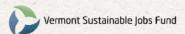
Brighter Vermont Community Energy Dashboard

BUILDING A BETTER ENERGY FUTURE. TODAY.

A Collaborative Project of the









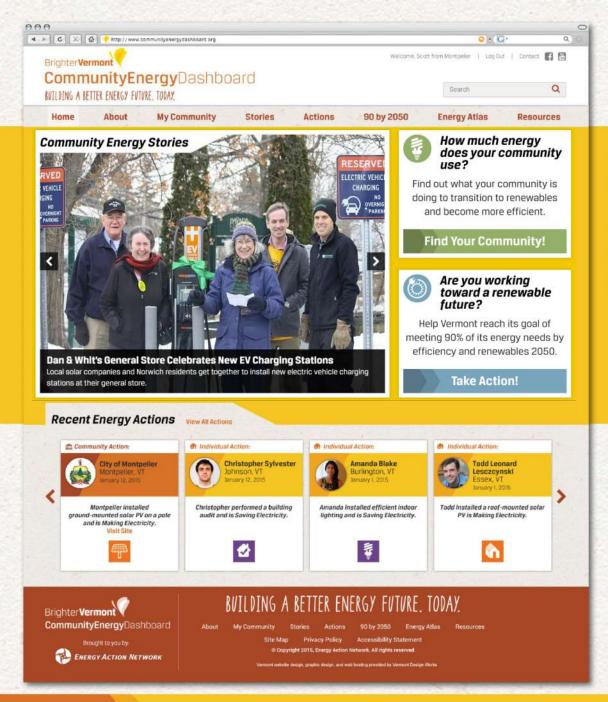
....and many other partners

With funding support from









What is the Community Energy Dashboard?

A powerful website to help your community understand and analyze energy at the local level:

- > Where you are now
- > Where you need to go
- > How you can get there

TAKE ACTION ON BEHALF
OF YOUR COMMUNITY —
MOTIVATE, INSPIRE!

What's New

- ✓ New focus on municipalities Vermont Climate Action Communities
- √ Re-organized and expanded Energy Atlas
- ✓ Planning for Dashboard 2.0

Climate Action Communities





The Vermont Climate Action Communities (VCAC) program is dealigned to help Vermont municipalities achieve deep energy efficiency savings, reduce local emissions and participate in the transition to a clean energy economy, improve resilience in the face of climate change, and provide locally supported renewable energy generation for municipalities and the communities they serve. Led by VLCT in partnership with a wide range of support againstations, Vermont Climate Action Communities offers technical assistance, training and information to help municipalities plan and take actions to reduce greenhouse gas emissions.

Municipalities are in a unique position to drive efficiency, resiliency, and renewable energy improvements – not only for their own energy use but through their influence on future development and their on-going relationships with the residents and businesses within their community. Municipalities consume energy for buildings, treatment facilities, street lighting, and vehicles. Municipalities influence new development and re-development through both municipal planning and the permitting

process. Finally, they have on-going relationships with every resident and business within their jurisdiction through the provision of a wide-range of municipal services

Program success will be based upon achieving measurable improvements through increased efficiency and renewable energy generation. Under the Vermont Climate Action Communities Program, municipalities are encouraged to make a piedge to reduce greenhouse gas emissions and then track their actions on the Community Energy Dashboard.

Please don't hesitate to contact the arganizations coordinating this effort: Karen Horn, VLCT (kharn@vict.org); Paul Markowitz, Efficiency Vermont (pmarkowitz@vict.org or 802-540-7808) or Rob Fish, Energy Action Network (rfish@eanvt.org, 802-583-8527) with any questions or concerns.

Municipalities are encouraged to undertake actions in four broad categories:

Municipal Energy Use

Public Policy, Planning & Infrastructure

Residential and Business Outreach and Engagement

Energy and Climate Resiliency

Background on the Vermont Climate Action Communities Effort

How your town can participate

Discovering your town's energy data and recording actions and piedges

Goals of the Vermont Actions Communities Effort

Scope of Assistance

Key partners for this effort

VERMONT CLIMATE ACTION COMMUNITIES

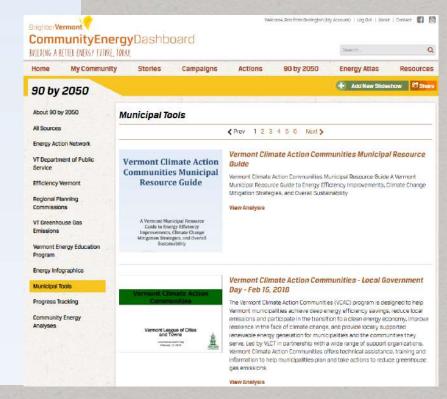
The <u>Vermont Climate Action</u>
<u>Communities (VCAC) program</u> is
designed to help Vermont
municipalities achieve deep energy
efficiency savings, reduce local
emissions and participate in the
transition to a clean energy economy,
improve resilience in the face of
climate change, and provide locally
supported renewable energy
generation for municipalities and the
communities they serve.

