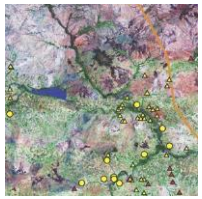


Renewable Energy Planning in Massachusetts

Massachusetts Clean Energy Center's
Community Energy Strategies Program

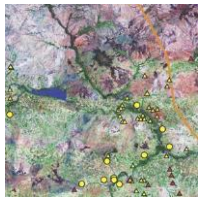
David Healy and Katie Budreski

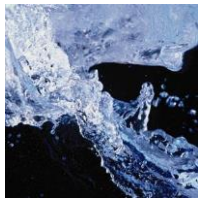
House Natural Resources & Energy Committee

April 14, 2015

9:00 PM EST

STONE ENVIRONMENTAL INC

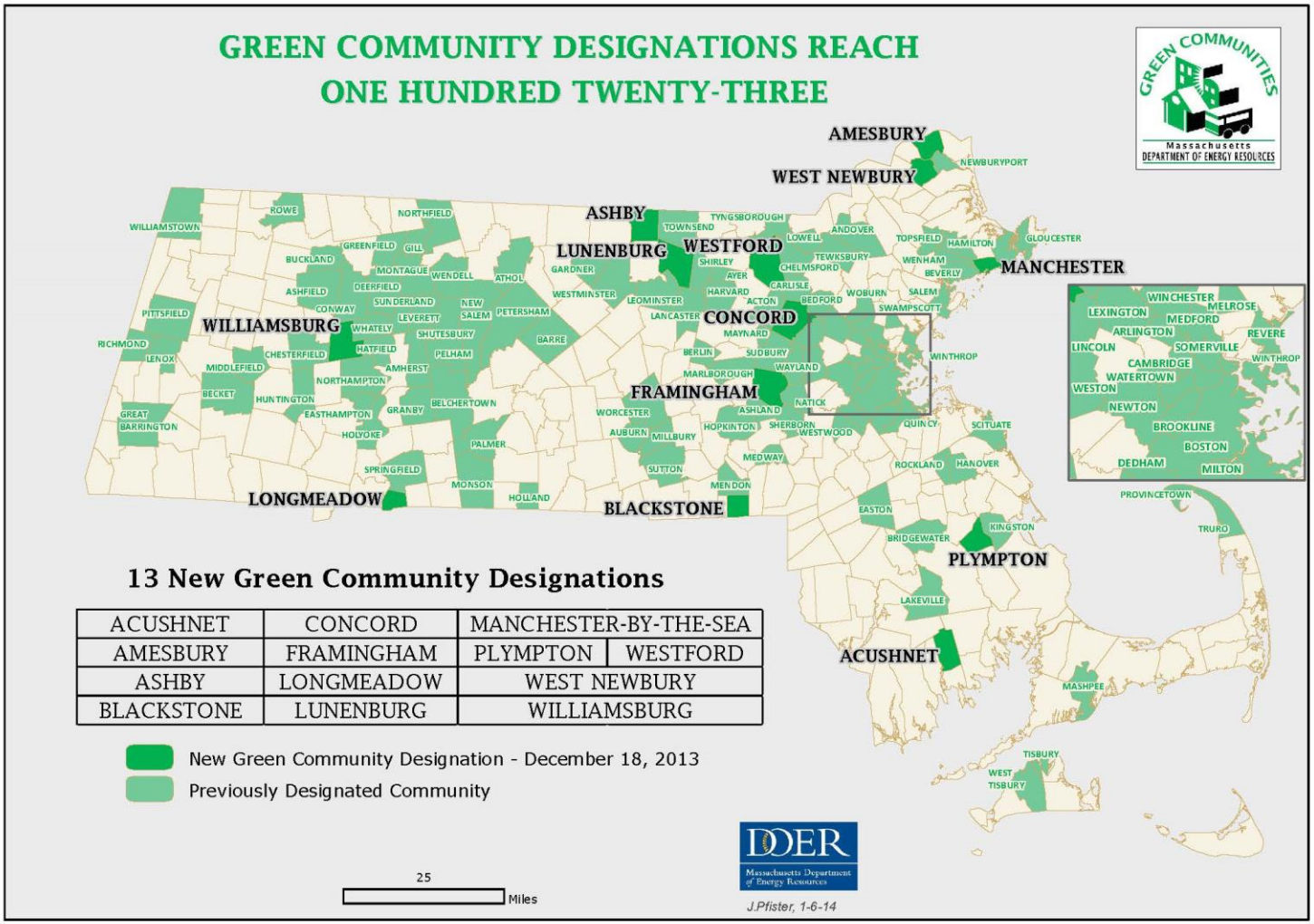

Contents

Background

- Stone has been involved with the Massachusetts Community Energy Strategies Program (2013 – Present)
  - Main objective: develop clean energy roadmap for communities
  - One of two consultants who won the competitive bid to work on the project
  - Conducted the GIS inventory of potential clean energy solutions
  - Meister Consulting Group was other consultant that facilitated the public meetings, working group progress, and road map development
  - Worked closely with MassCEC, towns, and Meister

Massachusetts Green Communities

- 123 Communities as of January 2014
  - 35% of all MA Communities
- Helps municipalities navigate and meet 5 criteria
- Qualifies municipalities for grants
  - ~$25,000,000 in grants awarded to green communities



Criteria for Green Community

- Five Criteria Required to Receive Designation
  - Provide **as-of-right siting** in designated locations*
  - Adopt **expedited application/permit process** for as-of right energy facilities
  - Establish energy use baseline and establish plan to ***reduce energy by 20% within 5 years***
  - Purchase only ***fuel efficient vehicles***
  - Require to ***minimize life-cycle costs*** of new construction

*http://dsireusa.org/incentives/incentive.cfm?Incentive_Code=MA14R&re=0&ee=0

MASSACHUSETTS CLEAN ENERGY CENTER

Basics:

- Quasi-Public Agency
- Created in 2008 by Governor Deval Patrick's Green Jobs Act
- Funded by the Renewable Energy Trust Fund (systems benefit charge paid by electric ratepayers)

Mission:

- **Accelerate** clean energy technologies, companies and projects
- **Create** high-quality jobs and long-term economic growth
- **Support** municipal clean energy projects
- **Invest** in residential and commercial renewable energy installations
- **Cultivate** a robust marketplace for innovation

Community Energy Strategies Pilot Program

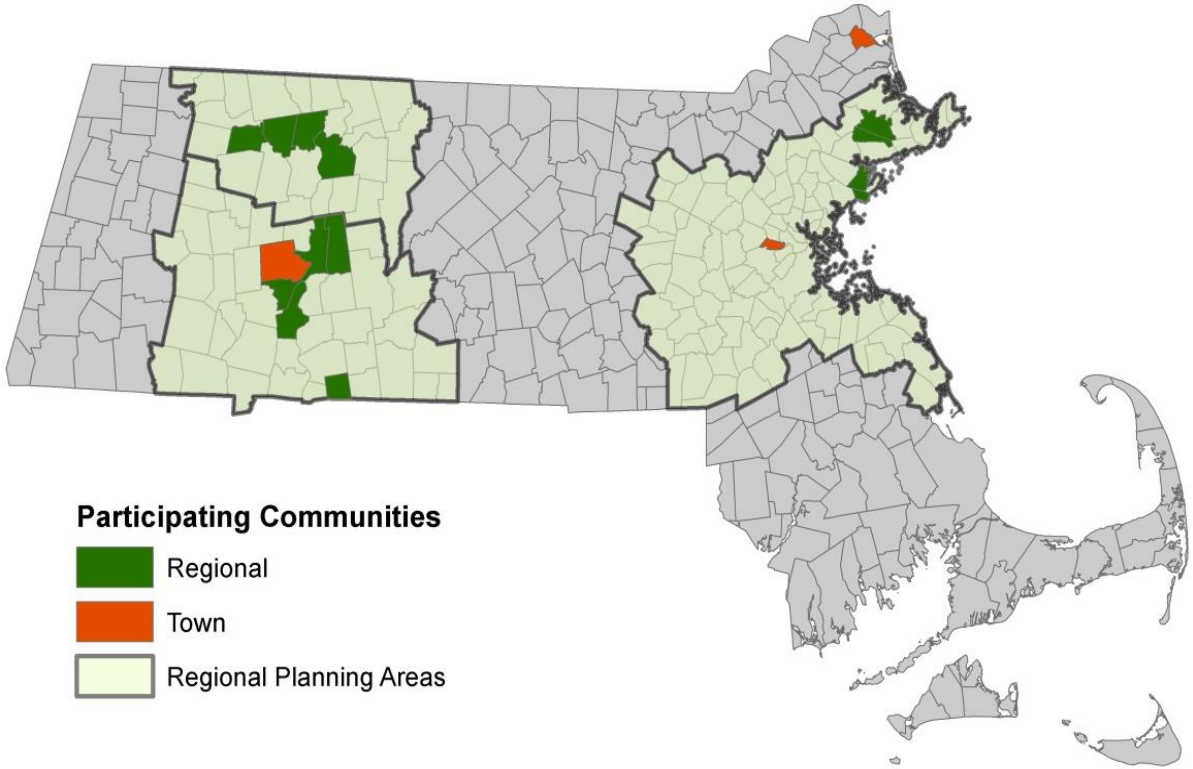
A Collaboration of MA CEC, DOER, and Local Government

GOALS:

- Assist *Green Communities* to **identify and implement** an optimal mix of existing strategies and incentives to address local interests, needs, and opportunities for clean energy development.

