

Global Climate, Local Resiliency

Climate Vulnerability Analysis for New Lebanon, NY



Cornell University



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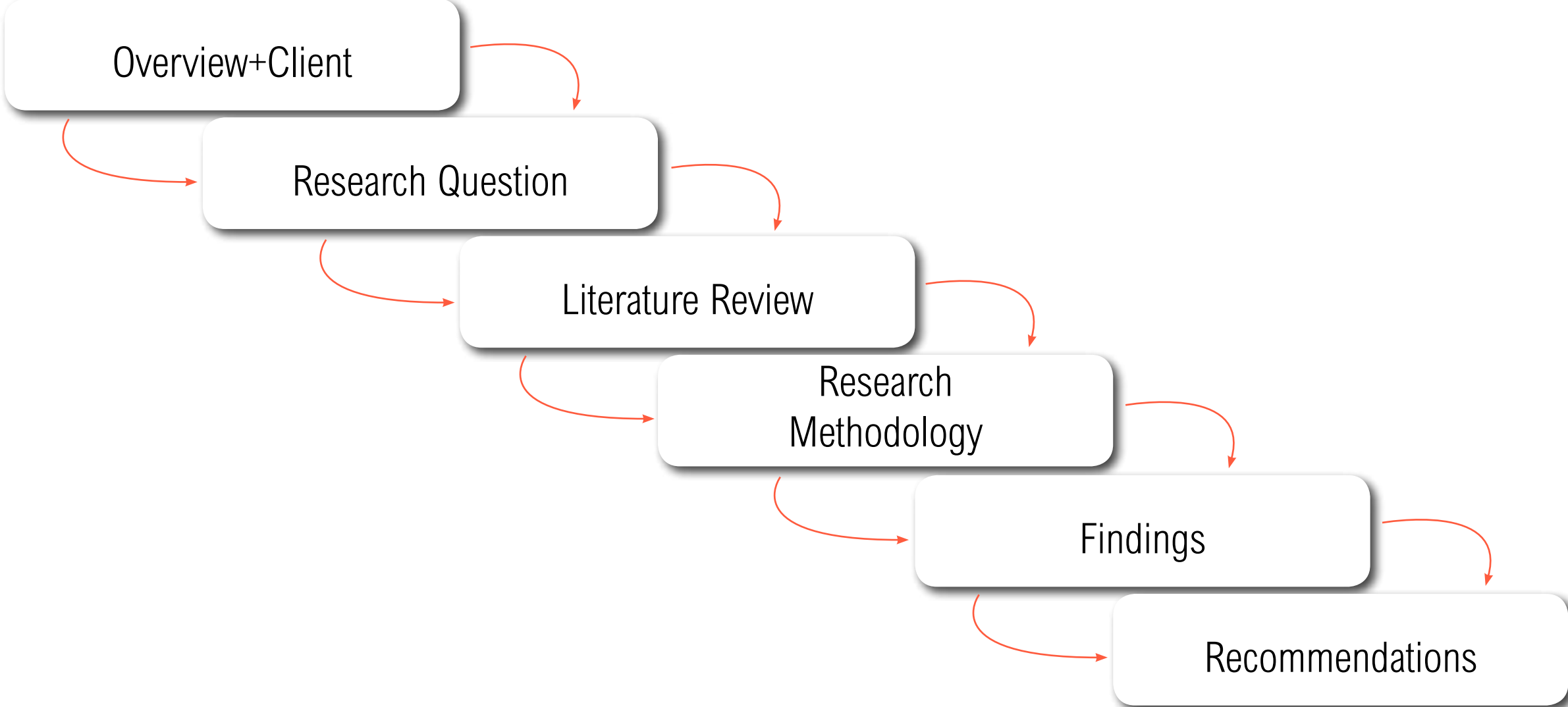
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CALS - Global Development



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Project New Lebanon



Project New Lebanon

Overview

NYS Climate Smart Communities Program



Reduce greenhouse gas emissions

Adapt to climate effects

Thrive in a green economy



Project New Lebanon

Overview

NYS Climate Smart Communities Program

Program Goals:

