives	Farmers Mills: Tree down on Farmers Mill Road near Kentview Drive in Lake Carmel NY. Ludingtonville: Tree down on a transformer. Towners: Tree down on Fair Street near Routh 311 in Lake Carmel NY. Lake Carmel: Tree down blocking Terry Hill Road in Lake Carmel NY.

NCEI SED Episode ID	183551
Reported Property Damage	MAHOPAC MINES: \$1,000
Description	Thunderstorm Wind
Start Date	7/3/2023
End Date	7/3/2023
Episode Narrative	A slow moving front and shortwave trough aloft approached from the west. Surface heating led to moderate instability and a severe

¹⁸ "First Alert Forecast: CBS2 9/9/23 Evening Weather," CBS New York, September 9, 2023, video, 4:00, <https://www.youtube.com/watch?v=MmsCMzkt3Hc>.

	thunderstorm was able to develop and produce damaging wind gusts and large hail as it moved through southeastern NY.
Event Narratives	Tree down on Taconic State Parkway southbound south of exit 25, Peekskill Hollow Road.

NCEI SED Episode ID	180762
Reported Property Damage	\$0
Description	Hail
Start Date	6/2/2023
End Date	6/2/2023
Episode Narrative	A shortwave aloft approached from the north along with a surface backdoor cold front. Severe thunderstorms were able to develop ahead of the cold front and produce large hail and damaging winds.
Event Narratives	One inch hail reported via social media near Thunder Ridge in Patterson.

NCEI SED Episode ID	177068
Reported Property Damage	\$0
Description	High Wind
Start Date	12/23/2022
End Date	12/23/2022
Episode Narrative	A strong low pressure system centered near the eastern Great Lakes Region continued to strengthen as it moved northeast on December 23, 2022. This brought high winds over southeastern New York that morning as the pressure gradient tightened over the area.
Event Narratives	NY Department of Highways reported a tree down on Route 121 southbound at Red Fox Lane in Peach Lake, NY at 610 AM Local Standard Time. This blocked one lane.

NCEI SED Episode ID	172514
Reported Property Damage	BREWSTER: \$1,000
Description	Thunderstorm Wind
Start Date	7/21/2022
End Date	7/21/2022
Episode Narrative	A pre-frontal trough out ahead of a cold front was able to spark severe thunderstorms over an unstable environment in southeast NY.
Event Narratives	Tree down and road closure on NY 22 northbound at Reed Farm Drive. All lanes blocked.

NCEI SED Episode ID	163746
Reported Property Damage	\$0
Description	Hail
Start Date	11/13/2021
End Date	11/13/2021
Episode Narrative	A strong and slow moving frontal boundary, along with a potent mid level disturbance triggered strong to severe thunderstorms which impacted Southeastern New York. Six tornadoes also touched down across Long Island with one in Nassau County and five across Suffolk County.
Event Narratives	Hail of 1 inch in diameter was reported.

NCEI SED Episode ID	161960
Reported Property Damage	NELSONVILLE: \$3,000
Description	Thunderstorm Wind
Start Date	8/11/2021
End Date	8/11/2021
Episode Narrative	A low pressure trough in a warm and humid air mass triggered severe thunderstorms across the Southeastern New York.
Event Narratives	Police Department reports wires down near Maple Terrace and Cedar Street.

NCEI SED Episode ID	
Reported Property Damage	LAKE MAHOPAC: \$10,000 CARMEL: \$10,000 BREWSTER: \$10,000
Description	Thunderstorm Wind
Start Date	8/27/2020
End Date	8/27/2020
Episode Narrative	An upper level disturbance in close proximity to a departing warm front triggered numerous severe thunderstorms across Southeastern New York. These storms produced a tornado in Montgomery, NY in Orange County.
Event Narratives	Lake Mahopac: Numerous trees snapped and uprooted and power lines down. Carmel: Numerous trees and power lines down through the town. Brewster: Multiple large trees reported down on power lines.
Additional Information	

Photograph

NCEI SED Episode ID	152384
Reported Property Damage	\$0 reported by the NCEI; additional damages reported under FEMA Declared Emergencies and Natural Disasters
Description	Tropical Storm
Start Date	8/4/2020
End Date	8/4/2020
Episode Narrative	Category 1 Hurricane Isaias with maximum sustained winds of 85 mph, made landfall near Ocean Isle Beach, NC at 11:10 pm on August 3rd. Isaias' intensity weakened back to Tropical Storm strength as its forward speed increased to near 30 mph early morning of August 4th. The center of Isaias passed about 65 miles west of New York City at 3 pm on August 4, 2020. Tropical storm force winds extended well east of the center of circulation. The highest sustained wind speeds ranged from 35 to 55 mph, with gusts 60 to 80 mph, across Long Island, NYC and portions of the Lower Hudson Valley, resulting in widespread wind damage and power outages. A storm surge as high as 3 to 5 ft across the Lower NY Harbor and the south shore of western Long Island, occurred during low tide, which only resulted in localized minor coastal flood benchmarks being reached in these spots. Greater impacts were realized along the ocean beachfront from 8 to 12 ft surf causing significant beach erosion and flooding. Additionally, rough surf of 4 to 6 ft on far western Long Island Sound caused damage to marinas across coastal Westchester County. Rainfall amounts of 1/2 to 4 1/2 inches were observed across the Lower Hudson Valley, highest amounts across western areas, with 1/2 to 1 1/2 inches observed across NYC, and generally less than an inch across Long Island. One death resulted from the high winds: A 60 yr old man was killed in the Briarwood section of Queens near the intersection of 84th Drive and 143rd Street near Smedley Street from a tree falling on his vehicle. One injury resulted from the high winds: A woman was critically injured when a falling tree branch hit her while walking on Dumont Avenue in Brownsville Brooklyn. Preliminary damage cost estimates for Public Assistance are:

	The number of power outages statewide peaked around 920000 on August 4-5th, with many outages lasting several days to a week. The state lost around xx percent of their tree population.
Event Narratives	Nearby, a peak wind gust of 51 mph was recorded at the Stewart Airport AWOS at 420pm LST and a peak wind gust of 57 mph at the NYS mesonet in Somers at 33 ft elevation at 120pm LST. These type of winds across the area resulted in numerous trees and tree limbs being downed, power outages, damages to homes and automobiles, and disruption to mass transit.
Additional Information	See FEMA Declared Emergencies and Natural Disasters
Photograph	See FEMA Declared Emergencies and Natural Disasters

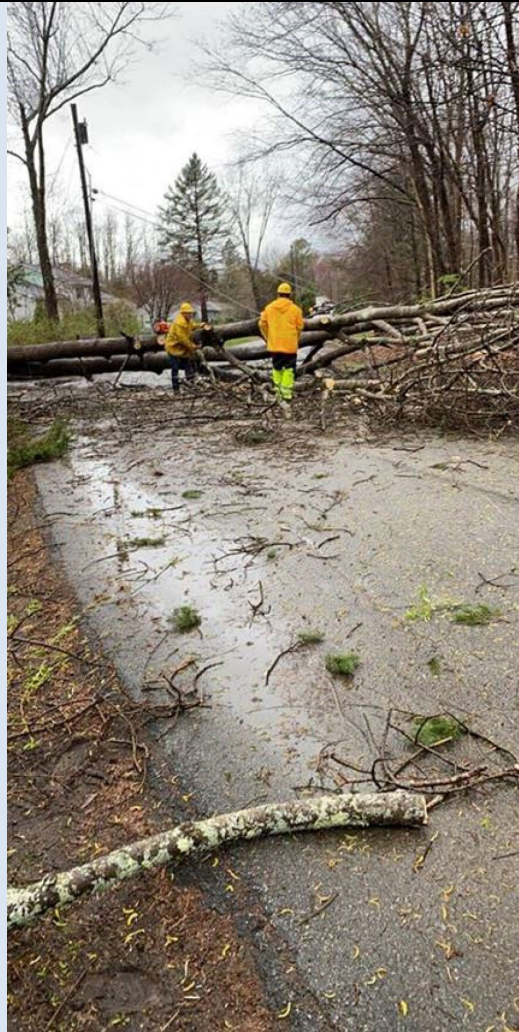
NCEI SED Episode ID	147245
Reported Property Damage	GARRISON: \$5,000
Description	Thunderstorm Wind
Start Date	5/15/2020
End Date	5/15/2020
Episode Narrative	A cold front triggered severe thunderstorms which moved through Interior Southeastern New York.
Event Narratives	Sheriff's dispatcher reports multiple trees and power lines down along Route 9 near Garrison, NY. Time estimated by radar.

NCEI SED Episode ID	146125
Reported Property Damage	\$50,000
Description	High Wind
Start Date	4/13/2020
End Date	4/13/2020
Episode Narrative	Deep low pressure passed to the west of the area resulting in high winds.
Event Narratives	At 1037 am, social media reported a tree down on US 6 eastbound in Carmel. According to social media reports, a downed tree and wires laid across NY 9D in both directions north of Main Street in Cold Spring at 1110 am.

Additional Information

1.3 million power outages were reported from Texas to Maine,¹⁹ and thousands of outages occurred Countywide.²⁰

Photograph



21

NCEI SED Episode ID	140283
Reported Property Damage	CRAFTS: \$1,000
Description	Thunderstorm Wind
Start Date	7/22/2019

¹⁹ Allison Dunne, "Power Outage Repairs From A Wind Storm Continue," WAMC Northeast Public Radio, April 14, 2020, <https://www.wamc.org/hamilton-valley-news/2020-04-14/power-outage-repairs-from-a-wind-storm-continue>.

²⁰ Isabel Keane, "More than 10,000 customers still without power Tuesday after storms pounded area," LoHud, Rockland/Westchester Journal News, last modified April 14, 2020, <https://www.lohud.com/story/weather/2020/04/13/westchester-putnam-power-outage-wind-storm/2981620001/?gnt-cfr=1&gca-cat=p&gca-uir=true&gca-epti=z1184xxe1184xxv003999d--43--b--43--&gca-ft=203&gca-ds=sophi>.

²¹ Central Hudson, included in Allison Dunne, "Power Outage Repairs From A Wind Storm Continue," WAMC Northeast Public Radio, April 14, 2020, <https://www.wamc.org/hamilton-valley-news/2020-04-14/power-outage-repairs-from-a-wind-storm-continue>.

End Date	7/22/2019
Episode Narrative	A cold front stalled as a stationary boundary triggering severe thunderstorms that impacted Southeastern New York.
Event Narratives	Tree down on Route 6 (Crane Road) with time estimated by radar.

NCEI SED Episode ID	137446
Reported Property Damage	\$0
Description	Hail
Start Date	6/30/2019
End Date	6/30/2019
Episode Narrative	A strong upper level disturbance triggered severe thunderstorms across Southeastern New York.
Event Narratives	One inch hail reported.

NCEI SED Episode ID	128365
Reported Property Damage	BREWSTER: \$3,000 SODOM: \$2,000
Description	Thunderstorm Wind
Start Date	6/18/2018
End Date	6/18/2018
Episode Narrative	A prefrontal trough ahead of a cold front approaching from the west brought severe weather to Southeastern New York.
Event Narratives	Brewster: A tree and wires down on Peaceable Hill Road. Sodom: Wires reported down across Star Ridge road near route 202.
Additional Information	
Photograph	

NCEI SED Episode ID	124185
Reported Property Damage	LAKE CARMEL: \$1,000 CARMEL: \$2,000 LAKE CARMEL: \$5,000 BREWSTER: \$0
Description	Thunderstorm Wind
Start Date	5/15/2018
End Date	5/15/2018
Episode Narrative	An approaching cold front triggered numerous severe thunderstorms over southeastern New York. These storms produced 3 tornadoes in the Lower Hudson Valley, as well as microbursts and macrobursts.

Event Narratives	Lake Carmel: Bank sign damaged at the Putnam County National Bank on Route 52. Carmel: Trees and wires down along Route 52 with at least one power pole snapped. Lake Carmel: Trees down on Woodstock Road. Brewster: A 65 mile per hour gust was reported by Brewster mesonet station.
Additional Information	
Photograph	

NCEI SED Episode ID	124185
Reported Property Damage	LUDINGTONVILLE-LAKE CARMEL (Kent): \$250,000 HAVILAND HOLLOW-PUTNAM LAKE (Patterson): \$100,000
Description	Tornado
Magnitude	LUDINGTONVILLE-LAKE CARMEL: EF2 HAVILAND HOLLOW-PUTNAM LAKE: EF1
Start Date	5/15/2018
End Date	5/15/2018
Episode Narrative	An approaching cold front triggered numerous severe thunderstorms over southeastern New York. These storms produced 3 tornadoes in the Lower Hudson Valley, as well as microbursts and macrobursts.
Event Narratives	LUDINGTONVILLE-LAKE CARMEL (Kent): Based on a National Weather Service storm survey, done in conjunction with the Putnam County Bureau of Emergency Services, is been determined that an EF2 tornado with estimated peak winds of 115 mph moved through Kent, New York. The tornado originated near apartments at 1213 New York Route 52. It continued down NY State Route 52, damaging some roofs in the strip mall at the intersection of Route 52 and Farmers Mill Road, where it also knocked down portions of the parapet above the Dunkin Donuts, and snapped and uprooted some trees. The tornado lifted near 52 Bowen Road in Kent. The most extensive damage was along Schuykill Court, where dozens of large trees were uprooted and snapped, with a convergent pattern to most of the fallen trees. Based on this damage, the tornado was classified as an EF2, with estimated maximum winds of around 115 mph. HAVILAND HOLLOW-PUTNAM LAKE (Patterson): Based on a National Weather Service storm survey, done in conjunction with the Putnam County Bureau of Emergency Services, is been determined that an EF1 tornado with estimated peak winds of 100 mph moved along a discontinuous path through Patterson, New York. The tornado originated along NY State Route 22, north of the

intersection with Haviland Hollow Road, near the Watchtower Educational Center. The tornado then tracked along East Branch Road, turned left toward Putnam Lake, then lifted near the intersection of East Branch Road and Fairfield Drive. The storm snapped multiple trees along its path, not all of it continuous. The most extensive damage occurred in the general vicinity of 706 East Branch Road, where multiple trees were uprooted and snapped, lying in a convergent pattern, and where leaves were splattered on three sides of the house. Based on this information, the tornado was classified as an EF1 with estimated maximum winds of 100 mph.

Additional Information

Photograph



22

NCEI SED Episode ID	120647
Reported Property Damage	\$50,000
Description	Strong Wind
Start Date	10/24/2017
End Date	10/24/2017
Episode Narrative	Strong winds occurred ahead of and behind a cold front.

²² Anonymous, included in David Proper, "Tornados Devastate Putnam," *The Putnam Examiner* 10, no. 478 (2018): 1, <https://examiner-pdf-downloads.s3.amazonaws.com/putnam/2018/PutnamExaminers5-22-18.pdf>.