- Provide **educational opportunities** to support Community Energy Strategies planning context, activities, and results.

- Support **development** of local clean energy planning engagement and capacity to promote ongoing ownership and implementation of clean energy goals.

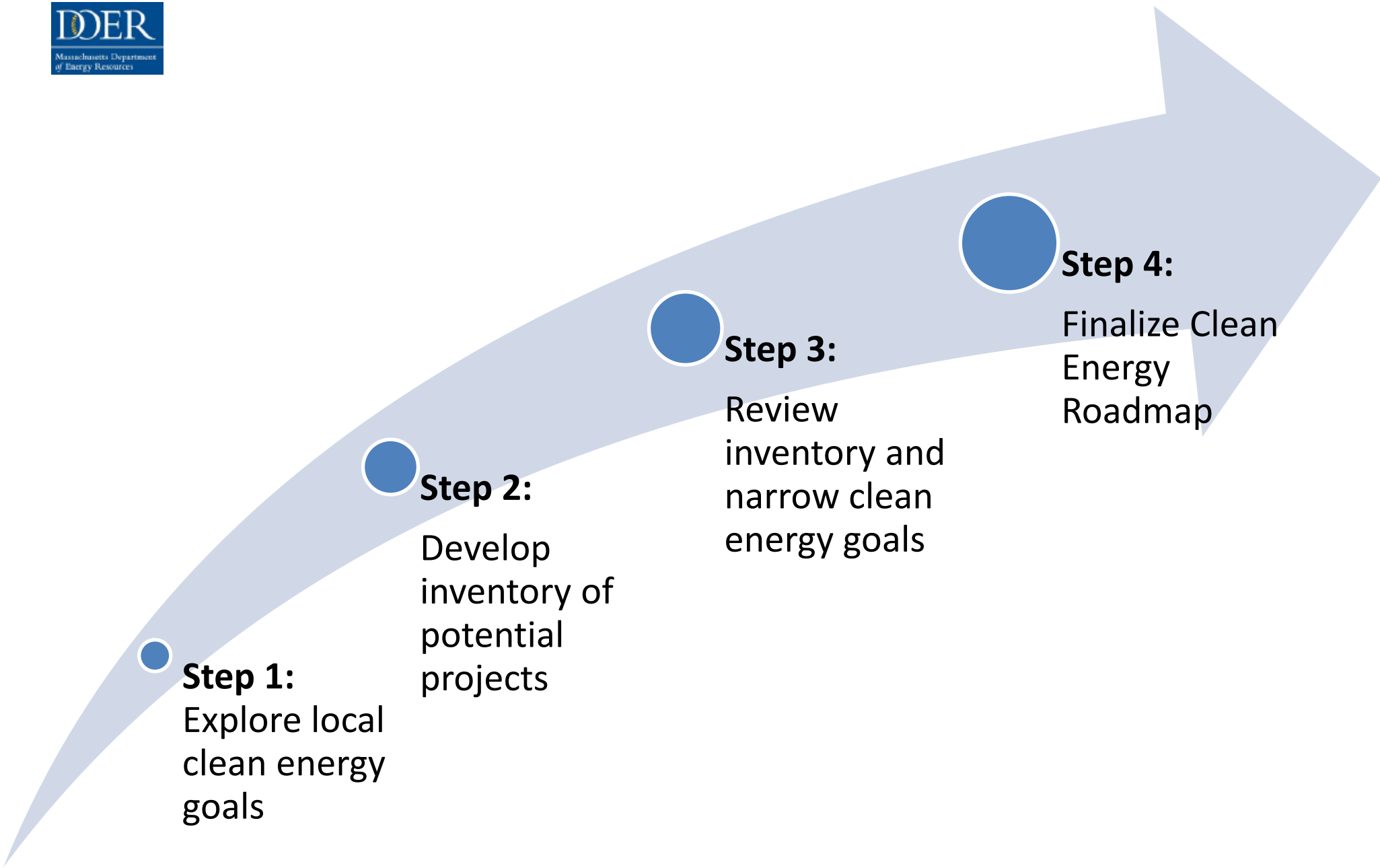


Community Energy Strategies Pilot Program

Assumptions

- CESP assesses clean energy opportunities at the community or regional level based on:
  - Local clean energy goals
  - Local clean energy resources
  - *"Each community is unique. Renewable energy projects that work for one community may not work for another, and this program will help these communities find the best projects to fit their cities and towns,"* - MassCEC CEO Alicia Barton.
- Distribution and extent of clean energy opportunities can be realized through **GIS based spatial analysis** of infrastructure, and siting criteria for various clean energy technologies

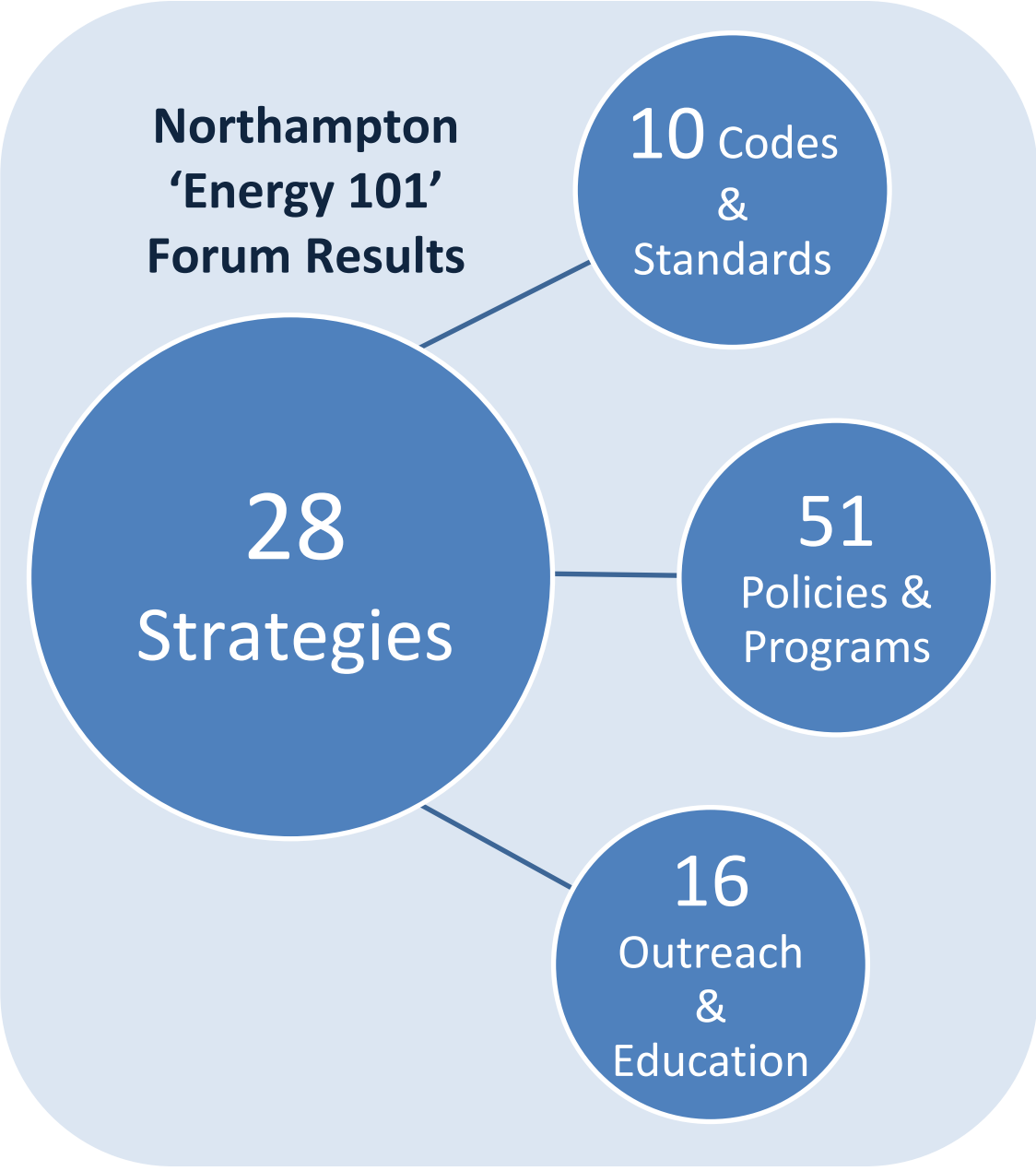
Community Energy Strategies Pilot Program – 4 Steps