- Reduce greenhouse gas emissions
- Build resiliency to climate impacts
- Save taxpayer dollars
- Increase energy security
- Improve community health + safety
- Support a green economy

**~9.3 million people
statewide live in Climate
Smart Communities**

Communities Receive:

- Funding for climate mitigation
- Reduce the cost of charging clean vehicles, EV charging
- Free technical assistance

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Overview

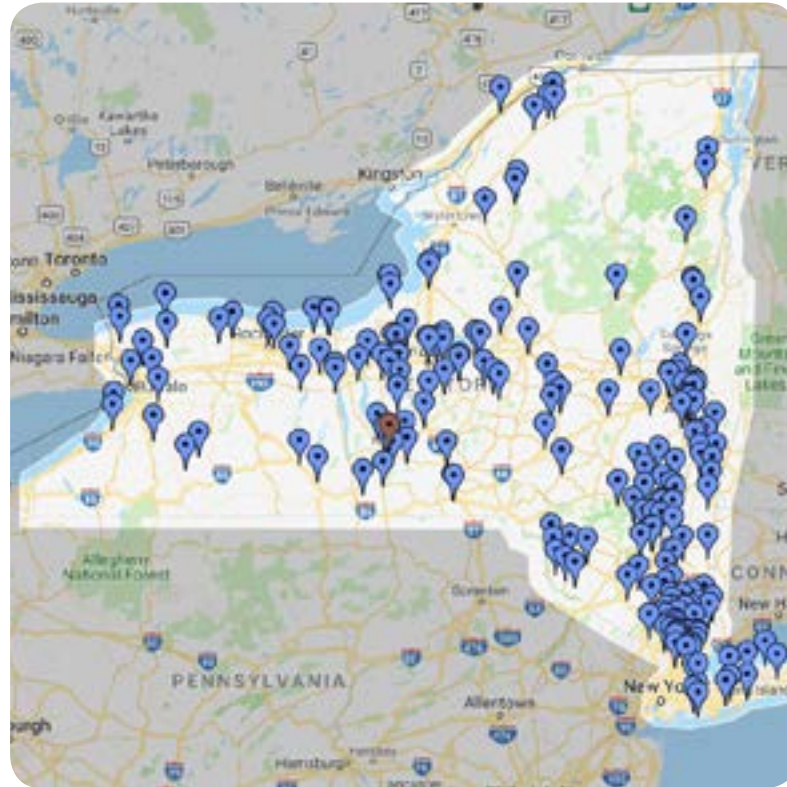
NYS Climate Smart Communities Program

Certification Criteria:

Points

Priority Actions

Pledge Elements



Program Stats:

327 CSC Communities

58 Bronze Certified
(120 points needed)

7 Silver Certified
(300 points needed)

Project New Lebanon

Client

New Lebanon - A Climate Smart Community



April 2020: Became a CSC
community

March 2021: Achieved Bronze
Status

GOAL: Silver Status



Project New Lebanon

Client

Cornell's Role in New Lebanon

Project Goals:

- Identify key hazards (drought, storms, etc.)
- Identify key assets (roads, schools, etc.)
- Prioritize risks

Complete a Climate Vulnerability Assessment for the New Lebanon CSC Taskforce + help them achieve CSC Silver Status.

Project Deliverables:

- Formal consulting report
- Presentation materials to raise community awareness.

