

Eastern Connecticut State University Town of Windham



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Community Resilience Building Workshop Summary of Findings May, 2017

Eastern Connecticut State University
Town of Windham
Community Resilience Building Workshop
Summary of Findings

Overview

The need for academic institutions, municipalities, regional planning organizations, states and federal agencies to increase resilience and adapt to extreme weather events and a changing climate is strikingly evident amongst the communities of Eastern Connecticut. Recent events such as Tropical Storm Irene and Sandy have reinforced this urgency and compelled leading communities like Eastern Connecticut State University (ECSU) and the Town of Windham (campus + municipality herein referred to as the “Community”) to proactively collaborate on planning and mitigating potential risks. Ultimately, this type of leadership is to be commended because it will reduce the vulnerability of campus and municipal residents, infrastructure and ecosystems and serve as a model for other communities in the state of Connecticut, New England, and the Nation.

In the winter of 2016-17, a partnership formed between ECSU, Town of Windham, Second Nature, and The Nature Conservancy that focused on increasing awareness of risks from natural and climate-related hazards. In March 2017, a campus/municipal-based core team, organized and facilitated a Community Resilience Building Workshop. The core directive of this effort was the engagement with and between community stakeholders in order to facilitate the education, planning and ultimately implementation of priority adaptation actions. The Workshop’s central objectives were to:

- Define top local natural and climate-related hazards of concern;
- Identify existing and future vulnerabilities and strengths;
- Develop prioritized actions for the Community (campus + municipality);
- Identify opportunities to collaboratively advance actions to increase resilience.



For the Workshop, the Community employed a unique “anywhere at any scale”, community-driven process known as the Community Resilience Building (CRB) Workshop (www.CommunityResilienceBuilding.com). The CRB’s Risk Matrix and various science-based tools were integrated into the Workshop process to provide both decision-support and risk visualization around shared values and priorities across the Community. Using this workshop process, rich with information, experience and dialogue, the participants produced findings which are outlined in this summary report. The following report provides an overview of the top hazards, current concerns and challenges, current strengths, and proposed actions to improve the Community’s resilience to natural and climate-related hazards today and in the future.

The summary of findings transcribed in this report, like any that concern the evolving nature of risk assessment and associated action, are proffered for comments, corrections and updates from workshop attendees and additional stakeholders alike. The leadership displayed by Eastern Connecticut State University and Town of Windham on community resilience building will benefit from the continuous and expanding participation of all those concerned.

Summary of Findings

Top Hazards and Vulnerable Areas for the Community

During the CRB Workshop, community members were asked to identify the top natural hazards as informed by the core team in pre-workshop meetings. Inland flooding from intense storms and precipitation were identified as the hazards of greatest concern. Extreme storm events, including snow, ice, and wind, were also high on the participants’ lists. In addition, environmental changes associated with climate change particularly periods of extended drought and extreme temperatures were also highlighted as major issues. These hazards have direct and increasing impacts on Community residents and resources such as its neighborhoods, natural areas (river corridors, wetlands, watersheds, parks), roads, drinking and wastewater systems, health care and other critical infrastructure and community assets.

Top Hazards and Areas of Concern for the Community

Top Hazards

Inland Flooding due to Precipitation (River and Surface Runoff)

Extreme Storm Events (snow, ice, wind, Nor'easters, etc.)

Severe Drought and Extreme Temperatures

Areas of Concern

Neighborhoods: Main Street – Willimantic, Campus

Ecosystems: Willimantic, Shetucket, and Natchaug Rivers, Campus Arboretum, inland wetlands, other riparian corridors, forested watersheds.

Transportation: Route 6, smaller flood-prone municipal roads,

Infrastructure: Microgrid, Wastewater Treatment Facility, stormwater system, North Heating Plant (ECSU), Mansfield Hollow and Eagleville Dam, senior and assisted living facilities, gas stations, grocery stores, rail yard and tracks.



