Comprehensive Climate Change-Related Hazard Vulnerability Assessment

25 Points Priority for all certification levels

The goal of the action is for a municipality to complete a comprehensive Climate Change-Related Hazard Vulnerability Assessment (CCRHVA) and adopt it into the Land Use Plan Element of the Master Plan to meet the requirements of the Municipal Land Use Law (MLUL) (N.J.S.A. 40:55D-28). A comprehensive CCRHVA contains the 9 sections outlined in "Template 1.1 CCRHVA," which is found in the Guide to Local Climate Change Adaptation Planning: The Model Climate Change-Related Hazard Vulnerability Assessment for New Jersey Municipalities The comprehensive CCRHVA must be completed and adopted into the Land Use Plan Element of the Municipal Master Plan after October 2023, the date the Guide to Local Climate Change Adaptation Planning was made available.

If a CCRHVA was previously completed, an updated version that includes the 9 sections found in Template 1.1 CCRHVA can be integrated or appended and adopted into the Land Use Plan Element of the Master Plan.

Successful completion of this action could contribute toward one of the requirements for earning a Gold Star in both Climate Readiness and Health. For more information on earning a Gold Star see the Gold Star Standards section of the website.

Why is it important?

Climate change-related hazards can negatively impact all aspects of community life, including public health and safety, property and business security, and economic and environmental assets. As climate hazards are projected to intensify in frequency, strength, and unpredictability, municipalities should make decisions and plans based on a thorough understanding of the community's vulnerabilities to these hazards so that they are making investments that reduce vulnerabilities and are also not inadvertently increasing vulnerabilities. Conducting a comprehensive CCRHVA provides the necessary baseline information and builds capacity for equitable and effective climate change adaptation at the local level. Municipalities are required by the NJ MLUL (N.J.S.A. 40:55D-28.) to include a CCRHVA in the Land Use Plan Element of their Master Plans, but the law does not specify a level of depth to the CCRHVA sufficient to meet the challenges and threats presented by climate change. Additionally, by evaluating details of how climate change-related hazards affect multiple systems and sectors in the community, a comprehensive CCRHVA can illuminate opportunities for adaptation based on favorable climate change trends, such as for the agricultural or tourism sectors. It can also highlight social disparities exacerbated by climate change that must be addressed. A more comprehensive CCRHVA allows for more targeted strategies, leading to more successful solutions.

The law requires municipalities to include the following in their CCRHVAs:

1. Analyze current and future threats to, and vulnerabilities of, the municipality associated with climate change-related natural hazards.
2. Include a build-out analysis of future residential, commercial, industrial, and other development in the municipality, and an assessment of the threats and vulnerabilities identified above related to that development.
3. Identify critical facilities, utilities, roadways, and other infrastructure that is necessary for evacuation purposes and sustaining quality of life during a natural disaster, to be maintained at all times in an operational state.
4. Analyze the potential impact of natural hazards on relevant components and elements of the master plan.
5. Provide strategies and design standards that may be implemented to reduce or avoid risks associated with natural hazards.

6. Include a specific policy statement on the consistency, coordination, and integration of the climate-change related hazard vulnerability assessment with certain other plans adopted by the municipality.
7. Rely on the most recent natural hazard projections and best available science provided by the New Jersey DEP.

This action requires these 7 items and the additional elements described in this action.

Who should lead and be involved with this action?

The Green Team can lead this action in coordination with the municipal planning board and planner. The planning board is responsible for the Master Plan, and the planner is typically responsible for preparing the materials to include in the Master Plan, therefore, because the CCRHVA will be part of the Master Plan, the planning board and planner must be involved in this action. The activities of this action occur at the same time that the municipality is developing its CCRHVA for the municipal master plan. A comprehensive approach to completing a municipal CCRHVA can include the Green Team and others who will complete this action, which must be integrated into the CCRHVA by the planner under the oversight of the planning board. It will be necessary to interact with additional municipal representatives aware of municipal plans, policies, regulations, and conditions affecting climate hazard risks and impacts. This includes the engineer, administrator, governing body, and department staff. Interested members of the public and advisory stakeholders are solicited to participate in developing the town's CCRHVA as part of this action. To assist in identifying key local stakeholders, use Worksheet 2.3 Key Local Stakeholders found in the Guide to Local Climate Change Adaptation Planning; and to create a project team to participate in the development of the CCRHVA, use Worksheet 3.1 Project Team Selection. For additional guidance on identifying and soliciting the input of key stakeholders see steps 2 and 3 in the "What to do and how to do it" section.

