Distributed Generation Stakeholder Group

Governor's Energy Office

October 21, 2021

Agenda

- Welcome and logistics
- Illustrative calculation of 7% program target
- Overview of Renewable Energy Siting Tool
- Public comment and break – 2:00
- Discussion of presentations and takeaways from Oct. 14 meeting
- Energy Storage Deployment with Distributed Generation
- Adjourn – 3:30 p.m.

Background

- The Act requires this group to determine *"the optimum total amount of distributed generation for the program period [2024 through 2028] calculated using 7% of total load based on operational capacity."*

  P.L. 2021 ch. 390 §4 sub. 2(B)

- This is an illustrative example of the optimum total amount of distributed generation ("program target") utilizing previously developed and publicly available data sources and tools. It is intended solely to inform the Stakeholder Group's discussions.

Assumptions

- Maine Climate Council load growth projections
  - 15.6 TWh in 2030
- National Renewable Energy Lab's PVWatts® calculator
  - Representative DG facility
  - 4.99 MWAC, Augusta

Illustrative calculation

- 7% of total load = 1.092 TWh, or 1,092,000,000 kWh
- Representative DG facility would generate 6,935,381 kWh annually
  - Number of facilities = 1,092,000,000 kWh / 6,935,381 kWh = 158 facilities
- 158 representative facilities with 4.99 MWAC capacity would yield program target:
  - Overall program target = (158)(4.99 MWAC) = 788.42 MWAC
- Assuming 788 MWAC allocated from 2024 to 2028:
  - Annual program target = 788.42 MWAC / 5 years = 158 MWAC per year
- Mechanism to adjust target based on NEB development

Solar Siting Toolkit

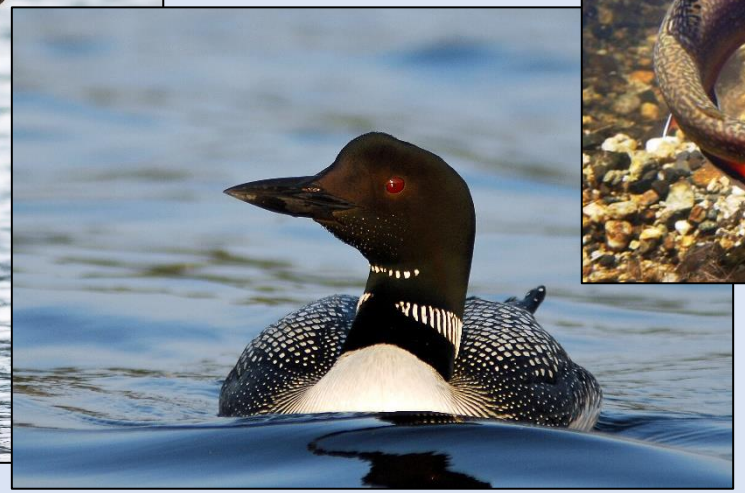
Maine Audubon

Sarah Haggerty
October 2021

Climate Change and Wildlife

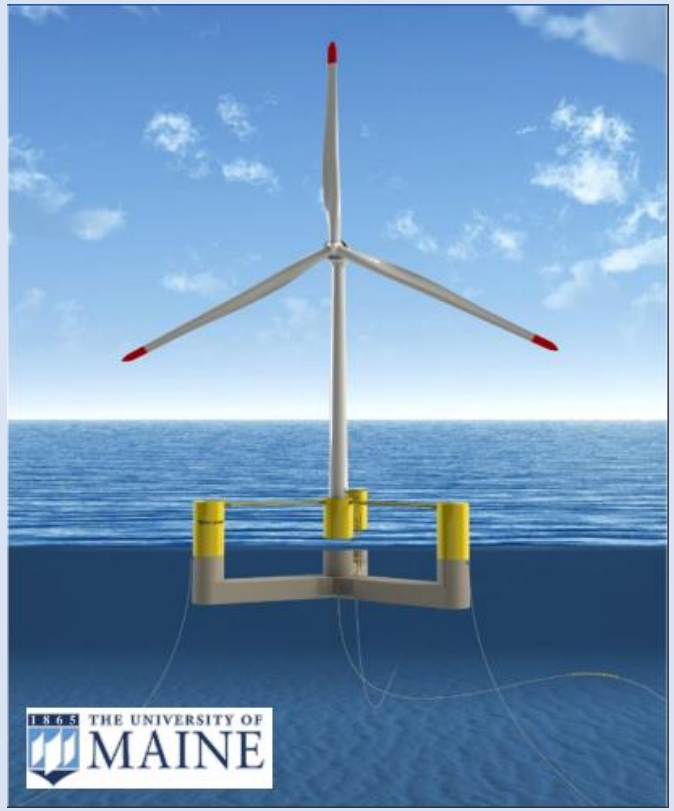
Our mission: Maine Audubon works to conserve Maine's wildlife and wildlife habitat by engaging people in education, conservation, and action.

- Iconic Maine species such as moose, loons, eastern brook trout, and Atlantic puffins are experiencing multiple threats as a result of climate change, which puts their populations in Maine at risk.



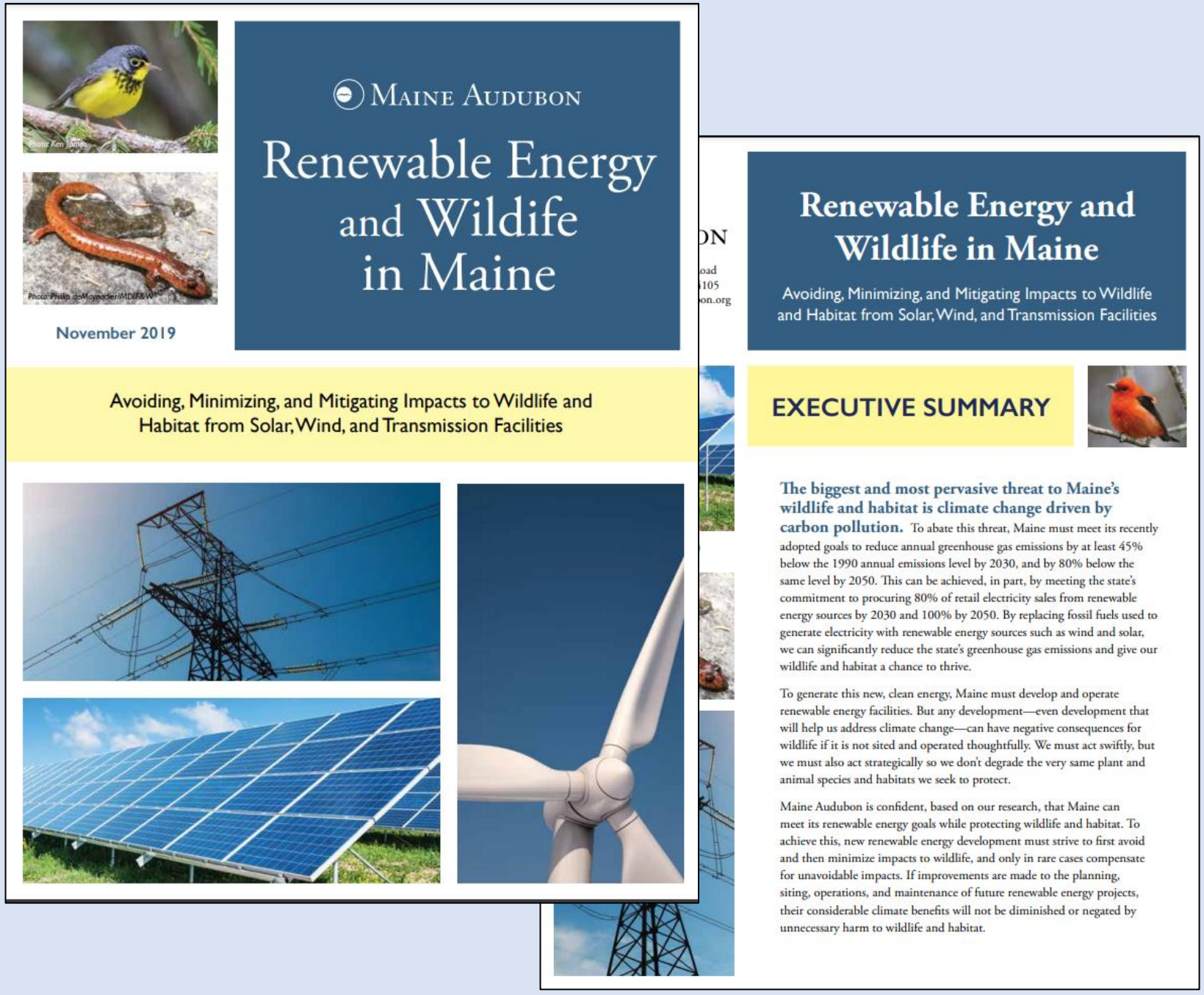
Climate Change and Wildlife

Maine Audubon supports policies that transition Maine to a clean energy economy. Advancements in solar, wind, and other renewable energy technologies mean that achieving 100% renewable energy in Maine by 2050.



MAINE AUDUBON

- In 2019 Maine Audubon published a report looking at the intersection of renewable energy and wildlife and habitats
- Scientific literature review
- Focused on solar, terrestrial and offshore wind, and transmission
- Reviewed existing state policies in New England



Maine Audubon's Solar Energy Toolkit

BEST PRACTICES
for Low Impact Solar Siting, Design, and Maintenance
Avoiding and Minimizing Impacts to Natural and Agricultural Resources

Increasing renewable energy production in Maine is critical to mitigating the impacts of climate change on Maine's natural resources and agricultural and natural resource based economies. Solar projects that follow these low-impact best practices will help Maine people, businesses, and communities realize solar's climate and economic benefits, while avoiding or significantly reducing undue impacts to wildlife, farming, and critical natural resources such as clean water.

The purpose of this document, authored by Maine-based environmental and agricultural nonprofit organizations, is to advise solar developers, municipalities, and the public about ways to avoid or minimize development conflicts. It is not meant to supercede required federal, state and municipal permitting; likewise, we recommend using these best practices regardless of permit requirements. It is also important to note that solar development is subject to other considerations, including interconnection, project economics, and other siting constraints.

FEBRUARY 2020

Model Site Plan Regulations and Conditional Use Permits to Support Solar Energy Systems in Maine Municipalities

ıment describes and models two land-use tools Maine municipalities
o permit small-, medium-, and large-scale solar energy systems,
both ground-mounted and roof-mounted solar installations. The
f this document is to assist Maine municipalities in supporting
ent of solar energy systems in ways that address the needs of their
ity. Communities will need to carefully consider how model language
odified to suit local conditions and where it should be inserted into
g zoning ordinance, if applicable. Further, it is highly recommended
anguage adapted from these models be reviewed by municipal
rior to adoption.

FAQ

SOLAR IN MAINE
Frequently Asked Questions
for Siting and Hosting Solar Projects at the Municipal Level

Today, Maine is on the cusp of a new era of solar power development. With the passage of a suite of new statewide laws in 2019, Mainers are beginning to experience what other states have been experiencing: a swelling opportunity for more solar installations, more solar jobs, and more solar customers including large customers like municipalities—that are using solar to lower energy costs. That opportunity brings questions about what solar means for Maine cities, towns and people.

This document was created to provide answers to common questions about solar development that have been raised by municipal officials, landowners, and others considering larger solar projects for their own use or in their communities.

The questions and answers are organized under three general themes:

- General background on solar energy projects in Maine
- Physical features of solar development
- Considerations for municipalities, landowners, and neighbors

A companion document from Maine-based conservation organizations provides guidance to developers on how to responsibly site solar projects in Maine. If you have follow-up questions, there is contact information at the end of this document.