Project New Lebanon

Client

New Lebanon - About



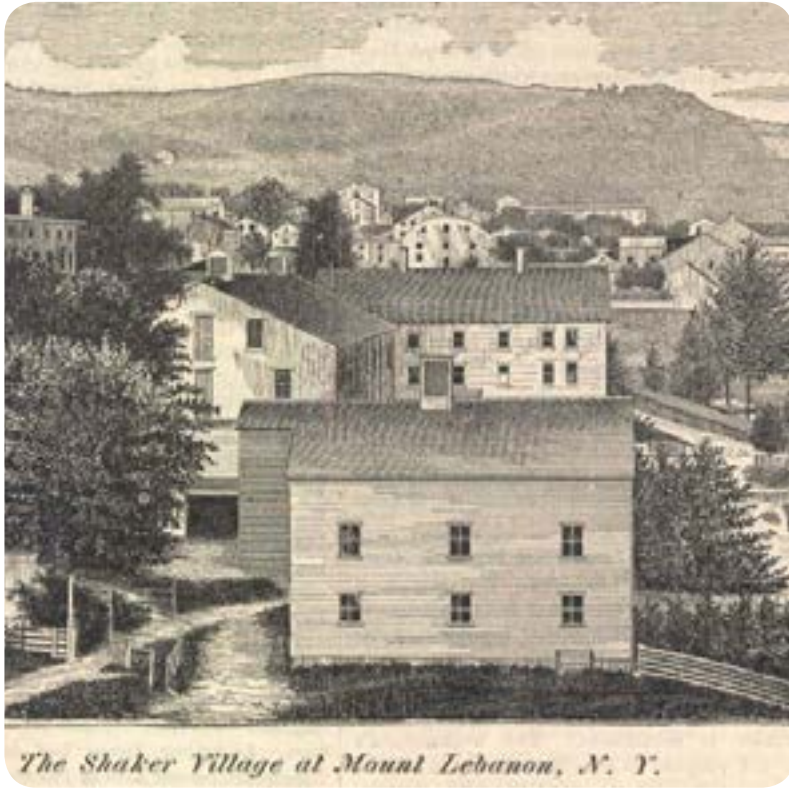
- Settled ~1786
- Population of 2,305 (2010 census)
- 24 miles from Albany at the intersection of US20 & US22.
- Right on the edge of the Taconic Mountains



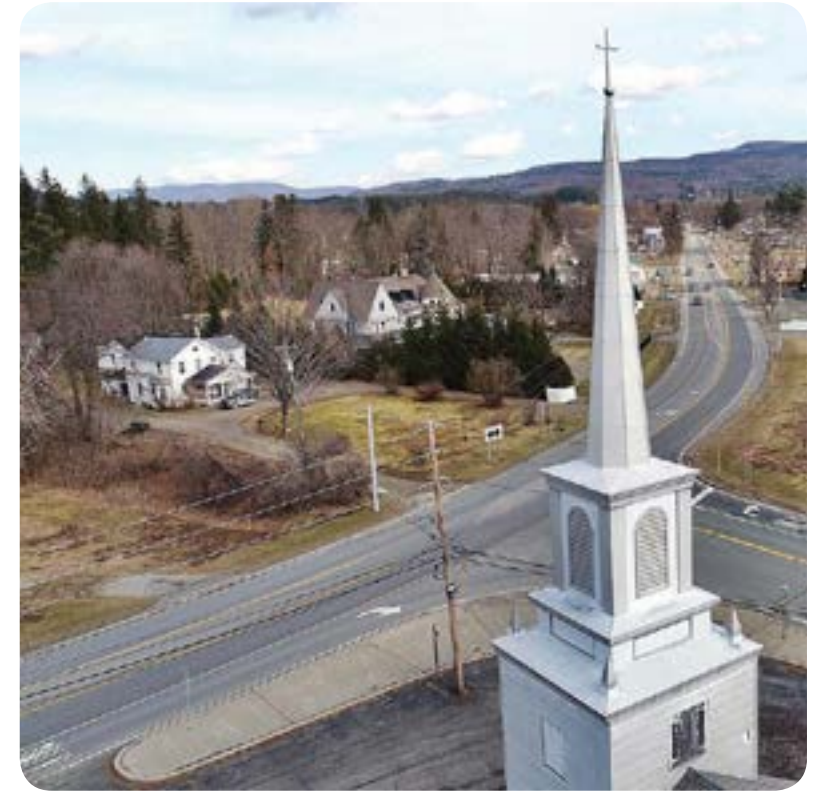
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Client

New Lebanon - Culture



- Original home of the Shakers, a once popular religious group
- Lebanon Springs: warm thermal spring
- Residents of Note:
Samuel J. Tilden
George Henry Williams



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Research Question

Identify Critical Assets that are important to New Lebanon.