Willimantic River (Credit: Pinterest)



ECSU Campus Map (Credit: ECSU)



Windham Mills (Credit: Artspace CT)



Current Concerns and Challenges Presented by Hazards

Eastern Connecticut State University and the Town of Windham have several concerns and face multiple challenges related to the impacts of natural hazards. In recent years, the Community has experienced a series of highly disruptive and damaging weather events including Tropical Storm Irene (August 2011), Tropical Storm Sandy, (October 2012), and winter Nor'easter Nemo (February 2013). Impacts from Irene included heavy rain-induced inland flooding and wind damage. Sandy caused extensive power outages across large portions of the Community. Nemo dropped nearly three feet of snow on the Community knocking out power and isolating residents and neighborhoods. The magnitude and intensity of these events across Connecticut over the course of just 18 months has increased awareness of natural hazards and climatic change, while motivating communities like ECSU and the Town of Windham to comprehensively improve resilience at the municipal, county and regional level.

This series of extreme weather events highlights that for this Community the impacts from hazards are diverse; they range from flooding of surface streets and low-lying areas near rivers and wetlands during heavy precipitation events to property damage from trees, wind, snow, and ice. Longer periods of elevated heat, particularly in July and August, have raised concerns about vulnerable segments of the population including the elderly and students. The combination of these issues presents a challenge to preparedness, response and mitigation priorities and requires comprehensive yet tailored actions for particular locations and/or areas across the Community; from Campus to Main Street.

The workshop participants were generally in agreement that the Community is experiencing more intense and frequent storms events. The impacts, particularly during Tropical Storm Irene, affected the daily activities of most residents. Additionally, there was a general concern about the need for and challenges of being prepared with contingency plans for worst case scenarios during different times of the year (i.e., major hurricanes (Cat-3 or above)) particularly in the late fall/winter versus summer due to more intense winter storms.



Specific Categories of Concerns and Challenges

Emergency Management

There was a concern raised about the lack of “bench strength” across police, fire, and EMS to ensure a high level of response in circumstances where disaster events extend beyond 24-36 hours. In addition, there was a recognition that declining level of volunteers involved with critical services may have a progressively important impact on overall emergency management services if not rectified in the short term.

Vulnerability of Road Network

One of the key concerns expressed by participants was the vulnerability of road network during and after routine and extreme events. Road blockage prevents emergency management services from reaching stricken areas, reduces public access to evacuation routes and critical facilities like gas stations, grocery stores, and pharmacies. It was clear at the Workshop that residents and employees are highly reliant on Route 6 which may at times become impassable.



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Railroad Yard and Rail Line

While not managed by the Town, the presence and movement by rail of hazardous materials at the rail yard alarmed some participants. The concern was connected to the potential event of hazardous material releases or spills that could have an immediate impact on employees, adjoining residents and the abutting river system. A general lack of awareness regarding contingency planning was raised for follow-up by the Town with the rail yard management representatives.

Specific Categories of Concerns and Challenges continued...

Community Communication and Collaboration

There was a universal recognition amongst the participants that there is an immediate need to convene and coordinate a broad stakeholder effort to both foster a sense of community and initiate the development of a communications plan between Eastern Connecticut State University and the Town of Windham. While there is a track record of collaboration, the participants recommended surfacing opportunities to strengthen ties in several meaningful ways identified herein.

Riparian Zones and Wetlands

One of the key challenges raised during the Workshop was the lack of awareness amongst residents of the benefits and critical services (including flood storage and prevention) provided by the river and wetlands ecosystems. The larger concern is that the wetlands are not being valued and incorporated as natural infrastructure that can help reduce risk and improve resilience.

Upstream Dams

Some Workshop participants raised alarm regarding the lack of information around the exiting management and contingency of the two large dams located upstream from the Town of Windham: Mansfield Hollow and Eagleville Dam. The concerns primarily revolved around the potentially significant impacts from catastrophic dam failures to the downtown area of Willimantic and critical infrastructure in proximity to connected rivers systems in Windham. In addition, questions were raised about the level of preparedness across the region and amongst other downstream municipalities in the event that such a disaster were to occur.