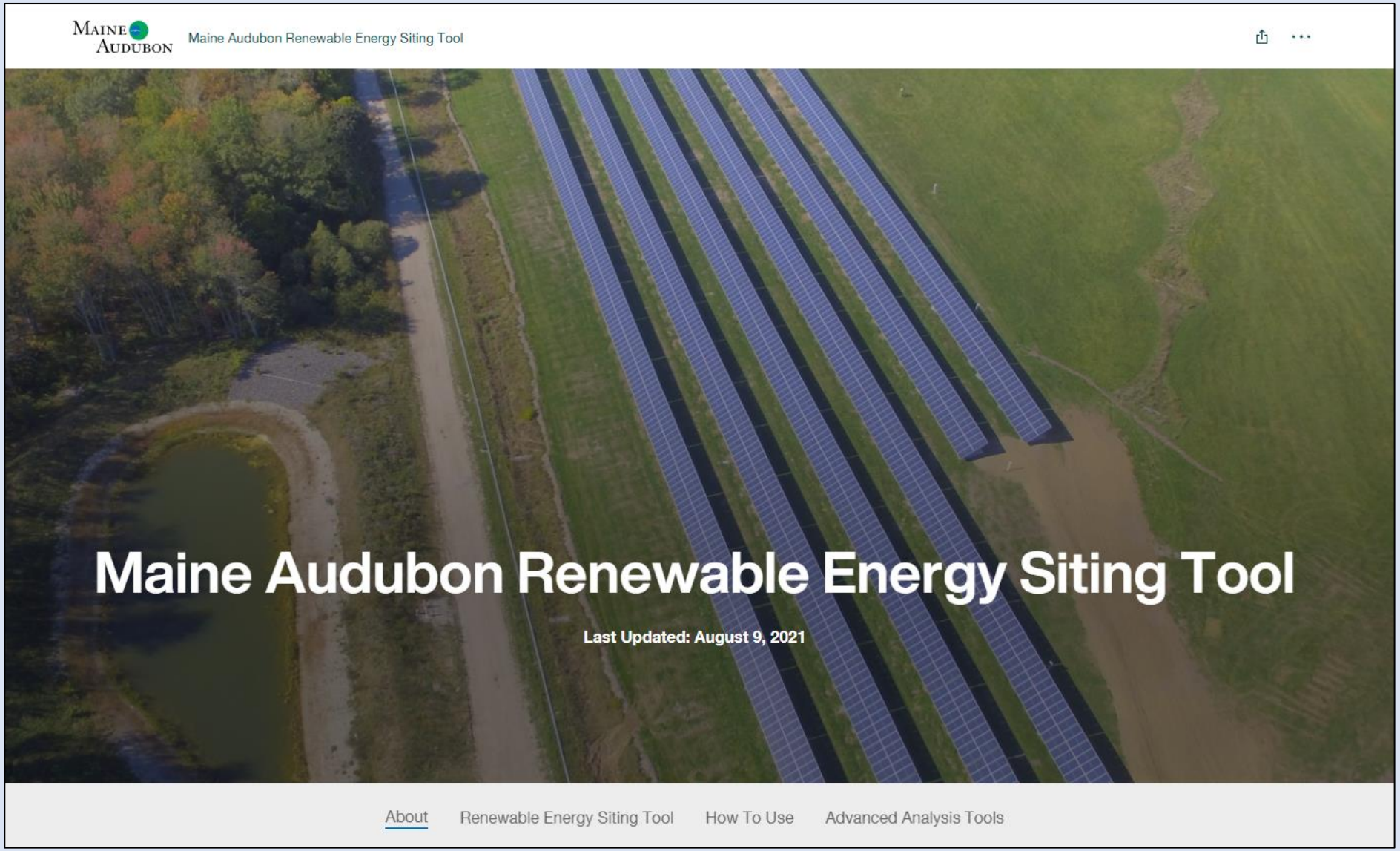
Coming Soon!

- Planting Guide for Solar Sites
- Profiles of wildlife-friendly solar projects
- Guide to Community Solar

