

# Solar Energy for Northern New England





# REVISION ENERGY

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Brentwood, NH

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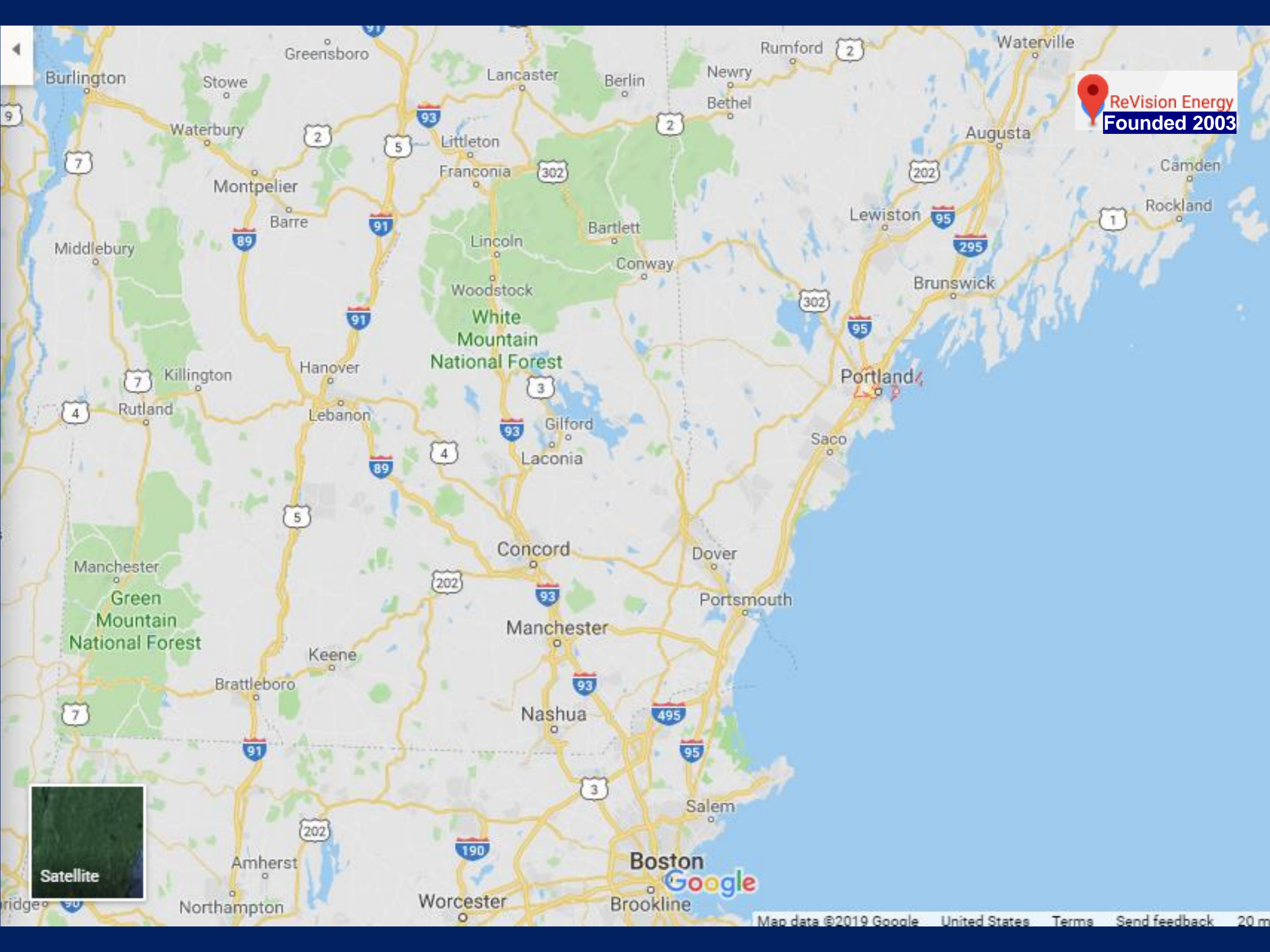
Tel. (603) 365-1725