Timeframe

A comprehensive CCRHVA with adoption into the master plan can take from 8 to 12 months or longer to complete.

Project costs and resource needs

Staff costs may be incurred to compile planning documents, review municipal policies, and conduct stakeholder outreach. Using the worksheets and information in the Guide to Local Climate Change Adaptation Planning, Green Team members can assist in this process. Professional costs associated with the CCRHVA may be expected for developing and interpreting a build-out analysis required by the MLUL and for completing a vulnerability matrix spreadsheet to rank vulnerabilities. Knowledgeable Green Team members can assist in reducing the costs, however, time will need to be contributed by the municipality's staff and planner and other professionals.

What to do, and how to do it ("How to")

This section provides guidance and recommendations for implementing the action. A municipality does not need to follow this guidance exactly if it meets the requirements for earning points for this action.

Lookback Period: A municipality can earn points for this action if the comprehensive CCRHVA was adopted in the current or previous two years after October 2023.

Complete the following components as part of a municipal CCRHVA to earn points for a comprehensive municipal CCRHVA. All of the components must be completed. Specific how-to instructions are available in the Guide to Local Climate Change Adaptation Planning. Current versions of worksheets and other resources are maintained in the Guide to Local Climate Change Adaptation Planning and can be accessed by viewing or downloading the guide and clicking on the links in the guide. Worksheets and other tools are provided as resources, and points can be earned if the component is completed without the use of these resources, as long as the requirements of the action component are met. To accomplish a comprehensive CCRHVA, it is expected that the full Guide to Local Climate Change Adaptation Planning will be utilized while completing this action, however direct links to the worksheets and resources are provided here for convenience.

The Guide to Local Climate Change Adaptation Planning addresses a major gap in information for localities and practitioners to tackle the complexity of climate hazards and impacts at the local level. While municipal officials and community members in a flood-prone state like NJ are aware that flooding disrupts lives and business, causes damage to property and infrastructure, and poses severe safety risks, there is limited

understanding of how to evaluate levels of vulnerability at a municipal scale. An understanding of vulnerabilities is necessary for determining investments for future growth and addressing issues of immediate concern, particularly for socially vulnerable populations, which are centered throughout the planning process outlined in this resource. This guide provides an easily implemented step-by-step process, with contextual information about climate hazard impacts and sustainable solutions, that enables meaningful local action.

To enhance its application by practitioners, the Guide to Local Climate Change Adaptation Planning includes widely utilized data sources and existing municipal planning processes at varying levels of technical detail to ensure municipal leaders and community members understand the importance and implications of local climate adaptation planning and can adequately drive the planning process. It is designed to communicate in relation to things localities are already accustomed to considering, while providing a structure to make their resilience work less daunting and more organized and efficient.

Although numbered differently, the steps below are organized according to the organization of the steps of the Guide to Local Climate Change Adaptation Planning, and municipalities should work through these steps with the use of the guide. Some steps may occur concurrently or be relevant at more than one point in the CCRHVA process. Community engagement is an example of this. Worksheets indicated in this action and the Guide to Local Climate Change Adaptation Planning are labeled with the number of the step where they can be found in the guide.

Steps in Part I of the Guide to Local Climate Change Adaptation Planning

1) Catalog and review the planning documents in the community relevant to conducting a CCRHVA and those that will need to be updated based on the CCRHVA, and include this information in the municipal CCRHVA. The review occurs at two points in the planning process. The initial review occurs near the start of the process to identify existing plans, the visions and goals contained in the plans, and any information in the plans that is relevant to climate adaptation planning. Doing this early in the process provides an opportunity to understand existing community goals or challenges and will save time when there is a need to locate information from various planning documents at later phases in the process of analyzing hazard vulnerabilities and developing strategies. The second point at which this component is conducted and completed is after climate hazard vulnerabilities have been identified. At this point, the action involves determining how the plans are affected by climate hazard vulnerabilities and identifying updates that may need to be made to the plans' goals and strategies. To complete this component, the planning document review must occur at a minimum at these two points in the process of developing the town's CCRHVA, and the information must be included in subheading iii of section V (Potential Impact on the Master Plan, Other Planning Efforts, and Municipal Capacity) of Template 1.1 CCRHVA or the equivalent. It is recommended that Worksheet 2.1 Planning Documents Review in the Guide to Local Climate Change Adaptation Planning be used to complete this step, which corresponds to Steps 2.1 and 4.2.b in the guide.

