

# Climate Resilient Carlisle

Local Emergency Planning Committee Meeting

May 6, 2024, 10:00 am



# Purpose – Climate Resilient Carlisle MVP Grant

The purpose of this project is to make recommendations for improvements to the local codes (bylaws, regulations, and policies) that will help make Carlisle more resilient to climate change.

The discussion at this meeting will focus on those topics that pertain to the Local Emergency Planning Committee and are based on a review of town planning documents and town bylaws, regulations, and policies, as well as discussions with the public at a Public Forum held on February 15, 2024, and discussions with the Carlisle Municipal Vulnerability Preparedness Core Committee.

# Discussion Questions

For each topic today, consider if the issue can be addressed through improvements in:

- Carlisle Bylaw/Regulation *(yes/no/explain)*
- Carlisle Policy *(yes/no/explain)*
- Education or training *(yes/no/explain)*
- Additional work on the part of a town department *(yes/no/explain)*
- Other

Did we miss an important topic for this discussion? Do you have any additional concerns?

## Discussion Topics

- Wildfire/Brushfire Mitigation and Preparedness
- Storm and Severe Weather Preparedness
- Safety/Emergency Response Implications of new energy/  
decarbonization approaches
- Flooding
- Microgrids for Municipal Services and Emergency Shelter

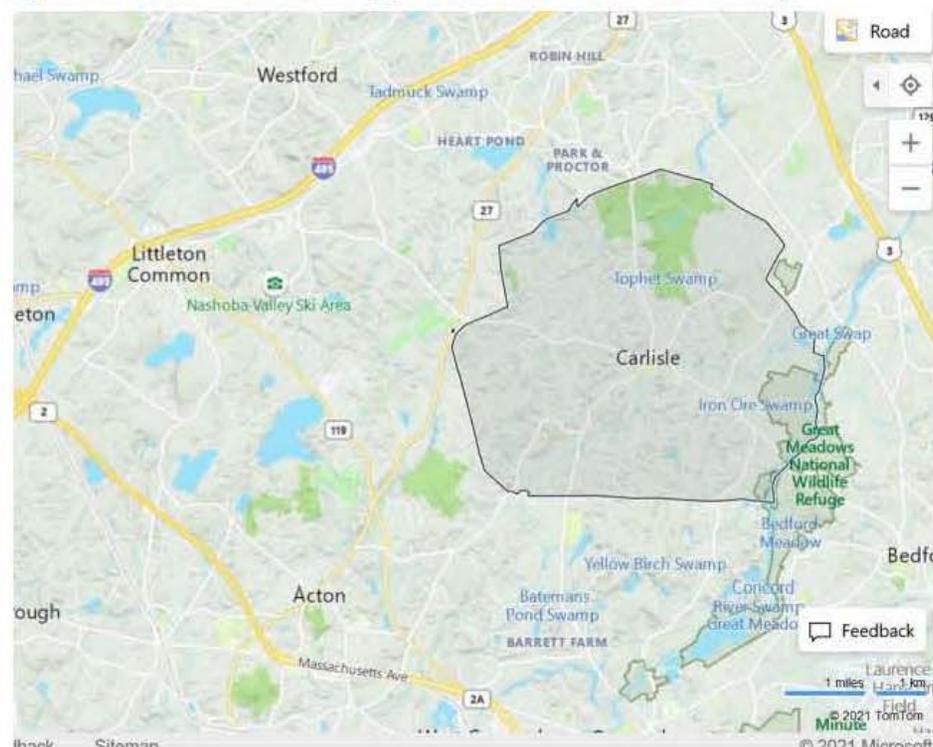
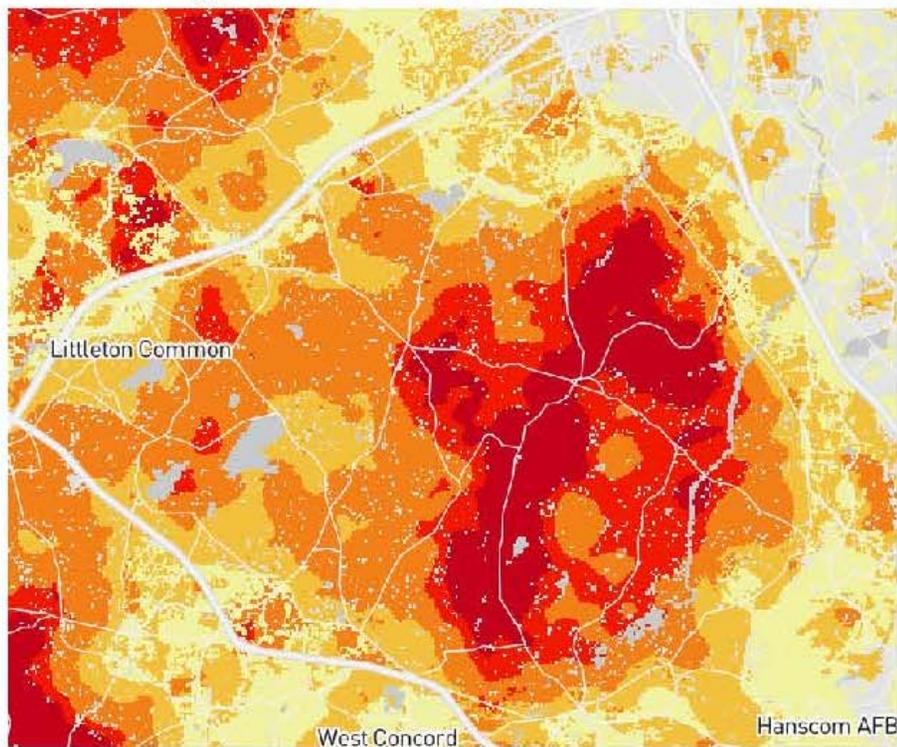
# Wildfire/Brushfire Mitigation and Preparedness