Event Narratives	A downed tree on Route 292 North of Mooney Hill Road was reported, which caused a road closure. This occurred at 630 am in Patterson.
Additional Information	
Photograph	

NCEI SED Episode ID	120717
Reported Property Damage	OSOAWANA CORNERS: \$2,500 MANITOU: \$1,000 PUTNAM LAKE: \$1,000
Description	Thunderstorm Wind
Start Date	9/5/2017
End Date	9/5/2017
Episode Narrative	An approaching cold front triggered isolated severe thunderstorms in Putnam County.
Event Narratives	Osoawana Corners: Trees were reported down on Canopus Hill Road, east of Route 9. Manitou: Trees were reported down on New York State Route 9D, one-quarter of a mile north of Bear Mountain Bridge. Putnam Lake: A tree was reported down near 450 East Branch Road in Putnam Lake.
Additional Information	
Photograph	

NCEI SED Episode ID	118079
Reported Property Damage	OSCAWANA LAKE: \$2,000 KENT CLIFFS: \$0 PATTERSON: \$5,000 BREWSTER HGTS: \$1,000 BREWSTER: \$7,500
Description	Thunderstorm Wind
Start Date	6/19/2017
End Date	6/19/2017
Episode Narrative	An approaching upper level shortwave and associated surface cold front triggered multiple severe thunderstorms across sections of New York City and the Lower Hudson Valley.
Event Narratives	Oscawana Lake: A tree was reported down on wires just southeast of Oscawana Lake at 459 Oscawana Lake Road. Kent Cliffs: A tree was reported down in Fahnestock State Park. Patterson: Trees were reported down on wires along Route 311 in Patterson. Brewster

	Heights: A tree was reported down along Route 312 in Tilly Foster. Brewster: Many trees and wires were reported down just northwest of Brewster along Drewville Road.
Additional Information	
Photograph	
NCEI SED Episode ID	118076
Reported Property Damage	MILLTOWN: \$1,500
Description	Thunderstorm Wind
Start Date	6/13/2017
End Date	6/13/2017
Episode Narrative	A passing cold front triggered isolated severe storms over Orange and Putnam Counties.
Event Narratives	A tree was reported downed northeast of Brewster Hill at the intersection of Routes 312 and 22.
NCEI SED Episode ID	113589
Reported Property Damage	\$50,000
Description	Strong Wind
Start Date	2/13/2017
End Date	2/13/2017
Episode Narrative	Low pressure passed to the east and rapidly deepened.
Event Narratives	A mesonet station 1 mile north of Peach Lake measured a wind gust up to 51 mph at 202 pm.
Additional Information	Over 70mph gusts observed in neighboring Westchester County. ²³
Photograph	
NCEI SED Episode ID	110099
Reported Property Damage	MILLTOWN: \$5,000
Description	Thunderstorm Wind
Start Date	8/11/2016
End Date	8/11/2016
Episode Narrative	A trough of low pressure helped trigger isolated severe storms, which impacted Putnam and Nassau Counties.
Event Narratives	Trees were reported down on I-84 just west of the New York-Connecticut border.

²³ "February 13th Wind Event," National Weather Service New York, NY, February 13, 2017, <https://www.weather.gov/okx/storm02132017>.

Additional Information	
Photograph	
NCEI SED Episode ID	109190
Reported Property Damage	LAKE SECOR: \$3,000
Description	Thunderstorm Wind
Start Date	7/18/2016
End Date	7/18/2016
Episode Narrative	A passing cold front triggered isolated severe thunderstorms over the Lower Hudson Valley, New York City, and Long Island.
Event Narratives	Trees and power lines were reported down at the intersection of Wood Street and Goldfinch Lane just northeast of Donald J. Trump State Park.
Additional Information	
Photograph	

Extreme Storms – FEMA Declared Emergencies and Natural Disasters

FEMA Declaration Number	DR-4723
Reported Property Damage	\$3.5 million ²⁴
Description	Severe storms and flooding
Start Date	7/9/2023
End Date	7/10/2023
Information	According to a storymap from the NWS, a frontal boundary stalled over the lower Hudson Valley in early July 2023, lifting warm and humid air, becoming part of a wave of low pressure moving slowly off the coast of Long Island and New Jersey. ²⁵ As the storm moved, it brought devastating flooding from New York to Vermont. The slow-moving showers and thunderstorms brought 4-9 inches of rain in three hours during the afternoon of July 9 in Putnam County and adjacent areas, with Garrison and Cold Spring receiving near 5.0 inches in that time span. A Flash Flood Emergency was declared in eastern Orange, northern Rockland, western Putnam, and northwest Westchester counties. Motorists were stranded and had to be rescued. Flooding impacted the Metro-North Hudson Line. The most

²⁴ "AVAIL - Fusion Events V2," Albany Visualization and Informatics Lab (AVAIL), last modified October 30, 2025, <https://mitigateny.org/cenrep/source/870>, included in "Hurricane," New York State MitigateNY, https://mitigateny.org/assess_risk/natural_hazards/hurricane.

²⁵ "July 9-10, 2023 Devastating Flooding Across Southeastern NY," National Weather Service New York, NY, <https://storymaps.arcgis.com/stories/821dddf2db7847ecad6b2424f206focd>.

devastated locations weren't in Putnam County, but flooding did occur in Cold Spring, Mahopac, and Patterson. One fatality was reported in Fort Montgomery. Areas of Putnam County near the Hudson River hit a 1/500-1/1000 year 3-hour rainfall exceedance event. The following road closures were reported: Popolopen Bridge was closed for a month across Hudson from Southern Philipstown; Route 218 washed out and remained closed for several months; Taconic State Parkway, US9, US6, Route 9D, which go through Putnam County, were impacted.²⁶

The following was reported by the NWS text-based Local Storm Reports for New York, NY: Water rushed down E Lake Blvd in Carmel. Fair St closed in Lake Carmel. "DOT reports flooding on NY 6N both directions at Potter Rd, all lanes blocked" in Mahopac. All lanes flooded on Taconic State in Mahopac near Tompkins Corners. Patterson: Flooding and Road closure on NY 292 in both directions; NY 311; and NY 55.²⁷

According to an NWS Public Information Statement, Putnam Valley had reported 8.93 in of rainfall as of July 10.²⁸

A narrative/timeline of impacts is available on patch.com.²⁹

Photograph

FEMA Declaration Number	DR-4615, EM-3572
Reported Property Damage	\$1.8 million ³⁰
Description	Hurricane Ida
Start Date	9/1/2021
End Date	9/3/2021
Information	Hurricane Ida made landfall on August 29 in Louisiana, before weakening to a post-tropical cyclone as it moved northeast,

²⁶ "July 9-10, 2023 Devastating Flooding Across Southeastern NY," National Weather Service New York, NY, <https://storymaps.arcgis.com/stories/821dddf2db7847ecad6b2424f206focd>.

²⁷ "Preliminary Local Storm Report... Summary," National Weather Service Text Product: LSROKX, July 11, 2023, <https://mesonet.agron.iastate.edu/wx/afos/p.php?pil=LSROKX&e=202307110027>, included in Iowa Environmental Mesonet, Iowa State University.

²⁸ "Rainfall Reports from Flood Event July 9 - July 10," National Weather Service Text Product: PNSOKX, National Weather Service, July 10, 2023, <https://mesonet.agron.iastate.edu/wx/afos/p.php?pil=PNSOKX&e=202307102332>, included in Iowa Environmental Mesonet, Iowa State University.

²⁹ Lanning Taliaferro, "HV Flood Timeline July 9: People Trapped, Cars Flood, Roads Collapse," Patch, last modified July 15, 2023, <https://patch.com/new-york/southeast/hudson-valley-flooded-timeline-sundays-severe-weather>.

³⁰ "AVAIL - Fusion Events V2," Albany Visualization and Informatics Lab (AVAIL), last modified October 30, 2025, <https://mitigateny.org/cenrep/source/870>, included in "Hurricane," New York State MitigateNY, https://mitigateny.org/assess_risk/natural_hazards/hurricane.

Photograph

	southeastern New York as a tropical depression on August 23. ³⁶ ³⁷ Putnam County faced outages, with Phillipstown being the hardest hit among Central Hudson customers. ³⁸ Flooding was reported across Putnam, Orange, Rockland, and Westchester Counties, with a Flood Warning issued. ³⁹
Photograph	
FEMA Declaration Number	DR-4567
Reported Property Damage	\$82,400 ⁴⁰
Description	Tropical Storm Isaias
Start Date	8/4/2020
End Date	8/4/2020
Information	The night of August 3, 2020, Hurricane Isaias made landfall in North Carolina, before weakening to a tropical depression and moving north. The storm crossed through Orange and Sullivan Counties in New York, west of Putnam County, on August 4. ⁴¹ Wind gusts of 57 mph were measured in Somers, Westchester County, south of Mahopac. ⁴² According to Patch, The Croton Falls Commuters and fixed route PART system were left without power, and the MetroNorth Harlem line, which services the towns of Southeast and Patterson, was closed north of Westchester County. ⁴³ Over 30,000

³⁶ Ryan Miller and Diane Pantaleo, "Tropical Storm Henri Doesn't Make Landfall in NY but State of Emergency Still in Effect," LoHud, Rockland/Westchester Journal News, last modified August 22, 2021, <https://www.lohud.com/story/weather/hurricanes/2021/08/21/hurricane-henri-nyc-long-island-tracker-category-1-cuomo-state-of-emergency/118457098/?gnt-cfr=1&gca-cat=p&gca-uir=true&gca-epti=z116701d00----v116701d--75--b--75--&gca-ft=153&gca-ds=sophi>.

³⁷ Richard J Pasch, Robbie Berg, and Andrew B. Hagen, *National Hurricane Center Tropical Cyclone Report: Hurricane Henri*, Report No. AL082021 (National Oceanic and Atmospheric Administration National Weather Service, 2022), https://www.nhc.noaa.gov/data/tcr/AL082021_Henri.pdf.

³⁸ Michael Woyton, "Power Restoration Continues Monday in Mid-Hudson Valley," Patch, August 23, 2021, <https://patch.com/new-york/midhudsonvalley/power-restoration-continues-monday-mid-hudson-valley>.

³⁹ Bobby Welber, "Henri is Pouring on Hudson Valley, Widespread Flooding Expected," Hudson Valley Post, August 23, 2021, <https://hudsonvalleypost.com/henri-is-pouring-on-hudson-valley-widespread-flooding-expected/>.

⁴⁰ "AVAIL - Fusion Events V2," Albany Visualization and Informatics Lab (AVAIL), last modified October 30, 2025, <https://mitigateny.org/cenrep/source/870>, included in "Hurricane," New York State MitigateNY, https://mitigateny.org/assess_risk/natural_hazards/hurricane.

⁴¹ "Isaias 2020," National Oceanic and Atmospheric Administration, Historical Hurricane Tracks, <https://coast.noaa.gov/hurricanes/#map=9.33/41.5443/-74.318&search=eyJzZWFrY2hTdHJpbmciOiJQdXRuYWogQ291bnR5LCBOZXcgWWgyaywgVVBliwic2VhcmNoVHlwZSI6Imdlb2NyZGVkIiwib3NtSUQiOiIxdm4MDIyIiwiaWY2FoZWdvcmlscyY6WyJINSIsIkgoliwiSDMiLCJIMiIsIkgxliwiVFMiLCJURCIslkVUllOSInIlYXJzIjpbXSXSwibWqudGhZljbXSwiZW5zbyl6W10slnByZXNzdXJlIjpb7InJhbmdlljpbMCwxMDMwXSXSwiaW5jbHVkZVVua25vZ25QcmVzc3VyZSI6dHJ1ZXosInNlbGVjdGVkU3RvcmlJRCl6IjIwMjAyMTFOMTMzMDYiLCJidWZmZXliOjYwLjIidWZmZXJvbmloIjpbIkd5hdXRpY2FslE1pbGVzIl0slnNvcnRTZWxlY3Rpb24iO3sidmFsdWUiOiJ5ZWFrY29uZXdlc3QilCj5YWJlbCI6IiIYXlgKE5ld2VzdCkifSwiYXBwbHlUboFPSSI6dHJ1ZXSwiaXNTdGgybUxhYmVsc1Zpc2libGUiOnRydWVg.>

⁴² Amy R. Paulin and George Latimer, *United Westchester August 2020 Storm Response Report* (New York State Assembly, 2021), https://assembly.state.ny.us/write/upload/member_files/088/pdfs/20210104_0094811.pdf.

⁴³ Lanning Taliaferro, "Storm Aftermath Closes Putnam County," Patch, August 5, 2020, <https://patch.com/new-york/southeast/storm-aftermath-closes-putnam-county>.

	customers across the County were left without power the day after the storm. Trees and tree limbs were downed across the County. ⁴⁴ The New York National Guard was called to deliver water, ice, and dry ice to Putnam County residents for three days. ⁴⁵ A state of emergency was declared by the County. ⁴⁶
Photograph	

Severe Winter Storms - National Centers for Environmental Information Storm Events Database

NCEI SED Episode ID	198597
Description	Ice Storm
Start Date	2/15/2025
End Date	2/16/2025
Episode Narrative	Low pressure lifted northeast out of the Tennessee Valley and tracked just west of the area with the warm front getting up against south and southeastern portions of the region. A light accumulating snow changed to a prolonged period of freezing rain across northern interior sections.
Event Narratives	With respect to snow, 1 to 2 inches in all likelihood was reached around the county / zone before the change to freezing rain. Poughkeepsie ASOS just to the north reported just a half inch of ice, and there were reports to the west and east of or near a half inch of ice which included Danbury ASOS. Based on radar estimates in and around Putnam county warning criteria with respect to ice is estimated to have been reached.
Photograph	

NCEI SED Episode ID	198670
Description	Winter Weather
Start Date	2/8/2025
End Date	2/9/2025
Episode Narrative	A progressive low pressure system emerged out of the Tennessee Valley and quickly moved across the region bringing an accumulating wet snowfall. Most places received an advisory level snowfall with mainly 3 to 4 inches of snow, with some locations

⁴⁴ Lanning Taliaferro, "Storm Aftermath Closes Putnam County," Patch, August 5, 2020, <https://patch.com/new-york/southeast/storm-aftermath-closes-putnam-county>.

⁴⁵ Eric Durr, "NY National Guard Assists in Isaias Storm Response," New York National Guard, August 12, 2020, <https://www.nationalguard.mil/News/Article-View/Article/2310501/ny-national-guard-assists-in-isaias-storm-response/>.

⁴⁶ Lanning Taliaferro, "Storm Aftermath Closes Putnam County," Patch, August 5, 2020, <https://patch.com/new-york/southeast/storm-aftermath-closes-putnam-county>.

	getting slightly higher and lower amounts. This was a front end quick thump driven by warm advection snowfall which fell primarily during the evening hours of the 8th. The snow quickly tapered to some light freezing rain and drizzle in spots after the initial thump. Some locations further east changed back to a lighter snow before ending in the early morning.
Event Narratives	Mainly 3 to 4 inches fell across the zone, with not a lot of snowfall reports for the zone. Cocorahs reported 3.5 inches at 0.3 S Nelsonville, and 3.0 inches in Cold Spring.
Photograph	

NCEI SED Episode ID	197966
Description	Heavy Snow
Start Date	1/19/2025
End Date	1/19/2025
Episode Narrative	A cold front pushed through, with a secondary cold frontal boundary lingering back to the west. Low pressure formed along the boundary and began to strengthen as it pulled away quickly to the east and northeast. The accumulating snow was generated mainly from frontogenetical forcing which occurred to the north and west of the developing surface low. Winter Storm criteria was reached in Orange and Putnam Counties, but fell just short of warning criteria across Northern Westchester. The remainder of SE New York either achieved advisory criteria or fell just short of advisory criteria.
Event Narratives	A trained spotter reported 6.5 inches at 3 WNW Fahnestock State Park. Cocorahs reported 6.3 inches at 0.3 S Nelsonville, and 6.0 inches at Cold Spring early the following morning, with a report of 5.6 inches via Newspaper / Media at Putnam Valley.
Photograph	

NCEI SED Episode ID	199146
Description	Winter Weather
Start Date	12/20/2024
End Date	12/21/2024
Episode Narrative	A progressive upper / mid level trough lead to low pressure moving across the Ohio Valley with a secondary low developing just off the coast. Temperatures were warm and above freezing much of the time along the coast, but often at or below freezing for mainly the northwestern interior. This led to an advisory level snowfall across a good portion of Orange and Putnam counties. Also, northern portions of Nassau County on Long Island received around 3 inches.