# Who We Are

## *Solutions & Experience*

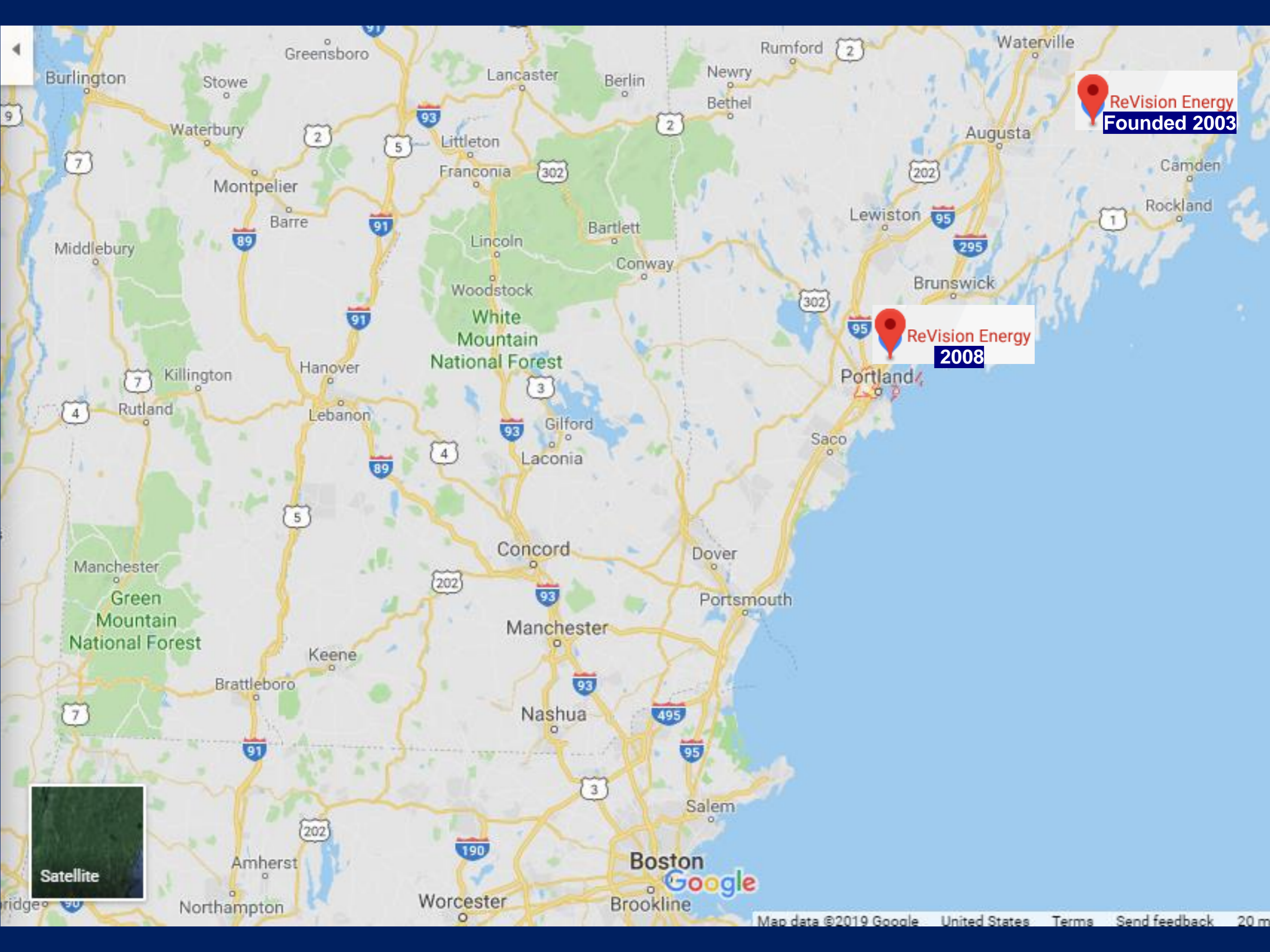


**REVISION ENERGY**



 **ReVision Energy**  
**Founded 