

Final Report

Governor's Council on Climate Change

EO-3 Section 5(a) - Working Group: State

Vulnerability Assessment Framework

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List of acronyms

CIRCA	Connecticut Institute of Resilience & Climate Adaptation
CCVI	Climate Change Vulnerability Index
DAS	CT Department of Administrative Services
DEEP	CT Department of Energy and Environmental Protection
DESPP	CT Department of Emergency Services and Public Protection
EO3	Executive Order No. 3
EO 21-3	Executive Order No. 21-3
GC3	Governor's Council on Climate Change
NHMP	CT Natural Hazard Mitigation Plan (2019)
OPM	CT Office of Policy and Management

Background

This report presents the recommended framework for the inventory of vulnerable assets and operations under Executive Order No. 3 (EO3). EO3 expanded the scope and responsibilities of the Governor's Council on Climate Change (GC3) to include both the oversight of mitigation of carbon emissions and climate change adaptation and resilience. Section 5 of EO3, directs the GC3 in several efforts regarding the development, implementation, and institutionalization of climate change strategies. As part of this section, the GC3 was tasked to "establish a framework, in consultation with the state's Chief Data Officer, for which state agencies shall compile and maintain an inventory of vulnerable assets and operations in coordination with CIRCA's ongoing vulnerability assessment."

Meeting dates and process

The State Vulnerability Assessment Framework Working Group was established in early 2021 to undertake the charge in EO3. The working group met four times over the course of 2021 with the initial meeting on April 7, 2021, and the last one on November 23, 2021. The content of the meetings included a discussion of the charge for the working group, formation of the work plan, identifying data necessary for the assessment of vulnerability, defining vulnerability criteria and risk parameters, and identifying relevant climate hazards for the state. Every meeting included an opportunity for public participation. All agendas, meeting minutes, and recordings from the meetings can be found here: <https://portal.ct.gov/DEEP/Climate-Change/GC3/Subcommittee-and--working-groups>.

Defining the framework

The framework is intended to provide the structure for the review of state agencies' assets and operations, with the goal of enhancing planning and preparedness and minimizing the effects of any vulnerabilities to the impacts of climate change.

This framework includes:

- A recommended method for state agencies to compile and maintain an updated inventory of their vulnerable assets and operations.
- A checklist for state agencies to use to identify assets and operations that are vulnerable to the impacts of climate change, which in turn may have a cascading effect on vulnerable populations, historic or cultural functions or properties, or other.

In order to create the framework, the working group developed and reviewed the following three elements:

- I. A checklist for Connecticut state agencies to utilize when determining the vulnerability of their assets and operations
- II. Existing inventories of state governmental assets and operations to assist state agencies with completing the above-described checklist, including any that provide services to vulnerable populations, in consultation with the Chief Data Officer (OPM)

III. Additional climate assessment tools that state agencies may use to complete the above checklist

The final step in the framework process was to bring these three elements together to establish the State Vulnerability Assessment Framework and then make recommendations on how the framework could be implemented by state agencies.

Discussion of terminology

As a first step in developing the framework, the working group came to consensus on the following definitions for the purposes of this framework:

State Government Assets and Operations

The Working Group clarified that the framework charge in Executive Order 3 was limited to state government operations and assets, not the geographic boundaries of the State of Connecticut. As such any implementation of the framework by the state does not include local government or private properties, for example. However, the framework will be publicly available and can be utilized by other entities who wish to conduct a similar assessment.

Critical Facilities

Critical Facilities are infrastructure and facilities that are critical to the health and welfare of the population because of their function, size, service area, potential to cause serious bodily harm, extensive property damage, or disruption of vital socioeconomic activities if destroyed or damaged, or if functionality is impaired.

The working group determined the vulnerability assessment framework should include the state's assets and operations' vulnerability to the loss in operations of public and private utility facilities, considered "critical facilities" because they are vital to maintaining or restoring normal services to the state government. These facilities include electric grid (generation and transmission), wastewater treatment plants, drinking water utilities, and communications infrastructure. The working group determined that the state government is not responsible for assessing the vulnerability of utilities to the impacts of climate change. This vulnerability assessment should be done by the utilities, but the state government should understand their vulnerability to the loss of service from a public or private utility. Understanding the state's vulnerability to the loss of critical facilities can help prioritize investments in the resilience of those facilities

Framework

I. A checklist for Connecticut state agencies to utilize when determining the vulnerability of their assets and operations

As previously mentioned, the checklist will identify two categories of vulnerabilities: i) vulnerability of the state agency's assets and operations to climate change and ii) the effect of those vulnerabilities on the populations they serve and on the historic and cultural functions or properties.

For the first part of the checklist, agencies will have to identify physical assets (buildings, etc.) that are critical to the function of the agency. For each identified asset, agencies will have to identify location, managers, reasons for criticality and primary climate threats (sea level rise, extreme temperatures, precipitation, etc.). In addition, agencies will identify operation functions that may be disrupted by climate drivers. These operations include planning, outreach/education, permitting, policy enforcement, research, billing, training, public services, contract administration, access to capital to finance improvements, etc.

In the second category of questions, agencies will identify critical populations that they serve (i.e., hospital patients, children, the elderly and prisoners) and how these populations may be impacted and in what character (number of populations impacted, duration of impacts or severity of impacts).