https://www.vtenergydashboard.org/vtclimateactioncommunities

Vermont Climate Action Communities Municipal Resource Guide

VERMONT
CLIMATE ACTION
COMMUNITIES

A Vermont Municipal Resource Guide to Energy Efficiency Improvements, Climate Change Mitigation Strategies, and Overall Sustainability



Download via this link: vtenergydashboard.org/municipalresourceguide

Table of Contents

ntroduction3
Municipal Resource Guide3-33
Municipal Energy Use3-18
Tracking Municipal Energy Use3-5
Identifying Energy-Saving Opportunities5-6
Building Energy Efficiency Improvements6-7
Renewable Energy for Municipalities7-11
New Building Construction11
Street Lighting11-13
Water Treatment Facilities13-14
Municipal Energy Storage14-15
Transportation15-17
Financing Municipal Energy Improvements17-19
Public Policy, Planning, & Infrastructure
Getting Started
Land-Use Planning – Reducing Sprawl and Encouraging Compact
Development21-22
Energy Planning22-23
Energy Building Codes23
Transportation23-25
Residential and Business Outreach and Engagement25-30
Transportation25-26
Heating26-28
• Electricity
Energy Education29
• Financing
Energy and Climate Resiliency30-33
Resilient Communities29-30
Resilient Flood Management30-31
Incorporating Climate Adaptation into Local Planning31-32
Encouraging Resilient Buildings31-32
Frequently Asked Questions
What is Vermont Climate Action Communities?33
What is the relationship between VCAC and the Vermont Climate
Pledge Coalition?33
Why should municipalities participate?33
What are the goals of the Vermont Actions Communities effort33-34
Which are the types of actions that municipalities are encouraged to
undertake?34
How can municipalities participate?34-35
What kind of assistance is available?35
What kind of assistance is available: Who are the key partners for this effort?
Contact Information
Jonate Intol mation

VERMONT CLIMATE ACTION COMMUNITIES

Created by Efficiency
Vermont, Vermont League
of Cities and Town, Energy
Action Network (EAN),
Vermont Energy and
Climate Action Network
(VECAN), VT Climate
Economy Project, the
Vermont Climate Pledge
Coalition, and Vermont
Climate Action
Communities.

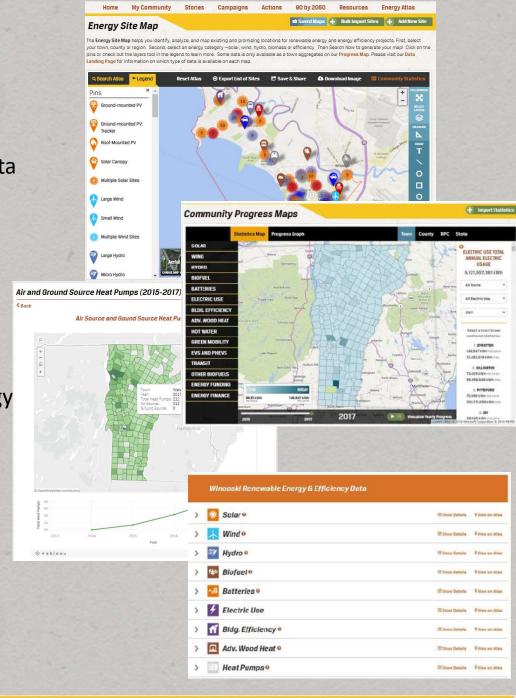
Download via this link:

The NEW Vermont Energy Atlas

The Energy Atlas is 4 tools that combine data from twenty-five official sources to show progress tracking information so you can learn the answers to these questions.

You now have the ability:

- ✓ identify, analyze and map existing and promising locations for renewable energy and energy efficiency projects
- ✓ quickly compare per capita statistics
- ✓ see annual changes by energy category
- ✓ view all statistics for your community
- ✓ utilize a timeline feature to visualize progress over time.