maineaudubon.org/solar

Maine Renewable Energy Siting Tool

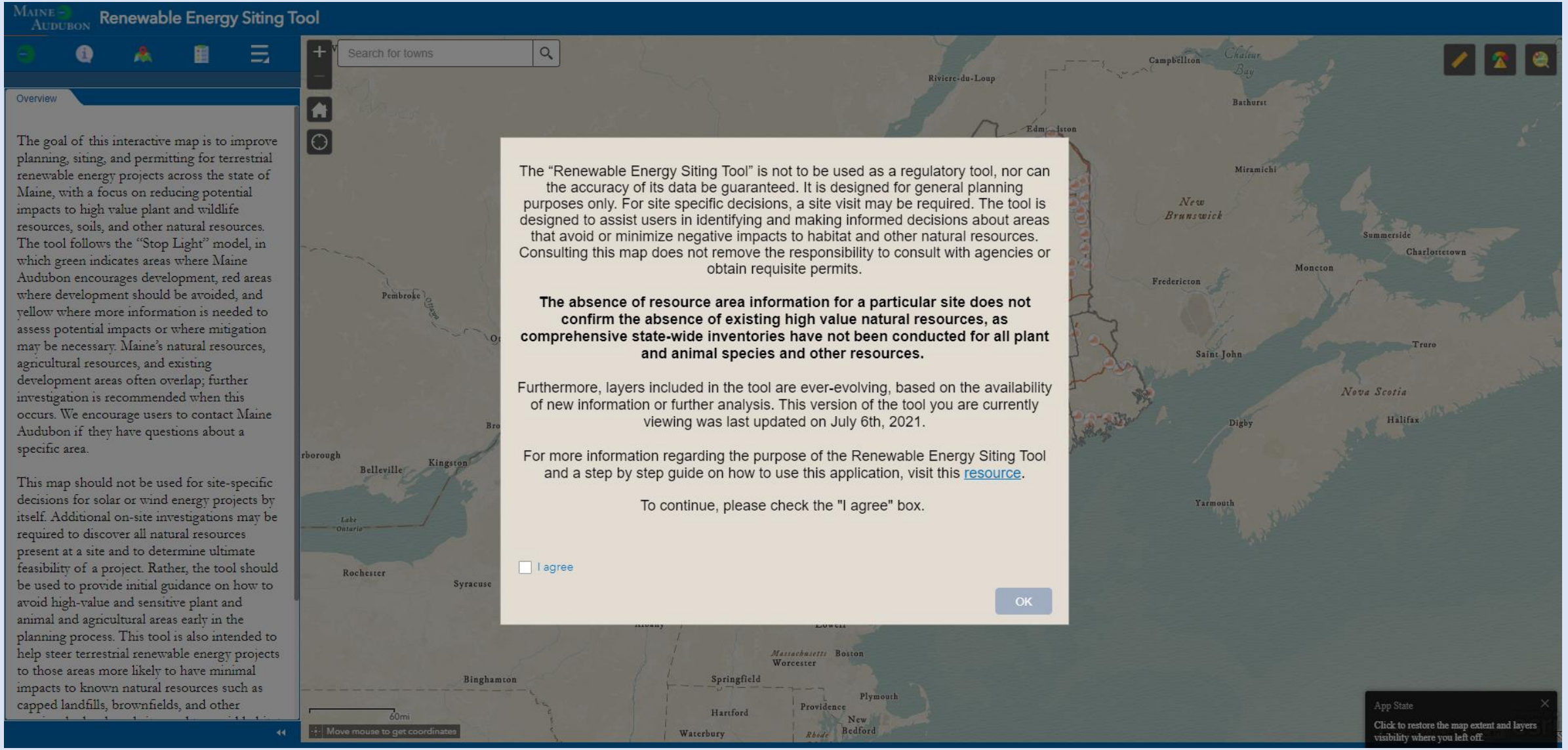
maineaudubon.org/solar



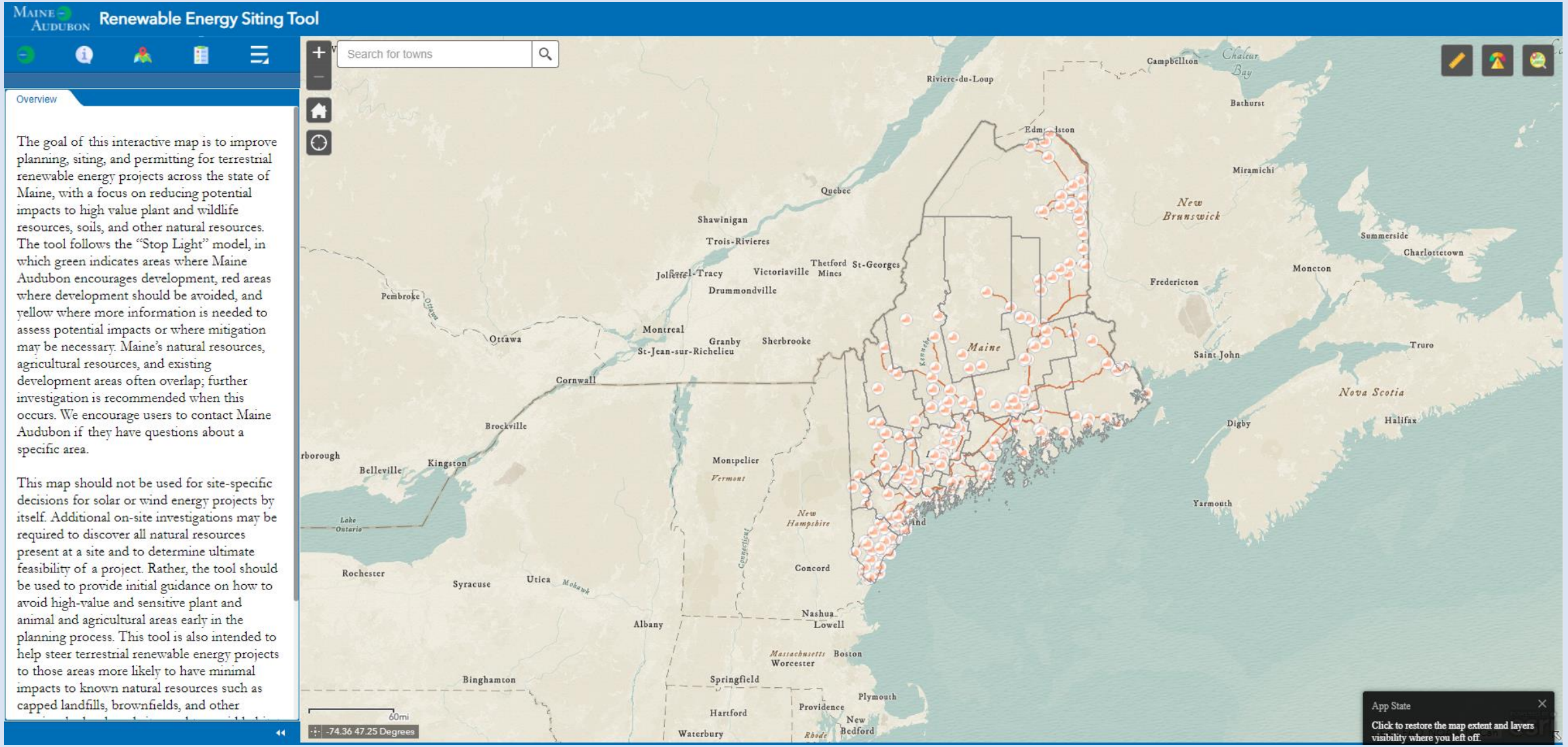
Story Map

- About the tool
- Step-by-step instructions
- Walk-through of Analysis Tools

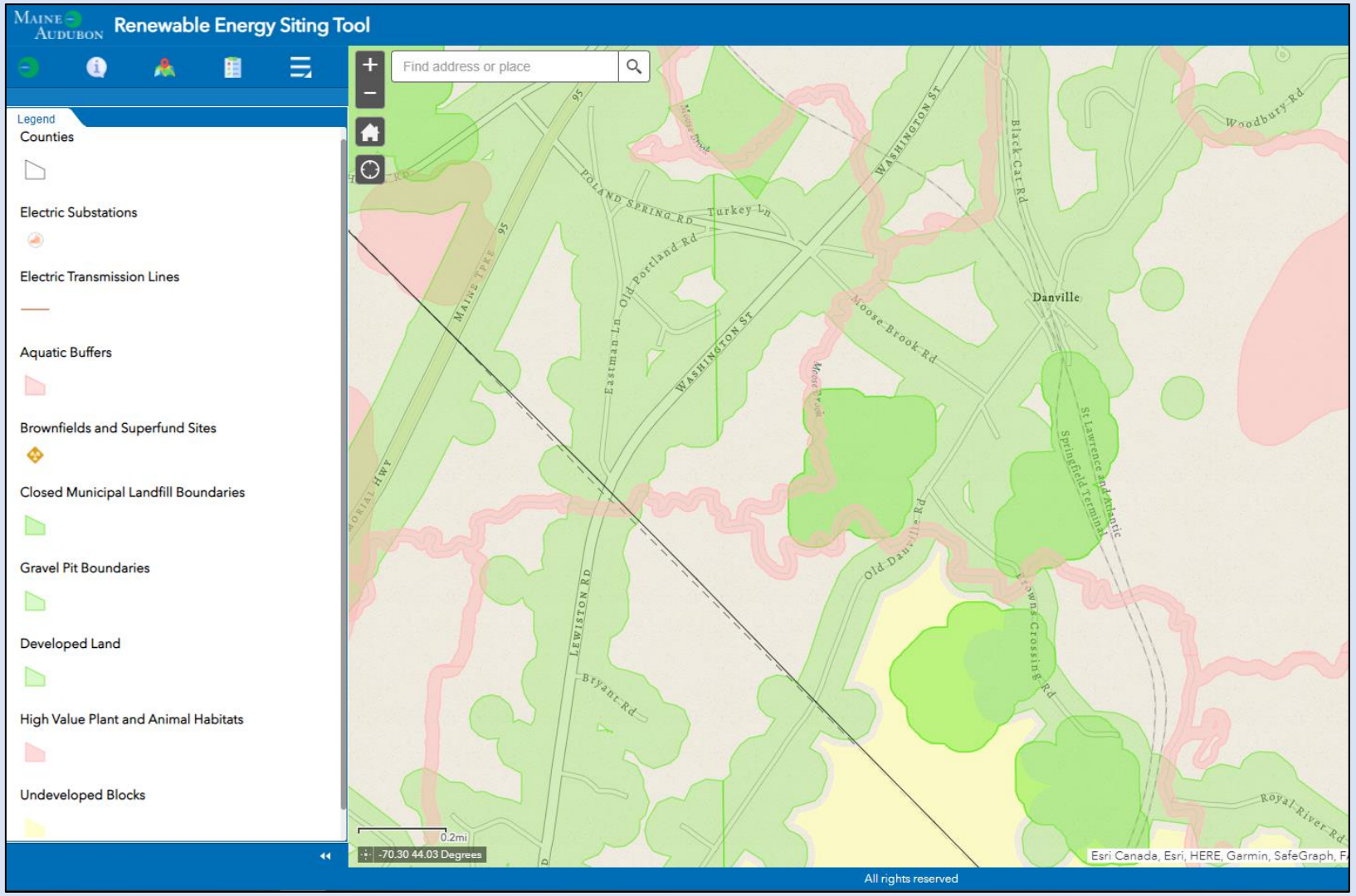
Maine Renewable Energy Siting Tool



Maine Renewable Energy Siting Tool



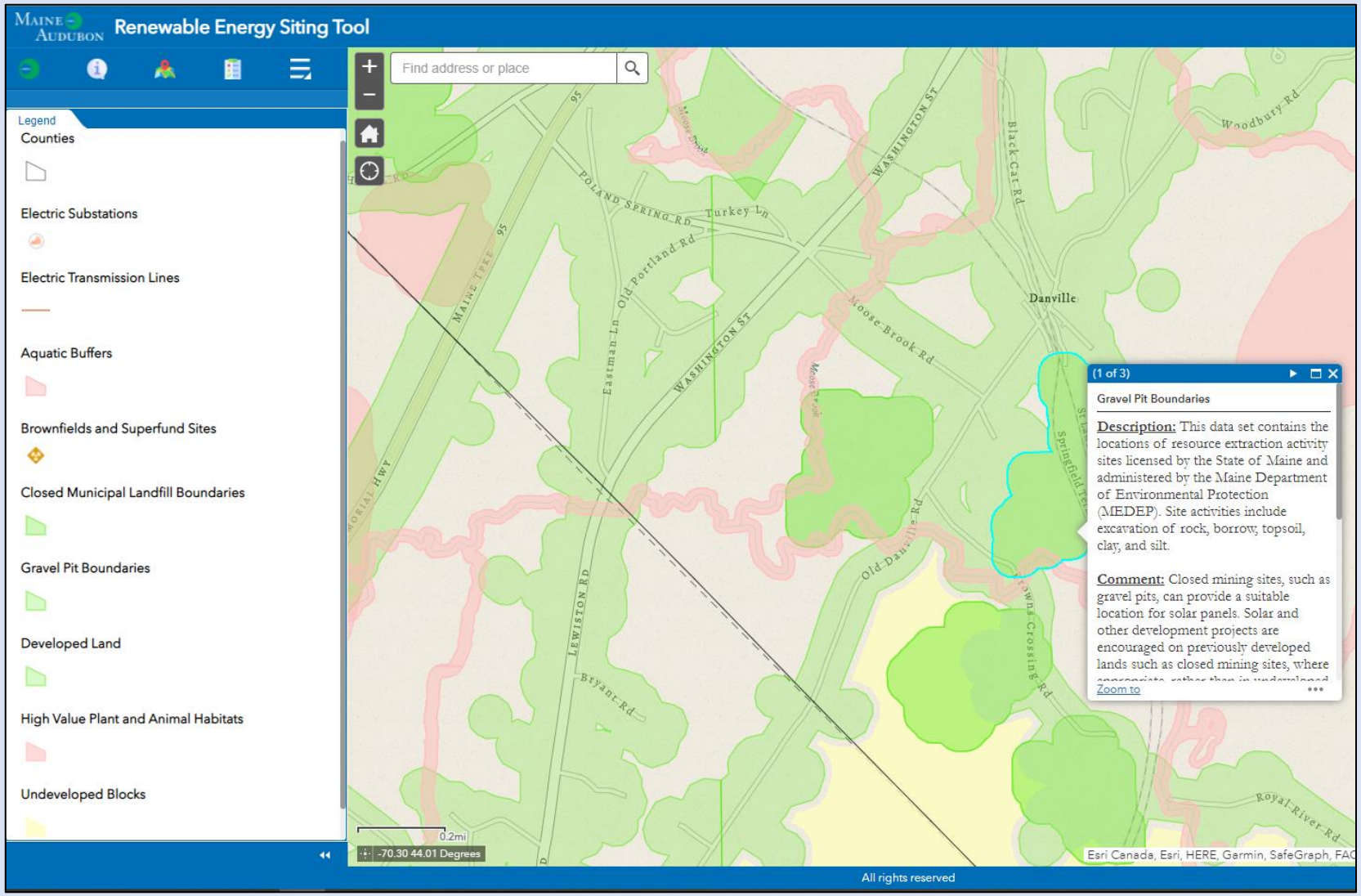
Maine Renewable Energy Siting Tool



Uses "Stop light" approach – red, yellow, green guidance

- "Green" areas – primarily developed areas (gravel pits, landfills, etc.) – solar development is okay
- "Yellow" areas – sites where more information or mitigation may be needed
- "Red" areas – sites to be avoided
- **There may be overlap**

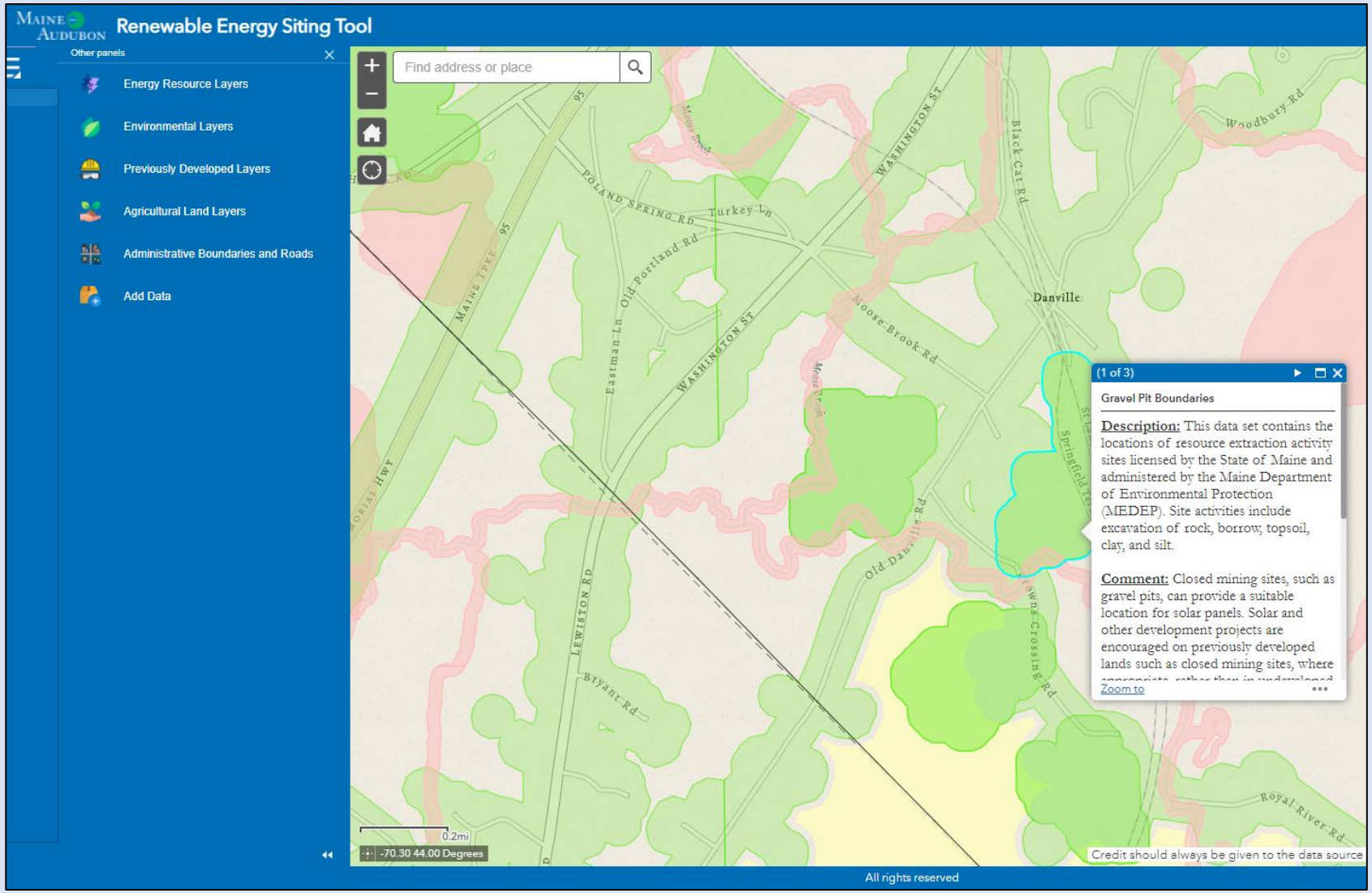
Maine Renewable Energy Siting Tool



Pop-ups provide additional information

- Description – describes what data are included
- Comment – provides guidance on use or avoidance and why
- Data Source – provides a link to the data source where available

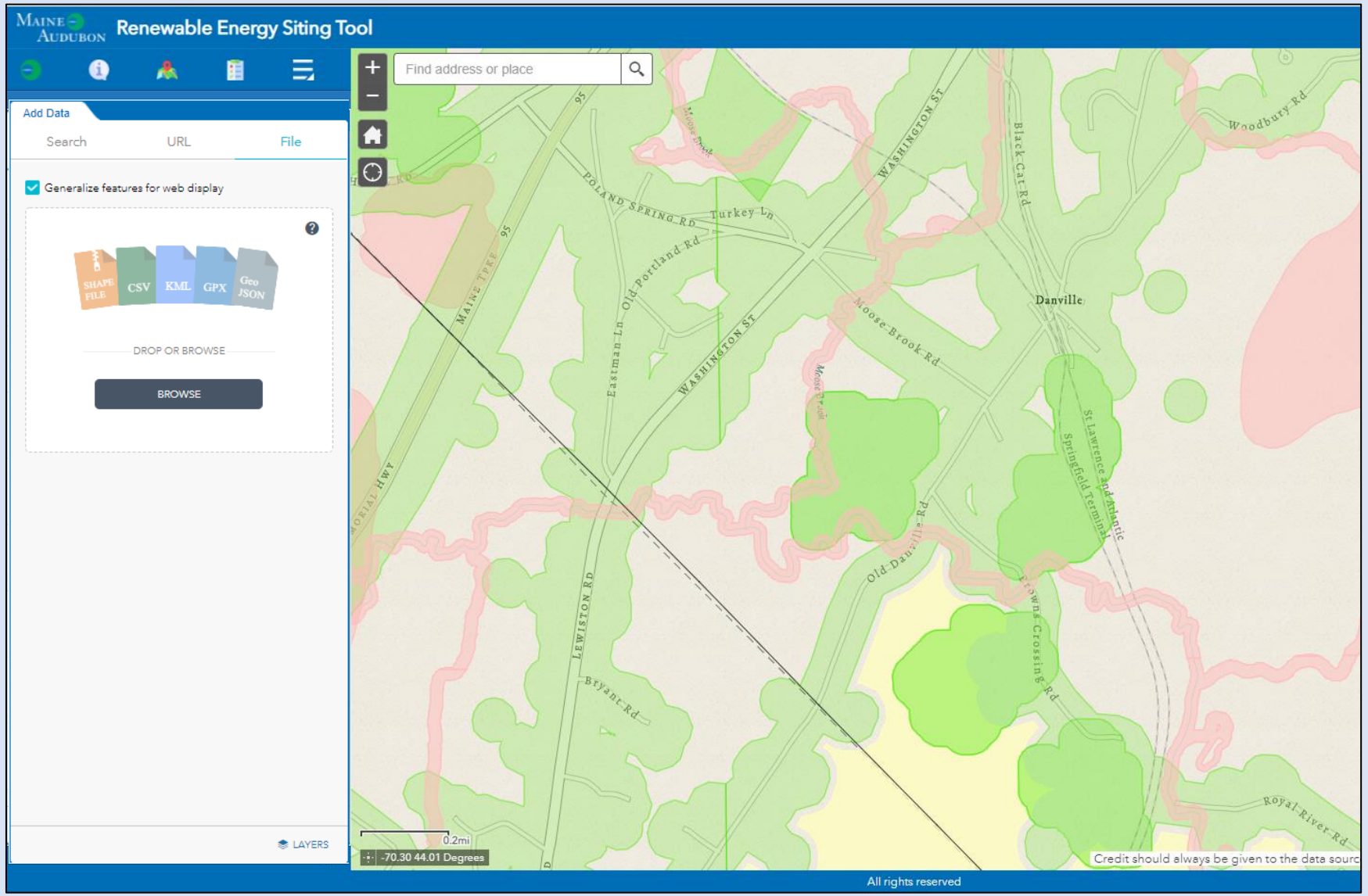
Maine Renewable Energy Siting Tool



Datasets grouped by type

- *Energy Resource Layers*
- *Environmental Layers*
- *Previously Developed Layers*
- *Agricultural Land Layers*
- *Administrative Boundaries and Roads*