Eagleville Dam (Credit: Pinterest)



Mansfield Hollow Dam (Credit: ACOE)

Current Strengths and Assets

Because of the recent experiences with extreme weather, Eastern Connecticut State University and the Town of Windham are well acquainted with the existing and shared strengths. Reinforcing best practices and enhancing available assets will generate greater benefits to the Community through increased resiliency to more frequent and intense storms, as well as to long term impacts from the ongoing increases in air temperature, precipitation, and drought.

- Clearly, the responsive and committed leadership exhibited by officials and senior staff is a very much appreciated strength at Eastern Connecticut State University and the Town of Windham. Ongoing collaboration between staff across these entities on the priorities identified below will help to advance comprehensive, cost-effective approaches to resilience.
- Both entities have solid, highly experienced, emergency management professionals with access to adequate, but limited, resources for shorter duration events. The overarching coordination amongst various departments including Police, Fire, and EMS was cited as an ongoing, and highly valued community strength.
- Highly active and engaged NGO community – particularly in Willimantic – that provides ongoing services for disadvantaged and resource-limited residents.
- Well established and supported on-campus, safety-related services for students, staff, and faculty (i.e., SIP, Blue Light System).
- The high concentration of well-educated members of the community (built-in knowledge base) along with many educational facilities at all levels was identified as an existing strength worth cultivating and applying more directly for improving overall resilience of the Community.



- The floodplains, inland wetlands, and open space across the municipality and in certain locations on campus offer increased defense against storms through flood storage and surface runoff capture and infiltration. Intact forested watersheds, reservoirs, and other park lands provide public amenities and serve to maintain water quality and quantity for dependent residents.

Top Recommendations to Improve Resilience

A common thread throughout the workshop discussions was the recognition that the Community needs to be better prepared through longer term community-based, contingency planning across all areas of concern. This need and additional core highlights surfaced by the Workshop participants are addressed below.

Highest Priority

- Immediate need to assess risks to facilities and residents in senior housing from storms and heat waves as well as to enhance access to cooling stations and increase preparedness within and across facilities. This will require working with providers to generate a comprehensive resiliency plan as needed for senior and assisted living facilities.
- Need to cultivate deeper “bench strength” to properly staff the Emergency Operations Center beyond current 24-36-hour capacity limitations. This will require that the Town manager and elected officials support strengthening the emergency operations capacity.
- Increase cross-over training on resiliency with other municipal, state and campus counterparts.
- Highlight the ecosystem services and co-benefits such as clean drinking water in local and regional planning amongst the Town, adjoining municipalities and ECSU.



Community Resilience Building Workshop Recommendations

Highest Priority

- Enhance coordination amongst shuttle services to and from senior housing and sheltering facilities in advance of storm events by proactively engaging with transportation providers.
- Seek to improve emergency preparedness by running more tabletop drills from the "playbook" of potential situations for Campus. Engage key municipal staff in exercises.
- To enhance emergency management processes, establish routine opportunities for Campus and Town planning meetings and updates.
- Provide regular maintenance of power plant and anticipate backup needs for fuel supply during major events. Look to establish working group between Campus and Municipalities to develop an integrated energy management plan to ensure continuity of services in the event the larger grid is compromised - should include municipal microgrid and campus energy plant along with other sustainable practices and renewable energy sources. Identify ways to create redundancies and fortify structures where feasible and cost effective.
- Catalogue and integrate existing alternative energy systems into overall energy management plan for Campus - including fuel cell at the Science Building and geothermal systems at student dorms.
- Develop a snow management plan with Town's public works department and ECSU.