Event Narratives	Cocorahs observers reported 2.7 inches in Cold Spring and 2.5 inches at 0.3 S Nelsonville.
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Photograph

NCEI SED Episode ID	197306
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Description	Winter Weather
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Start Date	12/15/2024
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End Date	12/16/2024
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Episode Narrative	An accumulating and advisory level snowfall occurred across northern portions of the Lower Hudson Valley in Southeastern New York. A departing strong high pressure system at 1048+mb and a weakening mid-level disturbance led to overrunning which resulted in a light accumulating snowfall. There was an expectation that less snow would be observed with less liquid precipitation overall and some freezing rain towards or just after precipitation onset. Thus, snowfall amounts in far northern sections was a bit more than anticipated.
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Event Narratives	Cocorahs observers reported 4.5 inches at 0.3 S Nelsonville and 3.5 inches at Cold Spring.
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Photograph

NCEI SED Episode ID	197326
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Description	Winter Weather
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Start Date	11/22/2024
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End Date	11/22/2024
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Episode Narrative	An occluded low pressure system brought heavy rain on the front end, with a change to heavy wet accumulating snow in higher elevations as the upper level low approached. There were much lower amounts in lower elevations. The upper low swung through on the back end of the system early on the 22nd resulted in height falls and colder air working in changing the precipitation to mainly wet snow across portions of the interior, especially in elevated locations.
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Event Narratives	A cocorahs observer reported 4.5 inches in Cold Spring.
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Photograph

NCEI SED Episode ID	187612
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Description	Heavy Snow
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Start Date	2/13/2024
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End Date	2/13/2024
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Episode Narrative	Low pressure across the Tennessee Valley and the Gulf states tracked tracked north, and redeveloped and intensified rapidly off the Mid Atlantic coast. A heavy wet snowfall occurred across much of Southeastern New York, with lesser amounts across portions of the coast, especially along and closer to the south shore and eastern third of Long Island. Marginal surface temperatures precluded higher snow amounts in urban locations and further south and east. A combination of over 250 crashes and accidents were reported across Long Island during the storm from state and county law enforcement officials.
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Event Narratives	Heavy wet snow fell across Putnam County with amounts averaging well over warning criteria. Some snowfall totals included; 12.1 inches at 1 N Fahnestock State Park, 11.3 inches in Mahopac, 11.1 inches at 3 NNE Cold Spring, 10.0 inches at 3 N Putnam Valley via broadcast media.
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Photograph	
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NCEI SED Episode ID	187076
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Description	Heavy Snow
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Start Date	1/6/2024
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End Date	1/7/2024
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Episode Narrative	Low pressure pushed northeast from the Tennessee Valley and moved along and off the coast. An accumulating snow took place across portions of the Lower Hudson Valley of Interior Southeastern New York. Orange and Putnam counties reached Winter Storm Criteria, while locations further south did not as snow totals dropped quickly southeast of Orange and Putnam counties as only advisory criteria was reached across portions of Westchester and Rockland counties where the snow mixed with, and even changed to rain in places.
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Event Narratives	Heavy snow was reported via Cocorahs observers with 6.5 inches reported in Cold Spring and 6.0 inches in Nelsonville. A report of 5.6 inches was submitted via Broadcast Media from Putnam Valley.
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Photograph	
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NCEI SED Episode ID	177038
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Description	Heavy Snow
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Start Date	3/13/2023
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End Date	3/14/2023
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Episode Narrative	A Miller B type storm brought rain which changed over to heavy wet snow across Interior SE NY. The heaviest snow totals were mostly
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	driven by elevation as temperatures were right at freezing. Most places closer to the coast and towards the metro changed to snow but most places had an inch or less mostly on colder surfaces.
Event Narratives	Very heavy wet snow fell across Putnam County resulting in a impactful heavy wet snow into the morning commute. Broadcast media reported 11.9 inches at 3 N Putnam Valley. A Public report came in with 12.0 inches at 1 WSW Lake Carmel. Fire Department and Rescue reported 17.0 inches at 4 NNE Fahnestock State Park. Cocorahs reported 10.5 inches in Cold Spring and Amateur radio reported 6.4 inches in Mahopac. A trained spotter also reported 13 inches in Kent via social media. Accumulations appeared to be greatly impacted by elevation.
Photograph	
NCEI SED Episode ID	176829
Description	Heavy Snow
Start Date	2/27/2023
End Date	2/28/2023
Episode Narrative	Weak high pressure and a marginally cold air mass was locked into the northeast with blocking to the north across Eastern Canada, while low pressure over the Midwest moved east and redeveloped off the Northern Mid Atlantic coast. This led to the first widespread accumulating snowfall across the CWA.
Event Narratives	Heavy snow was reported across the county. Snowfall reports included 6.5 inches at 2W Putnam Valley, 6.0 inches from Cold Spring, and 5.0 inches from COOP at Carmel Hamlet.
Photograph	
NCEI SED Episode ID	165394
Description	Winter Weather
Start Date	2/13/2022
End Date	2/13/2022
Episode Narrative	Weak low pressure developed along a frontal wave along the southeast coastline and moved northeast offshore as 700 mb frontogenesis contributed to sub advisory and advisory level snowfall across Southeastern New York. Impacts were minimal as the snow was wet in nature and had difficulty sticking on cement surfaces. Not all zones are entered as with a warm ground some zones had under 2.5 inches of accumulated snow.

Event Narratives	Snowfall amounts in an around Putnam County were at or close to 3 inches. Broadcast Media reported 2.5 inches in Putnam Valley and Brewster through a trained spotter reported 2.4 inches, with 3.5 inches just to the north in Dutchess County just south of Poughkeepsie.
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Photograph	
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NCEI SED Episode ID	165058
Description	Winter Weather
Start Date	1/28/2022
End Date	1/29/2022

Episode Narrative	A Nor'easter tracked just east of the benchmark bringing the highest snowfall totals and strongest winds to eastern coastal sections. Blizzard conditions verified across Suffolk County on Long Island, with near blizzard conditions for Southern Queens and Nassau Counties. Islip, NY set a record for its highest calendar day (midnight to midnight) snowfall total with 23.5 inches. The storm total for Islip was 24.7 inches. Winds were a factor even further west into New York City and Southern Westchester were 6 inches or more of snow fell on average. East of New York City widespread amounts of 10 to 20 inches were reported across Long Island. Widespread wind gusts of 40 to 50 mph were reported from New York City on east into Long Island. A few peak wind gusts exceeding 60 mph were reported across Suffolk County.
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Event Narratives	A moderate snowfall with strong gusty winds occurred across Putnam. The Brewster NYSM recorded a peak wind gust of 47 mph. Broadcast Media reported 4.0 inches in Putnam Valley, with a general 3 to 5 inches estimated to have fallen across the county.
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Photograph	
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NCEI SED Episode ID	164813
Description	Winter Weather
Start Date	1/16/2022
End Date	1/17/2022

Episode Narrative	A intense low pressure system tracks just inland from the coast as high pressure retreated resulting in wintry precipitation changing quickly to rain along the coast and in the city. The changeover took longer for northern and northwestern sections where accumulating snow fell.
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Event Narratives	From surrounding reports from trained spotters and official NWS Observations along with radar indicated an estimated 3 to 6 inches
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of snow fell across Putnam County before a brief changeover to freezing rain, then to rain.

Photograph

NCEI SED Episode ID	164617
Description	Winter Weather
Start Date	1/7/2022
End Date	1/7/2022
Episode Narrative	Coastal low pressure along the polar front developed in response to an upper level disturbance. This result in an moderate snowfall across the interior sections of the Lower Hudson Valley, with heavier snow across more southern and southeastern locations.
Event Narratives	Broadcast Media reported 3.0 inches of snow in Putnam Valley.
Photograph	

NCEI SED Episode ID	156082
Description	Winter Weather
Start Date	2/22/2021
End Date	2/22/2021
Episode Narrative	A strong upper level disturbance and its associated frontal system a brief period of moderate to locally heavy snow. The snow quickly transitioned to plain rain during the late afternoon and early evening as temperatures rose above freezing.
Event Narratives	Broadcast media reported 2.5 inches of snow in Putnam Valley.
Photograph	

NCEI SED Episode ID	156086
Description	Winter Weather
Start Date	2/18/2021
End Date	2/19/2021
Episode Narrative	A long duration wintry weather event occurred on Thursday, February 18, 2021 through Friday, February 19, 2021. A frontal wave of low pressure developed off the Middle Atlantic coast on February 18, 2021. The frontal wave combined with a strong upper level to produce a brief period of moderate to heavy snowfall during the morning and early afternoon on Thursday, February 18, 2021. The snow also mixed with sleet at times during the late morning and early afternoon hours across portions of the New York City metro and Long Island. Snowfall rates of 1 inch per hour occurred with locally 2 inches per hour at times. The precipitation became light and

changed to spotty freezing rain and freezing drizzle during the late afternoon through the overnight hours on February 18, 2021. The overall weather pattern did not change to much on Friday, February 19, 2021. Weak waves of low pressure continued to track along the frontal zone off the Middle Atlantic coast, combining with the lingering strong jet stream aloft to produce periods of mainly light snow. The light snow persisted into the early evening hours before tapering off just before midnight on Friday, February 19, 2021.

Event Narratives	Nearby trained spotters in northern Fairfield County Connecticut reported 3 to 5 inches of snow.
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Photograph	
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NCEI SED Episode ID	155989
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Description	Winter Weather
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Start Date	2/7/2021
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End Date	2/7/2021
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Episode Narrative	Low pressure developed off the NC/VA coast during the morning on Sunday, February 7, 2021. The low then tracked northeast away from the Middle Atlantic through the afternoon as it intensified, then well south and east of Long Island in the late afternoon and evening. A band of moderate to heavy snow developed across southern portions of the Lower Hudson Valley during the late morning hours. and the continued moving east across portions of the New York City metro and Long Island through the rest of afternoon. The initial moderate to heavy snow band merged with a second band developing across eastern Long Island in the afternoon. Snowfall rates within the bands were around one to as high as two inches per hour at times. Surrounding this moderate to heavy band was a steady snowfall through much of the day. Snowfall accumulation across much of Southern Connecticut ranged from 3 to as high as 9 inches.
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Event Narratives	Trained spotters and Broadcast media reported 4 to 5 inches of snow.
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Photograph	
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NCEI SED Episode ID	155867
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Description	Winter Storm
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Start Date	2/1/2021
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End Date	2/3/2021
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Episode Narrative	Low pressure developed over the Ohio Valley and Middle Atlantic on Sunday, January 31, 2021. The low then consolidated along the
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Middle Atlantic coast early on Monday, February 1, 2021 and intensified as it slowly tracked to the north-northeast. The low meandered slowly north as it moved along the northeast and New England coast later on Monday February 1, 2021 through Wednesday, February 3, 2021. The low brought a major winter storm to Southeast New York, with the most significant impacts occurring on Monday, February 1, 2021. 3 to 6 inches of snow had already accumulated across the New York City metro by the start of the morning commute. Near blizzard conditions then occurred through the rest of the morning into the early afternoon with snowfall rates of 1 to 3 inches per hour. Strong winds combined with these heavy snow rates to produce visibilities one quarter mile or less at times. The heavier bands of snow lifted north across the rest of southeast New York in the afternoon. Some warmer air moved over portions of New York City and Long Island late on Monday, February 1, 2021, which change the snow to sleet and even some light rain early Tuesday, February 2, 2021. Colder air returned however later Tuesday, February 2, 2021, changing all lingering precipitation to light snow. Light snow bands lingered across some of Southeast New York through the early morning hours on February 3, 2021. Snowfall totals ranged from 4 to 10 inches across eastern Long Island, with the rest of southeast New York receiving 12 to 18 inches of snow. Portions of the Lower Hudson Valley observed 20 inches of snow with some locations observing around two feet. Winds gusted 40 to 55 mph at times on Monday, February 1, 2021, which caused power outages. Travel was also severely impacted as many flights were cancelled and travel by train was suspended. New York City issued a Winter Weather Emergency Declaration restricting all non-emergency travel on Monday, February 1, 2021. COVID testing and vaccination sites were closed. Impacts were limited on February 2, 2021 and February 3, 2021 as the snow was largely light.

Event Narratives

Amateur radio reported 19.5 inches of snow in Cold Spring. Trained spotters, broadcast media, and COOP Observer reported 13 to 18 inches of snow. The nearby Danbury Connecticut Airport ASOS measured a 38 mph wind gust at 7:14 pm February 1, 2021.

Photograph

NCEI SED Episode ID

155048

Description

Winter Storm

Start Date

12/16/2020

End Date

12/17/2020

Episode Narrative	Low pressure developed along the Middle Atlantic coast on Wednesday December 16, 2020. The low deepened as it tracked northward towards Long Island, NY through the night on December 16, 2020. Arctic high pressure situated over southeast Canada provided a cold and dry air mass ahead of the low supporting moderate to locally heavy snowfall at the onset. The low pressure ultimately tracked from near Atlantic City, NJ to about 50 miles south of Fire Island, NY before sliding offshore Thursday December 17, 2020. This track led to warmer air aloft moving over the NYC metro and Long Island, changing the snow to a mixture of sleet and rain. Surface temperatures briefly warmed into the upper 30s across central and eastern Long Island early on December 17, 2020, changing the precipitation to plain rain. Once the low began moving away from Long Island, temperatures fell significantly below freezing with snow returning as the event ended. Any snowmelt and standing water refroze on Long Island. Any mixed precipitation was brief in the NYC metro and predominately snow fell across the Lower Hudson Valley. The storm significantly impacted travel during the evening commute on Wednesday December 16, 2020 and the morning commute on Thursday December 17, 2020. Many accidents resulted from the snow and icy conditions. Snowfall rates ranged from 1 to 2 inches per hour Wednesday evening. Total snowfall ranged from around 4 inches across coastal southeast Long Island to as much as 14 inches in Orange County. 6 to 12 inches of snow fell in the NYC metro. Strong wind gusts also occurred with the storm, 35 to 60 mph, with some coastal stations reporting gusts as high as 74 mph on Long Island.
Event Narratives	Trained spotters in Mahopac and Brewster reported 13 and 11.7 inches of snow respectively. Broadcast media, amateur radio, CoCoRaHS, and the public reported 9 to 11 inches of snow. The New York Mesonet station in Brewster measured a 36 mph wind gust at 8:55 am on December 17, 2020.
Photograph	
NCEI SED Episode ID	144800
Description	Heavy Snow
Start Date	12/1/2019
End Date	12/3/2019
Episode Narrative	A large area of low pressure across the Middle Atlantic on Sunday December 1, 2019 slowly moved towards the northeast. The low redeveloped just south of Long Island on Monday December 2, 2019

	and slowly moved offshore through the morning of Tuesday December 3, 2019.
Event Narratives	Trained spotters and CoCoRaHS observers in Putnam and nearby southern Dutchess County reported 5 to 7 inches of snow.
Photograph	
NCEI SED Episode ID	135657
Description	Heavy Snow
Start Date	3/3/2019
End Date	3/4/2019
Episode Narrative	Low pressure developed across the southeast on Sunday March 3, 2019 and then tracked off the Middle Atlantic coast early on Monday March 4, 2019. The low moved just inside the 40N/70W benchmark and continued out to sea. The low brought a widespread snowfall to southeast New York with the heaviest accumulations occurring across the Lower Hudson Valley. Snow mixed with rain and sleet occurring near the coast, reducing accumulations. Much of the significant snow occurred overnight with improved conditions during the Monday morning commute.
Event Narratives	Fire Department/Rescue, CoCoRaHS, and trained spotters reported 6 to 8 inches of snow.
Photograph	
NCEI SED Episode ID	135751
Description	Winter Weather
Start Date	3/2/2019
End Date	3/2/2019
Episode Narrative	A wave of low pressure brought light accumulating snow to southeast New York early on the morning of Saturday March 2, 2019. The low pressure quickly moved away from the coast after day break bringing an end to the accumulating snow.
Event Narratives	A COOP observer in Carmel reported 2 inches of snow.
Photograph	
NCEI SED Episode ID	132934
Description	Winter Storm
Start Date	1/19/2019
End Date	1/20/2019
Episode Narrative	Deepening low pressure tracking from the southeast United States on Saturday January 19, 2019 to the northeast on Sunday January