Community Energy Strategies Pilot Program: Step 1

Step 1: Explore Local Clean Energy Goals

- 'Energy 101' public forum
- Brainstorm to develop full listing of potential strategies, codes & standards, policies & programs
- Clean Energy Working Group helps guide process and narrow goals



Step 2: Develop inventory of potential clean energy projects

GIS-based Evaluation:

- Energy Efficiency
- EV Charging Stations
- Other Community Specific Analyses…

GIS-based Site Suitability Analyses:

- Wind
- Large Ground Mounted Solar PV
- Solar Canopies
- Anaerobic Digestion

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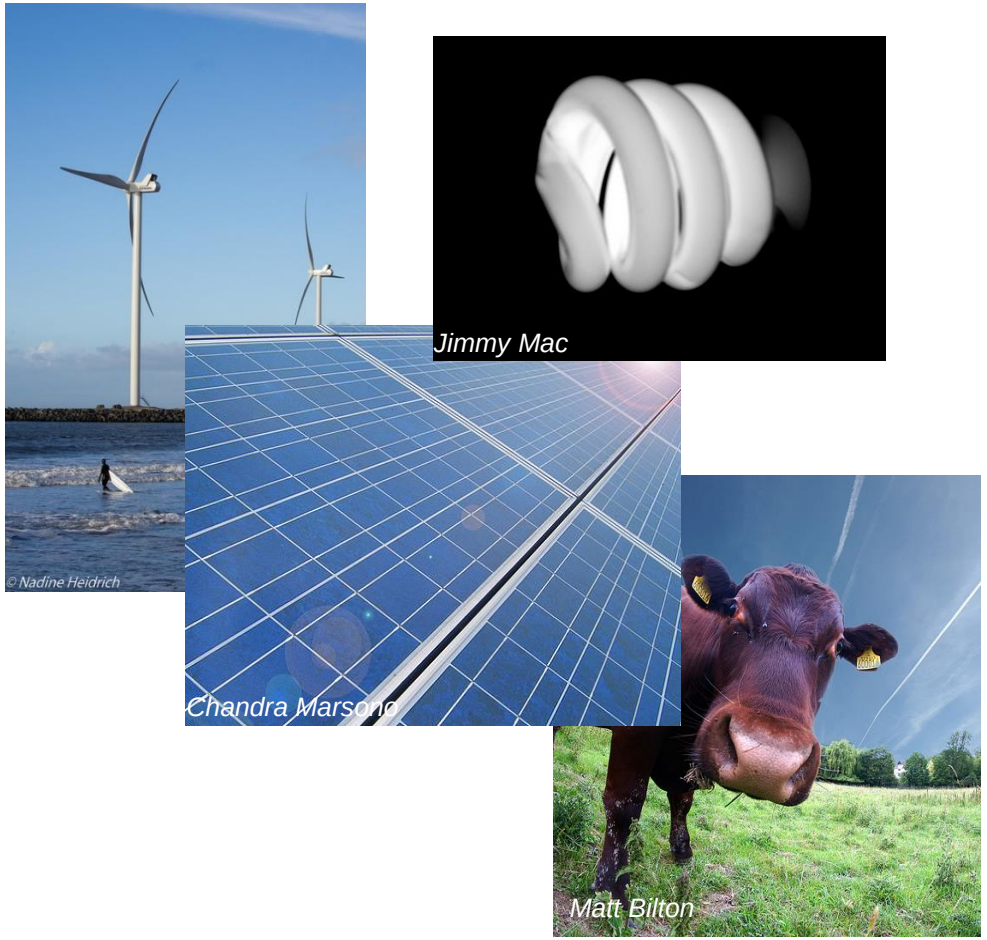


GIS-Based Evaluation:

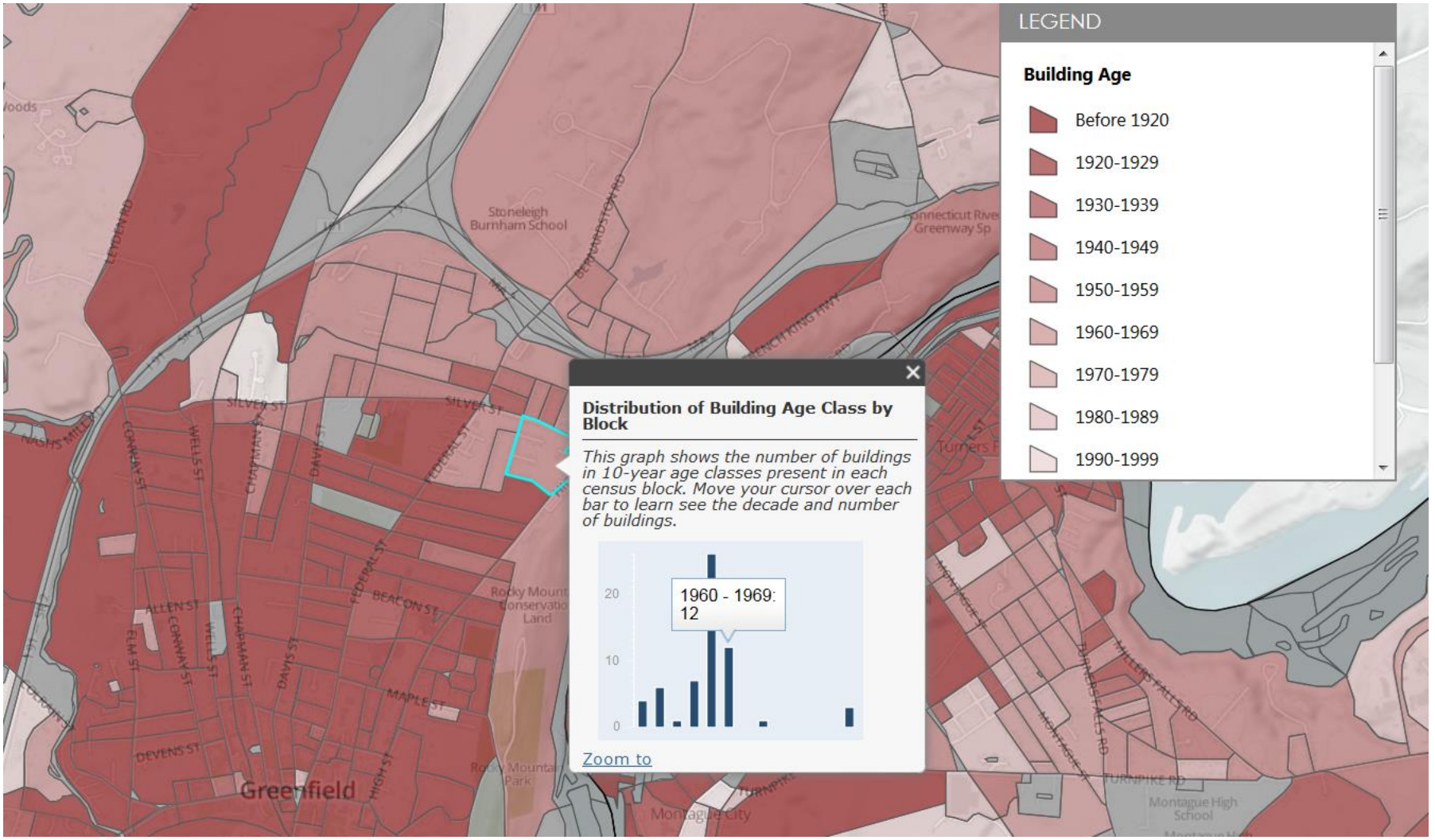
Use GIS data to qualitatively understand clean energy opportunities

- Renter vs. Owner Occupied Housing: US Census

GIS-Based Evaluation:

Use GIS data to qualitatively understand clean energy opportunities

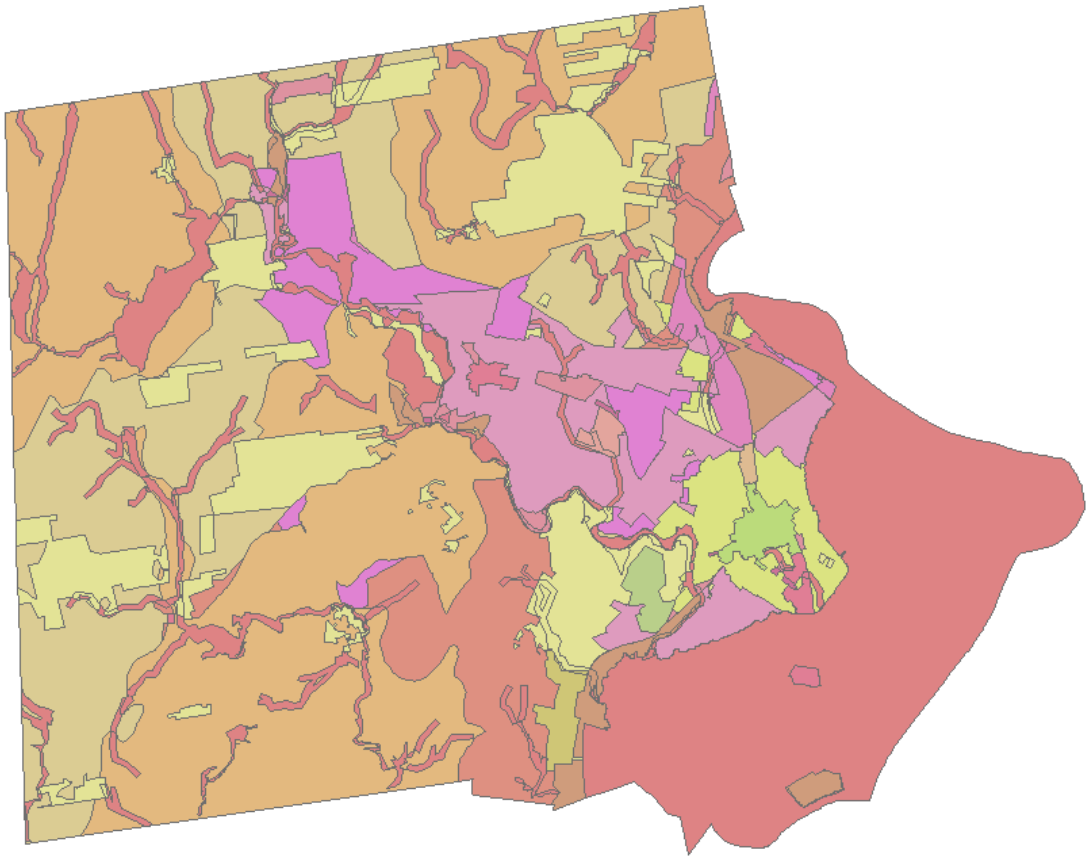
- Distribution of building age: Assessor Data



GIS-Based Site Suitability Analyses:

Identify and characterize areas that meet minimum threshold criteria

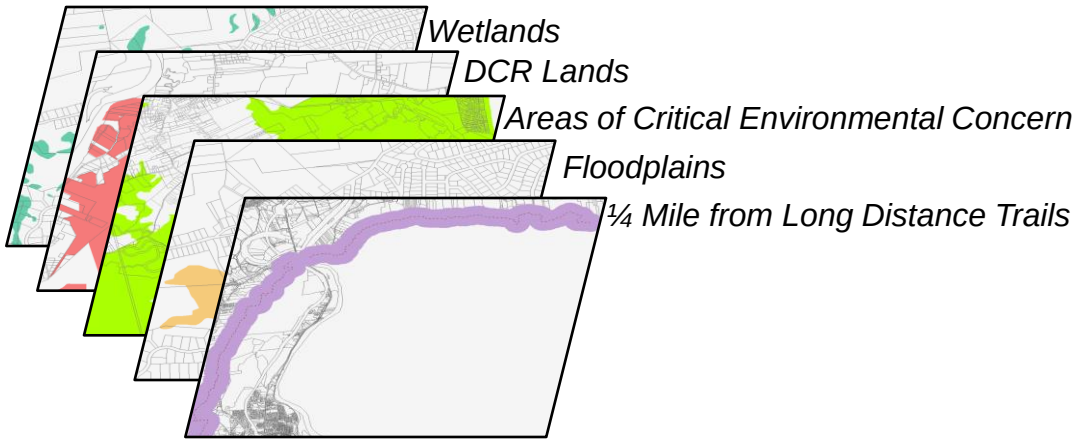
- Exclusion layers
- Concern layers
- Community-specific setbacks for the exclusion layers, concern layers, parcel boundaries and buildings
- Add additional zoning or conserved land restrictions
- Identify minimum parcel size requirements



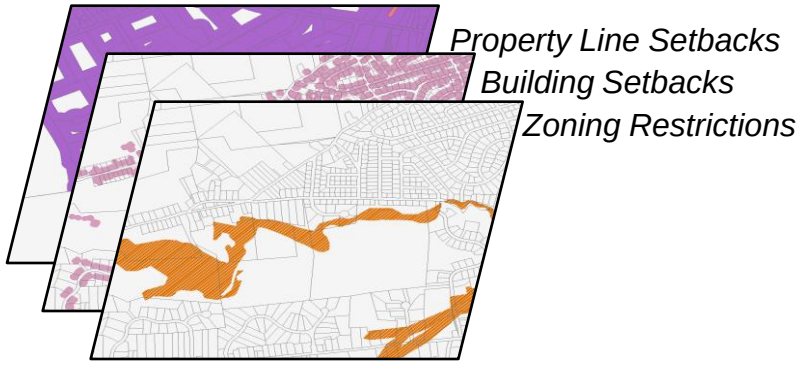
Solar Site Selection Example

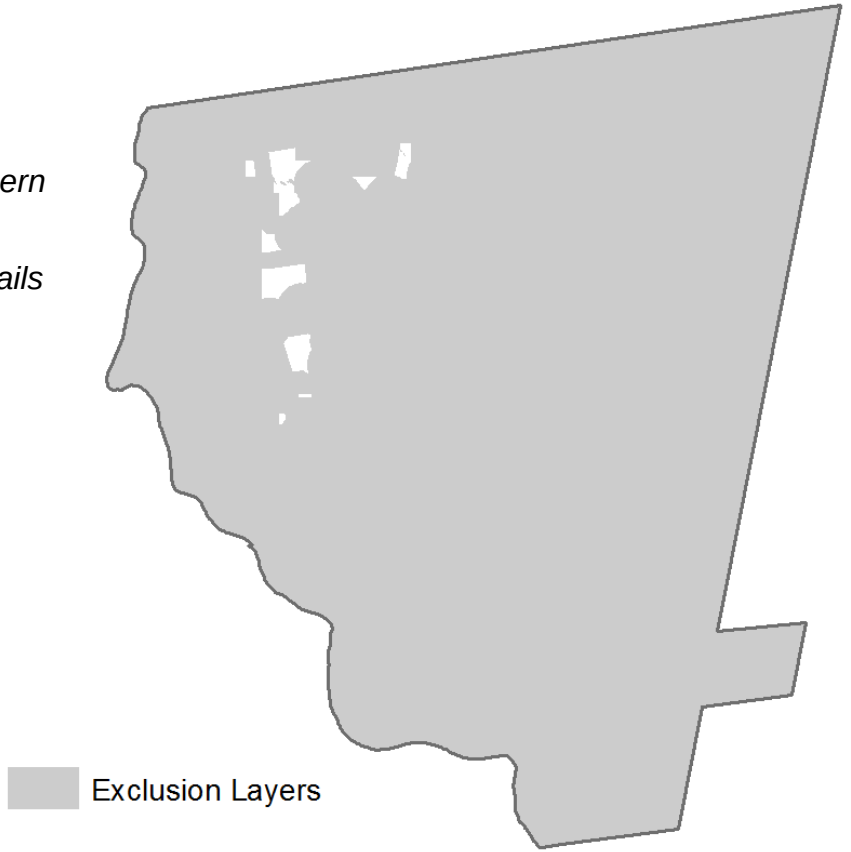
Exclusions: *Layers that clearly indicate incompatibility based on minimum technical requirements or regulatory status*