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Community Resilience Building Workshop Recommendations

High Priority (cont'd)

- Work with Utility to determine the exposure of critical regional transformer to severe weather events and help define proactive measures to increase resilience of equipment and facility at the regional scale for Town of Windham and surrounding municipalities.
- Need to improve the ability of Town to maintain stormwater system by securing a dedicated truck to routinely clean culverts, storm drains and drainage ways. In addition, conduct a green infrastructure opportunity assessment to see where stormwater runoff can be effectively and efficiently captured prior to entering the system.
- Strengthen dialogue with hospital administration to better understand and assess the capacity of hospital in the event of multiple, simultaneous scenarios. Explore ways that Campus facilities and capacity could help augment the municipal needs during major events.
- Enhance emergency communications in different languages besides English to ensure important messages and directions reach all populations across the municipality. Ensure emergency communications systems reach all students via a variety of diverse methods. Look to reevaluate effective use of social media amongst students to ensure prompt responses and appropriate actions in the event of an emergency.
- Identify ways to enhance resilience at the waste water treatment facility through additional fortification. Assess upstream dam vulnerability to determine the potential impacts to the waste water treatment systems from catastrophic failure and flooding.



Community Resilience Building Workshop Recommendations

High Priority (cont'd)

- Engage gas station owners and grocery store managers in resilience dialogue that should include enhancing generator capacity for multiple sites across town.
- Continue support for NGOs that provide training and distribution of materials in Willimantic by convening stakeholders to determine what additional good works and needs can be covered by the NGO organizations in collaboration with the community and ECSU.
- Continue to update lists of home-bound citizens and disabled student for emergency management rescue and safety activities. Expand list to cover disabled faculty and staff on Campus.

Moderate Priority

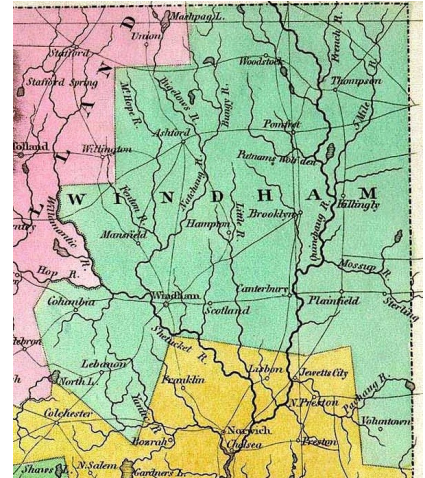
- Increase community-wide preparedness for major storms on municipal-wide road network to better manage and enable coordinated and safe post-storm access to homes and hospital.
- Increase community education on location and services available (shelter, food, showers, drinking water, etc.) with safe/preferred arterial routes pre-identified.
- Reassess readiness of sheltering options on Campus and coordinate with EAP, Red Cross, and emergency management professions in Windham. In addition, increase the availability of cots and beds for faculty and staff, as well as students.
- For foreign-born students secure alternative host families in the community (off-campus) during disasters.



Community Resilience Building Workshop Recommendations

Moderate Priority (cont'd)

- Look to enhance the Willimantic River riparian corridor to maximize the flood storage capacity and improve overall ecological condition by removing debris, obstacles, and invasives followed by restoration or enhancement where needed.
- Conduct scoping meeting with CT DOT to better clarify ways that the Town and Campus can help to minimize vulnerability of populations that require travel on Rt6 for employment and access to goods and services.
- Explore ways to modify bus routes and other public transport to accommodate community needs around major weather events. Review and update emergency transportation plan involving alternative travel routes.
- Increase outreach to private building managers to ensure broad and targeted dissemination of preparedness materials to elderly populations including discussions on oxygen supply and availability during disasters with senior housing managers.
- Continue to support existing farm operations in the Town by looking for ways to enable broader distribution and development of farm operations through zoning by the Town and sourcing local produce/products to residents and students on Campus.
- Look for ways to increase community engagement events and volunteer opportunities around and for the Willimantic, Shetucket, and Natchaug Rivers and other river/stream systems.



Credit: Connecticut 1824 Map

Community Resilience Building Workshop Recommendations

Moderate Priority (cont'd)

- Assess extent of flood risk of lower Main Street, Willimantic and determine the likely impacts of more severe storms and flooding.
- Increase contact between educational entities (High School, Tech School, ECSU) and develop improvement plans (i.e., cooperative sheltering agreements) that will strengthen dialogue in advance of crisis. ECSU should seek ways to invite high school/tech students on campus to functions to help accelerate relationships and awareness.
- Initiate a focused assessment of the risks associated with the railroad yard and facilities - drainage source into adjoining waterways and recipient of hazards materials via tanker cars. Investigate preparedness and existing measures to handle hazardous material issues.
- Increase security and address flooding issues to trail systems and other recreational/public amenities.