The 2021 Update to the Carlisle Hazard Mitigation Plan identified wildfire risk as being a high frequency (greater than 20% risk per year), serious (scattered major property damage; some minor infrastructure damage; essential services are briefly interrupted; some injuries and/or fatalities) hazard to Carlisle. Water for firefighting is serviced by fire ponds and cisterns throughout town, but is not adequate.

## ***Possible actions:***

- Require cisterns for all new developments.
- Identify high-risk areas, notify public, partner with property owners to install cisterns.
- Work with conservation landowners to design a management approach on public and conservation lands that addresses wildfire prevention/mitigation.

**Figure 18: USDA Wildfire Risk to Homes, Carlisle Close-up, and Reference Map**



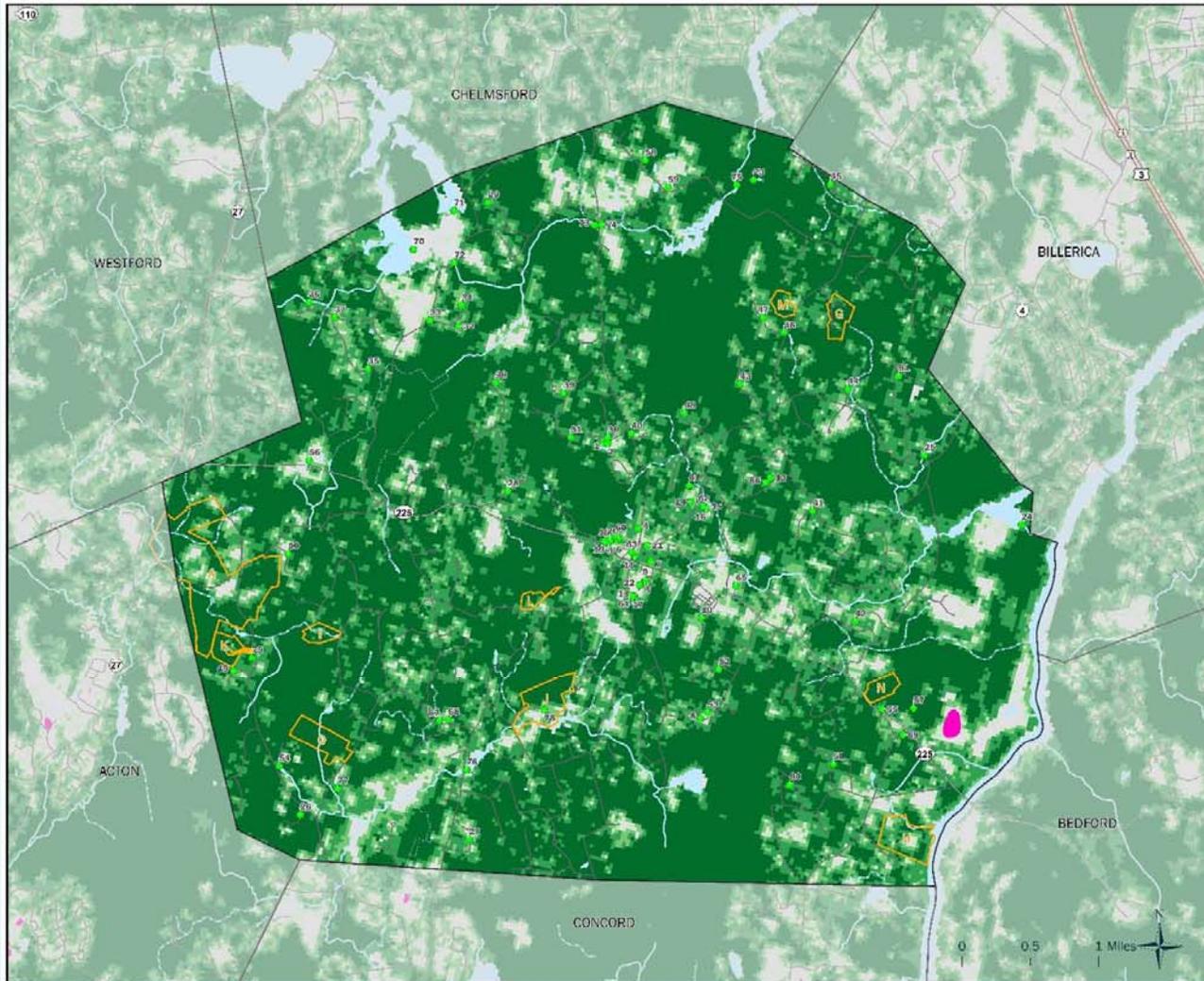
Sources: USDA Forest Service and Google Maps

# Storm and Severe Weather Preparedness

Carlisle frequently experiences power outages as a result of severe storms, due to downed trees and limbs taking out power lines. In addition, downed trees disrupt roadway travel and emergency access throughout town, often times leaving individuals or neighborhoods cut off for meaningful periods of time. Climate change is expected to increase the energy in storms, and this threat of power outages and disruption to access will continue and potentially increase.

## ***Possible actions:***

- Better mapping of flood hazards, alternative routes.
- Networks of neighbors, know your neighbor, neighborhood emergency preparedness planning, support for those in need and elderly residents.
- Require power lines to be buried.



FEMA Hazard Mitigation Planning Grant  
**CARLISLE, MA**

Map 9: High Land Surface Temperature

- Tree Canopy Coverage**
  - 0%
  - 1-25%
  - 26-50%
  - 51-75%
  - 76 - 100%
- Climate**
  - Hottest 5% of region's land area
- Sites**
  - Critical Infrastructure\*
  - Development Areas
  - \* See notes in separate table
- Transportation**
  - Rail Stations
  - Commuter Rail
- Roads**
  - Interstate
  - U.S. Highway
  - State Route
  - Streets
- Hydrography**
  - Perennial Stream
  - Intermittent Stream
  - Ditch/Canal
  - Aqueduct
  - Water Bodies

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, engineering or professional use.