Statewide Datasets



Local Datasets

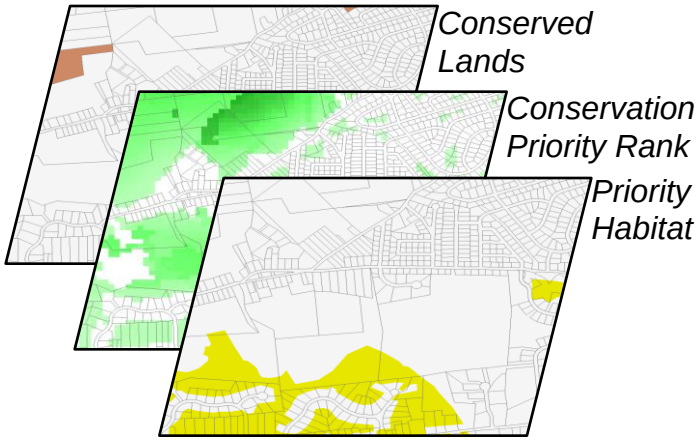




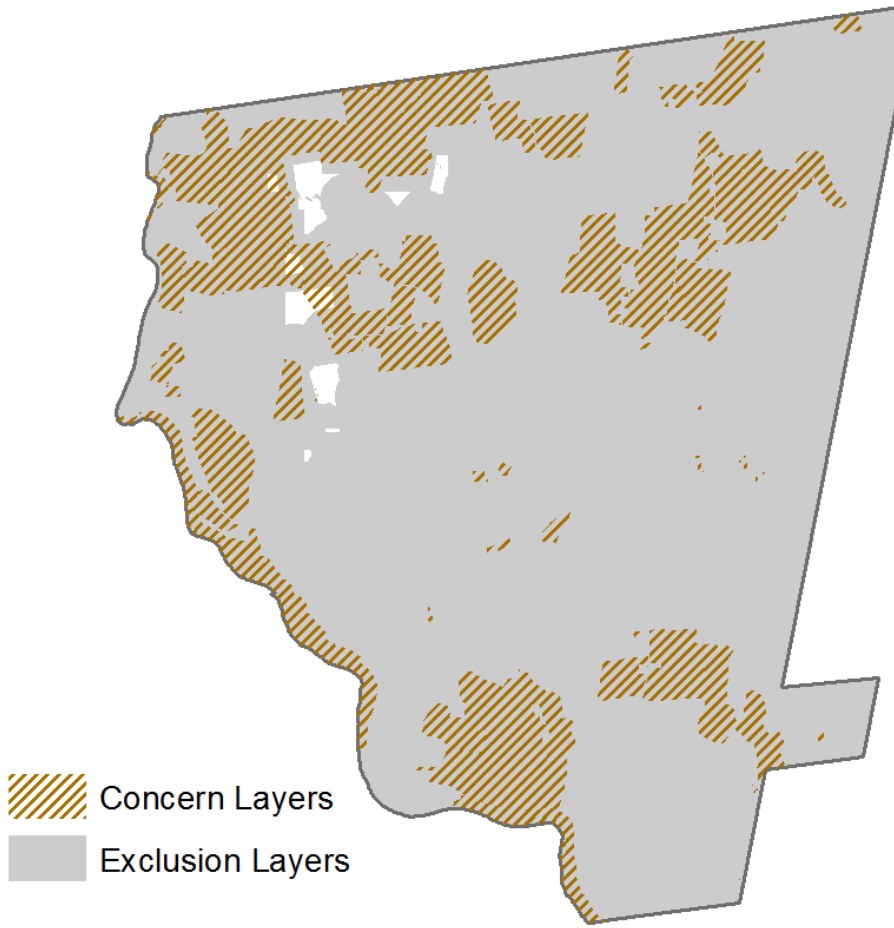
Solar Site Selection Example

Concerns: Layers that do not clearly indicate incompatibility but whose presence and selected attributes will inform decisions.

Statewide Datasets



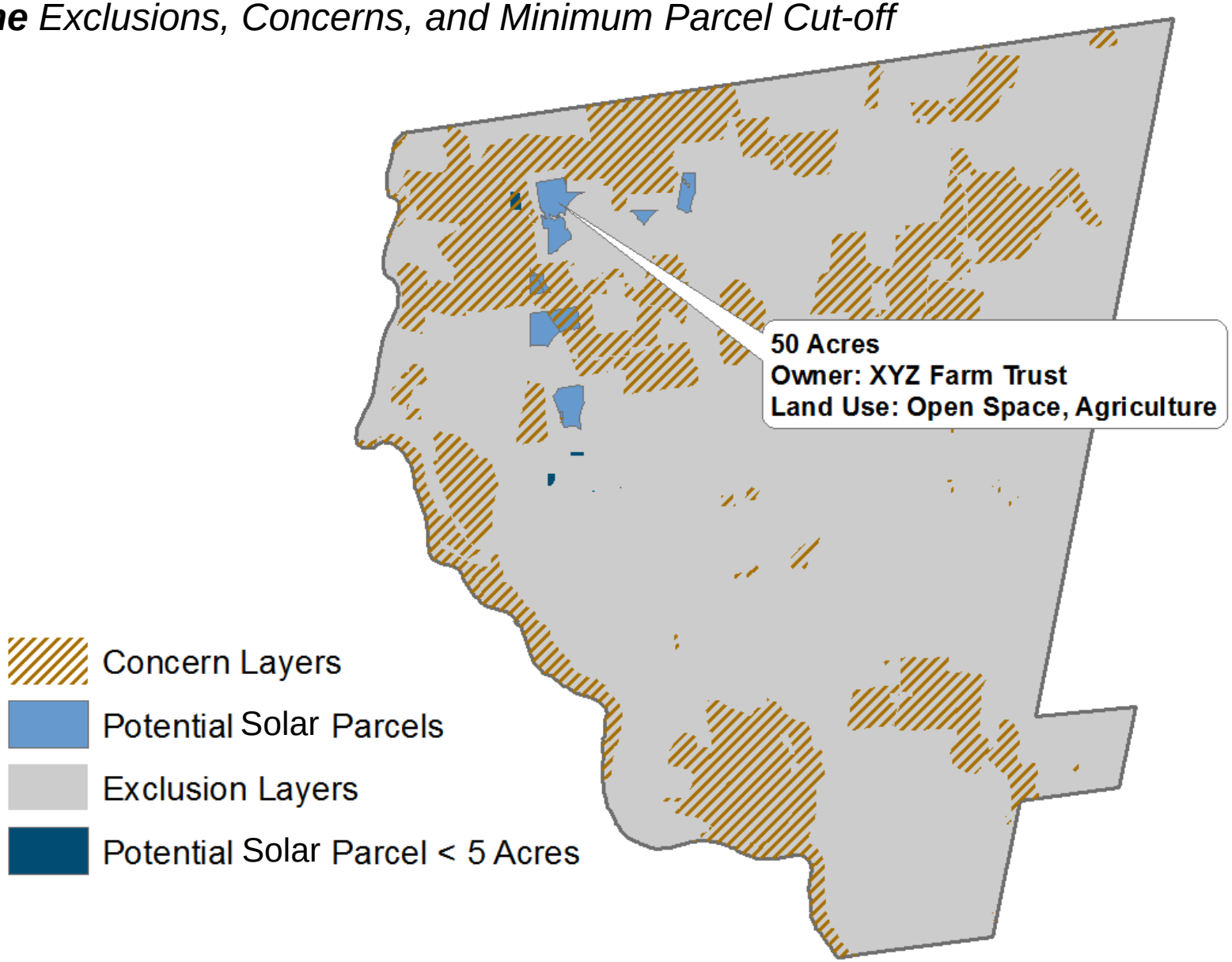
Local Datasets



Community Energy Strategies Pilot Program: Step 2

Solar Site Selection Example

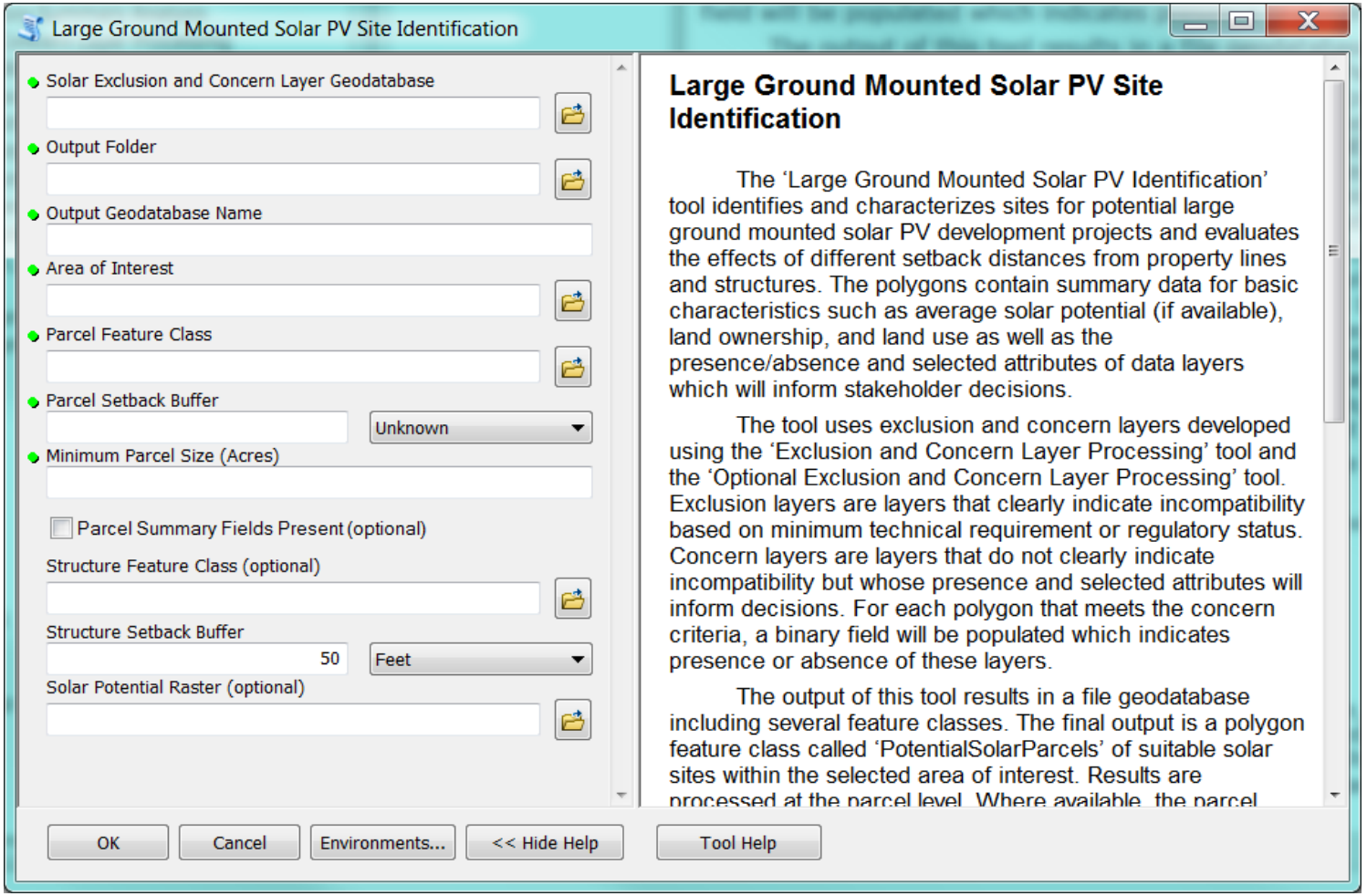
Combine *Exclusions, Concerns, and Minimum Parcel Cut-off*