2003**

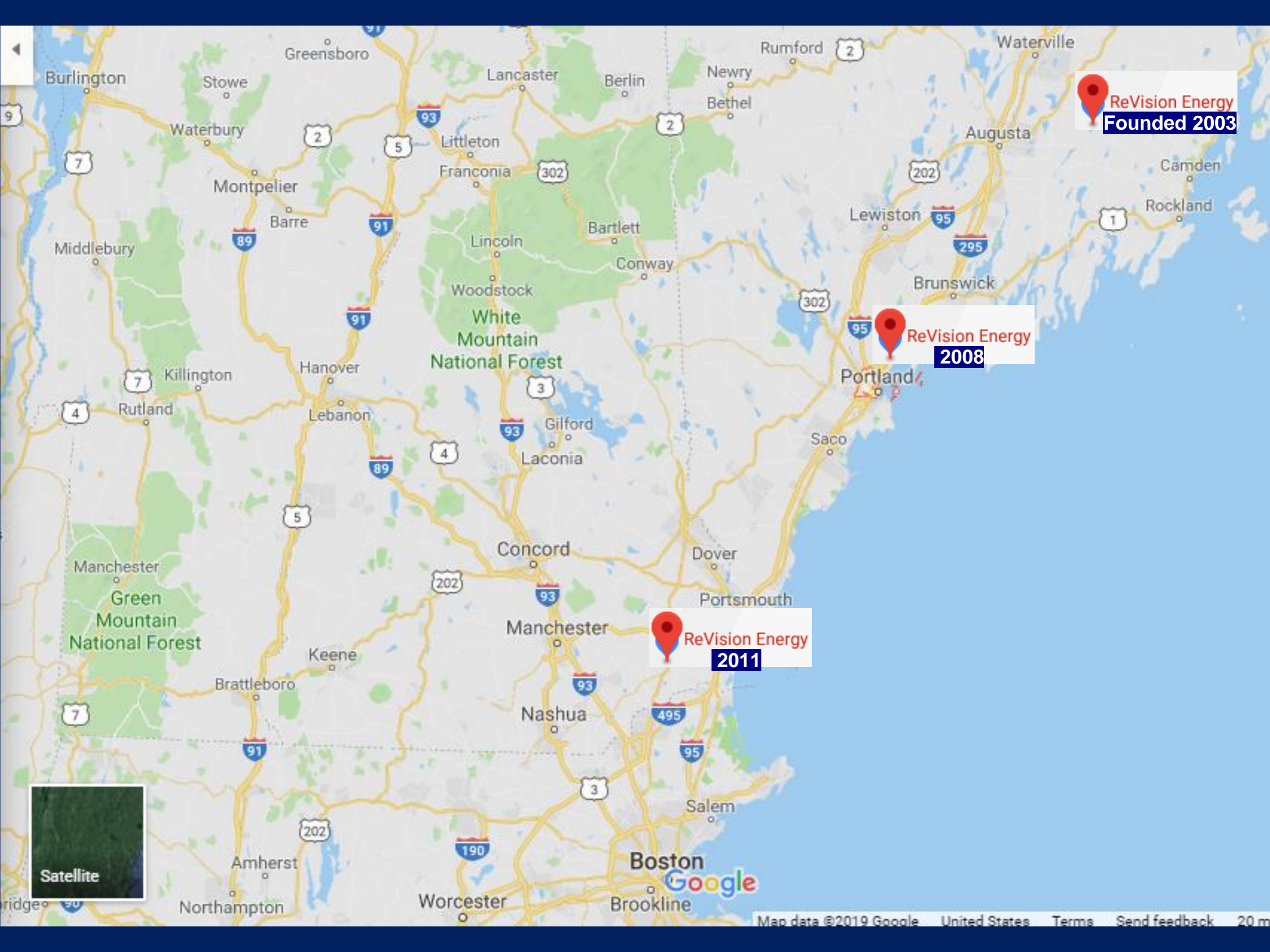




ReVision Energy  
Founded 2003

ReVision Energy  
2008

Satellite