Produced by MAPC, USA Services, 90 Toronto Plaza, 02668, MA 02133-0531 931-2770

Data Sources:  
 Metropolitan Area Planning Council (MAPC);  
 Massachusetts Geographic Information System (MassGIS);  
 Northern States Emergency Consortium (NESC);  
 Massachusetts Emergency Management Agency (MEMA);  
 Federal Emergency Management Agency (FEMA);  
 Imagery © Google  
 CARLISLE, MA  
 Date: 5/26/2021

# Safety/ Emergency Response Implications of new energy/decarbonization approaches

Carlisle is taking intentional steps to lower energy use and greenhouse gas emissions in transportation and the built environment, as stated in the 2022 Master Plan. In addition, Carlisle has adopted the Specialized Energy Code and the Stretch Energy Code for MA. These efforts are leading to the use of new systems and devices at individual homes and properties town, and while there are many positive aspects of these systems, there are also new risks that homeowners and emergency responders may be less familiar with. For example, these may be related to the installation of batteries, generators, solar, geothermal, specialized appliances, new building materials and/or new venting approaches.

## ***Possible actions:***

- Identify/map homes with special systems/construction for emergency response purposes

← ALL NEWS

# Emerging fire hazard: residential energy storage systems

📅 DECEMBER 18 • 2023



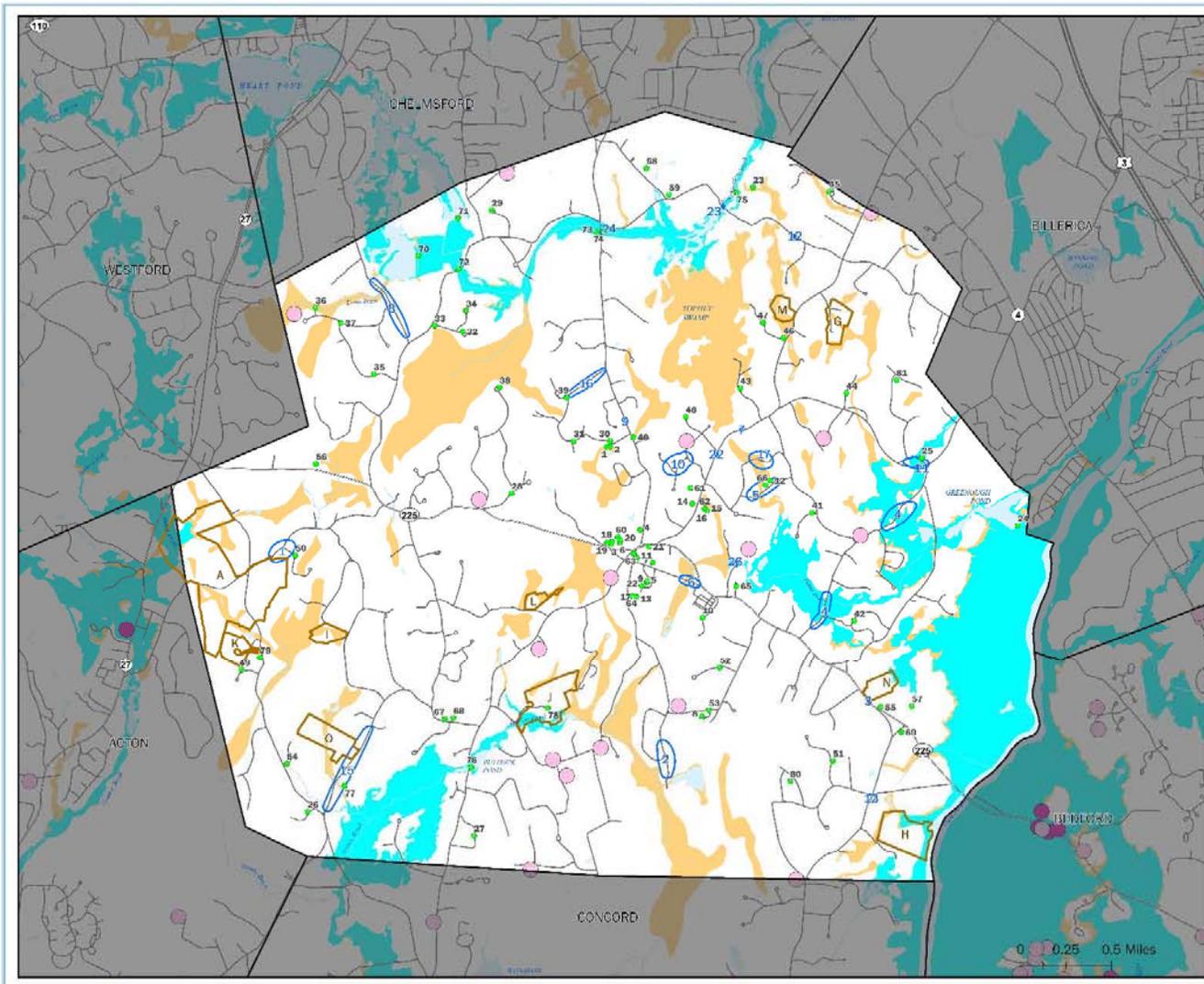
Source: International Association of Fire Fighters,  
<https://www.iaff.org/news/emerging-fire-hazard-residential-energy-storage-systems/>