What are the key
climate hazards which can
impact critical assets in the
town of New
Lebanon?

Identify Key Hazards
affecting New Lebanon.

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Research Question

- **Hazard:** An external issue
- Quantitative Information
- Addressed in Literature Review

$$\text{Risk} = \text{Hazard} \times \text{Vulnerability}$$

- **Vulnerability:** An internal issue
- Qualitative Information
- Addressed in Research

Literature Review

About the Review:

- Focus on Hazards
- Assessed at many scales
- Quantitative

Global
Regional
State
Local

Purpose:


















































Determine the presence and frequency of mentioning in hazard and climate science literature

Literature Review

 = Sector is Affected by Hazard

Key Sectors

Hazards

	Agriculture	Water	Telecom	Transport	Health	Ecosystems	Energy
Excessive Rain + Flooding							
Temperature Increases + Heat Waves							
Drought							
Snow + Ice Storms							
Invasive Species + Habitat Degradation							
Hurricanes + Heavy Storms							
Vector/Chronic Illness/Mental Health							

Research Methodology

Interviews



Vulnerabilities

Exist at local scale

Qualitative

Determine the presence of assets and the subsequent threat to those assets

Project New Lebanon

Critical Personnel Interviewed

1 Member of the Climate Smart Communities Task Force

2 Farmers: Organic Vegetables

1 Member of the Town Planning Board

2 Members of the Lebanon Valley Protection Association

1 Member of the Conservation Advisory Council

1 Farmer: Large Scale Cereal Crops

1 Farmer: Maple Products

1 Local Businessman + Town Board Member

1 Farmer: Cattle

Interview Flow

Do you think the seven hazards listed capture the scope of possible hazards which town of New Lebanon can face?

1

How would you prioritize the top three hazards?

2

Which of these seven sectors are most likely to be vulnerable to climate related hazards in the town of New Lebanon?

3

What are the concerns of town people about climate related hazards?

6

What are some of the specific community areas which are most vulnerable to climate hazards?