The final part of the checklist includes questions to understand the overall agency capability and capacity including but not limited to:

- Rating the overall ability to withstand natural hazards in terms of potential physical damage or disruption to its assets, mission, functions, staff and the public.
- Time to return to essential functionality after an extreme weather event
- Capability to maintain remote operations and continue to provide similar quality services
- Description of operations that cannot be conducted in alternative locations or functions that can't be remote
- Current challenges related to improving or maintaining the agency's ability to withstand natural hazards and climate impacts
- Steps or strategies in place to understand and mitigate vulnerabilities and current plan for continuity of operations
- Impacts on community
- Interdependencies with other agencies (cascading effects)

II. Identification of existing inventories of state governmental assets and operations to assist state agencies with completing the above-described checklist, including any that provide services to vulnerable populations, in consultation with the Chief Data Officer (OPM)

The workgroup identified inventories included two datasets:

1. [State Owned Buildings](#): This dataset contains information on structures that are owned by the State of Connecticut. This inventory is currently maintained by the OPM, and information is self-reported by those State agencies that have custody and control over State owned buildings.
2. [State Real Property](#): This dataset contains information on real property owned by the State of Connecticut, which is collected and updated annually in March by OPM.

This inventory is maintained primarily for the purposes of payments in lieu of property taxes (PILOT) to the host municipality.

Both lists provide an indication for which properties are relevant to the project, however, the datasets only contain address information, sometimes incomplete, and are not geocoded (converted into spatial or GIS data) to allow for overlay with climate data. A proposed solution to convert this information into geospatial data is to connect [Municipal Parcel Files](#) collected by the Regional Councils of Governments (COGs) using a common identifier. Parcel data is all property data on a town-by-town basis with spatial information created in the ArcGIS environment.

III. Additional climate assessment tools that state agencies may use to complete the above checklist

Climate Change Vulnerability Index (CCVI). An index developed by CIRCA that aggregates sensitivity, exposure, and adaptive capacity in Connecticut. The CCVI combines built, social, and ecological factors to identify areas that are vulnerable to flooding and heat related impacts of climate change. These mapping tools can be used to view vulnerability at both a regional scale and at specific sites to see how factors are contributing. Available at: [CIRCA Climate Change Vulnerability Index](#)

Other resources included in the checklist are:

Sea Level Rise

1. [FEMA Flood Level Map](#)
2. [NOAA Sea Level Rise Viewer](#)
3. [Connecticut SLOSH \(Sea, Lake, and Overland Surge from Hurricanes\) map](#)
4. [CIRCA Sea-Level Rise and Storm Surge Viewer](#)
5. [Connecticut Coastal Towns Storms Annual Exceedance Probability/Return Interval Viewer](#)
6. [CT Shoreline Change Analysis - UConn CLEAR](#)

Extreme Precipitation

7. [Northeast Regional Climate Center](#)

Extreme Temperatures

8. [USGS Drought Monitor](#)
9. [FEMA wildfire data visualization](#)

Other Extreme Events

10. [DEEP Connecticut Dam Safety](#)
11. [Public Water Systems](#)

Implementing the framework

The members of the working group developed a recommendation to implement the framework that was adopted as action #11 in *Executive Order No. 21-3 (EO 21-3): Actions That Reduce Carbon Emissions and Adapt to the Climate Crisis*. EO 21-3 called for 23 actions, that aligned with the proposed recommendations of the Governor's Council on Climate Change (GC3) in its [January 2021 report](#), that cut across state agencies and sectors in the areas of buildings and infrastructure; clean transportation; community climate resilience; health, equity, and environmental justice; jobs and the economy; and natural and working lands.

EO 21-3 #11: State Vulnerability Assessment of state government assets and operations and climate resilience project pipeline identified a governance structure and a source of financial resources to undertake the assessment; it mandated what should be included in the assessment; and required that assessment findings be included in agency planning processes and the State Natural Hazard Mitigation Plan. The text of the EO 21-3 #11 is below.

EO 21-3 #11: State Vulnerability Assessment of state government assets and operations and climate resilience project pipeline:

The Secretary of OPM, the Commissioner of DAS, and the Commissioner of DEEP, through the interagency Steering Committee on State Sustainability established by EO 1 and in cooperation with the Commissioner of the Department of Emergency Services and Public Protection ("DESPP"), shall conduct a State Vulnerability Assessment to assess the vulnerability of State government assets and operations to the impacts of climate change as described in the January 2021 GC3 report.

- A. Such Assessment may be funded by grant or loan funds provided pursuant to Section 16-243y of the Connecticut General Statutes and associated authorized bond funds pursuant to Public Act 21-111 or as may otherwise be authorized by the General Assembly.*
- B. Such Assessment shall include an update of the statewide inventory of real property, including critical facilities and buildings and where vulnerable populations reside.*
- C. Such Assessment shall include an evaluation of vulnerability to the loss in operations of public and private utility facilities critical to maintaining and restoring normal services to the state government.*
- D. Such Assessment shall include, in consultation with each state agency, a list of priority assets and infrastructure for climate resilience projects for each state agency.*
- E. Upon completion of the assessment, each state agency shall (1) as appropriate, incorporate the findings thereof into such state agency's planning processes and*

(2) transmit the findings to DESPP, which shall include these findings, as appropriate, in the next update to the State Natural Hazard Mitigation plan¹.

¹ https://portal.ct.gov/-/media/ConnecticutClimateAction/NML_EO_21-3_Website_Text_Actions.pdf