# Flooding

Carlisle's physical setting of ledge, till, high groundwater and widespread wetlands combined with historic country roads results in flooding challenges. A changing climate is already bringing more intense rainfall, an increase in overall annual rainfall, a shift in rainfall timing toward fall and winter and away from spring and summer. These conditions will increase the amount of surface runoff in a given storm event, and potentially widen floodplains and enlarge the areas impacted by nuisance flooding.

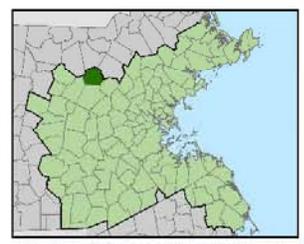
## ***Possible actions:***

- Improved mapping and protection of floodplains and wetlands, plus buffers to encompass potential future flooding.
- Strengthen wetlands and floodplain protections in bylaws/regulations.
- Improved municipal drainage system mapping and maintenance.
- Improved/strengthened stormwater management standards townwide.



FEMA Hazard Mitigation Planning Grant  
**CARLISLE, MA**  
 Map 3: Flood Zones

- Sites**
- Critical Infrastructure\*
  - Repetitive Loss Sites
  - Development Areas
  - Locally Identified Flooding
- Water Bodies**
- All Roads**
- Interstate
  - U.S. Highway
  - State Route
  - Streets
- Rail**
- Stations
  - Commuter Rail
  - Trains
- March 2010 Flood Claims**
- Disaster Assistance
  - Flood Insurance
- Flood Zones, 2017**
- Zone A: 1%
  - Zone AE: 1%
  - Zone AH: 1%
  - Zone AO: 1%
  - Zone VE: 1% with Velocity Hazard
  - 0.2% Annual Chance



The information depicted on this map is for planning purposes only. It is not adequate for legal decisions, definition, regulatory interpretation, or parcel level analysis.

Prepared by: MAPC Data Services  
 60 Temple Place, Boston, MA 02111 (617) 551-2770

Data Sources:  
 Metropolitan Area Planning Council (MAPC)  
 Massachusetts Geographic Information System (MassGIS)  
 Flood Zones data layer supplied by MassGIS October 2013  
 from "national data provided by  
 Federal Emergency Management Agency (FEMA)  
 Carlisle, MA  
 Date: 07/17/2014