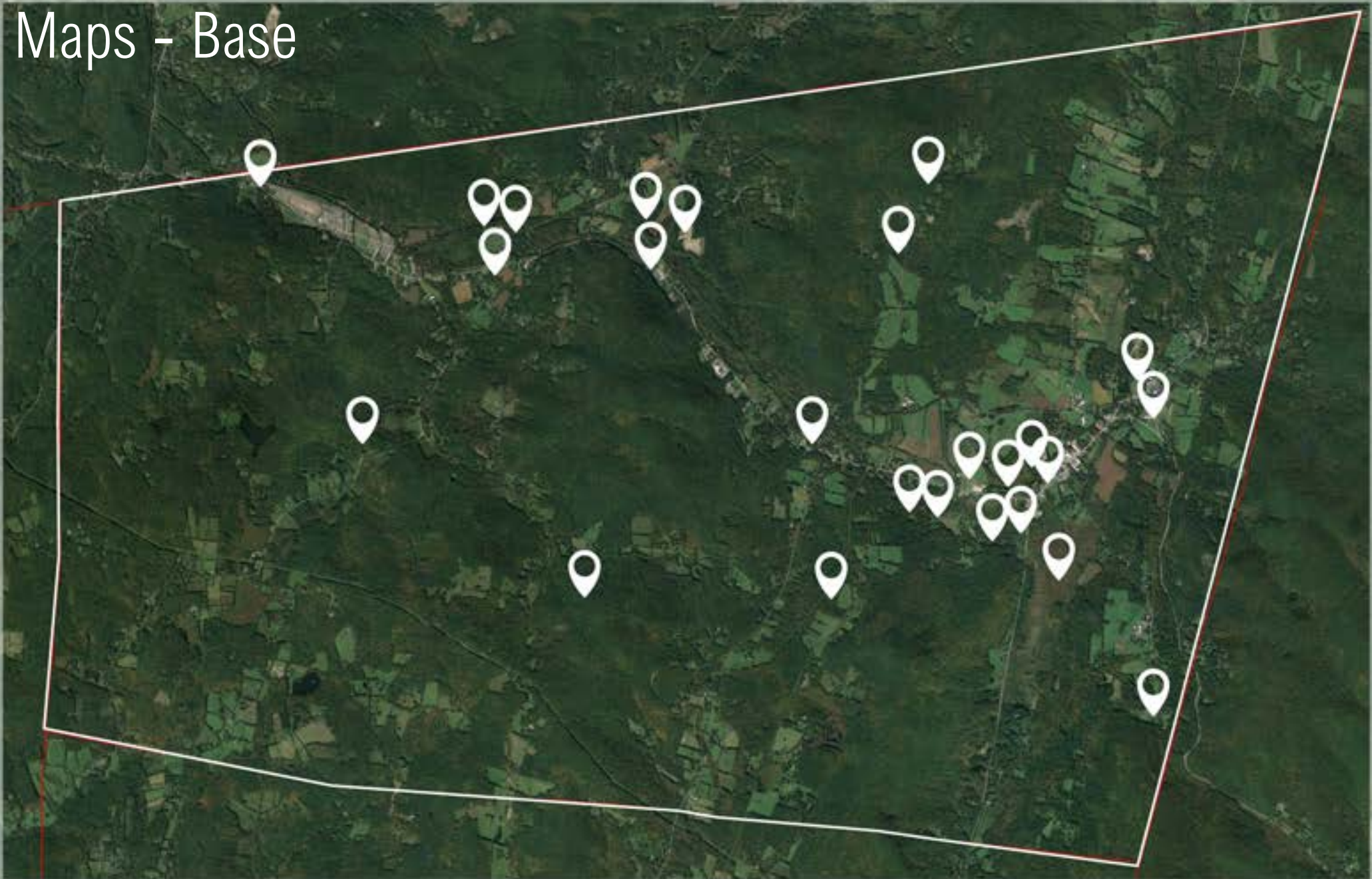
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What are some of the specific town assets (social or infrastructure) which are vulnerable to climate hazards?