Community Energy Strategies Pilot Program: Step 2

Using GIS Tools for Clean Energy Site Evaluation and Suitability allows for:

- Repeatability
- Flexibility
  - Use local data inputs
  - Alter setback distances
- Iterative analyses
  - Test multiple scenarios



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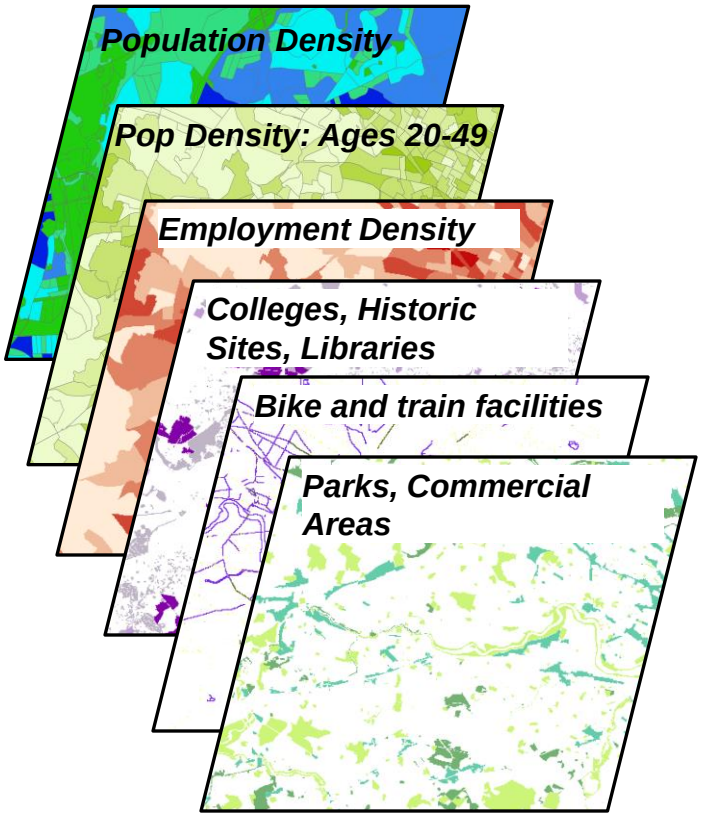
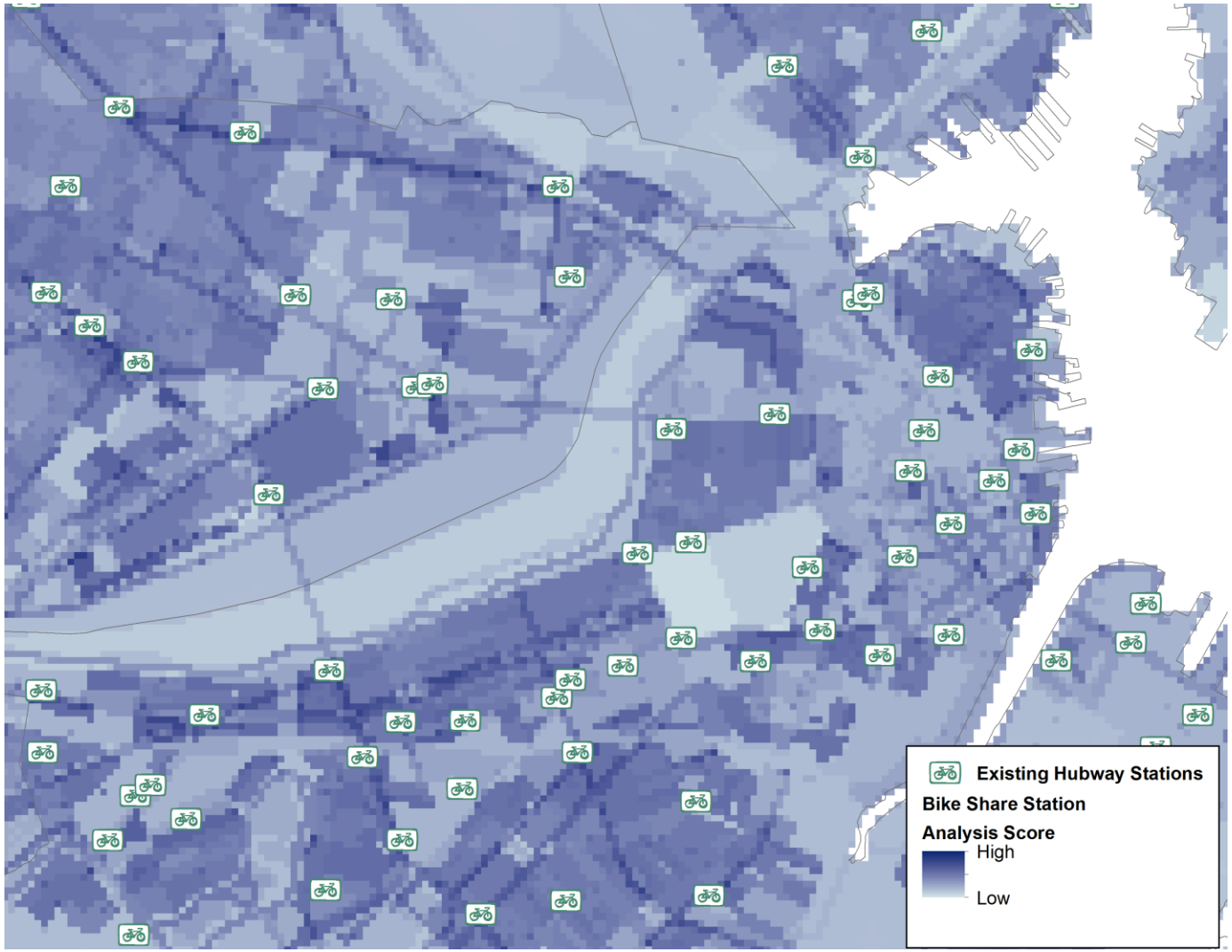
DOER Massachusetts Department of Energy Resources