	20, 2019. An arctic air mass was located across New England as the storm system approached the region. A warm front associated with the low moved north along the coast early on the morning of January 20 changing moderate to locally heavy snow to sleet and then liquid precipitation. The warmer air battled the arctic air advecting into the Lower Hudson Valley from the north. However, temperatures remained below freezing through much of the winter storm across the Lower Hudson Valley creating a significant ice accretion on top of snow accumulation. Trees and power lines were brought down due to the ice along with power outages across many towns.
Event Narratives	CoCoRaHS and the broadcast media reported 4 to 5 inches of snow. At nearby Newburgh, NY 0.4 inches of ice accretion was reported by a trained spotter and the nearby Danbury, CT Airport ASOS reported 0.37 inches of ice accretion. The combination of snow and ice created hazardous travel conditions along with downed tree limbs and power lines.
Photograph	
NCEI SED Episode ID	132666
Description	Winter Storm
Start Date	11/15/2018
End Date	11/16/2018
Episode Narrative	A wave of low pressure developed along the Middle Atlantic coast during Thursday November 15, 2018. The low was associated with a closed upper level trough across the Midwest. As the trough translated eastward into Friday November 16, 2018, the low pressure moved up the northeast coast. The antecedent air mass ahead of the low was cold and dry for the middle of November with temperatures during the morning and afternoon of November in the upper 20s and low 30s. The moisture associated with the trough and low pressure was able to produce moderate to heavy bands of snow as the precipitation began across the entire Tri-State area due to the cold air in place. Once the low drew warmer air from the south, the precipitation gradually changed to a wintry mix and then plain rain, especially for the New York City metro and Long Island. The moderate to heavy wet snowfall significantly impacted the evening rush hour with 1-2 inch per hour snowfall rates. Hundreds of trees, tree limbs, and branches were brought down by the weight of the snow, including over 100 trees alone in the New York City metro. Numerous accidents were reported along with a 20 car accident on

	the George Washing Bridge. Many motorists were stranded on roads across the city until the early morning hours the next day. The Long Island Railroad had delays and cancellations and there were over 1,000 flights cancelled at the New York City metro airports (Kennedy, La Guardia, and Newark).
Event Narratives	Trained spotters, Social Media, Broadcast Media, and the public reported 7 to 9 inches of snow.
Photograph	

NCEI SED Episode ID	125209
Description	Winter Weather
Start Date	4/2/2018
End Date	4/2/2018
Episode Narrative	Waves of low pressure moved along a stalled frontal boundary across the Middle Atlantic. Moderate to heavy snow fell during the morning commute across southeast New York. Snowfall rates reached 1 inch per hour at times. Daily record snowfall amounts were set at Central Park (5.0 inches), LaGuardia (5.5 inches), Kennedy (3.7 inches), and Islip (4.6 inches) for April 2nd.
Event Narratives	Trained spotters, broadcast media, and the public reported 5 to 6 inches of snowfall.
Photograph	

NCEI SED Episode ID	124192
Description	Winter Weather
Start Date	3/21/2018
End Date	3/22/2018
Episode Narrative	A large and slow moving low pressure developed along the Middle Atlantic coast on Wednesday, March 21st and moved slowly north and east along the coast through Thursday, March 22nd. Moderate to heavy snow bands moved across Long Island and New York City with lighter snow across the Lower Hudson Valley. The heaviest snow occurred in New York City and Long Island Wednesday night into early Thursday morning. The highest snowfall rates occurred on Long Island with generally 2 to 4 inches per hour at times. The NWS official observation at the Islip Airport indicated a snowfall rate of 5 inches per hour between 9pm and 10pm on March 21st with around 9 inches of snow falling from 8pm to 10pm. Within these heavier bands, near-blizzard conditions occurred with visibilities one quarter mile or less and winds gusting 30 to 35 mph.

Event Narratives	A COOP observer and trained spotters reported 3 to 5 inches of snow.
Photograph	

NCEI SED Episode ID	124182
Description	Winter Weather
Start Date	3/12/2018
End Date	3/13/2018
Episode Narrative	A strong area of low pressure tracked well offshore of the eastern seaboard, but tracked close enough to eastern Long Island to bring heavy snow bands during the morning and early afternoon on Tuesday, March 13, 2018. Snowfall rates were 1 to 2 inches per hour at times in the morning across eastern Long Island. A deep upper level trough over the northeast also aided in bringing lighter snow over the Lower Hudson Valley and portions of New York City, despite the low pressure tracking several hundred miles off the coast.

Event Narratives	A CoCoRaHS observer and a COOP Observer reported 4 to 5 inches of snow. An isolated 6.8 inch of snow report occurred 3 miles south of Fishkill by a CoCoRaHS observer.
Photograph	

NCEI SED Episode ID	124011
Description	Winter Storm
Start Date	3/7/2018
End Date	3/8/2018
Episode Narrative	A strong low pressure system developed along the Middle Atlantic coast during the morning of Wednesday, March 7, 2018. The low tracked along the coast through the early morning hours on Thursday, March 8, 2018. The storm brought heavy wet snow, strong gusty winds, and even some thundersnow to southeast New York. Snowfall rates ranged from 1 to 3 inches per hour at times in the heaviest snow bands.

Event Narratives	CoCoRaHS observers, trained spotters, COOP Observers, and broadcast media reported 15 to 20 inches of snowfall. Gusty winds combined with the heavy wet snow to bring down tree limbs and some power lines.
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Photograph	
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NCEI SED Episode ID	124006
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Description	Winter Weather
Start Date	3/1/2018
End Date	3/2/2018
Deaths	1
Episode Narrative	A rapidly intensifying low pressure developed along the Middle Atlantic during the early morning hours on March 2, 2018. The low moved slowly off the coast and became nearly stationary near the [...] benchmark. The storm brought winter storm conditions to portions of the Lower Hudson Valley, especially in the higher elevations.
Event Narratives	The county saw generally to 3 to 5 inches of snow, but there were isolated higher amounts at elevated locations. A CoCoRaHS observer reported 10.3 inches of snow three miles north of Fahnestock State Park. The public reported 7.6 inches of snow in Mahopac. The broadcast media reported one fatality due to the strong winds. An 11 year old boy was killed when a tree was knocked down onto a house at 1215 pm in Putnam Valley.
Photograph	

NCEI SED Episode ID	123548
Description	Heavy Snow
Start Date	2/17/2018
End Date	2/18/2018
Episode Narrative	A low pressure developed along a frontal boundary along the southeast coast on the evening of Saturday, February 17, 2018. This low gradually became better organized as it moved up the coast towards the [...] benchmark early Sunday, February 18, 2018. This system brought heavy snow to portions of the Lower Hudson Valley and light to moderate snow across the New York City Metropolitan and western Long Island.
Event Narratives	A COOP Observer and trained spotters reported 6 to 7 inches of snowfall.
Photograph	

NCEI SED Episode ID	122899
Description	Winter Storm
Start Date	1/4/2018
End Date	1/4/2018
Episode Narrative	The development of the blizzard/winter storm began along the southeast coast on Wednesday January 3, 2018. An amplifying upper

	level trough spawned the development of low pressure off the coast of Florida. The low pressure rapidly intensified on Wednesday night through Thursday January 4, 2018 as it moved north-northeast along the coast. The low passed just east of the [...] benchmark Thursday afternoon. The central pressure when the storm developed was around 1004 millibars at 1 pm Wednesday. 24 hours later, the central pressure fell to around 950 mb, approximately a 54 millibar drop. The rapid intensification of the storm led to heavy snow, strong winds, and blizzard conditions over Long Island, and in Queens in New York City and the Lower Hudson Valley. Near-blizzard conditions occurred across Manhattan, the Bronx, and Brooklyn. Thundersnow was also observed across eastern Long Island. Thousands of flights were cancelled on January 4, 2018 and nearly 900 were cancelled the day after the blizzard. System-wide delays and cancellations occurred on the Long Island Railroad and Metro North Railroad. There were also numerous accidents on across southeast New York. Thousands of homes and businesses also lost power.
Event Narratives	A COOP Observer reported 10 inches of snow in Carmel. Elsewhere across the county, trained spotters and the broadcast media reported 6 to 8 inches of snow. Winds gusts to 40 MPH at nearby Danbury Airport at 3:21 PM.
Photograph	
NCEI SED Episode ID	114609
Description	Winter Storm, Blizzard
Start Date	3/14/2017
End Date	3/14/2017
Episode Narrative	Rapidly deepening low pressure tracked up the eastern seaboard on Tuesday March, 14 bringing blizzard conditions to portions of the Lower Hudson Valley. Heavy snow and sleet along with strong winds occurred across the New York City Metro. The storm cancelled numerous flights at JFK and LGA with some mass transit services suspended. A pair of 2 story homes under construction on Beach 7th street in Far Rockaway collapsed and numerous trees and wires were downed due to the strong winds. Approximately 17,000 power outages resulted from the strong winds and heavy snow.
Event Narratives	Trained spotters and a COOP observer reported 14 to 21 inches of snowfall. Some sleet also mixed in with the heavy snow.; Nearby Poughkeepsie Airport ASOS showed blizzard conditions, with

visibility less than one quarter mile in heavy snow and frequent wind gusts over 35 mph during the afternoon on March 14th.

Photograph

NCEI SED Episode ID	113563
Description	Winter Storm
Start Date	2/9/2017
End Date	2/9/2017
Episode Narrative	Low pressure developed along a cold front over the Middle Atlantic early Thursday, February 9th. The low rapidly intensified as it moved off the Delmarva coast in the morning and then to the south and east of Long Island late morning into the afternoon. The low brought blizzard conditions to Long Island and portions of the Lower Hudson Valley. Heavy snow and strong winds also occurred over the New York City Metro. The blizzard brought delays and cancellations to the regions transportation systems as well as numerous accidents on roadways. The Long Island Railroad had system wide delays and at least 20 trains were cancelled. Several hundred rescues were performed by police and fire departments on Long Island. The storm also cancelled approximately 2,000 flights at Kennedy and La Guardia Airports.
Event Narratives	Trained spotters and the public reported 11 to 13 inches of snowfall.
Photograph	

NCEI SED Episode ID	112447
Description	Winter Weather
Start Date	12/17/2016
End Date	12/17/2016
Episode Narrative	A warm front moving north along the Middle Atlantic coast initiated the development of a wave of low pressure south of Long Island on the morning of December 17. This system brought locally heavy snow and some ice to portions of the lower Hudson Valley of southeast NY.
Event Narratives	A cooperative observer in Carmel reported snowfall of 3.5 inches. A trained spotter in Mahopac reported snowfall of 5.1 inches.
Photograph	

NCEI SED Episode ID	103820
Description	Winter Storm
Start Date	1/23/2016

End Date	1/24/2016
Episode Narrative	Low pressure moving across the deep South on Thursday January 21st and Friday January 22nd intensified and moved off the Mid Atlantic coast on Saturday January 23rd, bringing heavy snow and strong winds to southeast New York, and blizzard conditions to Long Island, New York City, and nearby southern Westchester County. NY Gov. Cuomo declared a state of emergency early Saturday January 23rd. Metro North and Long Island Railroad service halted at 4 PM Saturday. In New York City, the blizzard contributed to more than 400 car crashes, and streets were closed to all but emergency vehicles from mid-afternoon Saturday January 23rd until 7 AM Sunday January 24th. Much of the city's mass transit was shut down, along with bridges and tunnels across the city and to/from New Jersey. The Port Authority Bus Terminal, the busy Midtown NYC transportation hub, closed its doors at 4 PM Saturday. Broadway shows announced all Saturday performances were canceled. Travel in and out of New York City airports lagged through Monday January 25th as airlines pre-emptively cut hundreds of flights. All arrivals and departures were eventually canceled due to severe winter weather conditions at LaGuardia airport, with Kennedy at a virtual standstill as well. More than 1,000 flights out of New York City-area airports were cancelled, including 90% of flights from LaGuardia.
Event Narratives	Trained spotters and an NWS cooperative weather observer in Carmel reported snowfall ranging from 8 to 14 inches.
Photograph	

Flooding - National Centers for Environmental Information Storm Events Database

NCEI SED Episode ID	205599
Description	Flash Flood
Start Date	7/14/2025
End Date	7/14/2025
Episode Narrative	A weak front approached from the west along with PW of 2 inches resulting in heavy rainfall across the area. 4 to 6.5 inches of rainfall totals were reported with rainfall rates between 1 to 2 inches.
Event Narratives	PUTNAM LAKE: Basement flooding on Gates Drive near Haviland Drive. Fire Department responding.
Photograph	

NCEI SED Episode ID	193107
Description	Flash Flood
Start Date	6/30/2024
End Date	6/30/2024
Episode Narrative	A slow moving cold front allowed for widespread thunderstorm development on June 30th. MUCAPE values of 2000-3000 J/kg with PWATs near 2 allowed for thunderstorms to produce heavy rainfall with rainfall rates of 1-2 inches per hour. These thunderstorms moved through the Lower Hudson Valley and Connecticut resulting in 1 to 2 inches of rain, most of which fell over a one to two hour period. This resulted in localized flash flooding.
Event Narratives	SODOM: Police reports occupied vehicle stuck in flood water.
Photograph	

NCEI SED Episode ID	187410
Description	Flash Flood
Start Date	12/18/2023
End Date	12/18/2023
Episode Narrative	A warm front ahead of a developing coastal low pressure system positions itself over the area late on December 17th and into December 18th. As the low pressure intensified and approached, significant amounts of moisture focused along the warm front ahead of the coastal low resulting in widespread areas of heavy rainfall that occurred over a 12-18 hour period. PWATs were 1.5-1.7 inches which were near record values. A widespread 2-5 inches of rain fell over the area. This resulted in many areas of flash flooding as well as significant rises in rivers.
Event Narratives	NELSONVILLE: Flooding on NY 9D both directions near Fair Street. All lanes closed. HAVILAND HOLLOW: Route 22 closed due to flooding between Route 164 and Haviland Hollow Road.
Photograph	

NCEI SED Episode ID	183593
Description	Flash Flood
Start Date	7/9/2023
End Date	7/10/2023
Episode Narrative	A stalled frontal boundary remained over the area which produced multiple rounds of torrential rainfall from heavy thunderstorms from July 9th through July 10th. CAPE values of 2500 to 3500 J/kg and

	PWAT values of near 1.8 allowed heavy thunderstorm development to produce rainfall rates of 2-3 inches per hour at times. There were parts of the area that receive anywhere from 3-5 inches of rain in a several hour period with some spots seeing upwards of 8 inches. This allowed for the issuance of a localized Flash Flood Emergency for portion of the Lower Hudson Valley.
Event Narratives	MAHOPAC MINES: Carmel: Video of water rushing down Wixon Pond Road and East Lake Blvd in Carmel, NY. LAKE CARMEL: Fair Street closed due to high water in Lake Carmel. MAHOPAC FALLS: DOT reports flooding on NY 6N both directions at Potter Road. All lanes blocked. TOMPKINS CORNERS: All lanes flooded on Taconic State Parkway near Tompkins Corners. PATTERSON: Flooding and road closure on NY 292 both directions between start route NY 292 NY 311 Patterson and End Route NY 55 Pawling. All lanes of 2 blocked.
Photograph	
NCEI SED Episode ID	129478
Description	Flash Flood
Start Date	7/28/2018
End Date	7/28/2018
Episode Narrative	A cold front stalled across the region during the afternoon, resulting in widely scattered showers and thunderstorms, primarily across the Lower Hudson Valley. With plenty of moisture available in the atmosphere, these storms resulted in isolated flash flooding across parts of northeastern Putnam County. A cooperative observer in Carmel, NY measured 1.39 inches of rain from this event.
Event Narratives	LAKE CARMEL: Ludingtonville Road was closed along I-84 in Lake Carmel due to flooding. PATTERSON: Route 311 was closed in Patterson due to flooding.
Photograph	

Extreme Heat - National Centers for Environmental Information Storm Events Database

NCEI SED Episode ID	659285
Description	Excessive Heat
Start Date	8/12/2016
End Date	8/13/2016

Episode Narrative	High pressure over the western Atlantic Ocean ushered in hot and humid air northward across the area.
Event Narratives	The combination of hot temperatures in the 90s, and high humidity resulted in a heat index up to 110 degrees at Montgomery Airport. In addition, a heat index of 109 was observed at nearby Poughkeepsie.