2) Identify municipal staff and departments, community groups and advocates, and community members who can provide expertise and diverse community perspectives throughout the climate adaptation planning process. This is Step 2.3 in the Guide to Local Climate Change Adaptation Planning. It is recommended that Worksheet 2.3 Key Local Stakeholders in the guide be used. Municipalities should center socially vulnerable populations in this component and throughout the CCRHVA process, and the guide provides specific guidance and resources for doing so. A description of this community participation step can be included in section III (Description of Process and Community Participation) in Template 1.1 CCRHVA or the equivalent for action submission. A description of the community participation process is required for submission and described in the "What to submit to earn points for this action" section.

3) Create a roster of individuals to solicit for participation on the project team. It is recommended that Worksheet 3.1 Project Team Selection of Step 3.1 in the Guide to Local Climate Change Adaptation Planning be used. A description of this community participation step can be included in section III (Description of Process and Community Participation) in Template 1.1 CCRHVA or the equivalent for action submission. A description of the community participation process is required for submission and described in the "What to submit to earn points for this action" section.

4) Develop and implement a community engagement plan. See Step 3.2 of the Guide to Local Climate Change Adaptation Planning. A description of this community participation step can be included in section III (Description of Process and Community Participation) in Template 1.1 CCRHVA or the equivalent for action submission. A description of the community participation process is required for submission and described in the "What to submit to earn points for this action" section.

Steps in Part II of the Guide to Local Climate Change Adaptation Planning

5) Gather information about climate hazards from community members, municipal departments, regional and

state partners, the local or county hazard mitigation plan, mapping services from federal, state, and institutional sources, and other data and stakeholder sources. Determine which, if any, additional hazards beyond those listed in the MLUL are relevant to the community and should be evaluated in the CCRHVA. This is part of Step 4.1.a of the Guide to Local Climate Change Adaptation Planning, which includes guidance and resources for collecting multiple types of data to identify climate hazards affecting the community. Include a description of the process to collect hazard information in section III (Description of Process and Community Participation); and descriptions of hazards identified in section VIII (Climate Hazards Descriptions) in Template 1.1 CCRHVA or the equivalent for action submission. A description of the community participation process is required for submission and described in the "What to submit to earn points for this action" section.

6) Conduct a development analysis to evaluate current and projected development in relation to current and projected hazards to identify changes to zoning and other land use policies and regulations to reduce vulnerabilities. This is Step 4.1.b of the Guide to Local Climate Change Adaptation Planning. Include the results of the analysis in subheading i of section V (Potential Impact on the Master Plan, Other Planning Efforts, and Municipal Capacity) of Template 1.1 CCRHVA or the equivalent for action submission. The outputs of the analysis should be used to inform adaptation strategies directly related to land use regulations. Areas that are currently exposed to climate hazards require immediate attention to reduce harm to people and property. Areas that are projected to be exposed to climate hazards also require immediate actions to modify local land use policies and regulations. The analysis should evaluate zoning and development under three scenarios:

- Current development in relation to current hazards
- Current development in relation to projected hazards
- Projected development in relation to projected hazards

7) Create a list of the public-serving facilities and infrastructure that are important in the community. This shall include features that are not designated as critical for hazard mitigation planning but are still considered important to community health and quality of life. Public-serving facilities and infrastructure include the built features that are important for keeping a community operational and healthy. These features should be entered into the "Built Infrastructure Features Full List" worksheet tab of Worksheet 4.1.c Vulnerability Matrix of the Guide to Local Climate Change Adaptation Planning. This is part of Step 4.1c of the Guide to Local Climate Change Adaptation Planning. To help complete the list of community facilities and infrastructure, and identify priority features, conduct a community session that will solicit information from community members in all areas of the municipality to confirm and identify important community features. Prior to developing any climate strategies, engage with the community to identify valued community assets and features through a participatory process such as described in the Sustainable Jersey Community Asset Mapping Action. Include the list of important community facilities and infrastructure in subheading i of section IV (Characterization of Community Systems, Features, and Hazard Vulnerabilities) of Template 1.1 CCRHVA or the equivalent for action submission. Prioritized and relevant features from this list also need to be included in the Built System Vulnerability Analysis (subsection ii of section IV) or the equivalent. Worksheet 4.1.c Vulnerability Matrix is an Excel spreadsheet that must also be included in the action submission. Include a description of the community engagement process to collect this information in section III (Description of Process and Community Participation) in Template 1.1 CCRHVA or the equivalent for action submission. A description of the community participation process is required for submission and described in the "What to submit to earn points for this action" section.