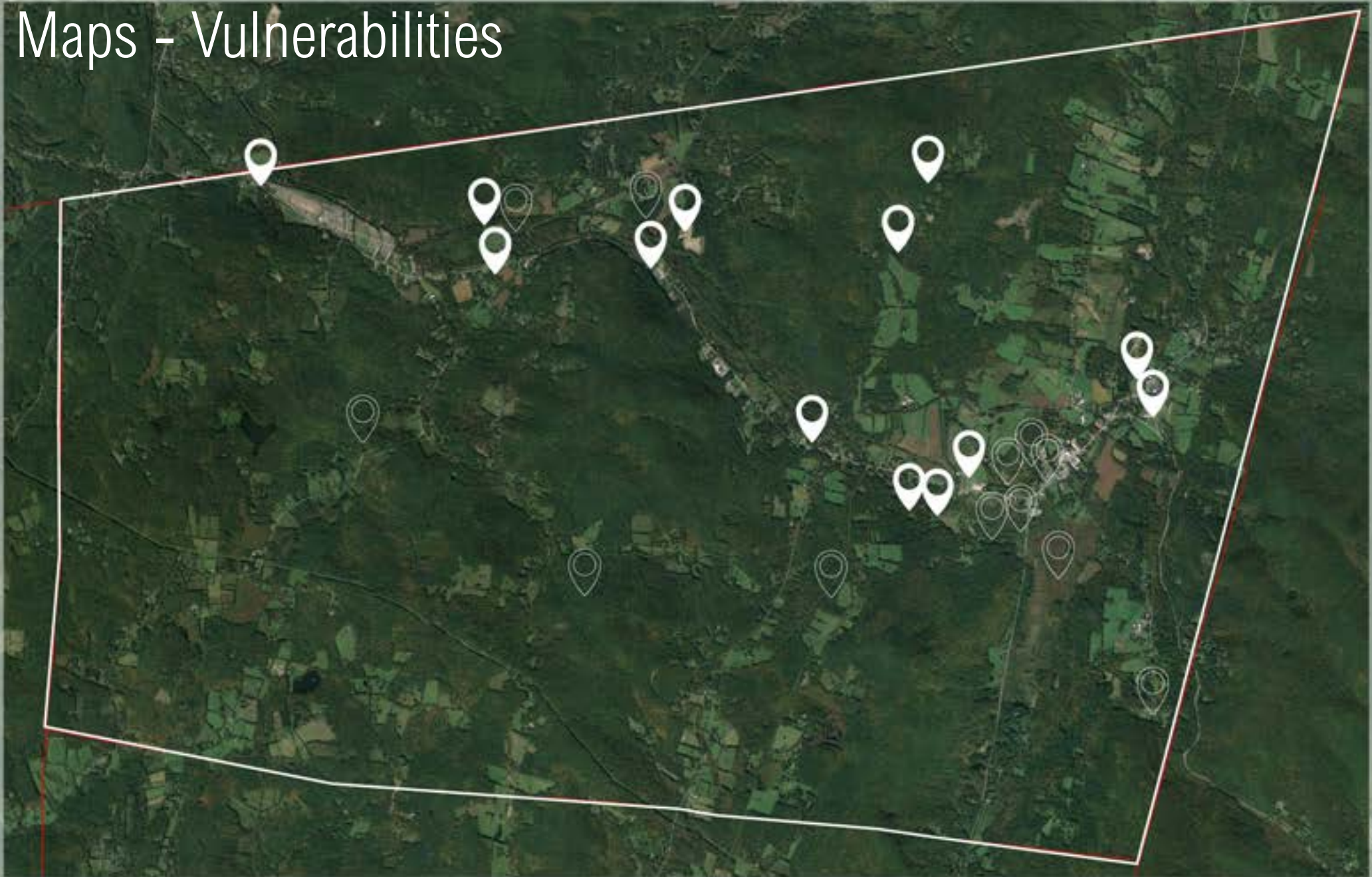
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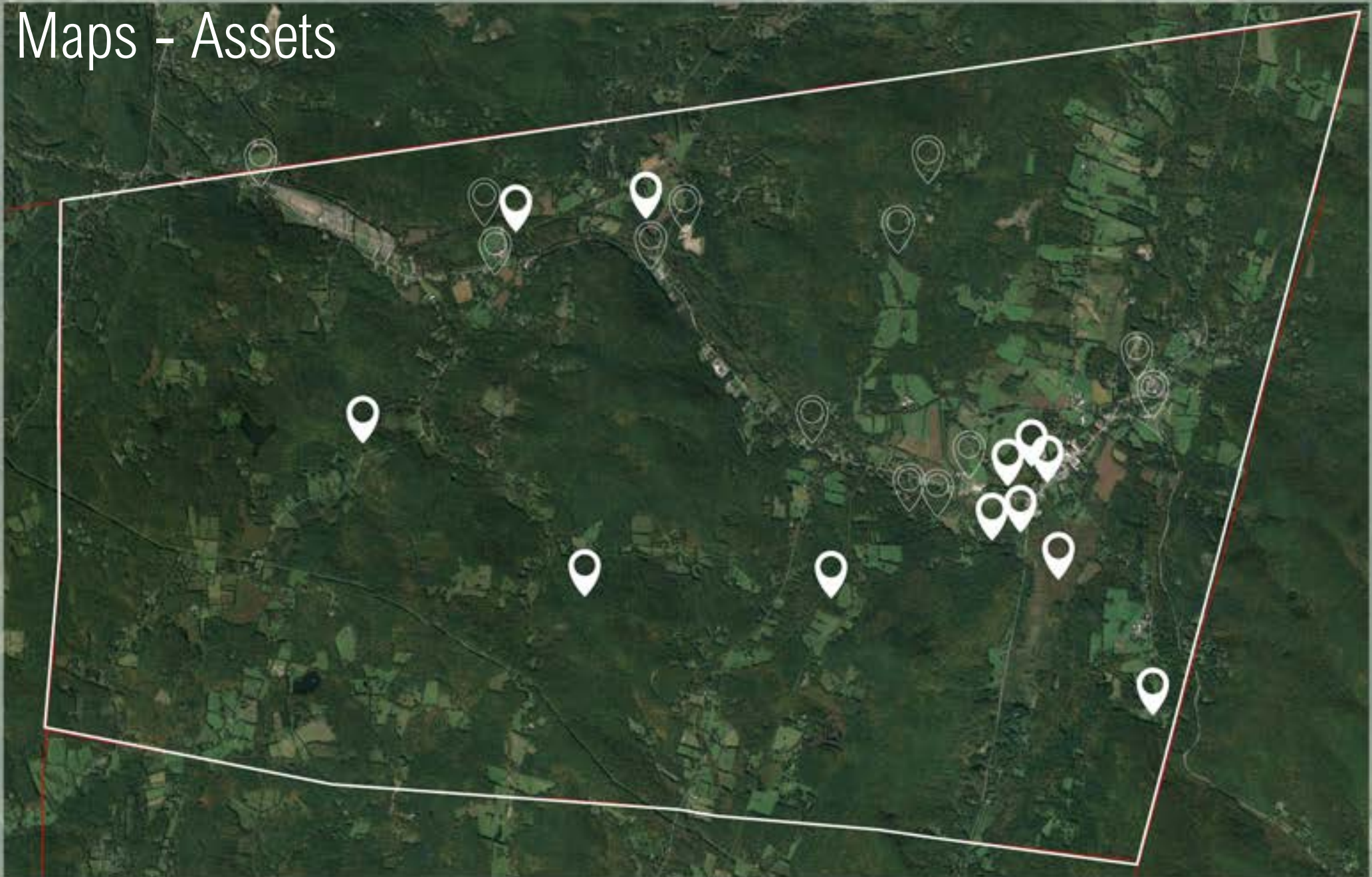
Maps - Base