Drought – National Drought Mitigation Center U.S. Drought Monitor

Drought data comes from the U.S. Drought Monitor, made available from NOAA's National Integrated Drought Information System.⁴⁷ The Drought Monitor is a dataset released weekly by authors who "bring together the physical climate, weather and hydrology data and reconcile that with local expert feedback, impact reports and conditions observations."⁴⁸

Start Date	9/2/2025
End Date	12/31/2025 (ongoing)
Severity	Moderate drought (D1) nearly all of county in October, abnormally dry November and in ~half of county through December.
Narrative	According to CBS News, the drought was caused by low precipitation, with deficits ranging from -7 to -12 inches across Connecticut and New York. A burn ban was declared in New York State. ⁴⁹ Except for Westchester County and New York City, the entire state was in a drought watch or warning. ⁵⁰

Start Date	9/24/2024
End Date	5/20/2025
Severity	Severe drought (D2) in nearly all of county mid-November through March; moderate drought for much of rest of time, abnormally dry in October 2024 and May 2025
Narrative	From mid-November 2024 – early March 2025, 90-100% of Putnam County experienced severe drought, with Abnormally Dry and Moderate Drought conditions extending several weeks earlier and

⁴⁷ "Time Series," United States Drought Monitor (USDM), <https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx>, included in "Drought Conditions for Putnam County," National Oceanic and Atmospheric Administration (NOAA) National Integrated Drought Information System (NIDIS), <https://www.drought.gov/states/new-york/county/Putnam>.

⁴⁸ "Drought Classification," United States Drought Monitor (USDM), <https://droughtmonitor.unl.edu/About/AbouttheData/DroughtClassification.aspx>.

⁴⁹ Tony Aiello, "Lack of Rain Across Tri-State Area Leads to Increasing Drought Concerns," CBS News New York, October 3, 2025, video, 1:48, <https://www.cbsnews.com/newyork/video/lack-of-rain-across-tri-state-area-leads-to-increasing-drought-concerns/>.

⁵⁰ Governor Kathy Hochul, "Governor Hochul Directs Department of Environmental Conservation to Add 10 More Counties to Drought Warning," New York State, October 8, 2025, <https://www.governor.ny.gov/news/governor-hochul-directs-department-environmental-conservation-add-10-more-counties-drought>.

later.⁵¹ The drought was caused by historically low precipitation.⁵² In mid-December, Putnam County streamflow was marked as Much below normal (less than 10th percentile), and groundwater was measured at a record low.⁵³ A statewide Drought Watch was declared, and a Drought Warning was issued from mid-November to mid-December for 15 New York counties, including Putnam County.⁵⁴

Start Date	6/13/2023
End Date	7/4/2023
Severity	Abnormally dry conditions, moderate drought in 2% of county for two weeks

Start Date	4/11/2023
End Date	5/2/2023
Severity	Abnormally dry conditions, moderate drought in 11% of county

Start Date	7/12/2022
End Date	1/24/2023
Severity	Severe drought in all or most of county from August - early November; moderate drought Nov-Dec, abnormally dry July and January
Narrative	From August – early November 2022, a majority of Putnam County experienced a severe drought, with 100% of the County experiencing severe drought from mid-August to early October. ⁵⁵ The drought was caused by low precipitation, with areas from New Jersey to Rhode Island and Massachusetts experiencing the driest or near-

⁵¹ "Time Series," National Drought Mitigation Center United States Drought Monitor (USDM), <https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx>, included in "Drought Conditions for Putnam County," National Integrated Drought Information System (NIDIS), <https://www.drought.gov/states/new-york/county/Putnam>.

⁵² "DEC Issues Update on Statewide Drought Conditions," New York State Department of Environmental Conservation (NYSDEC), <https://dec.ny.gov/news/press-releases/2024/12/dec-issues-update-on-statewide-drought-conditions>.

⁵³ "Drought Status Update for the Northeast," National Oceanic and Atmospheric Administration (NOAA) National Integrated Drought Information System (NIDIS), December 13, 2024, <https://www.drought.gov/drought-status-updates/drought-status-update-northeast-2024-12-13>.

⁵⁴ "Time Series," National Drought Mitigation Center United States Drought Monitor (USDM), <https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx>, included in "Drought Conditions for Putnam County," National Integrated Drought Information System (NIDIS), <https://www.drought.gov/states/new-york/county/Putnam>.

⁵⁵ "Time Series," National Drought Mitigation Center United States Drought Monitor (USDM), <https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx>, included in "Drought Conditions for Putnam County," National Integrated Drought Information System (NIDIS), <https://www.drought.gov/states/new-york/county/Putnam>.

driest July on record.⁵⁶ ⁵⁷ Moderate Drought conditions lasted until late December 2022, and Abnormally Dry conditions existed from July and until January 2023.⁵⁸

Start Date	3/22/2022
End Date	4/5/2022
Severity	Abnormally dry conditions in part or all of county
Start Date	4/13/2021
End Date	5/25/2021
Severity	Abnormally dry conditions in part or all of county
Start Date	9/22/2020
End Date	10/27/2020
Severity	Abnormally dry conditions
Start Date	6/23/2020
End Date	8/4/2020
Severity	Abnormally dry conditions
Start Date	3/17/2020
End Date	3/24/2020
Severity	Abnormally dry conditions
Start Date	9/17/2019
End Date	11/5/2019
Severity	Abnormally dry conditions
Start Date	12/5/2017
End Date	2/6/2018
Severity	Abnormally dry conditions
Start Date	9/26/2017
End Date	10/24/2017

⁵⁶ NWS New York NY (@NWSNewYorkNY), "Newark recorded their driest July on record, with just 0.55" of rainfall the entire month...", X, August 3, 2022, 3:59 p.m., <https://x.com/NWSNewYorkNY/status/1554919834021900288>.

⁵⁷ Anthony Macari and Storm Team 10, "July Ends as the Third-Driest and Fourth-Warmest on Record," NBC 10 WJAR, last modified July 31, 2022, <https://turnto10.com/weather/weather-blog/ending-july-as-the-third-driest-and-fourth-warmest-on-record-severe-drought-rhode-island-massachusetts-july-31-2022>.

⁵⁸ "Time Series," National Drought Mitigation Center United States Drought Monitor (USDM), <https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx>, included in "Drought Conditions for Putnam County," National Integrated Drought Information System (NIDIS), <https://www.drought.gov/states/new-york/county/Putnam>.

Severity	Abnormally dry conditions in portions of County; all of County for week of October 24
Start Date	4/19/2016
End Date	5/2/2017
Severity	Severe drought October 2016-March 2017; Extreme drought mid-November-January for portions of County; drought and abnormally dry conditions for whole period
Narrative	From Fall 2016 – Winter 2017, a severe (D2) drought encompassed 100% of Putnam County, with 12% of the County experiencing an extreme (D3) drought from late November to late January. 30% of the county experienced extreme drought the week of November 15.⁵⁹ According to the Cornell Chronicle, the drought was caused by warmth and a lack of snow in winter 2015-2016, followed by low rainfall and high temperatures throughout the growing season.⁶⁰ New York's Department of Environmental Conservation issued a drought watch, and the U.S. Department of Agriculture's Farm Service Agency declared many New York counties natural disaster areas. One survey of New York farmers found that over two-thirds of unirrigated field crops and pasturage suffered losses between 30 and 90 percent, with irrigated farms still experiencing up to one third of losses. Eastern New York farmers experienced average losses of 22 percent.⁶¹ These conditions had not occurred with such severity since the 1960s,⁶² and abnormally dry conditions extended for months before and after the most severe period.⁶³
Start Date	8/11/2015
End Date	2/23/2016
Severity	Moderate drought conditions May 19-June 15 and September-December; abnormally dry conditions otherwise

⁵⁹ "Time Series," National Drought Mitigation Center United States Drought Monitor (USDM), <https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx>, included in "Drought Conditions for Putnam County," National Integrated Drought Information System (NIDIS), <https://www.drought.gov/states/new-york/county/Putnam>.

⁶⁰ Blaine Friedlander, "Survey details impact of 2016 drought on New York Farming," Cornell Chronicle, April 6, 2017, <https://news.cornell.edu/stories/2017/04/survey-details-impact-2016-drought-new-york-farming>.

⁶¹ Blaine Friedlander, "Survey details impact of 2016 drought on New York Farming," Cornell Chronicle, April 6, 2017, <https://news.cornell.edu/stories/2017/04/survey-details-impact-2016-drought-new-york-farming>.

⁶² Climate Resilience Partnership, *Climate Change Adaptation and Resilience Plan* (Columbia County, 2024), 32, <https://drive.google.com/drive/folders/1-mboazilB8cCKHNnx7HObloTYnO7sAUX>.

⁶³ "Time Series," National Drought Mitigation Center United States Drought Monitor (USDM), <https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx>, included in "Drought Conditions for Putnam County," National Integrated Drought Information System (NIDIS), <https://www.drought.gov/states/new-york/county/Putnam>.

Wildfire – Compiled via Desktop Research

Start Date	4/18/2025
End Date	4/18/2025
Municipality	Putnam Valley
Extent (Acres)	21 ⁶⁴
Location	Peekskill Hollow Rd
Narrative Impact	Brush fire; At least 10 neighboring agencies called; road closed; statewide burn ban was in effect. ^{65 66}

Start Date	1/3/2025
End Date	1/5/2025
Municipality	Patterson
Extent (Acres)	1 ⁶⁷
Location	Area behind Peterson's Patterson Greenhouses
Narrative Impact	Caused by items in a burn pile that should not have been there; burned 1 acre of swampy land; included 5 DEC rangers. ⁶⁸

Start Date	11/9/2024
End Date	11/9/2024
Municipality	Putnam Valley
Extent (Acres)	8 ⁶⁹
Location	North end of Indian Lake; Chapman Rd
Narrative Impact	Brush fire; 40-50 firefighters called from across County and nearby towns. ^{70 71}

Start Date	10/22/2024
End Date	10/28/2024
Municipality	Kent

⁶⁴ "Fires in 10 New York State Counties Burn More than 37 Acres," *Adirondack Explorer*, April 22, 2025, <https://www.adirondackexplorer.org/search-and-rescue/rangers-fight-fires-10-counties-new-york-state/>.

⁶⁵ "Fires in 10 New York State Counties Burn More than 37 Acres," *Adirondack Explorer*, April 22, 2025, <https://www.adirondackexplorer.org/search-and-rescue/rangers-fight-fires-10-counties-new-york-state/>.

⁶⁶ Melanie Palmer, "Officials: Putnam County brush fire causes road closures," *news12 Westchester*, April 18, 2025, <https://westchester.news12.com/officials-putnam-county-brush-fire-causes-road-closures/>.

⁶⁷ Arianne Rogers, "New York DEC Rangers Uncover Cause of Putnam County Wildfire," *WPDH*, January 10, 2025, <https://wpdh.com/putnam-county-ny-wildfire/>.

⁶⁸ Arianne Rogers, "New York DEC Rangers Uncover Cause of Putnam County Wildfire," *WPDH*, January 10, 2025, <https://wpdh.com/putnam-county-ny-wildfire/>.

⁶⁹ Carol Wilkinson, "Firefighters Work to Contain Brush Fire in Putnam Valley," *news12 Long Island*, November 9, 2024, video, 2:42, <https://longisland.news12.com/firefighters-work-to-contain-brush-fire-in-putnam-valley/>.

⁷⁰ Carol Wilkinson, "Firefighters Work to Contain Brush Fire in Putnam Valley," *news12 Long Island*, November 9, 2024, video, 2:42, <https://longisland.news12.com/firefighters-work-to-contain-brush-fire-in-putnam-valley/>.

⁷¹ Lois Rizzi, "PVVFD Dispatched Brush Fire," *Putnam Valley Volunteer Fire Department*, November 14, 2024, <https://www.putnamvalleyfire.com/news/528/PVVFD-Dispatched-Brush-Fire>.

Extent (Acres)	33 ⁷²
Location	899 Golf Ridge Rd
Narrative Impact	Brush fire; Burn ban issued across Putnam County following fire; fire departments were called from across the county and nearby towns. ⁷³

Start Date	3/9/2020
End Date	3/10/2020
Municipality	Cold Spring
Extent (Acres)	277 ⁷⁴
Damages	\$116,000 ⁷⁵
Location	Breakneck Ridge, Hudson Highlands State Park
Narrative Impact	From MitigateNY: "A fire on Breakneck Ridge began early afternoon on Monday, March 9th, 2020, near the town of Cold Spring, NY. By the morning of March 10th, 150 acres of land had burned. Several agencies responded to help fight the fire, including fire departments from Dutchess Junction, North Highlands, Garrison, Putnam Station, Rombout, Cold Spring and Continental Village. Additionally, Cold Spring police and rangers from State Parks and the Department of Environmental Conservation (DEC) aided in putting out the fire. The fire was contained by Tuesday afternoon, March 10th. Eleven cars parked at the Breakneck parking lot were burned with no injuries reported. On March 18th, the state Department of Conservation said the fire had burned 277 acres. It ultimately caused \$116k in damages (REF507)."⁷⁶ From Putnam County's 2021 HMP: "In March 2020, Putnam County and Dutchess County fire companies in addition to New York State Park Rangers responded to a major brushfire that broke out between Cold Spring and Beacon. The brush fire started from a maintenance vehicle on the Metro-North Railroad line, damaged several park vehicles at a hiking trailhead, then jumped Route 9D and burned approximately 300 acres in Hudson Highlands State Park (Welber 2020, Sucato n.d.). No structures were reported damaged."⁷⁷

⁷² Jeff Edwards, "Putnam County Implements Temporary Burn Ban, Kent Fire Extinguished," Patch, last modified October 30, 2024, <https://patch.com/new-york/southeast/putnam-county-implements-temporary-burn-ban-kent-fire-extinguished>.