File: h:\p\carlisle\p\carlisle\_data\carlisle\_flood\_zones\_2017.mxd

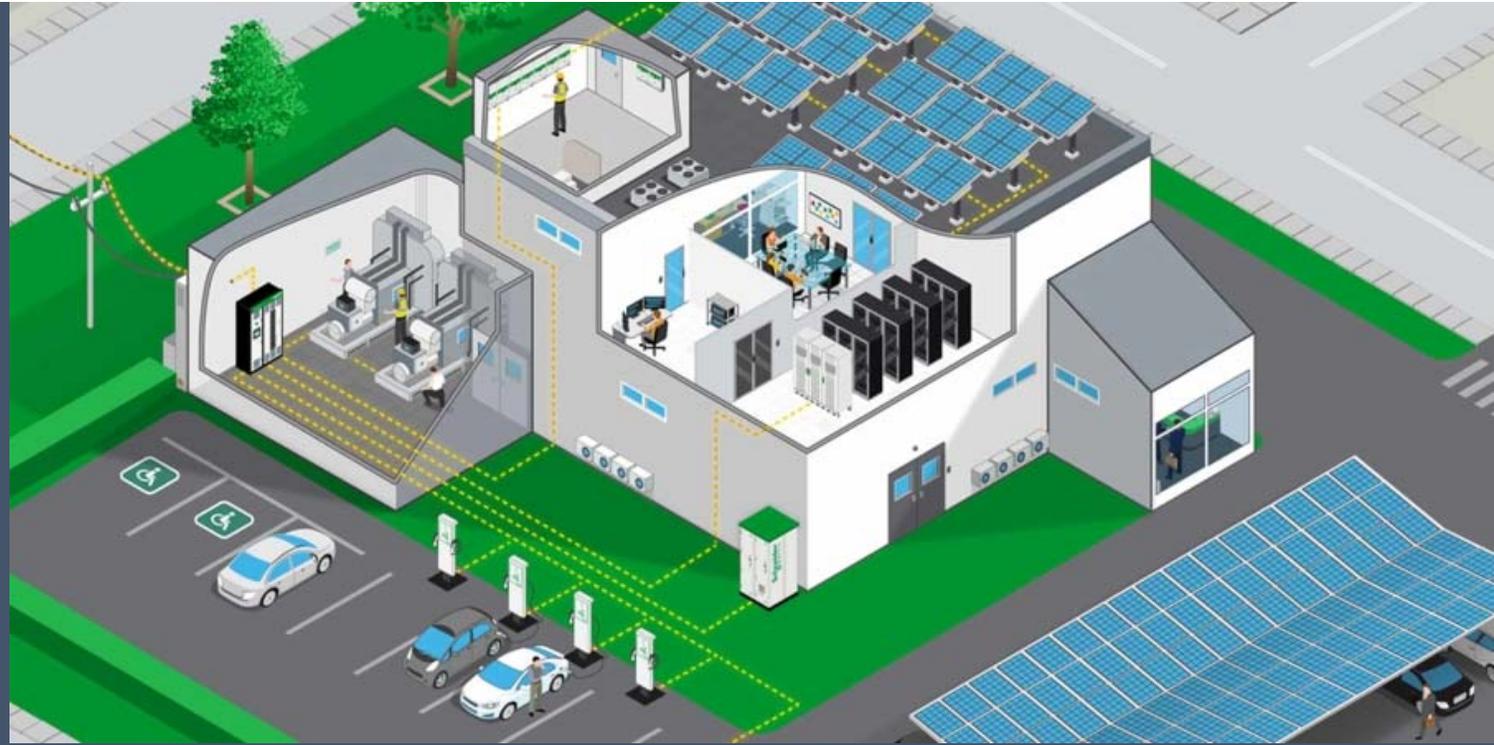
# Microgrids for Municipal Services and Emergency Shelter

During emergencies, Carlisle has found that the need for long-term or overnight shelter is limited. However, due to the relatively frequent power outages, there is a need for improved power supply for emergency services, continuation of town services, and provision of a temporary or daytime shelter with water and wastewater services and device charging services. A microgrid that could support the town center has been raised as a potential option to improve resilience for emergency services.

## ***Possible actions:***

- Explore the establishment of a microgrid to support emergency services in the town center (Elementary school, town offices, churches, Police, DPW, market)

## There are three main benefits of microgrids:



- Keep your facility's power on during grid outages
- Store electricity and sell it back to the grid during peak demand
- Integrate on-site renewables such as wind and solar

Source: Schneider Electric, <https://www.se.com/us/en/work/solutions/microgrids/>

# Other Upcoming Meetings

May 9 at 6:30 pm

Planning Board, Conservation Commission, Board of Health, Zoning Board of Appeals

May 15 at 7 pm

Historical Commission and Housing Trust

June 6 at 7 pm

Environmental Sustainability Committee

See Carlisle MVP Webpage for more information:

<https://www.carlislema.gov/1162/Municipal-Vulnerability-Preparedness>

Questions?

Reach out if anything comes to mind!

Thank you!!

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