Community Energy Strategies Pilot Program: Step 2

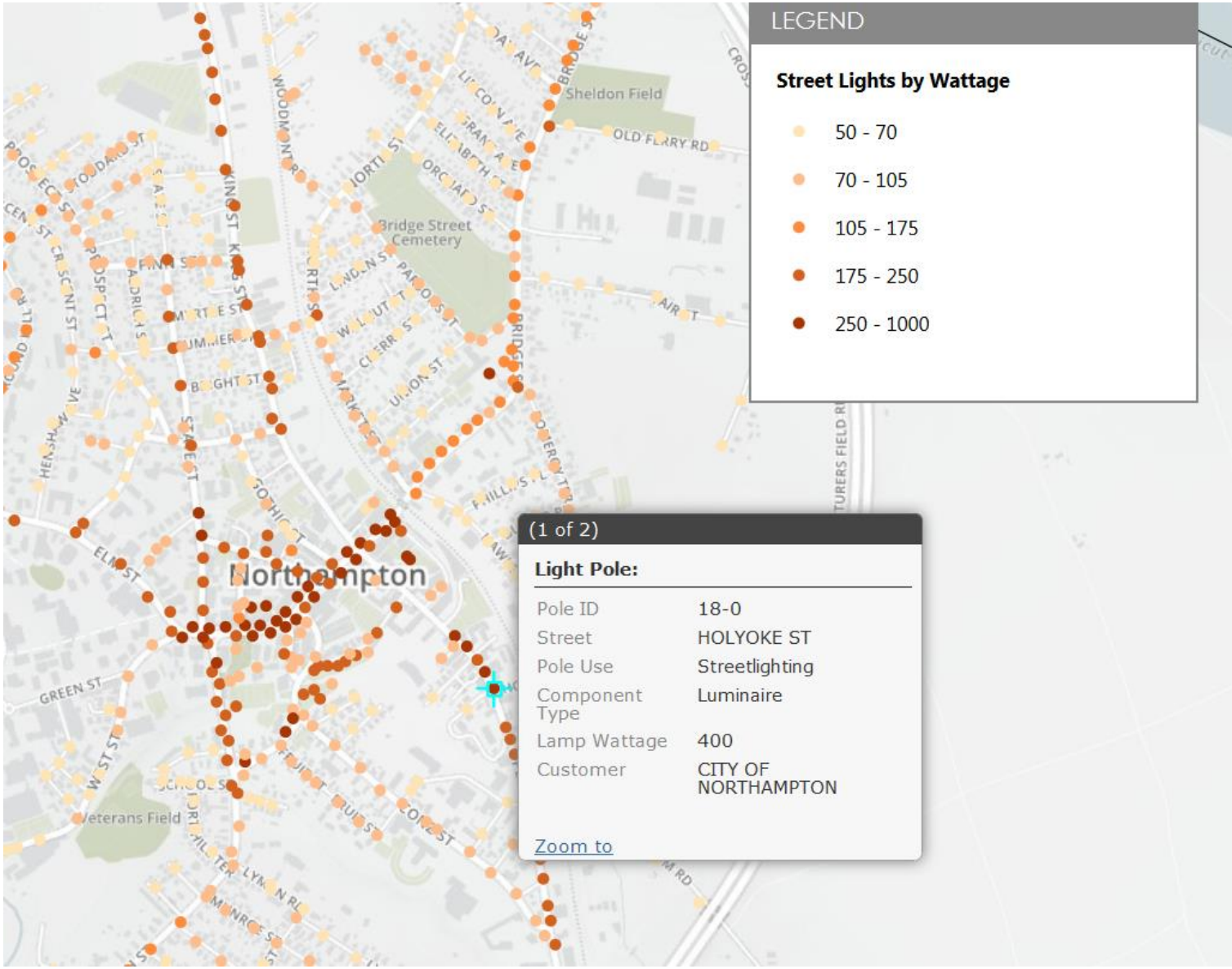
Additional GIS Analyses: Statewide Bike Share Station Suitability





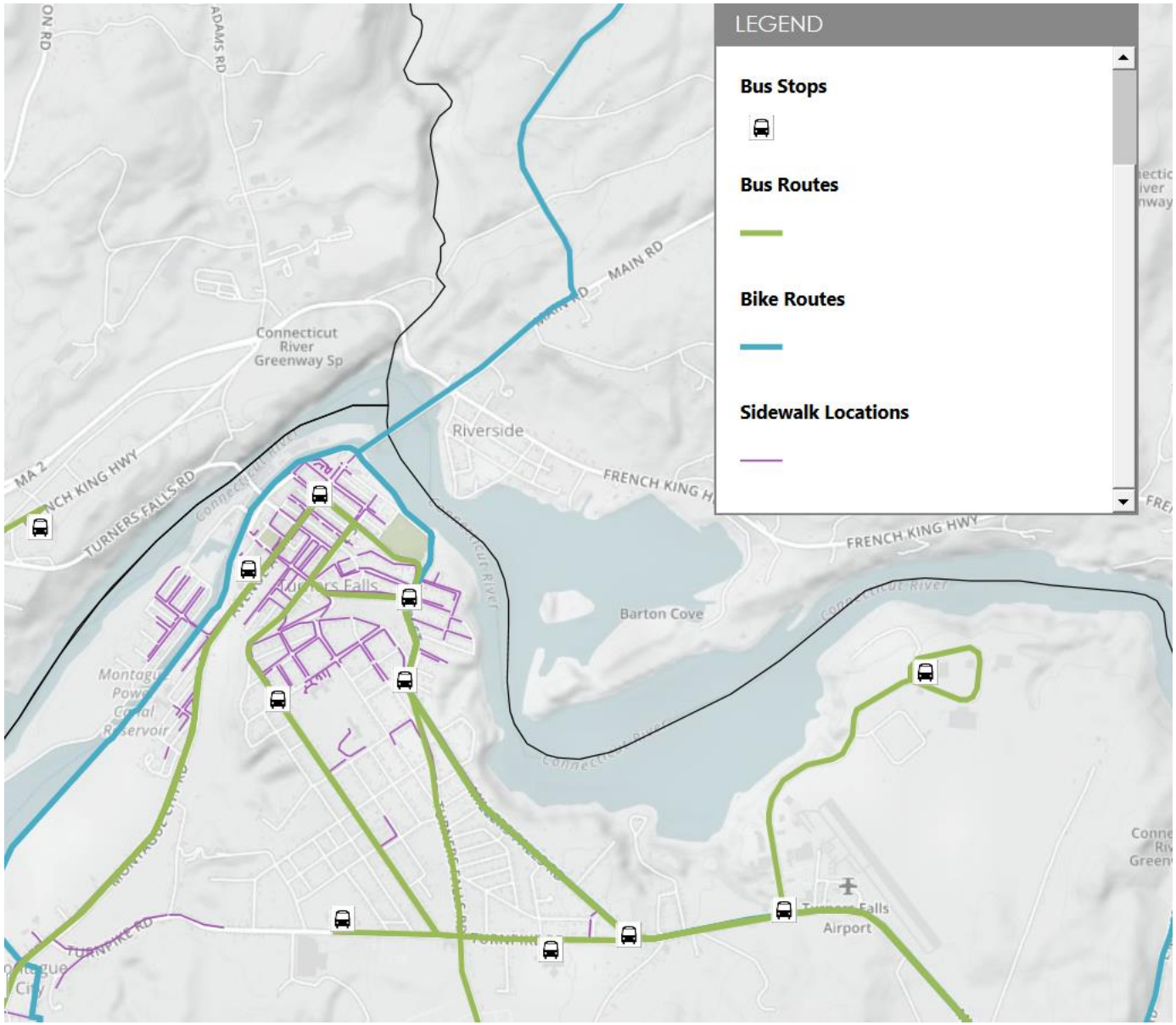
Additional GIS Analyses: Northampton Street Light Retrofit Program

- Connected spreadsheet inventory to pole locations
- Display Current Wattage
- Target LED Upgrade Locations



Additional GIS Analyses: Greenfield Transportation Inventory

- Map of all transportation infrastructure



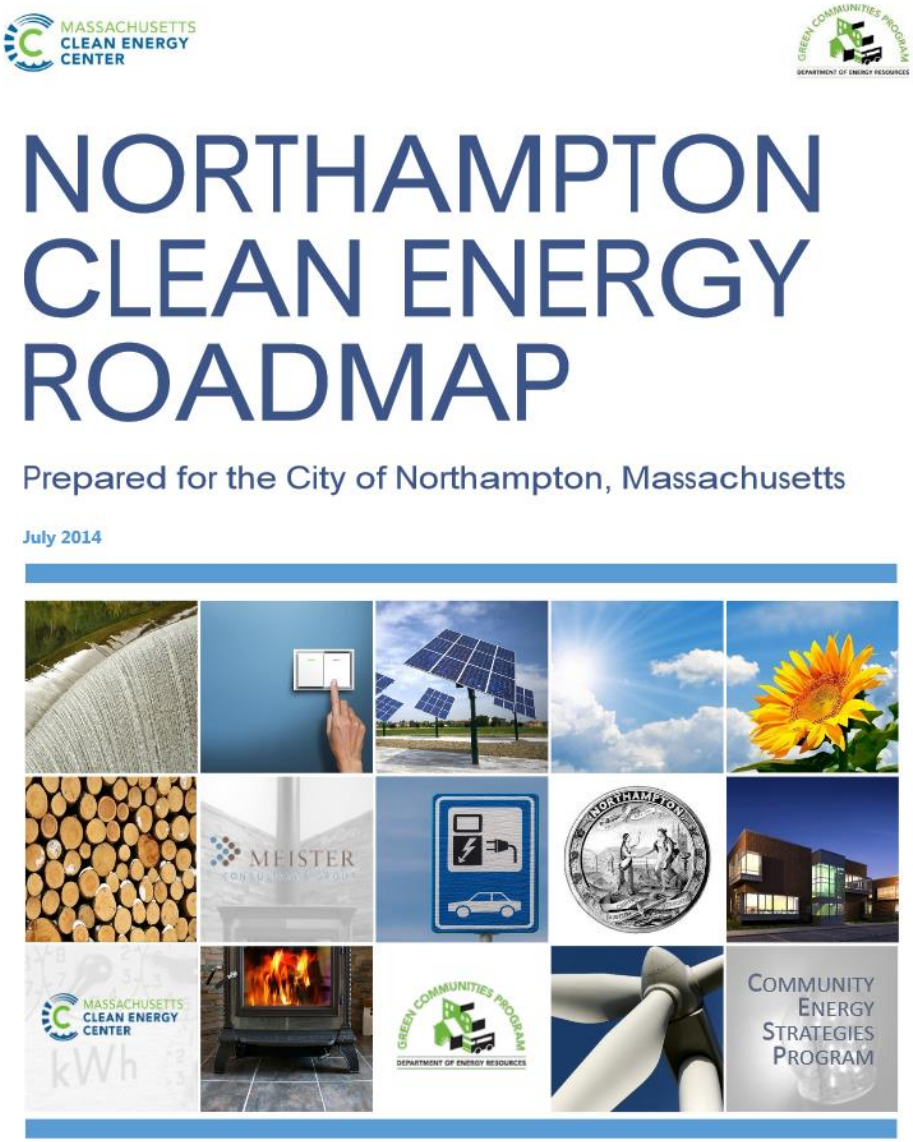
Step 3: Review Inventory and Narrow Clean Energy Goals