⁷³ Jeff Edwards, "Putnam County Implements Temporary Burn Ban, Kent Fire Extinguished," Patch, last modified October 30, 2024, <https://patch.com/new-york/southeast/putnam-county-implements-temporary-burn-ban-kent-fire-extinguished>.

⁷⁴ "Wildfire," New York State MitigateNY, https://mitigateny.org/assess_risk/natural_hazards/wildfire.

⁷⁵ "Wildfire," New York State MitigateNY, https://mitigateny.org/assess_risk/natural_hazards/wildfire.

⁷⁶ "Wildfire," New York State MitigateNY, https://mitigateny.org/assess_risk/natural_hazards/wildfire.

⁷⁷ Tetra Tech, "Section 5.4.10: Wildfire," in *Putnam County Hazard Mitigation Plan* (Putnam County, 2021), 7-8, https://www.putnamcountyny.gov/images/Departments/Emergency_Services/mitigation/2021/Section-5.4.10-Wildfire-121520dfs.pdf.

Photograph

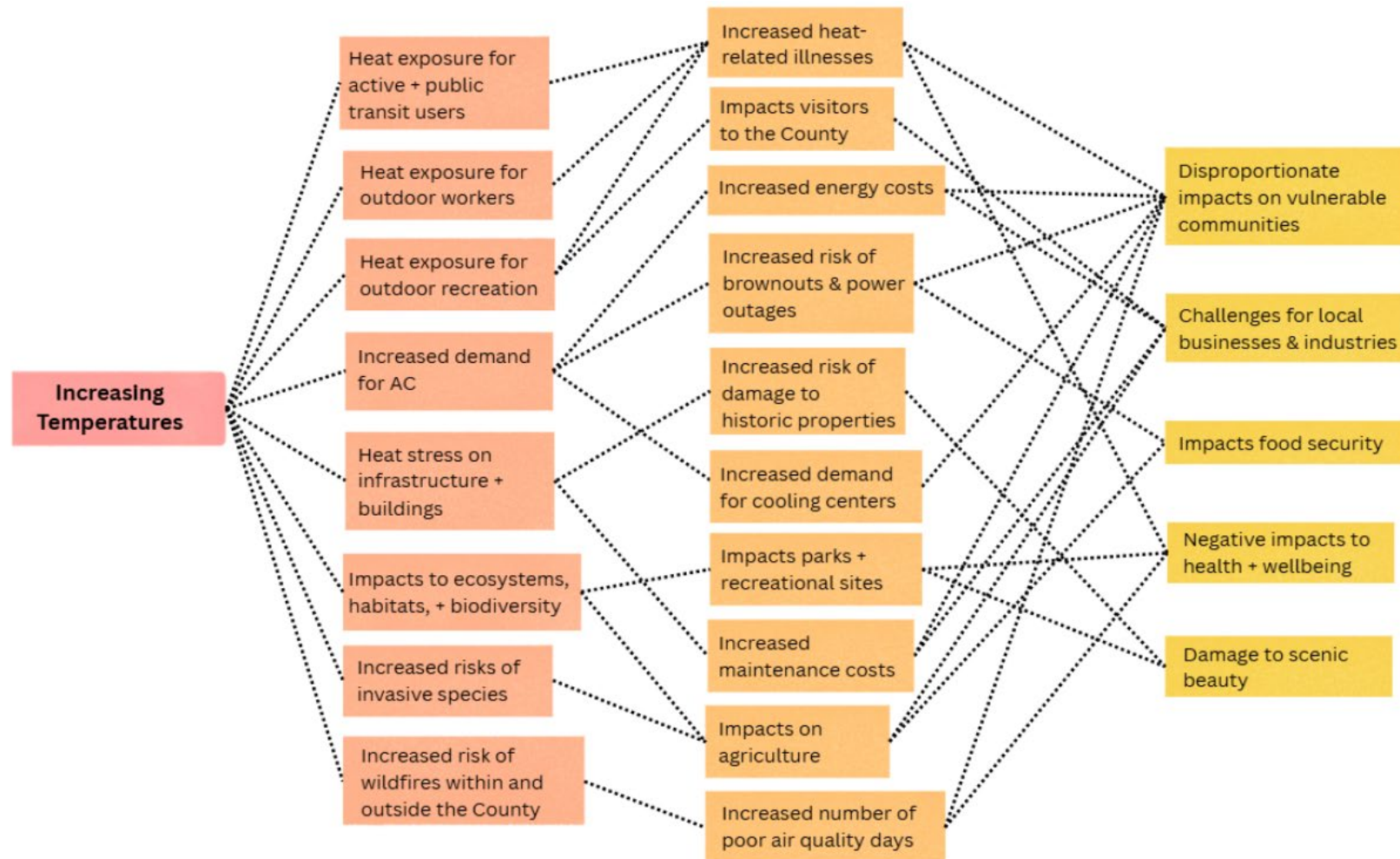


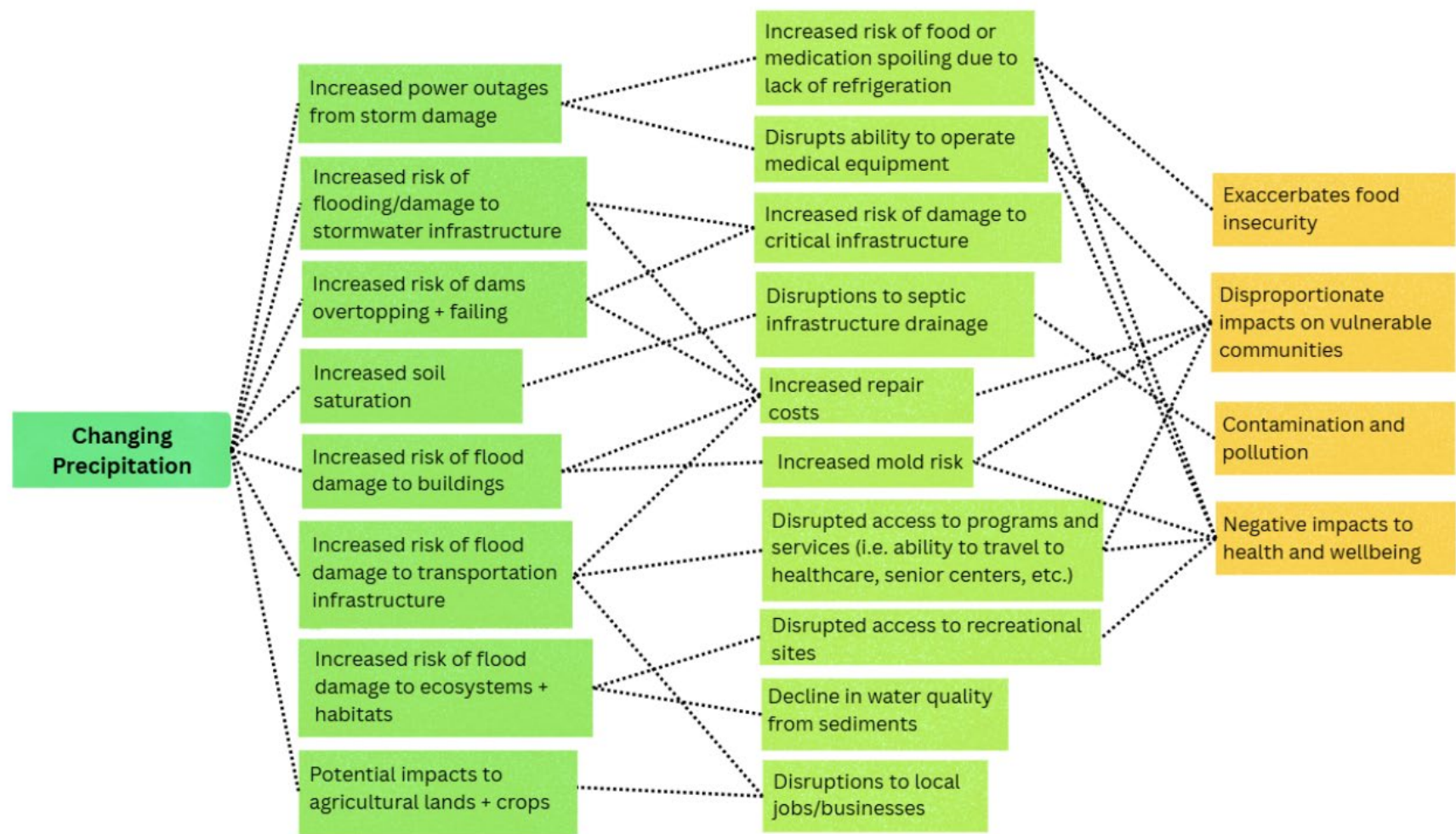
Source: *Sucato n.d.*

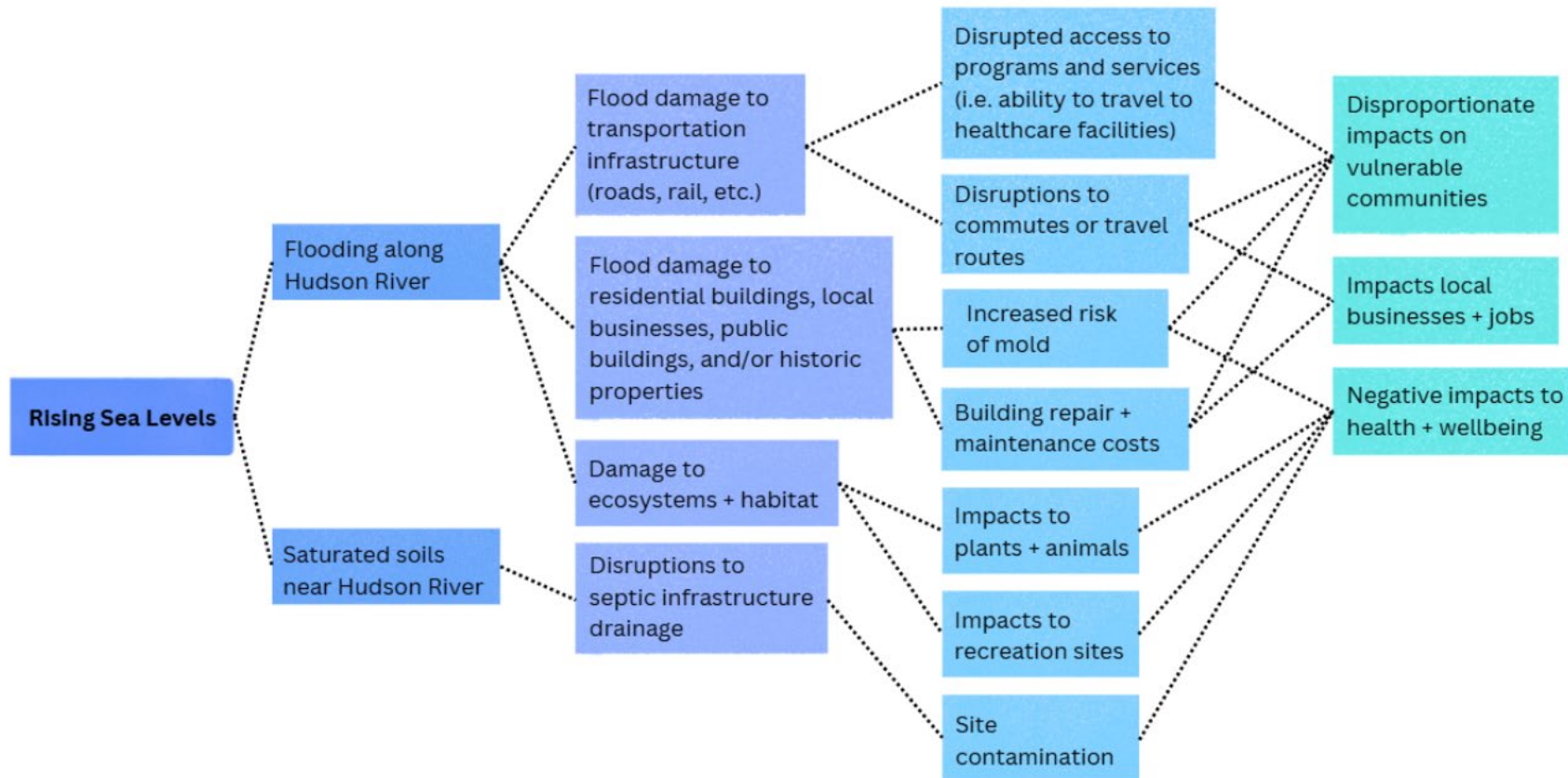
78

⁷⁸ Tetra Tech, "Section 5.4.10: Wildfire," in *Putnam County Hazard Mitigation Plan* (Putnam County, 2021), 8, https://www.putnamcountyny.gov/images/Departments/Emergency_Services/mitigation/2021/Section-5.4.10-Wildfire-121520dfs.pdf.