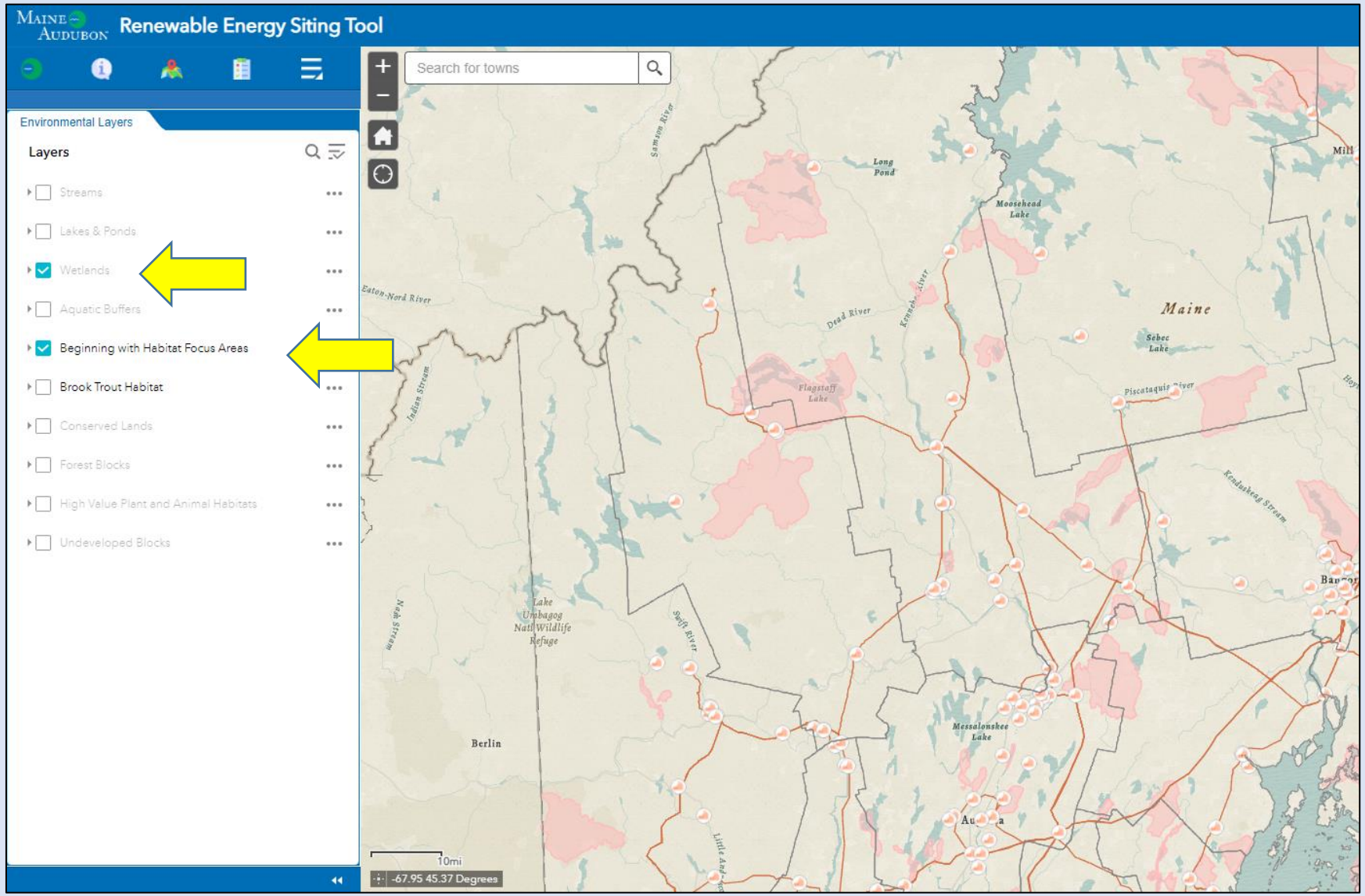
Maine Renewable Energy Siting Tool



Add additional data

- From ArcGIS online
- From a web service
- From your own files

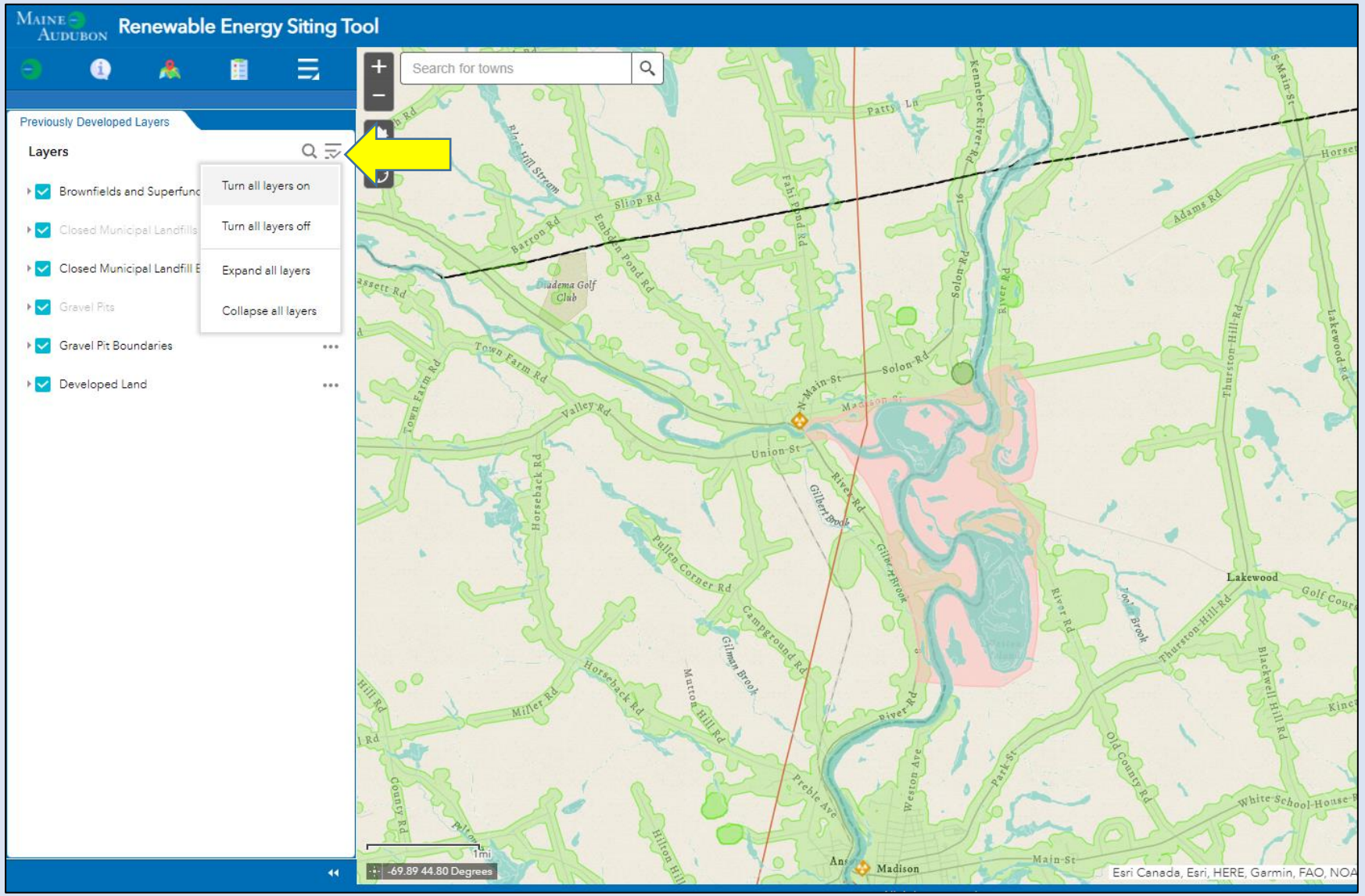
Maine Renewable Energy Siting Tool



Datalayer Visibility

- Must be turned on (check mark in box)
- Must be within present visible range (not “grayed out”)

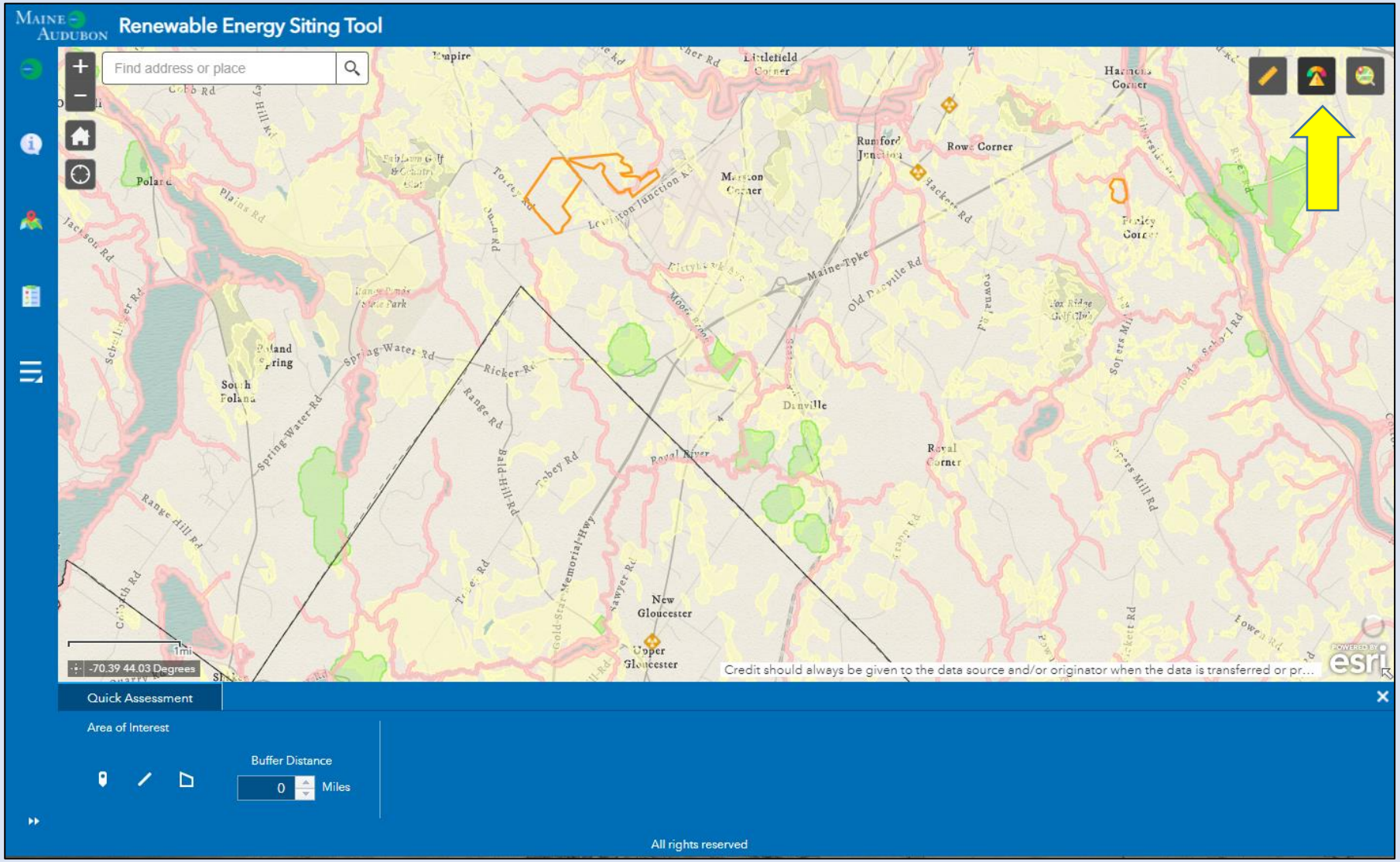
Maine Renewable Energy Siting Tool



Datalayer Visibility

- Turn all layers “on” or “off” with one click
- Only for features in that grouping