- Clean Energy Working Group reviews inventory
- ‘Energy 201’ public forum to narrow goals and establish priorities
- ‘Energy 201’ public forum provides education about technologies of interest
- Revise analyses, where needed

Step 4: Finalize Clean Energy Roadmap

- Final site suitability analyses compiled and presented
- Actual project options developed
- Interactive web maps of results to share with public

http://mapping.masscec.com.s3.amazonaws.com/CESP/ROADMAPS/Northampton.pdf



Community Energy Strategies Pilot Program: Step 4

Actual Project Options

- Strategies
  - Objectives
  - Description
  - Benefits & Risks
  - Financial Costs & Benefits
  - Next Steps
  - Resources

STRATEGY 1. DEVELOP COMMUNITY SOLAR PROJECT

A Northampton community solar project will allow residents that are unable to own their own solar installations to purchase locally produced solar electricity, saving them money and contributing to community renewable energy goals.

OBJECTIVES

- Coordinate the development of a community solar project for Northampton residents.
- Save participating residents money on their electricity bills.
- Reduce community greenhouse gas emissions and promote the development of large-scale solar.

BACKGROUND AND STRATEGY DESCRIPTION

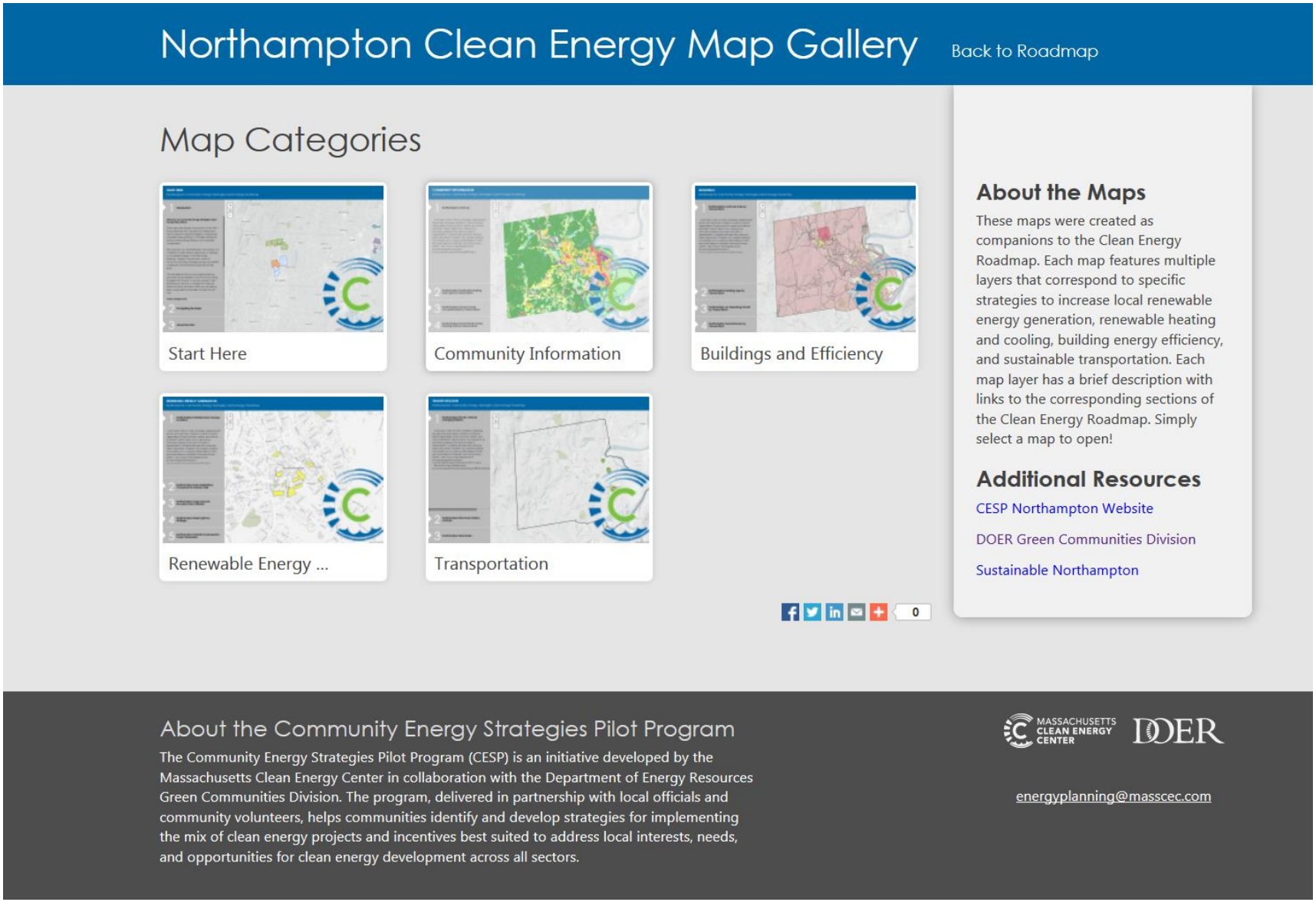
Many Northampton residents are unable to take advantage of the growing Massachusetts solar market because they either rent their residences or because their homes are unsuitable for solar. Community solar initiatives are one way to allow these residents to take advantage of low-cost solar power. Under the community solar model, a developer builds a PV system at an off-site location and participating residents agree to purchase energy from that system, typically at a discount compared to electricity from traditional electricity sources. There are a range of business models, such as direct ownership by local investors or development and financing by a third-party entity. Current Massachusetts net metering regulations are some of the most favorable in the nation for community solar projects and several municipalities have already established programs with the support of private developers.

As part of this strategy, Northampton staff will work with local volunteers to develop a community solar program, which will:

- Evaluate potential community solar ownership models.
- Identify potential city-owned or privately-owned sites within Northampton to support a community solar installation.
- Recruit potential community solar program participants.
- Assist with the procurement of a community solar program vendor.

With prices for solar installations at all-time lows and new state incentive programs that will favor community solar installations, a coordinated effort to develop a community solar initiative could significantly benefit the Northampton community.

Step 4: Finalize Clean Energy Roadmap



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Community Energy Strategies Pilot Program: Strategy Implementation

Initial Funding for Strategy Implementation

Grantee	Strategy	Funding Request	Recommended
Franklin Regional Council of Governments (FRCOG)	Energy Conservation Marketing Campaign	$30,000	Yes
Metropolitan Area Planning Council (MAPC)	School Behavior-Based Energy Use Reduction Program	$29,995	Yes
Newburyport	Solar Canopies Feasibility Study	$25,000	Yes
Northampton	• Community Energy Efficiency Mobilization Strategy • Feasibility Analysis of PV on City-owned Parking Lots and Emergency Facilities	$25,000	Yes
Pioneer Valley Planning Commission (PVPC)	• Renewable Thermal Energy Community Marketing and Group Purchase Discount Campaign • Regional Bike Sharing Program	$30,000	Yes
Watertown	Municipal Rooftop and Solar Canopies Feasibility Study	$25,000	Yes

Ideas for Extending to Vermont

- Community focus
- Opportunities for public involvement
- Develop statewide datasets for communities
- Easy to migrate existing MassCEC CESP tools to Vermont
- Tools give communities flexibility to use their own data
- RPCs have the GIS expertise to use tools
- Many existing GIS resources
  - Additional datasets may have to be developed (e.g., Building Footprints, GIS-Ready Assessor Data, GIS-Ready Statewide Property Boundaries)

Discussion and Questions

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