Data Partners



Vermont Center for Geographic Information















RENEWABLE ENERGY RESOURCE CENTER



CarShare Vermont













GREEN MOUNTAIN POWER

Generating Possibilities

Energy Efficiency & Renewable Energy

















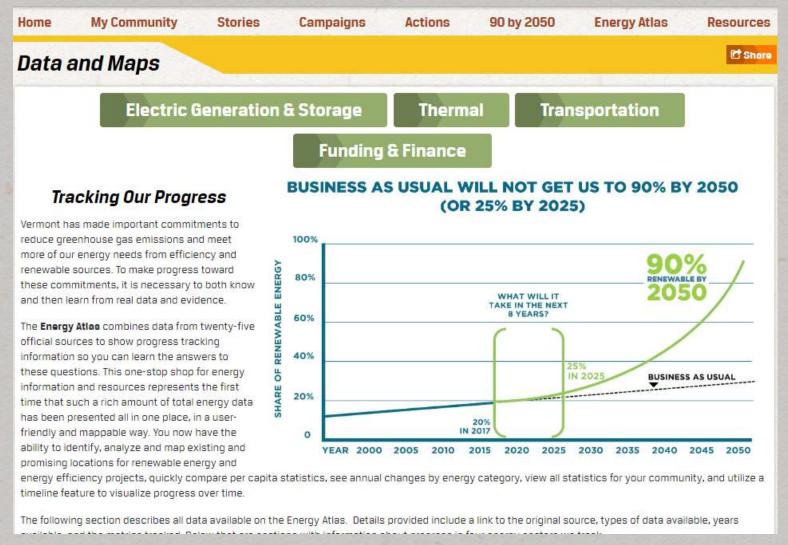








The Data Landing Page



Provides descriptions of all data available in the Atlas, the sources for each data set, the last update, directions for finding visualizations of that data set.

The Data Landing Page

Energy Site Maps



Energy Site Maps ♥

The Energy Site Map shows site-specific information. Data is only available for the following categories:

Soiar, Wind, Hydro, Combined Heat and Power (CHP), Utility
Scale Biomass Electricity Generation, Anaerobic
Digester, Landfill Methane, Batteries: Utility Scale - in Front
of Meter, Bidg.. Energy Star Certified Bidgs, LEED Certified
Green Bidgs, Community-Scale Advanced Wood Heat, Solar
Hot Water, Park-n-Rides, Carshare, Bikeshare, Level 1 & 2 - EV
Charging Stations, Local Bus Service, City-to-City Bus
Service, Amtrak, Compost Heat, Liquid Biofueling Station,
Biofuel Production Facility

Community Progress Maps



Community Progress Maps

The Community Progress Map shows town, county and state level aggregates of energy data. Topics cover energy generation, usage, an funding. All data is presented per capita. Data is available for all categories. Please click the category below to learn more.

Solar, Wind, Hydro, Biofuei, Batteries, Bidg. Efficiency, Adv. Wood Heat, Heat Pumps, Hot Water, Green Mobility, EVs and PHEVs, Transit, Other Biofueis, Energy Funding, Energy Finance

Community Statistics



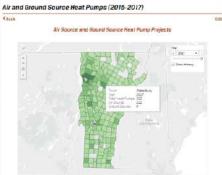
Community Statistics

The Community Statistics page provides a snapshot of all energy data available and the ability for the user to export the data.

To view your community's data, visit the My Community

Page, select your town, and then click on Statistics

Additional Maps and Analysis



Additional Maps and Analysis

Additional maps are found in the 90 by 2050 section. These maps show actual data (as opposed to per capita), further breakdowns of data, and comparisons of sectors.

Air and Ground Source Heat Pumps (2015-2017)
Residential Battery Storage (2018)
Heat Saver Loans (2014-2018)
Wood Stove Change-Out Program
Advanced Wood Heat Pellets
Advanced Wood Heat Chips

The Data Landing Page





Available on Community Progress Map

Electric Generation

Solar

Wind

Hydro

Biofuel



Ground-mounted PV 📴 💡 🦬





Description: PV installed on ground-mounted poles at a fixed angle to the sun. Data is from the Certificate of Public Good (CPG) home-owners and developers must obtain from the Public Service Department before install solar.

Type of Data: Site-Specific, Town Aggregate

Sector Breakdowns: None

Available Metrics: Type of Solar Installation, Address, Capacity

Years Available: 2000-2018

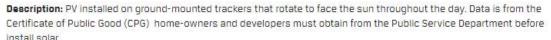
Source: Vermont Public Service Department Certificates of Public Good

Last Update: September 2018

Ground-mounted PV: Tracker 📴 💡 🦷







Type of Data: Site-Specific, Town Aggregate

Sector Breakdowns: None

Available Metrics: Type of Solar Installation, Address, Capacity

Years Available: 2000-2018

Source: Vermont Public Service Department Certificates of Public Good

Last Update: September 2018



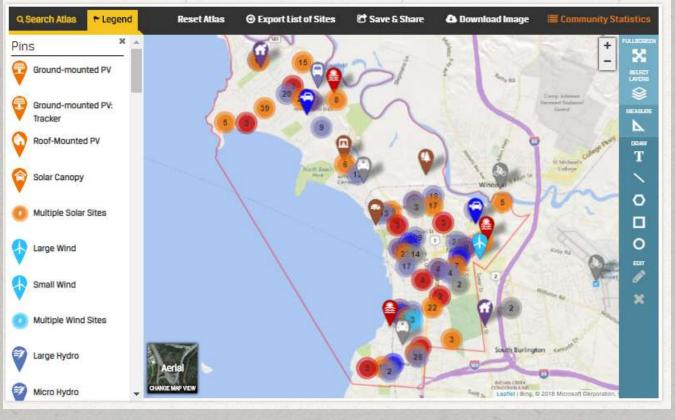




Energy Site Map



The Energy Site Map helps you identify, analyze, and map existing and promising locations for renewable energy and energy efficiency projects. First, select your town, county or region. Second, select an energy category —solar, wind, hydro, biomass or efficiency. Then Search Now to generate your map! Click on the pins or check out the layers tool in the legend to learn more. Some data is only available as a town aggregates on our Progress Map. Please visit our Data Landing Page for information on which type of data is available on each map.