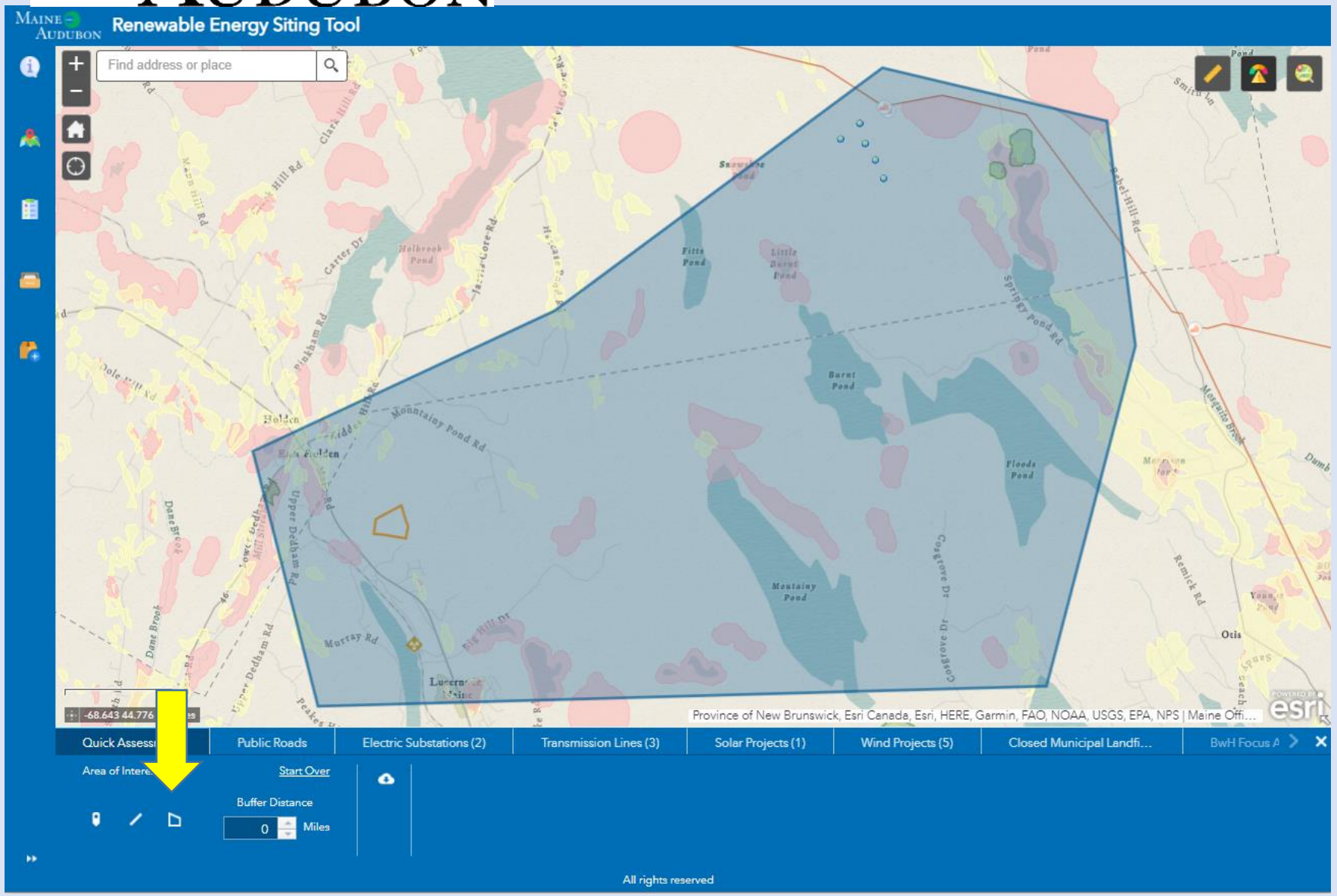
Maine Renewable Energy Siting Tool



Quick Assessment Screening Tool

Allows user to evaluate pre-defined resources in a particular area

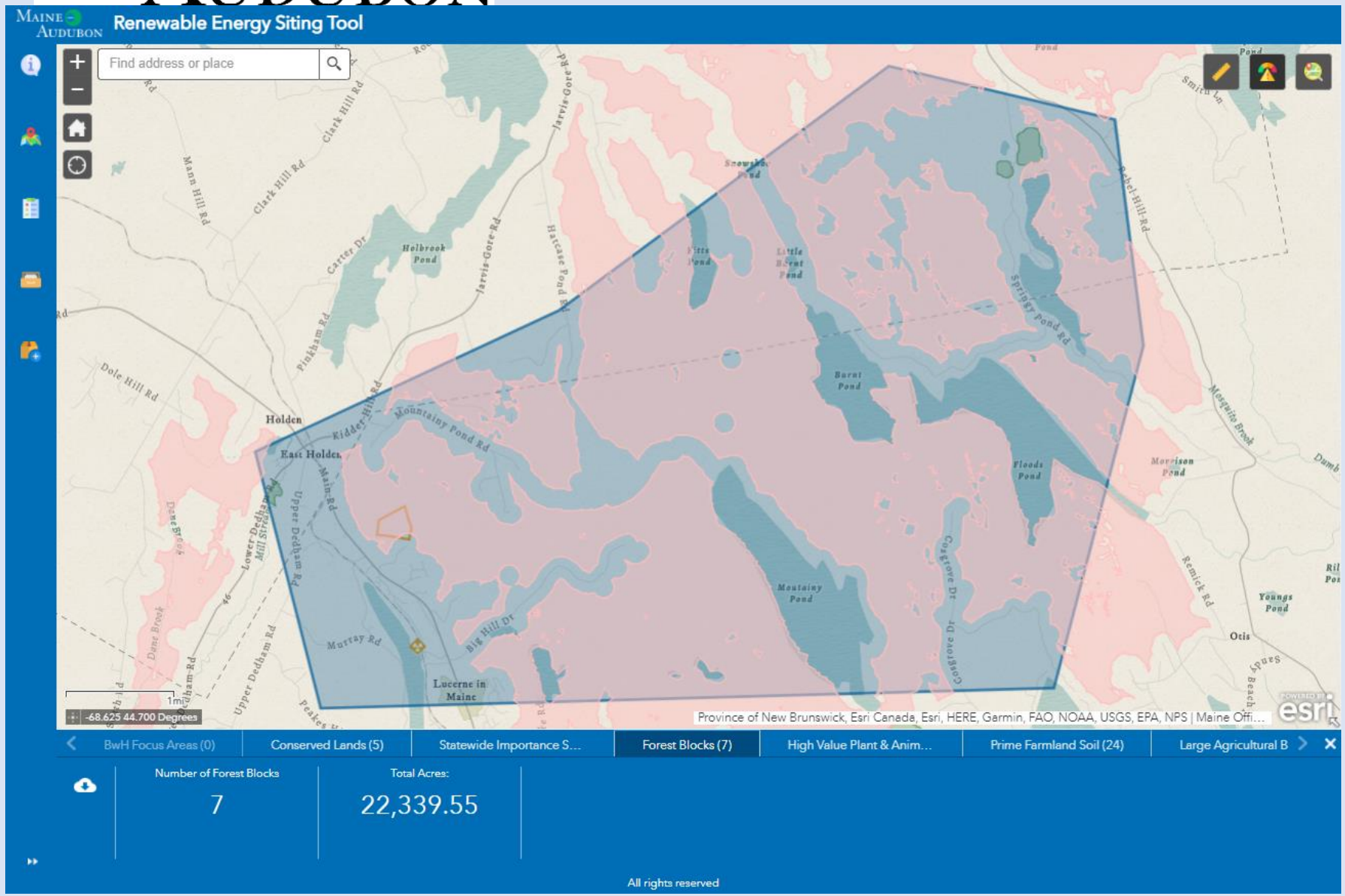
Maine Renewable Energy Siting Tool



Quick Assessment Screening Tool

- Allows user to evaluate pre-set resources in a user-defined area (drawn polygon, downloaded shape, or buffered point)
- Useful for assessing resources in a particular area

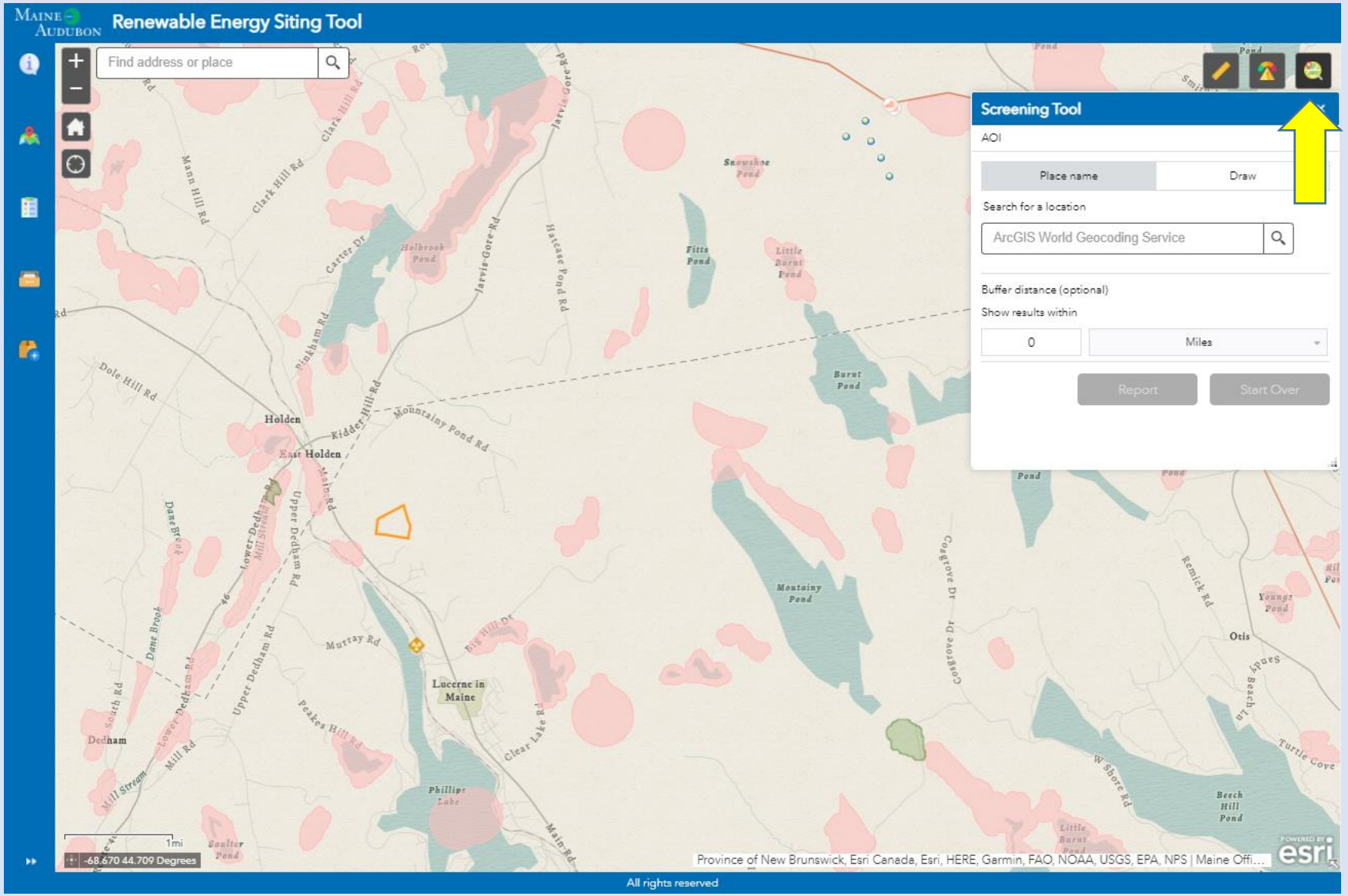
Maine Renewable Energy Siting Tool



Quick Assessment Screening Tool

- Not necessary for datalayers to be turned “on” for tool to work
- Highlights datalayer in question as you click each results tab
- Results include tallies or sums of data intersected (not clipped) by the shape being analyzed