Credit: ECSU



Community Resilience Building Workshop Recommendations

Moderate Priority (cont'd)

- Minimize the impacts of point and non-point source pollution to groundwater aquifer in Windham.
- Update capital improvement plan to ensure Main Street remains a vital and resilient hub of the community. Work with ECSU staff to find ways to encourage more interaction between Main Street and Campus as improvements and designs are implemented.
- Investigate opportunities to create independent energy utility for Windham.
- Maintain microgrid in Town and look to fund future expansion.
- Identify ways to capitalize on rich knowledge base at ECSU to help advance higher levels of resilience in Town. Take advantage of high concentration of well-educated people and provide educational opportunities to help increase resilience. Topics of focus could include resilient food systems, ecosystem services, resilient actions at household level, healthy food sourcing and preparation, etc.
- Secure and implement improvements to Reverse 911 system.
- Ensure new senior center address need for shower facilities. Discuss options to expand access and collaboration with ECSU on bathing facilities in the event of disaster.
- Assess capacity and resources required to fully equip shelters for residents and Campus population for longer multi-week stays in the event of a major disaster.



Community Resilience Building Workshop Recommendations

Moderate Priority (cont'd)

- Continue to encourage students with families near Campus to plan forward regarding responses to disasters by seeking refuge with families if more secure than remaining on Campus.
- Conduct a town-wide assessment of flooding linked to undersized culverts. Prioritize and replace culverts to reduce localized flooding issues. Link replacements with priority routes identified in transportation master plan discussions.

Lower Priority

- Need to catalogue improvements required to Town's open space areas. Develop a tree management and planting plan for the Town parks and public amenities. Seek other ways to enhance the park experience for residents.
- Seek ways to develop and implement an alternative trash management system in Willimantic.
- Ensure intact forests are maintained across the Town - particularly in areas with drinking water sources.
- Work to help resolve issues with existing brownfields within the Town.
- Ensure trail systems are maintained and encouraged by Town and Campus to help stimulate active lifestyles as a means towards a more healthy and resilient population.



Community Resilience Building Workshop Recommendations

Lower Priority (cont'd)

- Continue to remain aware of services and opportunities associated with airport.
- Increase number of hazard awareness materials in Spanish and other languages in risk education and outreach efforts.
- Maintain Campus Arboretum and seek ways to increase the use of green infrastructure and natural systems to retain surface runoff away from critical facilities and roadways on Campus.
- Reexamine possibility for year-round sheltering facility to enhance existing services for homeless population. Identify ways to expand sheltering facilities in times of need. Assess current impacts to riverside encampments from brush fire and flooding.
- Seek ways to reverse the dwindling number of students enrolled in school systems by initiating a dialogue across school systems - public and vocational in Town.



Credit: John Warner Barber—1830s

CRB Workshop Participants: Department/Commission/Representative

Town of Windham - Office of the Mayor
Town of Windham - Fire Department*
Town of Windham - Energy Commission*
Town of Windham - Planning*
ECSU - Office of the President*
ECSU - Facilities*
ECSU - Institute for Sustainable Energy*
ECSU - Housing*
ECSU - Faculty Representatives*
ECSU - Dining Services*
ECSU - Human Resources*
ECSU - Student Representatives*
Southern Connecticut State University - Office of Sustainability*
Wesleyan University - Sustainability

*Attendees

Citation

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CRB Workshop Project Team: Organization and Role

The Nature Conservancy – Adam Whelchel, PhD (Lead Facilitator)
Institute for Sustainable Energy - Laura Miller (Project Coordinator)
Second Nature – Ruby Woodside (Project Coordinator/Facilitator)
Institute for Sustainable Energy – Lynn Stoddard (Project Sponsor)
Second Nature – Brett Pasinella (Project Sponsor)
The Nature Conservancy – Drew Goldsman (Facilitator)
The Nature Conservancy – Cary White (Facilitator)