The Energy Site
Map helps you identify,
analyze, and map existing
and promising locations
for renewable energy and
energy efficiency projects

What's New

- ✓ All data is now from official sources
- ✓ Crowd-Sourced data has been eliminated
- ✓ Additional data includes:
 - ✓ EV Charging Stations
 - ✓ Bikeshare Programs
 - ✓ Transit Stops
 - ✓ Utility Scale Battery Storage

Statistics

Other Rinfuels 9

90 by 2050 **Energy Atlas** Home My Community Stories Campaigns Actions Resources Select a Different Community Waterbury **▲** Progress Statistics Actions III Analysis Stories ✓ Campalans Community Member Since: 2016 Population: 5,098 Area: 49.70 sq miles These statistics allow your community to track local renewable energy sites and production data, and see how you rank against other towns in Vermont (on

a per capita basis). The data come from official "Certificates of Public Good" and are updated quarterly. In addition you can add information on efficiency projects by going to the Energy Atlas page and clicking on "Add a Site".

Waterbury Renewable Energy & Efficiency Data Solar 9 ≡ Show Details ♥ View on Atlas Wind @ > ≡ Show Details View on Atlas Hvdro @ Show Details View on Atlas Biofuel @ Show Details View on Atlas Batteries @ View on Atlas Electric Use > ≡ Show Details View on Atlas Bldg. Efficiency 9 View on Atlas Show Details Adv. Wood Heat @ > View on Atlas Show Details Heat Pumps 9 Show Details View on Atlas Hot Water 9 Show Details VIEW on Atlas Green Mobility @ > Show Details View on Atlas EVs and PHEVs 9 View on Atlas ≡ Show Detalls Transit @ View on Atlas

≡ Show Details

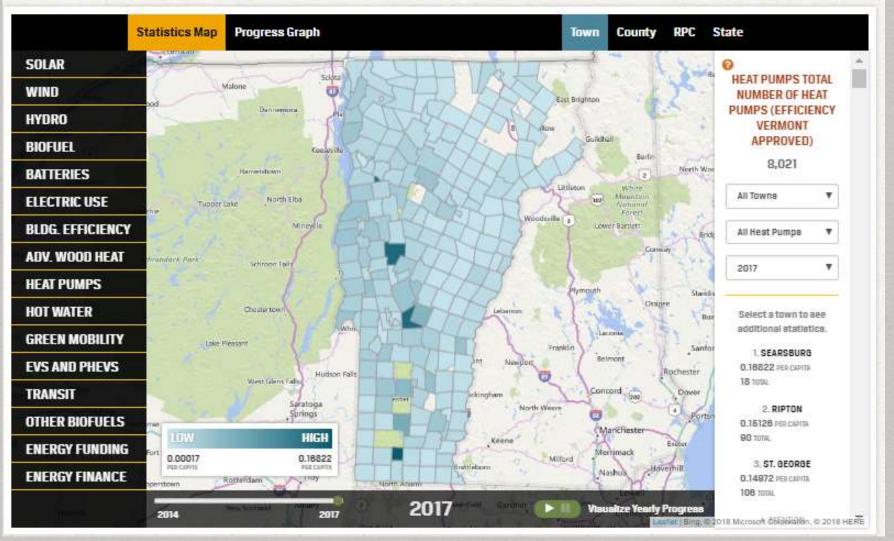
View on Atlas

The Community Statistics page provides a snapshot of energy data for your community.