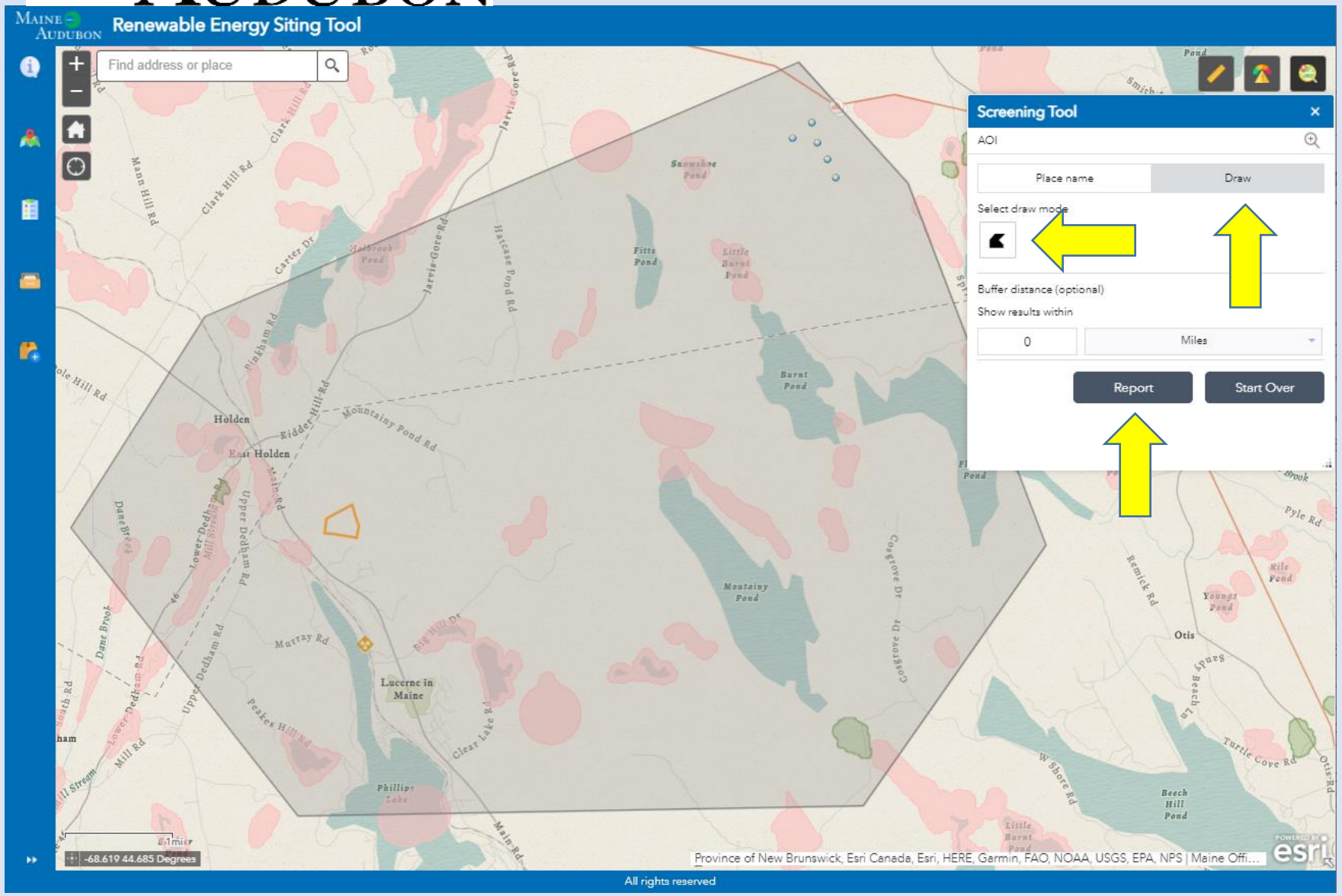
Maine Renewable Energy Siting Tool



Report Screening Tool

Allows user to evaluate all “on” resources in a particular area

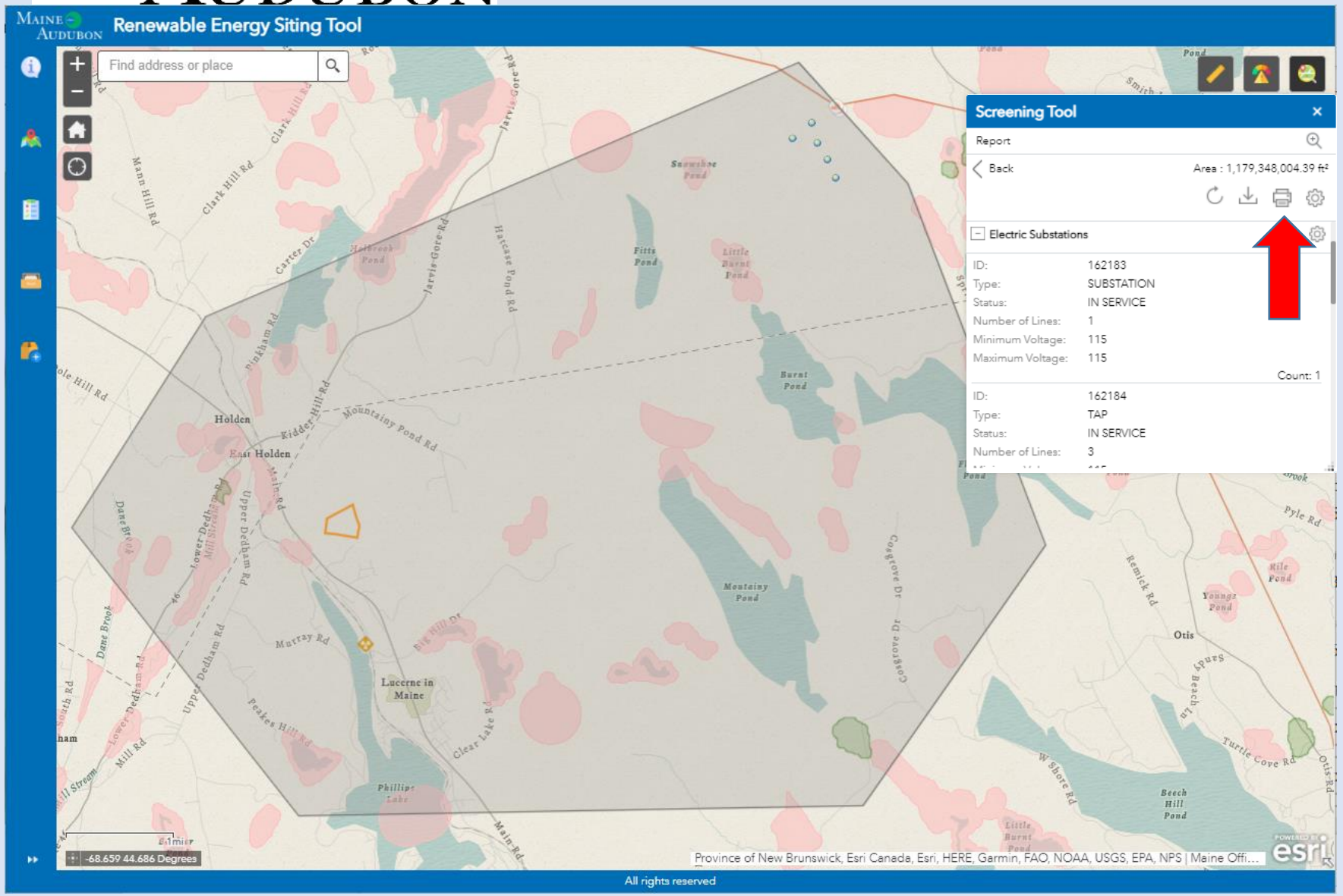
Maine Renewable Energy Siting Tool



Report Screening Tool

- Allows user to evaluate resources that are “turned on” and that fall within a user-defined area
- Provides report that can be printed out

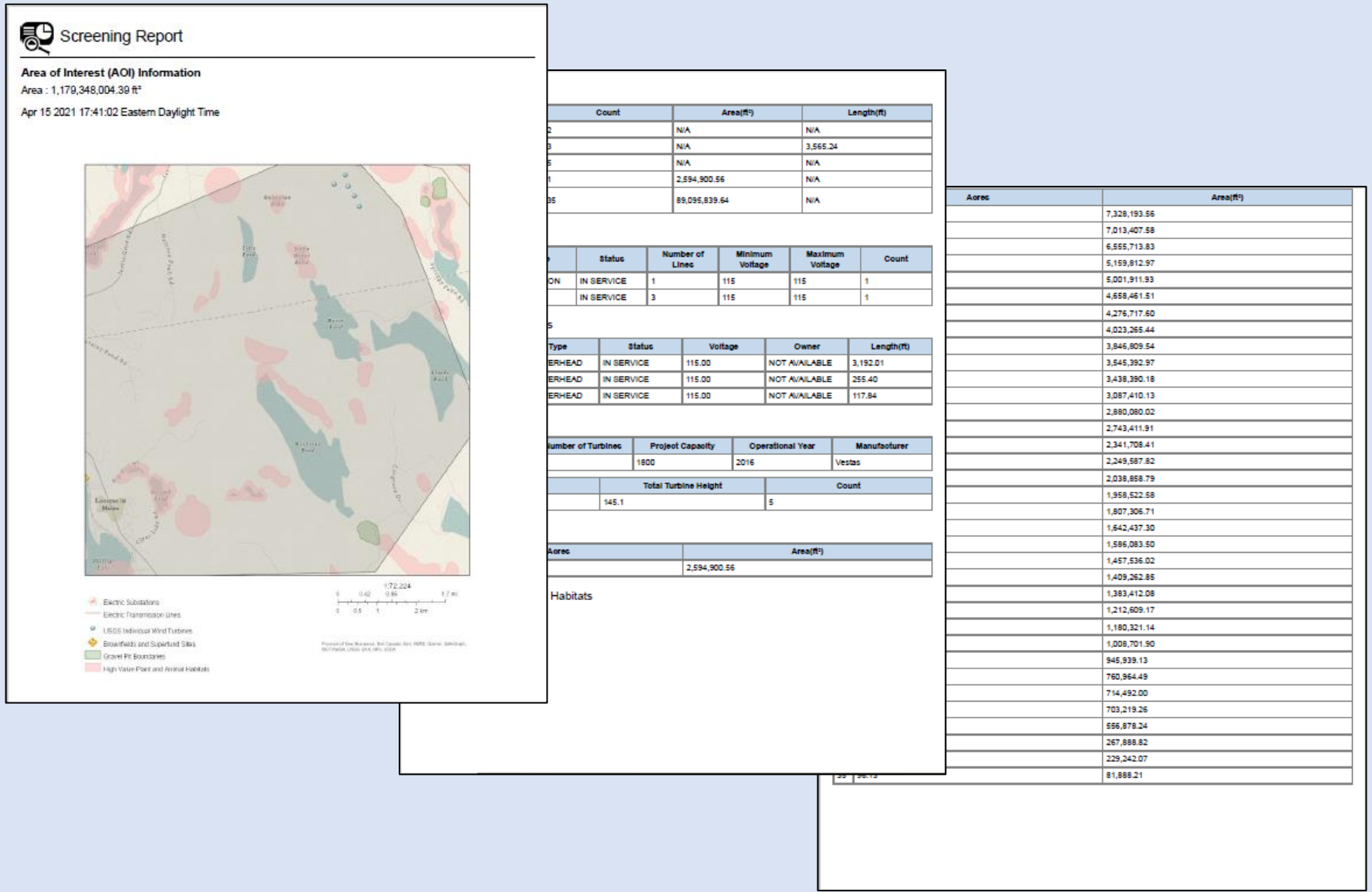
Maine Renewable Energy Siting Tool



Report Screening Tool

- Screen shows which layers have results and which don't (!). Only layers "turned on" and visible will have results.
- Similar to Assessment Tool, it tallies layers with results which can be expanded to review

Maine Renewable Energy Siting Tool



Report Screening Tool

Printout of report includes inset map and tables of attributes and calculations where applicable

Remember! This tool only analyzes the layers you have “turned on” and visible!