Maps - Vulnerabilities



Maps - Assets



Findings

Top Hazards (Lit Review):

- Excessive Rain and Flooding
- Temperature Increases and Heat waves
- Drought
- Snow and Ice storms

**Hazards (Lit Review) +
Assets (Interviews) were
analyzed together to
determine priorities**

Top Assets (Interviews):

- Transportation - Roads and Bridges
- Energy - Power Lines
- Water
- Agriculture

Weather is more likely to be extreme in the future.

- Rain is less likely to fall consistently, more likely to fall a lot or not at all.
- Temperatures are less likely to be “average,” more likely to be hot or cold
- Droughts are more likely to happen with inconsistent rainfall.
- Snow and Ice more likely to fall in large quantities all at once, with long periods of no snow in the wintertime.

Climate Projections + Assets Affected, New Lebanon

Excessive Rain + Flooding



- Flooding in town centers and critical farmland in flood plain

Short + Long Term

Temp. Increases + Heat Waves



- Increase in heat waves and potential damage to infrastructure

Long Term

Drought



- Potential shortage of water for drinking, ag, and fire dept.
- Potential for increase in forest fires

Short Term

Snow + Ice Storms



- Impacts to agriculture + perennial plants
- Inconsistent snow for snowmobiling

Short + Long Term

Other Notable Findings

- Drought is also linked with water shortage for the fire department. It affects the Emergency Response of the town.
- There are several dumping sites in the town which are also a possible vulnerability and can lead to pollution of water.
- Maple syrup production and sap running has been inconsistent in recent years.

Recommendations

Short Term (1-3 Years):

- Continue developing the Climate Smart Communities Program
- Attempt to further understand, research, and update flood risks
- Research options to diversify, expand, and protect power and heating options and assets
- Further develop emergency response plans (disaster risk reduction)



Long Term (3+ Years):

- Develop a water resources contingency plan
- Apply for grants and infrastructure projects
- Develop environmental education programs geared towards youth AND the elderly together

Thanks!