What's New

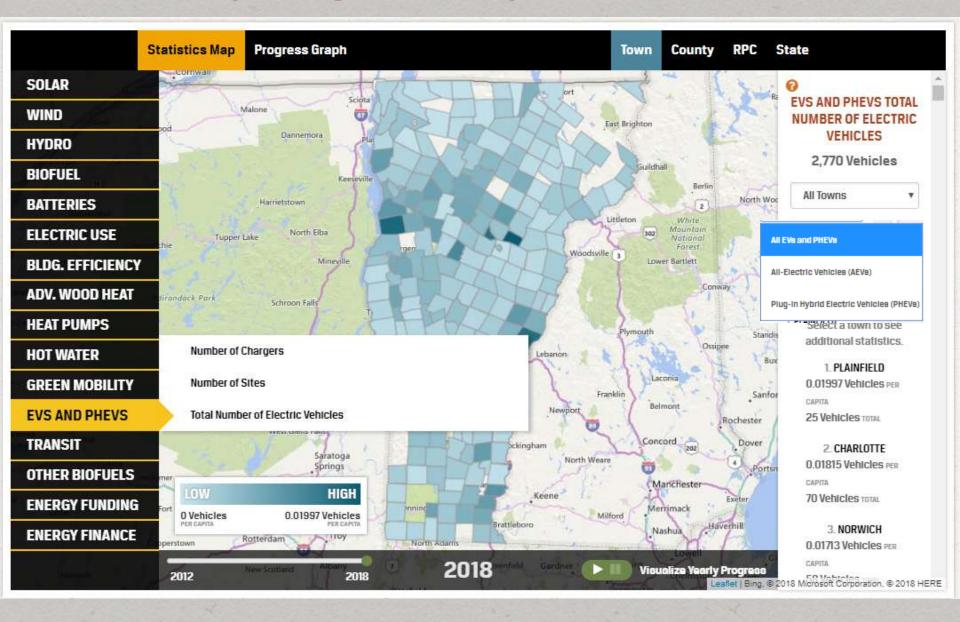
- ✓ All data is now from official sources
- ✓ Crowd-Sourced data has been eliminated
- ✓ Additional data includes:
 - ✓ Transportation Data
 - ✓ Weatherization Data
 - ✓ Heat Pump Data
 - ✓ Heat Saver Loans

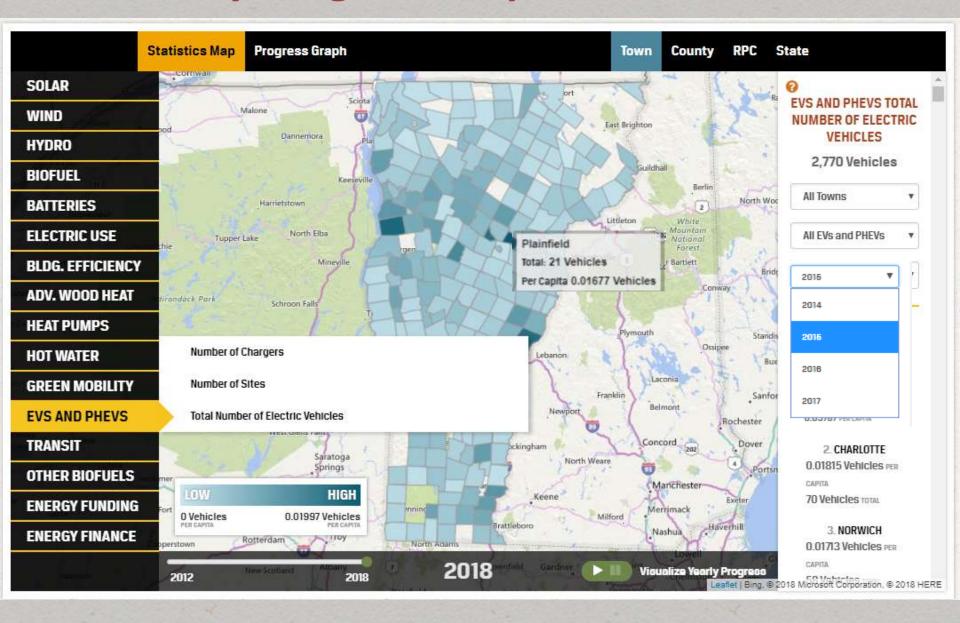
INFORM: STATISTICS AND ACTIONS TAKEN BY YOUR COMMUNITY PROVIDE ADDITION CONTENT FOR DECISION-MAKING