Appendix L: Climate Impact Chains

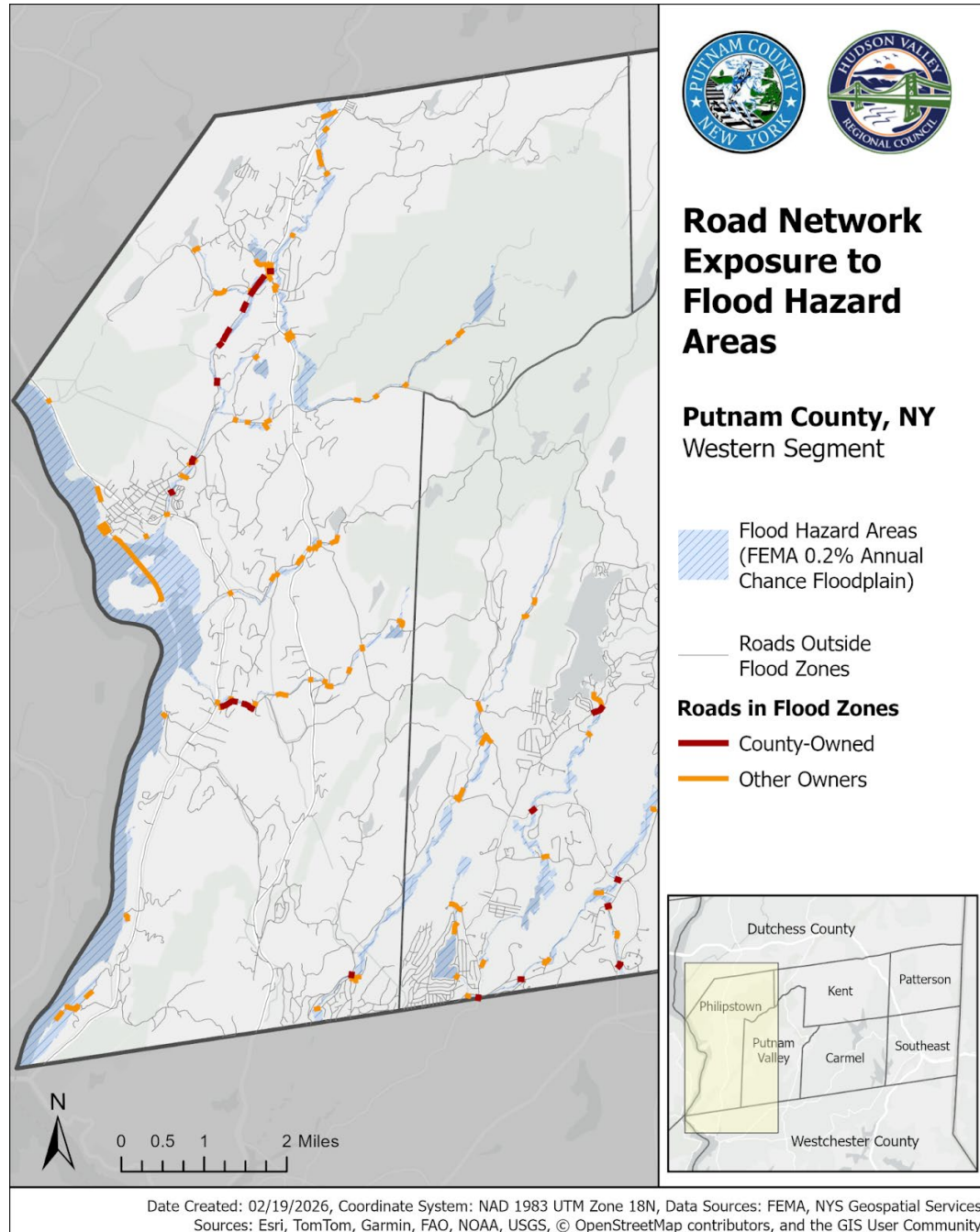




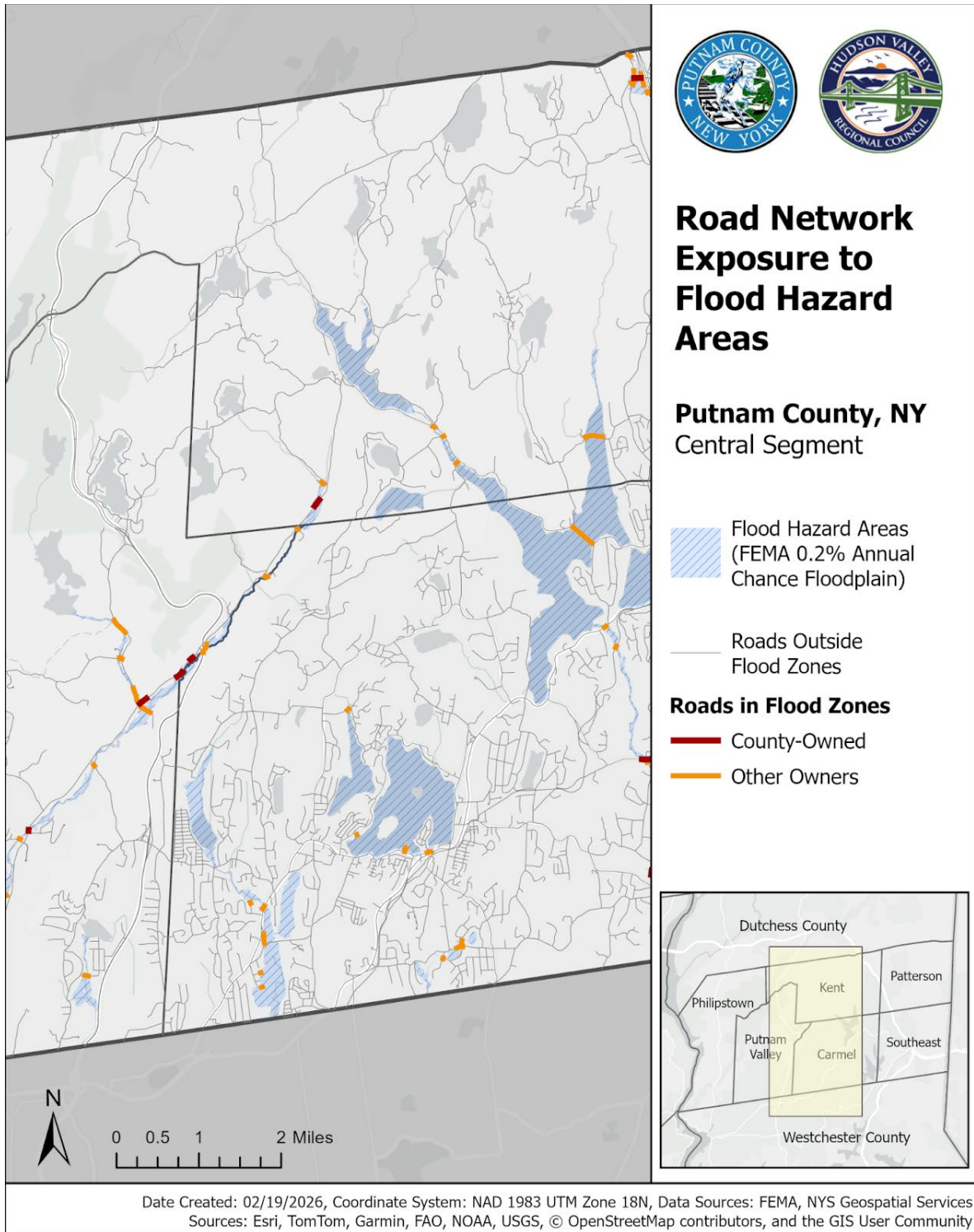


Appendix M: Travel & Transportation

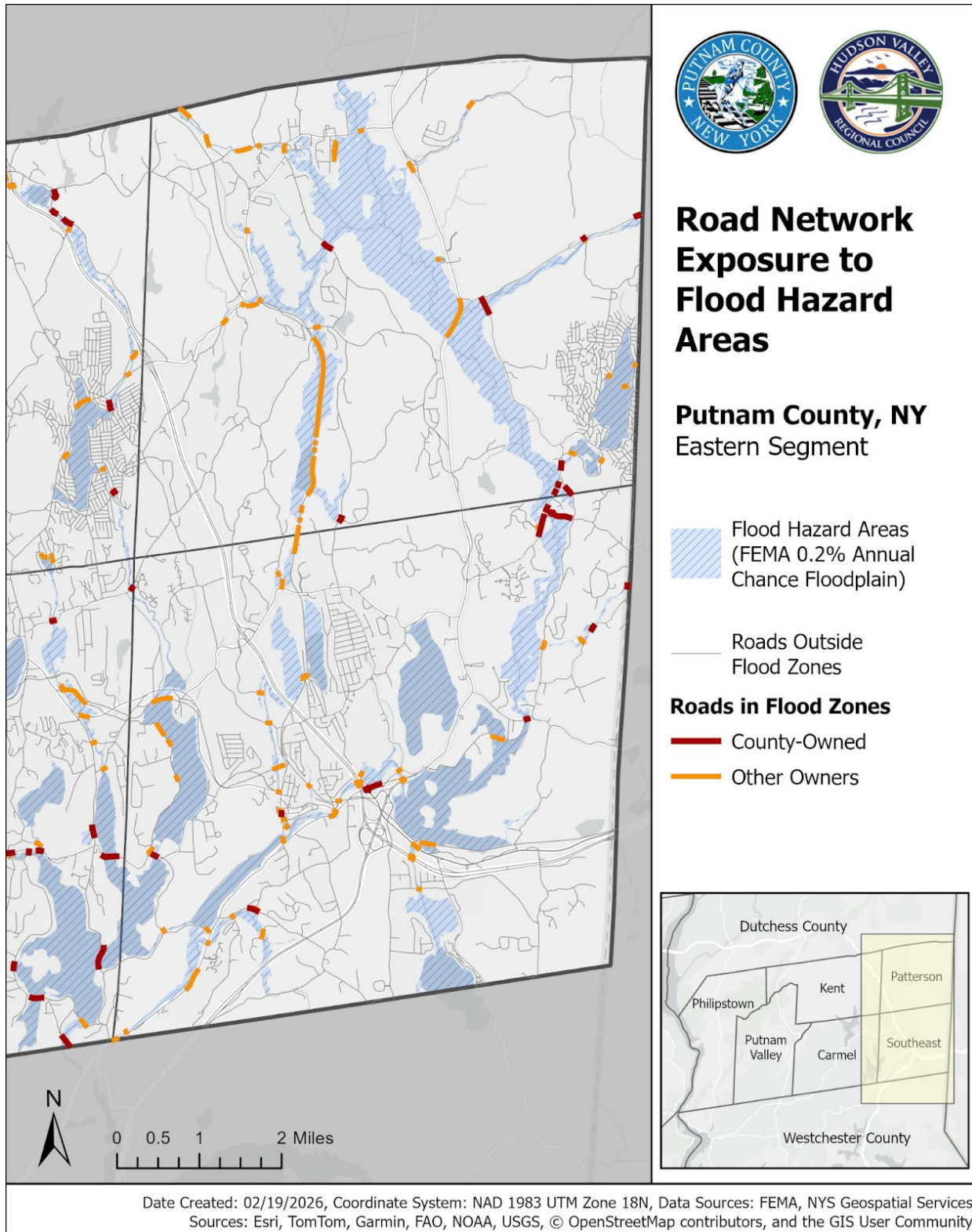
County & Non-County Roads within the 0.2% Annual Chance Floodplain



Map 1: Road network (separated by County ownership) in relation to the FEMA 0.2% Annual Chance Floodplain in Putnam County. Western segment.



Map 2: Road network (separated by County ownership) in relation to the FEMA 0.2% Annual Chance Floodplain in Putnam County. Central segment.



Map 3: Road network (separated by County ownership) in relation to the FEMA 0.2% Annual Chance Floodplain in Putnam County. Eastern segment.

County-Owned Roads within Floodplain

Street	Town	Neighborhood	Waterbody (Origin of flood zone)	Start	End
Croton Falls Road	Carmel	Kent Cliffs	West Branch Croton River	073° 40' 17.44" W 41° 21' 20.18" N	073° 40' 12.58" W 41° 21' 15.25" N
Croton Falls Road	Carmel	Kent Cliffs	Croton Falls Reservoir	073° 40' 43.08" W 41° 21' 45.54" N	073° 40' 35.17" W 41° 21' 45.42" N
Drewville Road	Carmel	Carmel Hamlet	Croton Falls Reservoir	073° 39' 40.95" W 41° 23' 14.56" N	073° 39' 30.18" W 41° 23' 14.46" N
Drewville Road	Carmel	Carmel Hamlet	West Branch Croton River	073° 41' 4.31" W 41° 23' 17.64" N	073° 40' 57.91" W 41° 23' 17.63" N
Drewville Road	Carmel	Carmel Hamlet/Kent Cliffs	Stream between Croton Falls Reservoir and Lake Gilead	073° 40' 35.58" W 41° 23' 18.77" N	073° 40' 33.7" W 41° 23' 18.64" N
Fair Street	Carmel	Carmel Hamlet	Michael Brook	073° 40' 21.11" W 41° 25' 44.15" N	073° 40' 19.86" W 41° 25' 44.35" N
Fair Street	Carmel	Carmel Hamlet	Middle Branch Croton River	073° 39' 13.71" W 41° 26' 3.86" N	073° 39' 13.37" W 41° 26' 4.23" N
Stoneleigh Avenue	Carmel	Carmel Hamlet	Michael Brook	073° 39' 48.7" W 41° 23' 27.97" N	073° 39' 50.08" W 41° 23' 32.79" N
Stoneleigh Avenue	Carmel	Kent Cliffs	Croton Falls Reservoir	073° 39' 46.68" W 41° 22' 4.71" N	073° 39' 42.05" W 41° 22' 16.37" N
West Shore Drive	Carmel	Kent Cliffs	Croton Falls Reservoir	073° 40' 58.17" W 41° 22' 4.35" N	073° 40' 57.56" W 41° 22' 7.07" N
West Shore Drive	Carmel	Kent Cliffs	Croton Falls Reservoir	073° 40' 43.85" W 41° 23' 17.55" N	073° 40' 43.74" W 41° 23' 18.31" N
Ludingtonville Road	Kent	Whaley Lake	Stump Pond Stream	073° 40' 0.64" W 41° 29' 55.83" N	073° 40' 0.91" W 41° 29' 55.91" N

Ludingtonville Road	Kent	Whaley Lake	Stump Pond Stream	073° 40' 2.54" W 41° 29' 56.48" N	073° 40' 3.52" W 41° 29' 56.91" N
Ludingtonville Road	Kent	Whaley Lake	Stump Pond Stream	073° 40' 4.61" W 41° 29' 57.55" N	073° 40' 5.09" W 41° 29' 57.9" N
Ludingtonville Road	Kent	Whaley Lake	Stump Pond Stream	073° 40' 13.3" W 41° 30' 2.58" N	073° 40' 15.21" W 41° 30' 3.67" N
Ludingtonville Road	Kent	Whaley Lake	Stump Pond	073° 40' 13.43" W 41° 30' 12.66" N	073° 40' 13.27" W 41° 30' 12.77" N
Ludingtonville Road	Kent	Whaley Lake	Stump Pond	073° 40' 13.1" W 41° 30' 12.89" N	073° 40' 13.04" W 41° 30' 12.93" N
Ludingtonville Road	Kent	Whaley Lake	Stump Pond	073° 40' 12.83" W 41° 30' 13.19" N	073° 40' 12.8" W 41° 30' 13.24" N
Ludingtonville Road	Kent	Whaley Lake	Stump Pond	073° 40' 12.77" W 41° 30' 13.34" N	073° 40' 12.73" W 41° 30' 13.5" N
Ludingtonville Road	Kent	Whaley Lake	Stream between Stump and Browns Ponds	073° 40' 13.47" W 41° 30' 15.58" N	073° 40' 13.59" W 41° 30' 16.04" N
Ludingtonville Road	Kent	Whaley Lake	Stump Pond Stream	073° 40' 57.01" W 41° 30' 29.33" N	073° 41' 2.23" W 41° 30' 29.32" N
Peekskill Hollow Road	Kent	Kent Cliffs	Peekskill Hollow Creek	073° 45' 36.77" W 41° 26' 1.21" N	073° 45' 32.88" W 41° 26' 5.02" N
Terry Hill Road	Kent	Lake Carmel	Lake Carmel/Stump Pond Stream	073° 39' 29.31" W 41° 27' 58.44" N	073° 39' 29.51" W 41° 27' 59.06" N
Terry Hill Road	Kent	Lake Carmel	Lake Carmel/Stump Pond Stream	073° 39' 29.83" W 41° 28' 0.36" N	073° 39' 29.85" W 41° 28' 0.47" N
Terry Hill Road	Kent	Lake Carmel	Lake Carmel/Stump Pond Stream	073° 39' 30.06" W 41° 28' 1.36" N	073° 39' 30.18" W 41° 28' 1.88" N
Townners Road	Kent	Lake Carmel	Middle Branch Croton River	073° 39' 27.81" W 41° 27' 4.87" N	073° 39' 27.04" W 41° 27' 5.38" N
Cornwall Hill Road	Patterson		Muddy Brook	073° 36' 22.14" W 41° 29' 37.66" N	073° 36' 22.19" W 41° 29' 37.69" N