Maine Renewable Energy Siting Tool

Things to Remember:

- This is for planning purposes only! This is not a regulatory map and it does not include all resources that exist.
- These data are from a variety of sources that are being updated all the time.
- We have utilized datasets that are the most applicable in the real world and that are consistent with other tools.
- Some datalayers will not draw until you are zoomed in to a preset extent. This is to maintain site stability.

Sarah Haggerty
shaggerty@maineaudubon.org
(207) 781-2330 x225

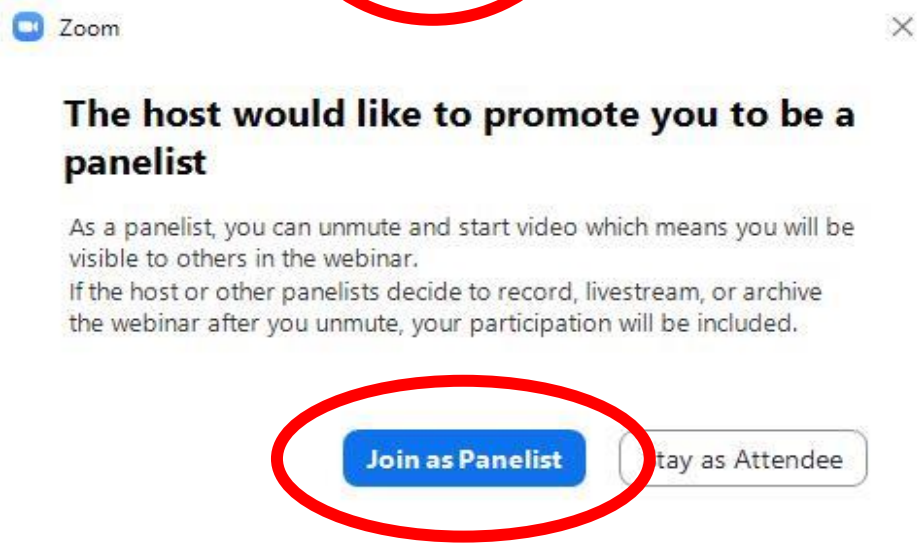
QUESTIONS?

All this information can be accessed through
maineaudubon.org/solar

Public comment – how to participate

1

2



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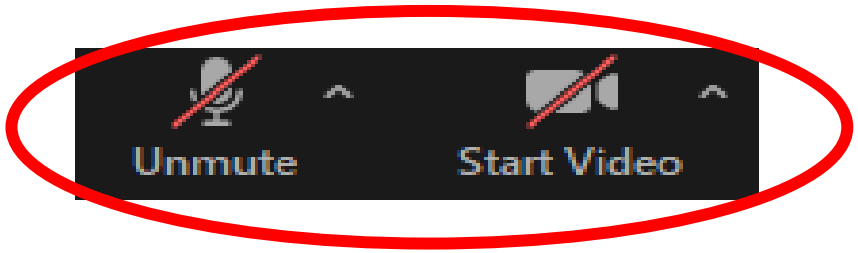


What are your reactions to the interim report scope?

What are your priorities for the future of distributed generation?

How can the stakeholder group make sure it hears a broad range of perspectives?

Discussion of Oct. 14 presentations

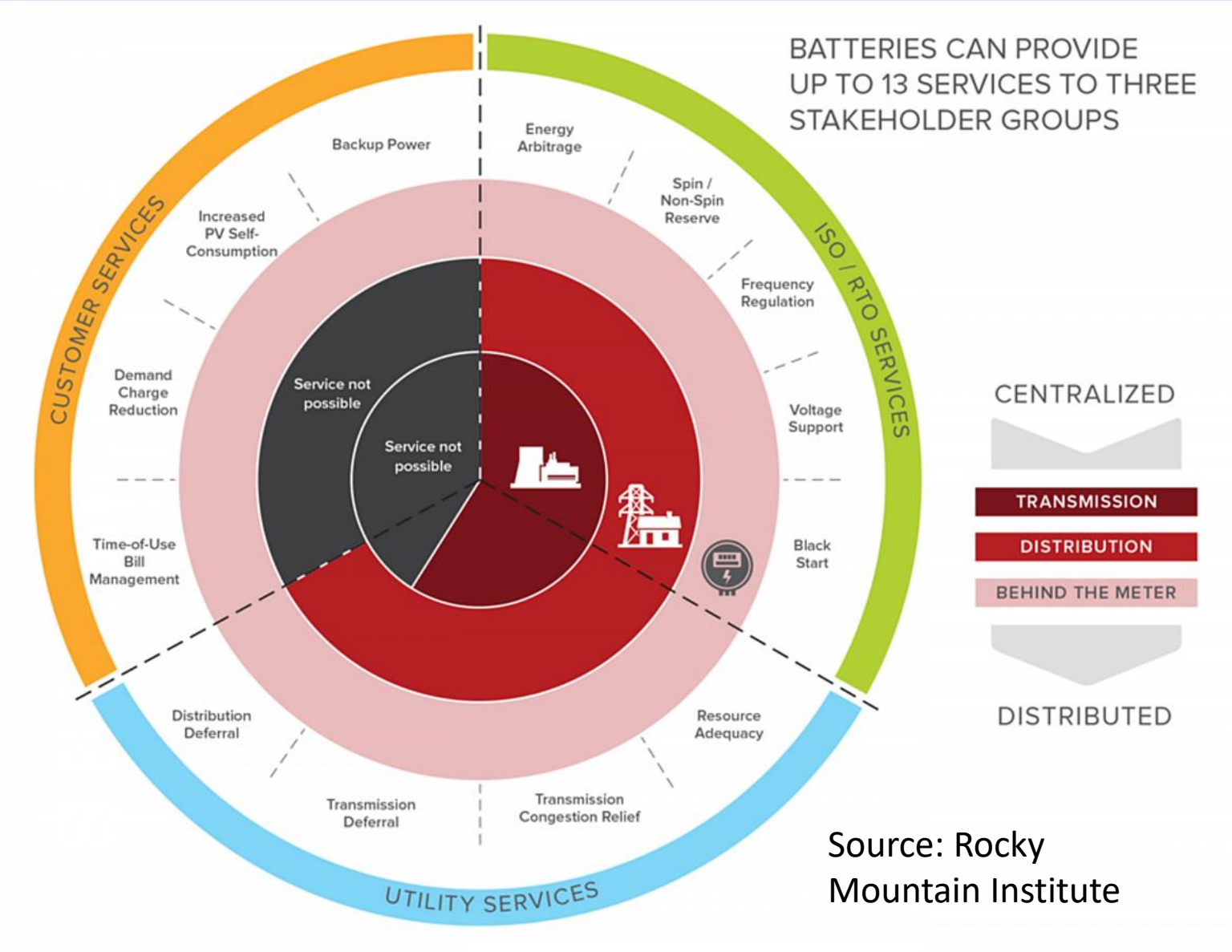
- What themes or lessons did you find most impactful from the October 14 presentations?
- What surprised you or shifted your perspective?
- As we think about a framework for a successor program, what priorities would you elevate?
- What straw-man recommendations based on the October 14 presentations might you bring forward for the initial report?

Adding Energy Storage to Distributed Generation Incentive Programs

Maine DG Stakeholder Group
October 21, 2021

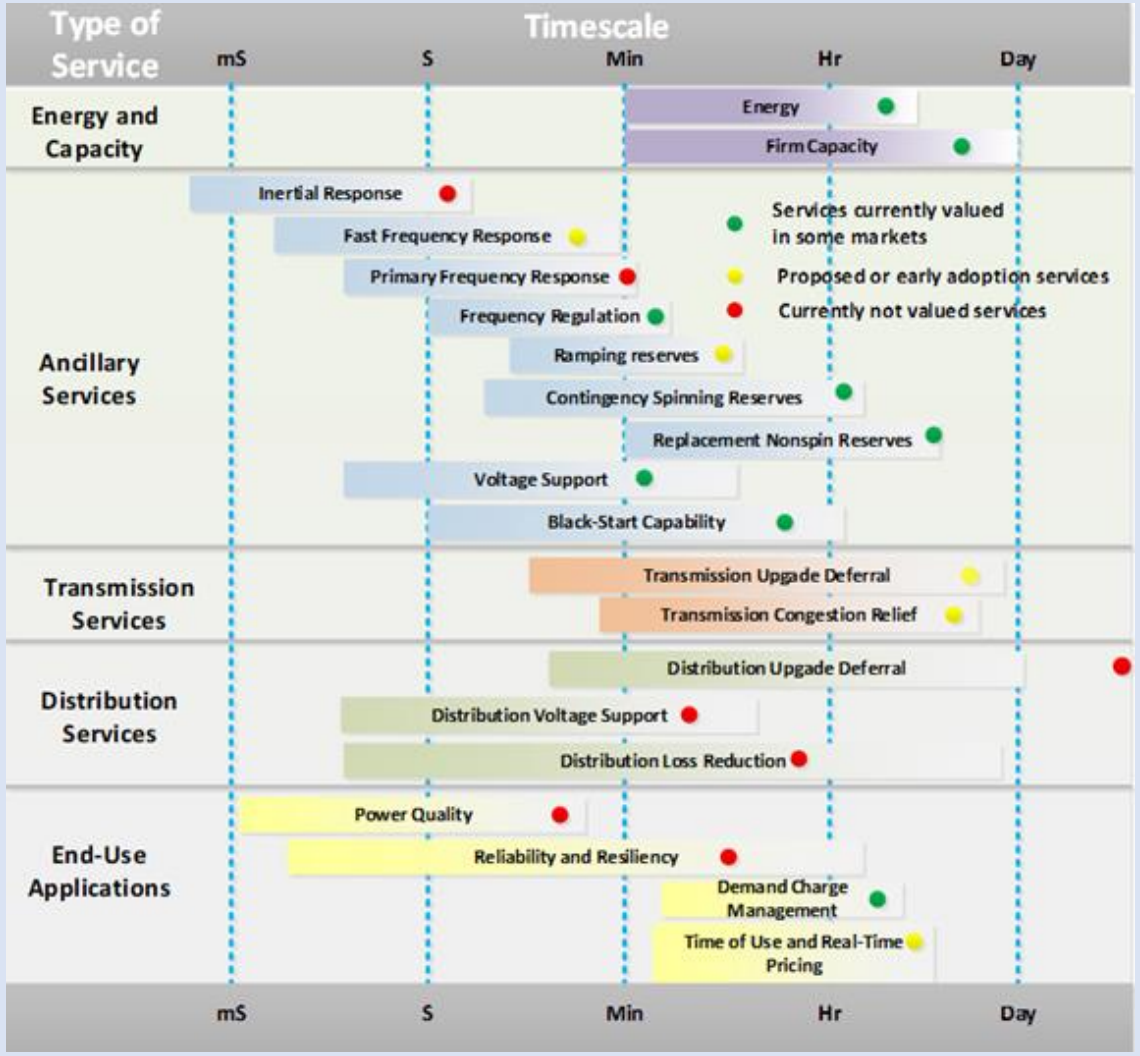
Todd Olinsky-Paul
Senior Project Director
Clean Energy Group/Clean Energy States Alliance

Storage is a multi-use resource! (unlike solar…)