8) Evaluate how operations and decision-making are governed in the community in relation to potential impacts from climate hazards. It is recommended that municipalities use Worksheet 4.1.c Municipal Governance in Step 4.1.c of the Guide to Local Climate Change Adaptation Planning. Include the evaluation findings in subheading ii of section V (Potential Impact on the Master Plan, Other Planning Efforts, and Municipal Capacity) of Template 1.1 CCRHVA or the equivalent for action submission.

9) Assign a climate hazard impact score, adaptive capacity score, and vulnerability score for features in the built, natural, social, and economic systems of the community. This is Step 4.2a of the Guide to Local Climate Change Adaptation Planning, including Worksheet 4.1.c Vulnerability Matrix. The guide also includes Worksheet 4.2.a Analysis Workflow as a step-by-step guide for working through analyses of each indicator for each system feature that is evaluated in the CCRHVA. A summary of the analysis workflow is provided in Worksheet 4.2.a Analysis Matrix. These analysis resources are directed at practitioners and planners conducting the technical evaluation of climate hazard vulnerabilities, and describe how to determine the scoring for the vulnerability matrix. The completed vulnerability matrix should be included in section IV (Characterization of Community Systems, Features, and Hazard Vulnerabilities) and/or the appendix of the CCRHVA (subsection ii of section IX of Template 1.1 CCRHVA) or the equivalent, and it is used to inform vulnerabilities outlined in section IV (Characterization of Community Systems, Features, and Hazard Vulnerabilities). Worksheet 4.1.c Vulnerability Matrix is an Excel spreadsheet that must also be included in the action submission.

10) Conduct a visioning workshop, incorporating the hazard impacts and municipal capacities analyses. At the workshop, solicit community input to confirm or adjust and prioritize the impact and adaptive capacity scores that were assigned during the assessment of climate hazard vulnerabilities. Discuss proposed adaptation strategies with the community to evaluate strategy alternatives. Use a framework such as the one provided in Table 8: Equitable Adaptation Considerations and Strategies in the Guide to Equitable, Community-Driven Climate Preparedness Planning created by the Urban Sustainability Directors Network to compare typical adaptation strategies with equitable solutions. The guide also describes a process of generating and analyzing alternative strategies to identify preferred strategies. This is Steps 5.1 & 5.2 of the Guide to Local Climate Change Adaptation Planning. Include a description of this activity in section III (Description of Process and Community Participation) of Template 1.1 CCRHVA or the equivalent for action submission. A description of the community participation process is required for submission and described in the "What to submit to earn points for this action" section.

What to submit to earn points for this action

To earn points for this action, the following documentation must be submitted as part of the online certification application to verify that the action requirements have been met.

Lookback Period: A municipality can earn points for this action if the comprehensive CCRHVA was adopted in the current or previous two years after October 2023.

1) **Description of Implementation** – In the text box provided on the submission page for this action provide a short narrative (300 words or less) of what has been accomplished and the impact it has or will have on the community. Explain how the action has provided a more comprehensive understanding of community vulnerabilities to climate hazards through the evaluation of data and community input, and the status of a CCRHVA including all components of the action, adopted in the municipal Master Plan. Indicate the planner or planning firm that integrated this action into the municipal CCRHVA. Indicate the following dates in the submission text box: 1) Start date of the CCRHVA planning process and 2) Adoption date of the CCRHVA into the municipal Master Plan.

2) **Upload**: the CCRHVA as adopted by the municipal Planning Board. The adopted CCRHVA shall include **all of the nine sections** (or equivalents) of Template 1.1 CCRHVA in the Guide to Local Climate Change Adaptation Planning, documented in the CCRHVA as described in the "What to do and how to do it" section. This includes a thorough description of the planning process and community participation throughout each step of the process, including in the identification of climate hazards and the development of adaptation strategies. Involvement and consideration of socially vulnerable populations should be described, and the guide includes guidance for centering socially vulnerable populations in the CCRHVA process. The description of the planning process and community participation is detailed in section III of Template 1.1 CCRHVA. Among other relevant information in this section, specifically describe if the community engagement to conduct a CCRHVA included at least two activities:

- outreach through meetings or interviews to identify hazards and important community features potentially affected by hazards, and
- a visioning workshop conducted with the community to evaluate the findings of the town's CCRHVA and potential strategies, actions, and design standards to include in the CCRHVA. The visioning workshop should include information about specific climate hazards and vulnerabilities in the community and be structured to provide direct input to the completed CCRHVA.