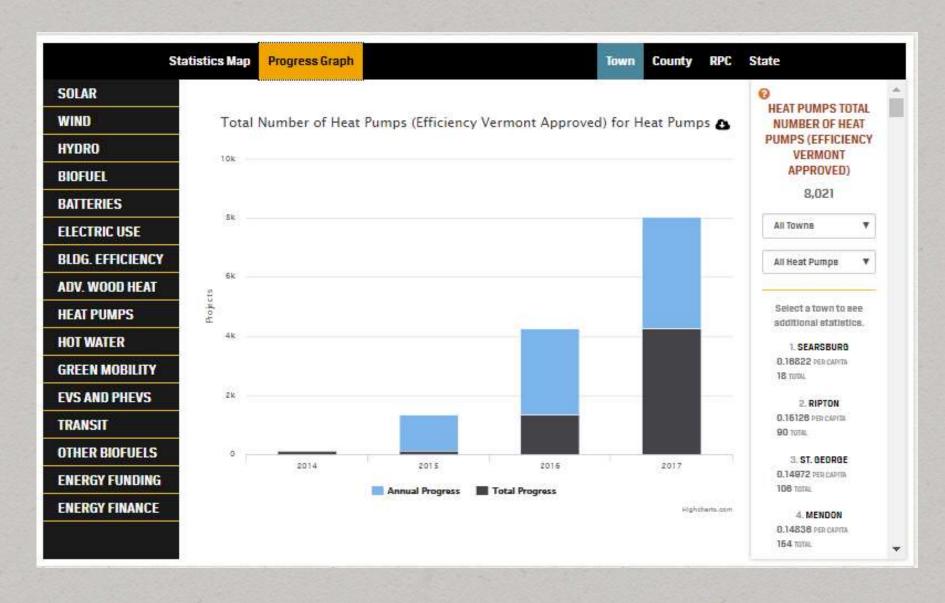


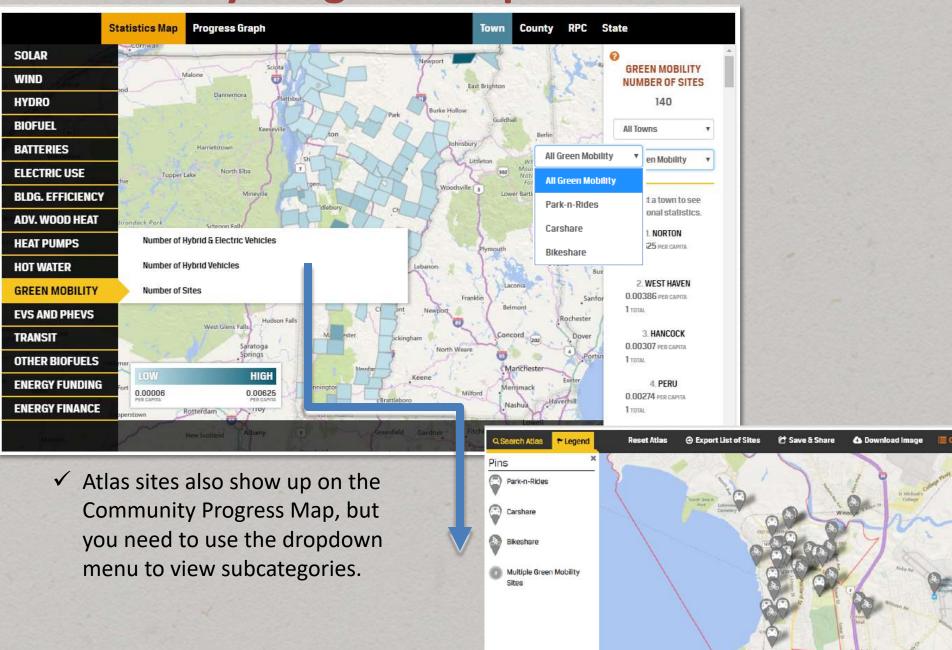
Key Features

- ✓ View town level aggregate data
- ✓ Compare Progress between communities
- ✓ Track progress over time