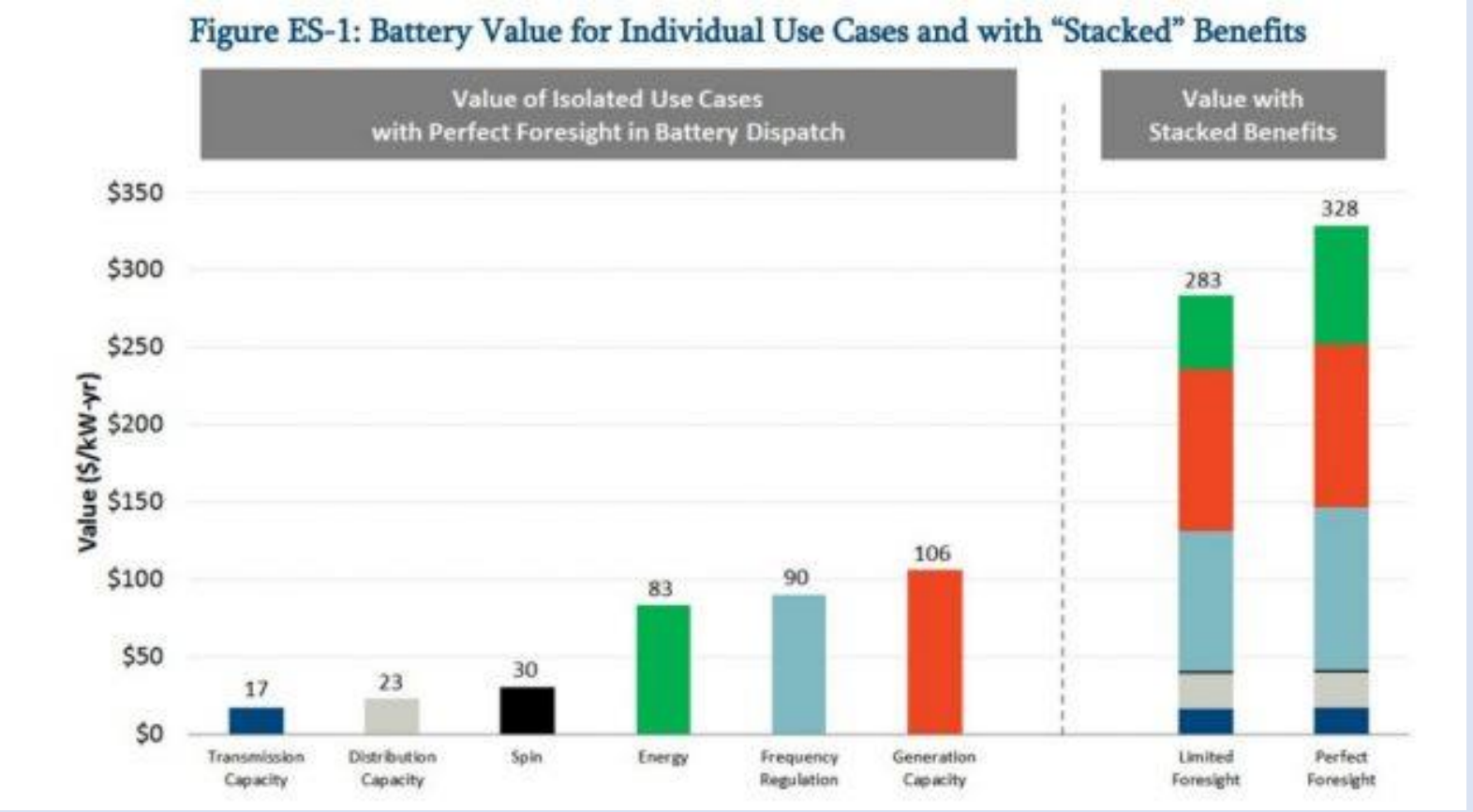
Source: Rocky Mountain Institute

A single energy storage resource may be able to provide many different services… but not all at the same time.



Energy storage operations are determined by the *value stack.*

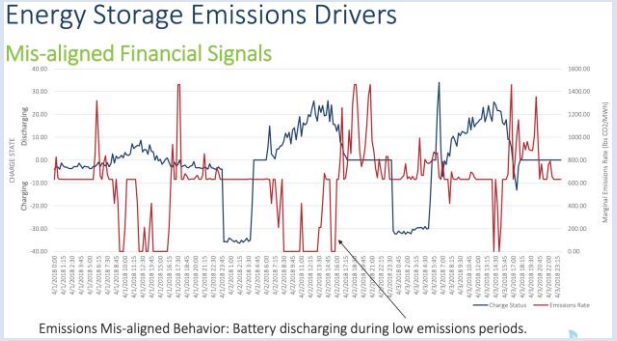
- Understanding the value stack is essential to understanding which services energy storage will provide.

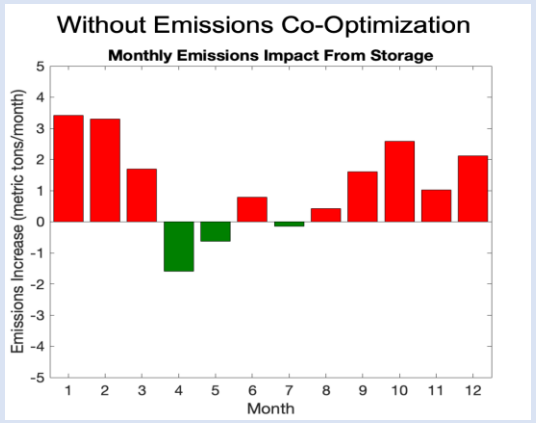


Meaningful incentives for storage incentivize storage *operations*, not just storage *deployment*

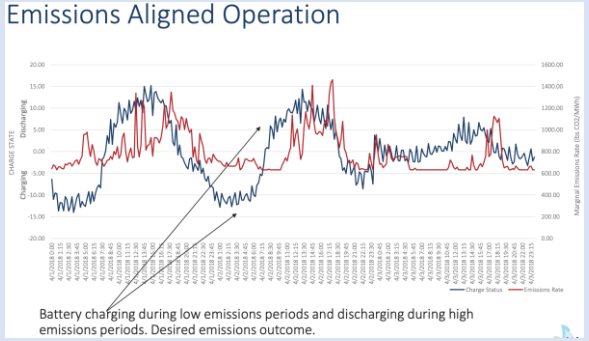
- States should use incentives to align storage value stack optimization with state policy goals.

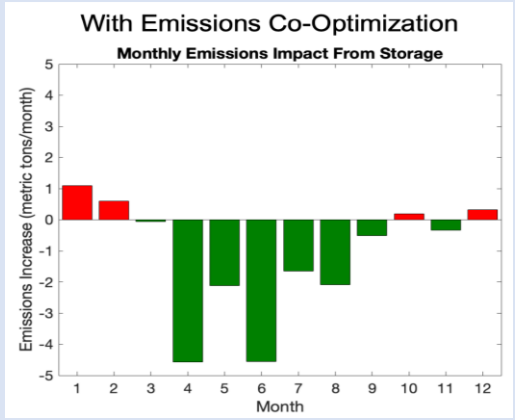
BEFORE





AFTER





Example:

California solved their emissions problem by making 50% of the SGIP battery incentive contingent on batteries charging and discharging *at the right times*.

Example: Three Massachusetts Programs

SMART solar incentive with storage adder

- Storage required to cycle 52 times/year
- No time element re charging and discharging
- Storage owners discharge resource at times of their choosing
- **Storage provides a private benefit**

ConnectedSolutions

- Storage contracts between customer and utility
- Utility signals customer to discharge storage on peak
- Storage owners are paid for resource performance
- **Storage provides a public benefit**

Clean Peak Standard

- Storage enrolls in statewide program
- Program rules set charging and discharging periods seasonally
- Storage owners generate valuable credits by cycling resource according to program rules
- **Storage provides a public benefit**

NOTE
Massachusetts waived SMART storage cycling rules for resources enrolled in ConnectedSolutions or Clean Peak Standard (“*The Energy Storage System must discharge at least 52 complete cycle equivalents per year, or must participate in a demand response program”)*

Storage can be added to existing programs that support state targets

This is often easier than designing a new program and finding new money

- Storage added to solar incentive (MA SMART, RI Energy Storage Adder)
- Storage added to energy efficiency (ConnectedSolutions battery program (MA, RI, CT) and demand response programs (VT, NH)
- Storage eligibility in RPS (ME, VT)

Storage incentives should target operations that support state clean energy targets and other social benefits

- Distributed generation (NEM, RPS and RES, 100% clean energy targets)
- Emissions reduction targets (GHGs, local pollutants/ozone)
- Clean peak standards (peaker retirement, solar shifting)
- Grid modernization goals (resilience, non-wires alternatives, T&D)

SMUD Energy StorageShares

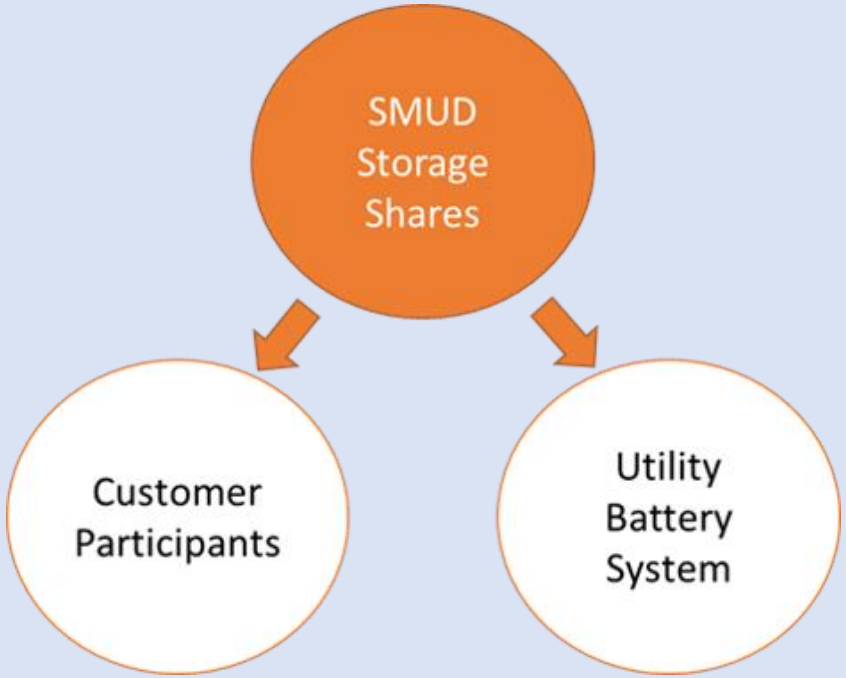
https://www.cesa.org/event/smud-energy-storageshares/

StorageShares – like community solar, but for battery storage

StorageShares is an innovative program that allows commercial customers to invest in a utility-owned energy storage system that reduces their cost of electricity while optimizing the grid benefits of energy storage.

Commercial customers can gain storage benefits even if they cannot install a battery behind their own meter.

Note that SMUD is vertically integrated, unlike Maine T&D utilities.



StorageShares – Customer Participants

- Customer buys shares at an upfront cost and receives a benefit over 10 years (1 share = 1kW of demand charge reduction)
- Customer benefit is provided by SMUD on the customer's bill (120 total bill credits)

Target customers:

- Commercial customers with a low load factor and high peak demand
- Customers in locations with low grid needs
- Not for customers seeking back-up power

StorageShares Benefits and Limitations

- No interconnection, maintenance or operating costs
- Guaranteed performance
- If your business relocates, StorageShares can move with you (within SMUD service territory)
- No disruption to normal business operations
- Continue to receive only one bill from SMUD

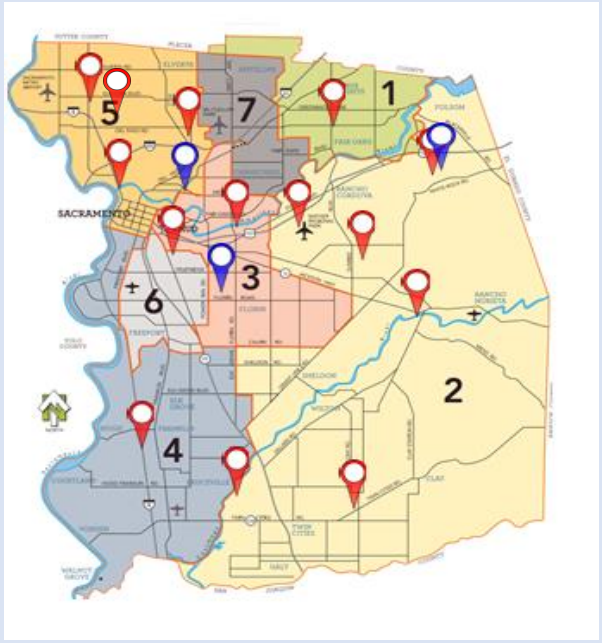
- Number of shares offered is limited to the potential benefit an actual battery could provide
- Participant agrees to not install a battery for demand charge reduction (no double dipping)
- Only customers on rates with demand charges are eligible (no residential customers)
- No resilience benefits to customers

Utility Benefits

- SMUD deploys and manages a battery based on locational grid needs
- Battery operation is independent of StorageShares on-bill customer benefit
- Battery procurement benefits from economies of scale
- Utility control creates a supply side resource instead of demand side load shaping
- Locational benefits

Customer Battery Need → Value Spread Across Territory

Utility Battery Need → Highly Locational Value



*Conceptual Representation. Not based on actual location needs.

Program Implementation

- Nov. 2019: Issued Utility Battery RFP for a 4MW Battery
  - 4MW creates 4,000 shares for the pilot offering
  - Contract announcement coming soon!
- Location selected based on the potential need to reconductor and upgrade a distribution line in the next 5 years.
- Battery will provide a diverse set of benefits
  - Infrastructure support
  - Grid services
  - DERMS integration
  - Market Participation (CAISO, EIM)
  - Job Training and Education

Thank You

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