Cornwall Hill Road	Patterson		Muddy Brook	073° 36' 22.42" W 41° 29' 37.8" N	073° 36' 25.71" W 41° 29' 39.45" N
Cornwall Hill Road	Patterson		Muddy Brook	073° 36' 25.95" W 41° 29' 39.59" N	073° 36' 26.59" W 41° 29' 40.1" N
Doansburg Road	Patterson	Sears Corners	East Branch Croton River	073° 33' 15.96" W 41° 27' 0.5" N	073° 33' 15.61" W 41° 27' 0.99" N
Doansburg Road	Patterson	Sears Corners	East Branch Croton River	073° 33' 13.17" W 41° 27' 5.18" N	073° 33' 12.98" W 41° 27' 5.65" N
Doansburg Road	Patterson	Sears Corners	Stream between East Branch Croton River and Lost Lake	073° 33' 10.51" W 41° 27' 16.11" N	073° 33' 10.07" W 41° 27' 18.48" N
Doansburg Road	Patterson	Sears Corners	Stream between East Branch Croton River and Lost Lake	073° 33' 10.02" W 41° 27' 18.72" N	073° 33' 9.98" W 41° 27' 18.93" N
East Branch Road	Patterson	Putnam Lake	Haviland Hollow Brook	073° 34' 9.48" W 41° 28' 55.44" N	073° 34' 14.61" W 41° 29' 3.54" N
Farm To Market Road	Patterson	Sears Corners	Southeast of Ice Pond	073° 36' 17.28" W 41° 26' 45.22" N	073° 36' 16.36" W 41° 26' 46.61" N
Gage Road	Patterson	Sears Corners	East Branch Croton River	073° 33' 2.76" W 41° 26' 59.9" N	073° 33' 5.91" W 41° 27' 2.82" N
Gage Road	Patterson	Sears Corners	East Branch Croton River	073° 33' 6.12" W 41° 27' 3.02" N	073° 33' 6.22" W 41° 27' 3.11" N
Haviland Hollow Road	Patterson		Haviland Hollow Brook	073° 32' 48.03" W 41° 29' 41.18" N	073° 32' 47.91" W 41° 29' 41.24" N
Haviland Hollow Road	Patterson		Quaker Brook	073° 32' 3.11" W 41° 29' 54.79" N	073° 32' 2.26" W 41° 29' 55.04" N
Haviland Hollow Road	Patterson		Quaker Brook	073° 32' 2.15" W 41° 29' 55.07" N	073° 32' 1.68" W 41° 29' 55.17" N
Fishkill Road	Philipstown	Nelsonville	Foundry Brook	073° 56' 23.97" W 41° 25' 40.4" N	073° 56' 23.26" W 41° 25' 42.1" N
Fishkill Road	Philipstown	Nelsonville	Foundry Brook	073° 56' 2.22" W 41° 26' 30.06" N	073° 56' 2.16" W 41° 26' 31.52" N

Fishkill Road	Philipstown	Nelsonville	Foundry Brook	073° 55' 59.54" W 41° 26' 54.17" N	073° 55' 58.97" W 41° 26' 54.56" N
Fishkill Road	Philipstown	Nelsonville	Foundry Brook	073° 55' 55.98" W 41° 26' 58.03" N	073° 55' 51.98" W 41° 27' 3.26" N
Fishkill Road	Philipstown	Nelsonville	Foundry Brook	073° 55' 39.44" W 41° 27' 16.51" N	073° 55' 37.68" W 41° 27' 19.28" N
Fishkill Road	Philipstown	Nelsonville	Foundry Brook	073° 55' 32.37" W 41° 27' 26.47" N	073° 55' 31.87" W 41° 27' 27.02" N
Fishkill Road	Philipstown	Nelsonville	Foundry Brook	073° 55' 31.62" W 41° 27' 27.31" N	073° 55' 31.49" W 41° 27' 27.45" N
Fishkill Road	Philipstown	Nelsonville	Foundry Brook	073° 55' 31.33" W 41° 27' 27.62" N	073° 55' 22.7" W 41° 27' 36.23" N
Fishkill Road	Philipstown	Nelsonville	Barrett Pond and Clove Creek	073° 55' 16.66" W 41° 27' 40.31" N	073° 55' 15.82" W 41° 27' 40.34" N
Peekskill Road	Philipstown	Nelsonville	Foundry Brook	073° 56' 41.55" W 41° 25' 21.47" N	073° 56' 41.39" W 41° 25' 21.24" N
Snake Hill Road	Philipstown	Manitou	Philips Brook	073° 55' 36.62" W 41° 23' 4.23" N	073° 55' 36.93" W 41° 23' 4.33" N
Snake Hill Road	Philipstown	Manitou	Philips Brook	073° 55' 59.14" W 41° 23' 6.22" N	073° 56' 0.42" W 41° 23' 5.94" N
Snake Hill Road	Philipstown	Manitou	Philips Brook	073° 55' 40.28" W 41° 23' 6.32" N	073° 55' 42.54" W 41° 23' 6.96" N
Snake Hill Road	Philipstown	Manitou	Philips Brook	073° 55' 50.66" W 41° 23' 8.72" N	073° 55' 50.7" W 41° 23' 8.73" N
Snake Hill Road	Philipstown	Manitou	Philips Brook	073° 55' 50.75" W 41° 23' 8.74" N	073° 55' 55.97" W 41° 23' 7.49" N
Sprout Brook Road	Philipstown	Manitou	Canopus Creek	073° 54' 15.9" W 41° 20' 14.85" N	073° 54' 15.8" W 41° 20' 15.32" N
Church Road	Putnam Valley	Oscawana Lake	Peekskill Hollow Brook	073° 50' 31.39" W 41° 21' 12.82" N	073° 50' 32.08" W 41° 21' 13.03" N

Church Road	Putnam Valley	Oscawana Lake	Oscawana Brook	073° 51' 41.54" W 41° 21' 58.01" N	073° 51' 42.85" W 41° 21' 57.27" N
Mill Street	Putnam Valley	Oscawana Lake	Shrub Oak Brook	073° 50' 32.0" W 41° 20' 18.53" N	073° 50' 31.16" W 41° 20' 19.56" N
Oscawana Lake Road	Putnam Valley	Oscawana Lake	Peekskill Hollow Creek	073° 52' 30.07" W 41° 19' 59.31" N	073° 52' 29.95" W 41° 19' 59.81" N
Oscawana Lake Road	Putnam Valley	Oscawana Lake	Peekskill Hollow Creek	073° 50' 49.44" W 41° 22' 59.03" N	073° 50' 49.03" W 41° 22' 59.15" N
Oscawana Lake Road	Putnam Valley	Oscawana Lake	Oscawana Brook	073° 50' 48.1" W 41° 22' 59.38" N	073° 50' 46.63" W 41° 22' 59.73" N
Oscawana Lake Road	Putnam Valley	Oscawana Lake	Oscawana Brook	073° 50' 45.42" W 41° 23' 0.2" N	073° 50' 43.66" W 41° 23' 1.54" N
Peekskill Hollow Road	Putnam Valley	Oscawana Lake	Peekskill Hollow Creek	073° 51' 54.61" W 41° 20' 10.92" N	073° 51' 53.55" W 41° 20' 10.89" N
Peekskill Hollow Road	Putnam Valley	Oscawana Lake	Shrub Oak Brook	073° 50' 40.73" W 41° 20' 56.34" N	073° 50' 40.04" W 41° 20' 56.48" N
Peekskill Hollow Road	Putnam Valley	Oscawana Lake	Peekskill Hollow Creek	073° 49' 41.51" W 41° 22' 37.92" N	073° 49' 41.42" W 41° 22' 38.47" N
Peekskill Hollow Road	Putnam Valley	Oscawana Lake	Wiccopee Brook	073° 48' 6.28" W 41° 23' 57.56" N	073° 48' 0.77" W 41° 24' 0.68" N
Peekskill Hollow Road	Putnam Valley	Oscawana Lake	Peekskill Hollow Creek	073° 47' 34.6" W 41° 24' 14.29" N	073° 47' 30.55" W 41° 24' 17.12" N
Peekskill Hollow Road	Putnam Valley	Oscawana Lake	Peekskill Hollow Creek	073° 47' 23.18" W 41° 24' 25.0" N	073° 47' 21.28" W 41° 24' 26.22" N
Deans Corner Road	Southeast	Sears Corners	Holly Stream	073° 37' 38.36" W 41° 22' 40.24" N	073° 37' 32.89" W 41° 22' 38.52" N
Doansburg Road	Southeast	Sears Corners	East Branch Croton River	073° 33' 29.9" W 41° 26' 34.29" N	073° 33' 25.78" W 41° 26' 45.24" N
Doansburg Road	Southeast	Sears Corners	East Branch Croton River	073° 33' 23.49" W 41° 26' 49.69" N	073° 33' 22.54" W 41° 26' 51.19" N

Drewville Road	Southeast	Sears Corners	Middle Branch Croton River	073° 38' 58.73" W 41° 23' 14.84" N	073° 38' 56.99" W 41° 23' 14.17" N
Milltown Road	Southeast	Sears Corners	East Branch Croton River	073° 33' 43.04" W 41° 24' 37.15" N	073° 33' 42.39" W 41° 24' 37.29" N
Milltown Road	Southeast	Sears Corners	Salmons Daily Brook	073° 32' 46.78" W 41° 25' 33.49" N	073° 32' 45.45" W 41° 25' 35.08" N
Milltown Road	Southeast	Sears Corners	Salmons Daily Brook	073° 32' 16.36" W 41° 26' 0.03" N	073° 32' 16.26" W 41° 26' 0.83" N
Old Doansburg Lane *Includes cul-de-sac	Southeast	Sears Corners	East Branch Croton River	073° 33' 4.15" W 41° 26' 44.4" N	073° 33' 17.73" W 41° 26' 47.16" N
Railroad Avenue	Southeast	Brewster	Tonetta Brook	073° 37' 10.6" W 41° 23' 39.44" N	073° 37' 10.55" W 41° 23' 40.06" N
Sodom Road	Southeast	Sears Corners	East Branch Croton River	073° 35' 57.35" W 41° 23' 53.8" N	073° 35' 56.93" W 41° 23' 55.03" N
Sodom Road	Southeast	Sears Corners	East Branch Croton River	073° 35' 59.26" W 41° 23' 54.42" N	073° 35' 56.93" W 41° 23' 55.03" N
Sodom Road	Southeast	Sears Corners	East Branch Croton River	073° 35' 56.93" W 41° 23' 55.03" N	073° 35' 47.96" W 41° 23' 57.44" N

Table A: Roads owned by Putnam County intersecting the FEMA 0.2% floodplain. Roads are listed alphabetically by town and then road name. Neighborhood names and the name of the closest waterbody are given. Geographic coordinates of the start and end of each road segment at risk of flooding are given at road centerline

Appendix N: Maladaptation Analysis

The following matrix includes an analysis of the CCARP's strategies for potential maladaptations, or unintended, negative outcomes. The analysis is color-coded such that a darker color indicates more significant maladaptive potential. This matrix is an initial assessment and aims to support proactive planning to reduce risks and promote positive outcomes into the future. All strategies may be vulnerable to lack of funding, which is maladaptive.

Infrastructure Adaptation Strategies						
	Does the below listed strategy have the potential to...					
Strategy	Increase emissions or exacerbate climate impacts?	Redirect vulnerabilities to other communities or future generations?	Negatively affect vulnerable communities?	Create path dependency?	Degrade ecosystems, biodiversity, or ecosystem services?	Become ineffective due to uncertainties about the future?
1. Secure & Incentivize Backup Power at Critical Facilities						
2. Expand Evacuation Planning	Will any new transportation infrastructure or options lead to increases in emissions?		How will evacuation routes ensure accessibility for vulnerable communities?			Will the travel routes be accessible in the future, given uncertainties about future climate conditions?
3. Increase Cooling Center Program Awareness and Accessibility						
4. Expand Storm & Emergency Shelters for Animals			Will there be any new accessibility challenges at storm shelters for people with pet allergies?			
5. Assess & Right-Size		Could investments in one location impact		For projects with large upfront costs, how	How will surrounding ecosystems be	How can investments contend with

Stormwater Infrastructure		stormwater management downstream?		feasible will it be to adjust in the future?	affected by stormwater infrastructure?	uncertainties about climate projections into the future?
6: Assess & Mitigate Dam-Related Risks		Will any new communities face changing flood risks due to dam removals?		Once expenditures on dam improvements or removals are implemented, how feasible is it to reverse course?	How will dam removals impact surrounding ecosystems and water levels?	How much will flood risks increase in the future?
7. Expand Septic Outreach, Education, & Programs						
8. Assess & Protect Building Stock			How can municipalities ensure equitable outcomes while identifying places to relocate buildings outside of the floodplain?			Could uncertainties about future climate trends impact building upgrades/repairs?
9. Expand Public Transportation				Could investments in public transportation infrastructure/assets impact long-term sustainability? (i.e. investing in EV v. traditional vehicles).		Could routes identified as safe now become vulnerable due to uncertainties about future climate conditions?

Social Adaptation Strategies						
	Does the below listed strategy have the potential to...					
Strategy	Increase emissions or exacerbate climate impacts?	Redirect vulnerabilities to other communities or future generations?	Affect vulnerable communities?	Create path dependency?	Degrade ecosystems, biodiversity, or ecosystem services?	Become ineffective due to uncertainties about the future?
10. Expand Outreach & Programs for			How will updates to print materials be communicated to			How will print materials contend with changing climate

Vulnerable Communities			community members, particularly residents without internet access?			conditions into the future?
11. Further Food System Resilience						
12. Coordinate with Healthcare Facilities						How will uncertainties about future climate trends impact emergency preparedness?
13. Collaborate with schools, daycares, preschools, and summer camps on resiliency and emergency preparedness planning.						
14. Coordinate with Local Employers & Businesses				How will current initiatives related to economic resiliency affect long-term sustainability? Will the industries invested in today continue to support Putnam in the future?	How will economic initiatives affect ecosystem and environmental resources?	

Environmental						
	Does the below listed strategy have the potential to...					
Strategy	Increase emissions or exacerbate climate impacts?	Redirect vulnerabilities to other communities or future generations?	Affect vulnerable communities?	Create path dependency?	Degrade ecosystems, biodiversity, or ecosystem services?	Become ineffective due to uncertainties about the future?

15. Reduce Risks from Wildfires & Smoke Exposure					How will forest management practices impact existing ecosystems and ecosystem services?	Will current fire resiliency planning efforts be updated in the future based on changing risk patterns?
16. Increase Ecosystem Management & Data Collection for Climate Resilience				Will the full suite of infrastructural options be considered (nature-based solutions and gray infrastructure solutions?)		
17. Enhance Agricultural Resilience						How will agricultural challenges and opportunities change in the future due to climate trends?
18. Protect County Archives & Historical Records from Flood Risk						Will the option identified for County Historical Records and Archives remain safe under a range of possible future conditions?

Cross Cutting						
	Does the below listed strategy have the potential to...					
Strategy	Increase emissions or exacerbate climate impacts?	Redirect vulnerabilities to other communities or future generations?	Affect vulnerable communities?	Create path dependency?	Degrade ecosystems, biodiversity, or ecosystem services?	Become ineffective due to uncertainties about the future?
19. Increase Storm & Emergency Preparedness Education						

20. Expand Data & Data Collection						Will data and mapping projects continue to reflect risks and vulnerabilities due to changes in climate trends over time?
21. Align Internal Processes & Plans						
22. Increase Volunteer Capacity						How can programs maintain long-term success if volunteer interest/capacity changes over time?
23. Increase Staff Capacity for Adaptation & Resilience Planning						
24. Expand Partnerships for Climate Resilience				Will resource sharing options or agreements remain consistent over time?		
25. Expand Timely Outreach & Education Capacity						

Table inspired by and adapted from the [CCARP Template's](#) Sample Maladaptation Analysis Matrix (p. 52)