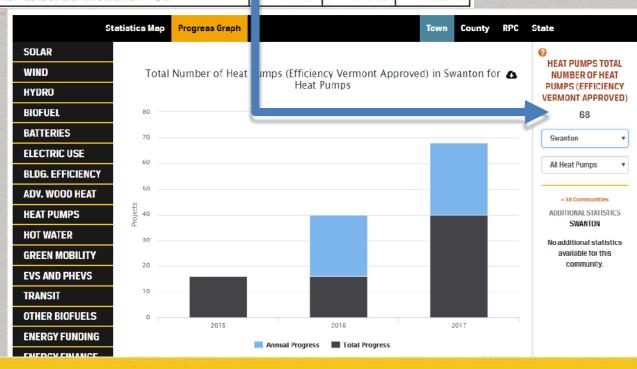


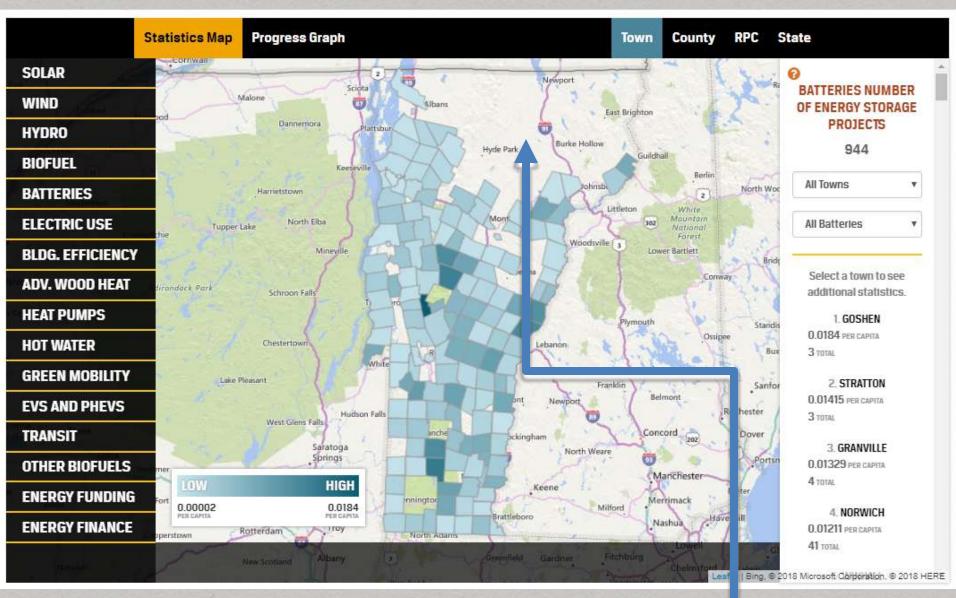


✓ Goals: Swanton Enhanced Energy Plan

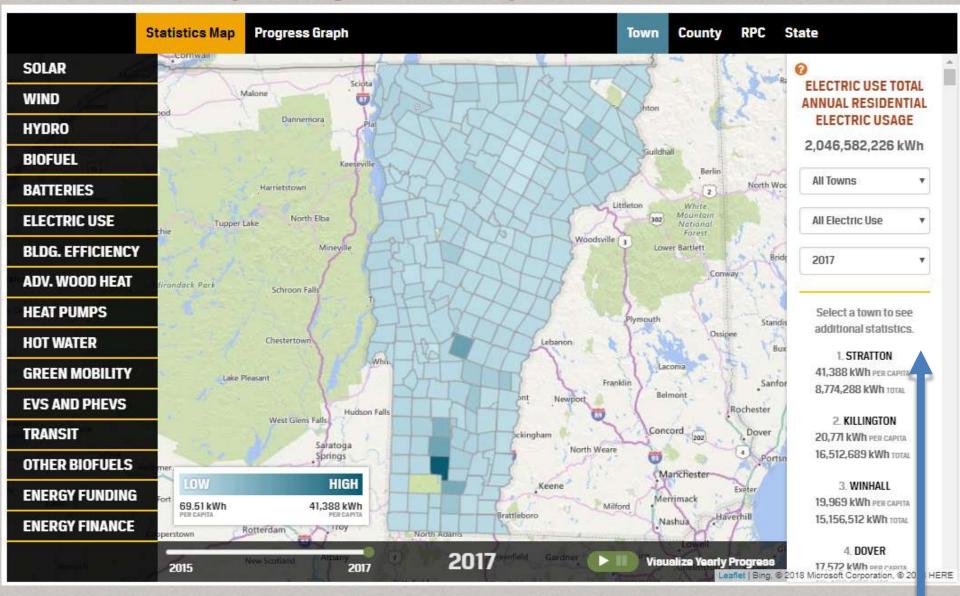
Table B.6 - Thermal Targets				
Thermal Targets	2025	2035	2050	
Percent of Total Heating Energy From Renewable Sources - Heating (BTUs)	46.3%	59.9%	87.9%	
New Efficient Wood Heat Systems (in units)	14	34	128	
New Heat Pumps (in units)	274	654	1293	
Percentage of municipal households to be weatherized	5%	42%	78%	
Percentage of commercial establishments to be weatherized	25%	49%	73%	

- ✓ Track community goals
- ✓ Track results of campaigns

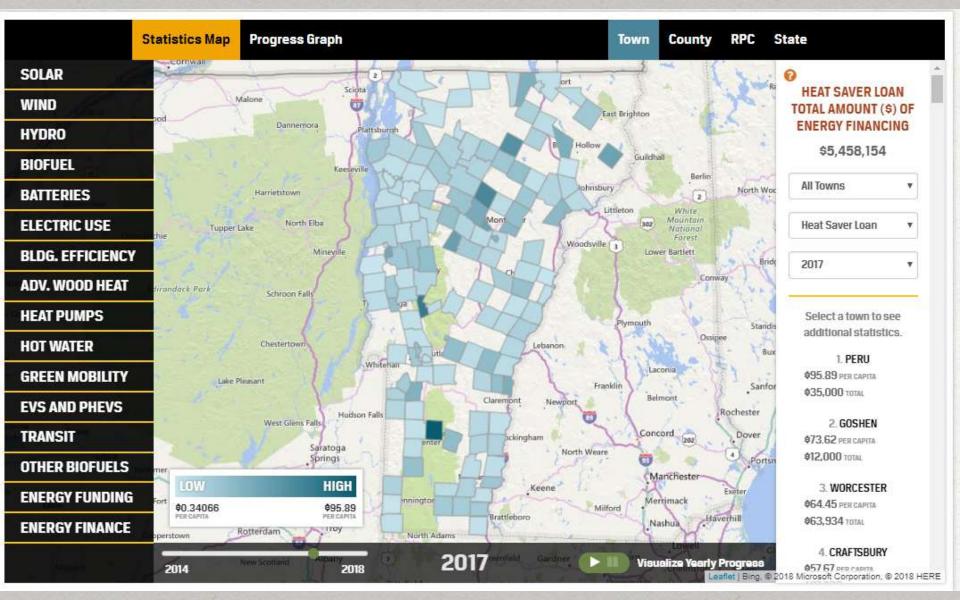




✓ Why is storage adoption lagging in the NEK?