In addition, the following documentation can be submitted to supplement the description of process and community participation:

Worksheet 2.3 Key Local Stakeholders, which is found in Step 2.3 in the Guide to Local Climate Change Adaptation Planning. Identification of local stakeholders must have occurred during the beginning of the process of developing the town's CCRHVA.

Worksheet 3.1 Project Team Selection, which is found in Step 3.1 of the Guide to Local Climate Change Adaptation Planning. Team selection must have occurred during the beginning of the process of developing the town's CCRHVA.

3) **Upload**: the certified copy of the Planning Board Resolution adopting the CCRHVA into the Land Use Plan Element of the Master Plan

4) **Upload**: a copy of Worksheet 4.1.c Vulnerability Matrix – Excel worksheet. The worksheet must include a tab with a list of the public-serving facilities and infrastructure that are important in the community, including features that are not designated as "critical" for hazard mitigation planning but are still considered important

to community health and quality of life. It must also include a tab with the climate hazard impact scores, adaptive capacity scores, and vulnerability scores for features in the built, natural, social, and economic systems of the community. Features from each of these systems must be included in the CCRHVA.

IMPORTANT NOTES:

There is a limit of six uploaded documents per action and individual files must not exceed 50 MB. Excerpts of relevant information from large documents are recommended.

All action documentation is available for public viewing after an action is approved. Action submissions should not include any information or documents that are not intended to be viewed by the public.

Resubmission Requirements

To resubmit for points under this action, please submit information to demonstrate the municipality's status on fulfilling its policy statement on the consistency, coordination, and integration of the CCRHVA with any existing or proposed natural hazard mitigation plan, floodplain management plan, comprehensive emergency management plan, emergency response plan, post-disaster recovery plan, capital improvement plan, and other plans. Step 4.2.b in the Guide to Local Climate Change Adaptation Planning includes a sample policy statement. Include the page of the municipality's CCRHVA where the adopted policy statement can be found, and upload the most current CCRHVA and adopted policy statement. Additionally, submit the most recent master plan or master plan reexamination report since adopting the comprehensive CCRHVA. The submitted plan or report must demonstrate use of the CCRHVA in the update or reexamination. Provide a description of how the comprehensive CCRHVA informed the updated master plan or reexamination report.

Approved Action Expiration Date

Approved actions will be set to expire three years from the date of adoption of the municipal Climate Change-Related Hazard Vulnerability Assessment into the master plan.

Gold Star Standard

Successful completion of this action could contribute toward the requirements for earning a Gold Star in Climate Readiness and as an Additional Action towards Gold Star in Health.

Spotlight: What NJ municipalities are doing

As this action is new, in the future we will have more case studies to highlight.

Resources

The following resources may be helpful in completing this action.

Guide to Local Climate Change Adaptation Planning: The Model Climate Change-Related Hazard Vulnerability Assessment for New Jersey Municipalities: This resource contains links to the worksheets for this action as well as climate and community data and hazard vulnerability assessment tools produced by the State of New Jersey, Rutgers University, federal agencies, and other sources. It is a step-by-step guide to conducting a comprehensive municipal CCRHVA. It is recommended that municipalities use this guide as they complete their CCRHVAs in conjunction with this action. This guide was created by New Jersey Future and Sustainable Jersey in collaboration with NJ Department of Environmental Protection and other partners statewide.

NJ Department of Environmental Protection Local Planning for Climate Change Toolkit: This resource contains guidance on a municipal CCRHVA and links to resources. Specific resources from this toolkit are linked in corresponding steps of the Guide to Local Climate Change Adaptation Planning, making the toolkit accessible through the use of the guide.

NJ Office of Planning Advocacy Municipal Climate Resilience Planning Guide: This resource provides an overview of the NJ MLUL requirement for municipalities to include a CCRHVA in the Land Use Plan Elements of their Master Plan.

The resource, Sustainability and Climate Adaptation Planning: An Integrated Guide for Highlands Region Municipalities, is supplementary guidance developed by the Highlands Council to help municipalities in the Highlands region incorporate the provision of the Highlands Regional Master Plan (RMP) into their climate

change planning. While the resource provides information specific to Highlands municipalities, it also serves as a model for any New Jersey municipality aiming to fully integrate their climate change-related hazard vulnerability assessment (CCRHVA) into the Land Use Plan Element of the municipal Master Plan, with a focus on sustainability. Additional guidance, support and grant funding is available to municipalities located in the New Jersey Highlands region. For a list of Highlands municipalities click here. For more information contact Highlands Council Environmental Scientist Sarah Friend, sarah.friend@highlands.nj.gov.