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Appendix

Base Maps



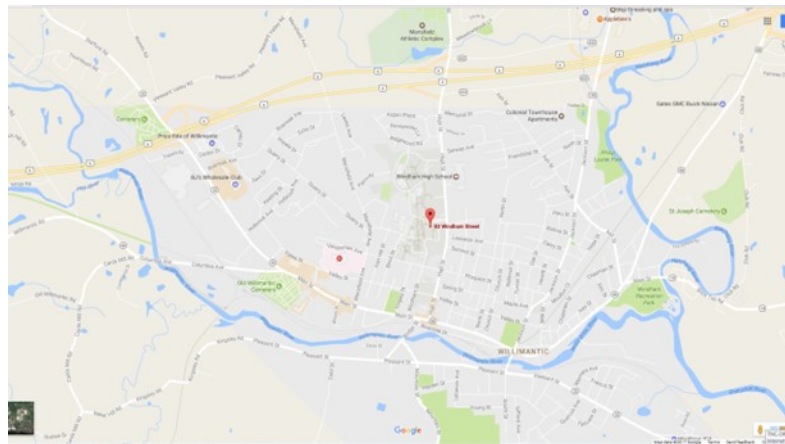
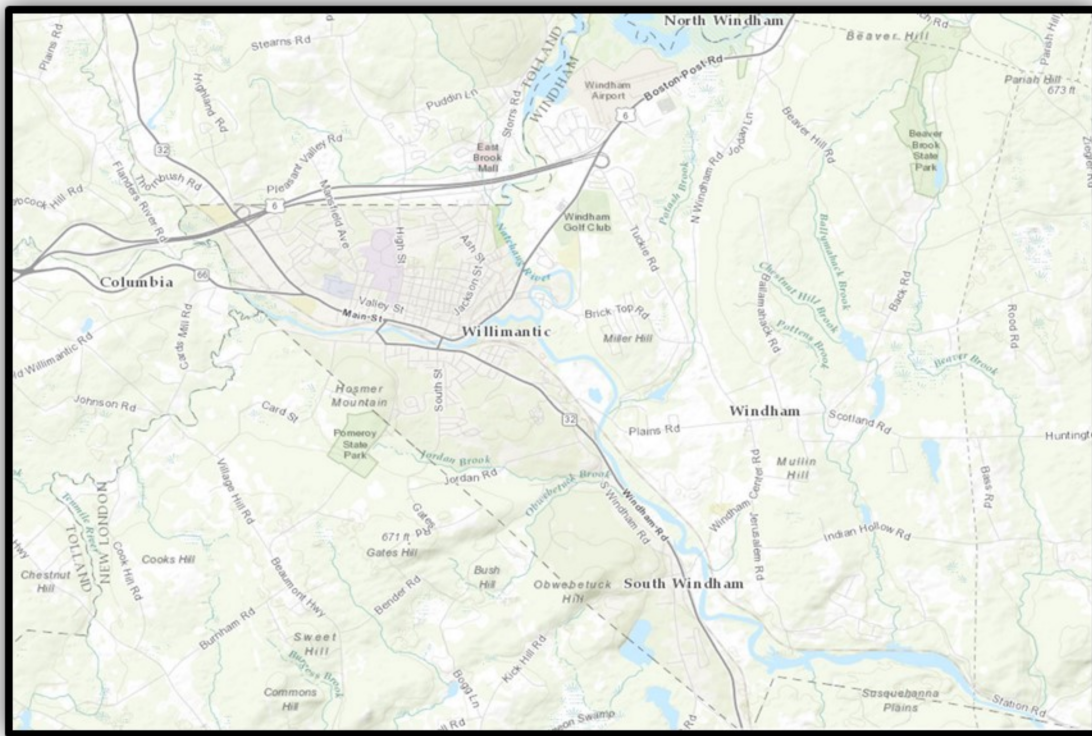




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