✓ Why are the following towns using the most electricity per capita?



[✓] What factors impact sign-ups for the Heat Saver Loan Program?

About 90 by 2050

All Sources

Energy Action Network

VT Department of Public Service

Efficiency Vermont

Regional Planning Commissions

VT Greenhouse Gas **Emissions**

Vermont Energy Education Program

Energy Infographics

Municipal Tools

Progress Tracking

Community Energy Analyses

Progress Tracking

Prev 1 2 Next >



Air and Ground Source Heat Pumps (2015-2017)

Displays Air Source and Ground Source Heat Pumps. Air Source Heat Pump installations (also called mini-splits, cold-climate heat pumps, and ductless heat pumps), used for building heating and cooling. Each installation may include multiple heads, or splits, in the building. The Dashboard visualizes aggregate data from Efficiency Vermont, based on rebates submitted by customers who purchase Heat Pumps. Years Available: 2015-2017. Source(s): Efficiency Vermont - Note: Efficiency Vermont began supporting Cold Climate Heat Pumps in 2015, so there's no data in 2014 for these. Projects attributed to Tier III in 2017 are included. Ground Source Heat Pump (also called geothermal) installations, used for building heating and cooling. The Dashboard visualizes aggregate data from Efficiency Vermont, based on rebates submitted by customers who purchase Heat Pumps. Note: Efficiency Vermont began supporting CCHPs in 2015. GSHPs aren't popular, so the volume of projects is low. Projects attributed to Tier III in 2017 are included.

View Analysis



Residential Battery Storage (2018)

Customer-sited facilities that store electricity for back-up power in the case of an outage. Some behind-the-meter facilities are still owned and can also be operated by the utility for offsetting peak demand, voltage regulation, and more. Only town-level data is available. As a relatively new technology, a statewide permitting process has not been established for energy storage projects. The Dashboard currently visualizes data from Green Mountain Power's Tesla Powerwall and self-supply battery programs. Type of Data: Site-Specific (utility scale), Town Aggregate (residential and utility scale) Sector Breakdowns: Utility-Scale/Residential Years Available: 2018 Source(s): Green Mountain Power and Grassroots Solar

View Analysis



Heat Saver Loans (2014-2018)

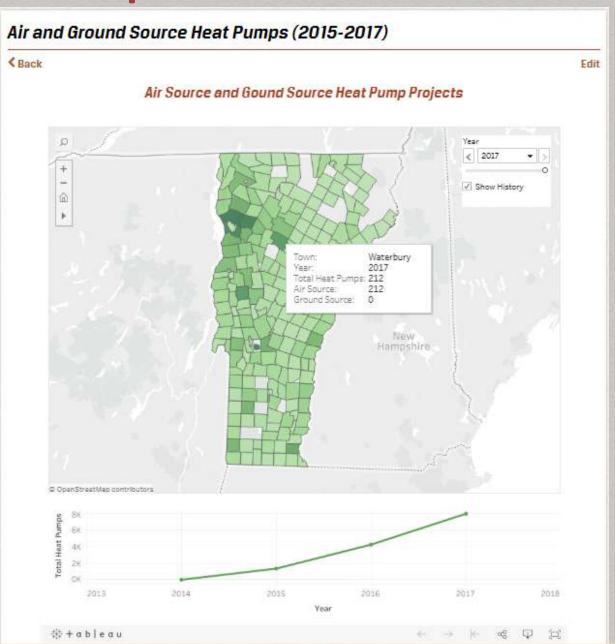
Loans administered by Efficiency Vermont to finance home weatherization and heating improvements. Prior to 2018, these loans were from VSECU and Opportunities Credit Unino, Town level data is on the Community Progress Map.

View Analysis

Additional Maps

- ✓ Show Actual Data not per capita
- ✓ Show comparisons between providers
- ✓ Combine metrics to show sectorwide progress – ie. **Advanced Wood Heat & Heat** Pumps

Additional Maps



Fall 2019 - Dashboard 2.0?

Statewide tracking - Visuals gaps/ individuals Town top drivers (3) W/ goals + tracking Lodownload list of all actions.

Motivate towns, regions, state to action Logomity businesses Aggregated data Campaigns Connect back to network resources-hubt spoke determine which network partners own which resources Automation (for site sustainability + data accuracy) morivale > Tracking progress > gaps > drivers > resources + fools

Questions?

Rob Fish
Dashboard Manager
Energy Action Network

802-383-8527 rfish@eanvt.orgHeat Pumps