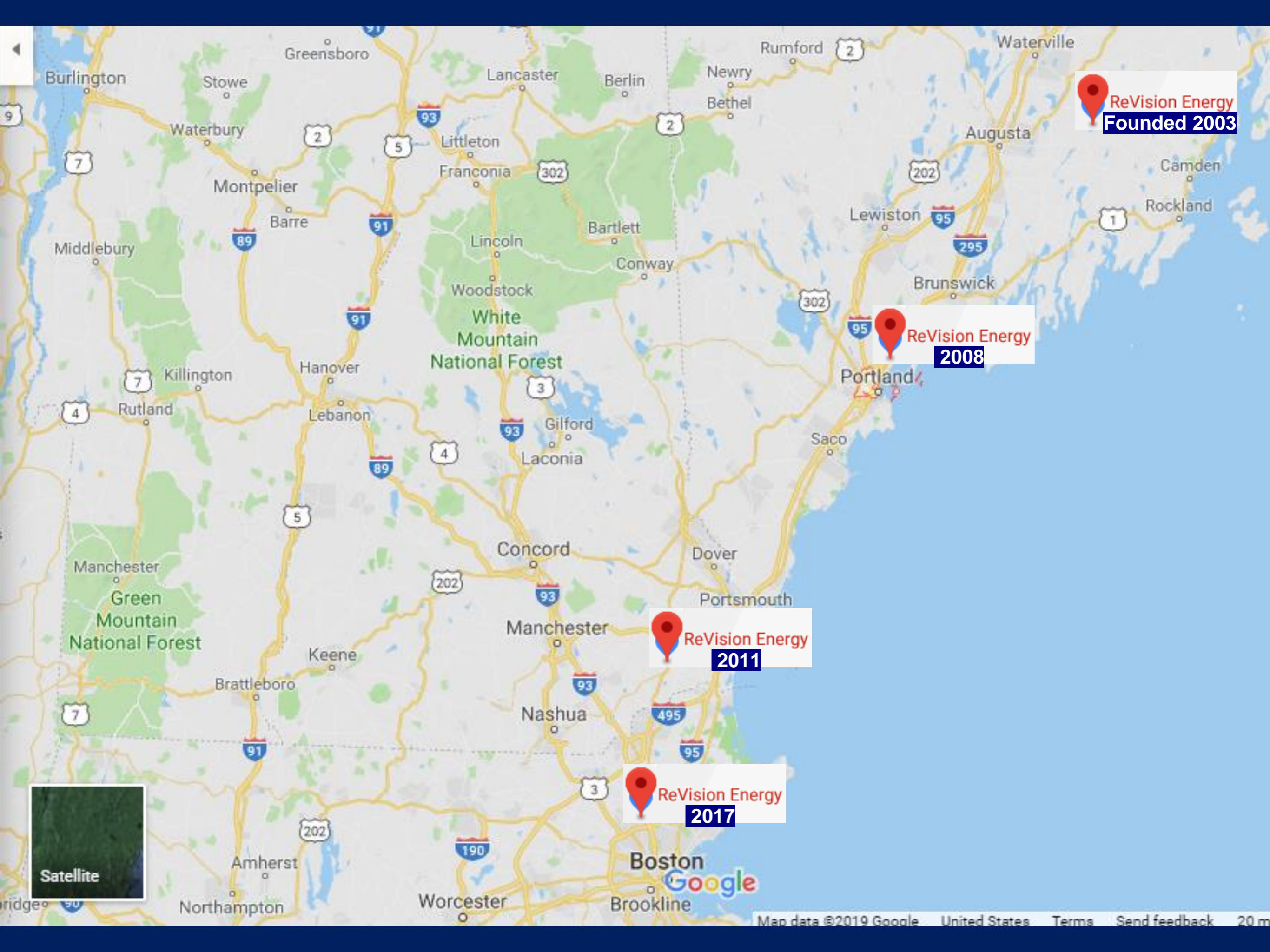


ReVision Energy  
Founded 2003

ReVision Energy  
2008

ReVision Energy  
2011





ReVision Energy  
Founded 2003

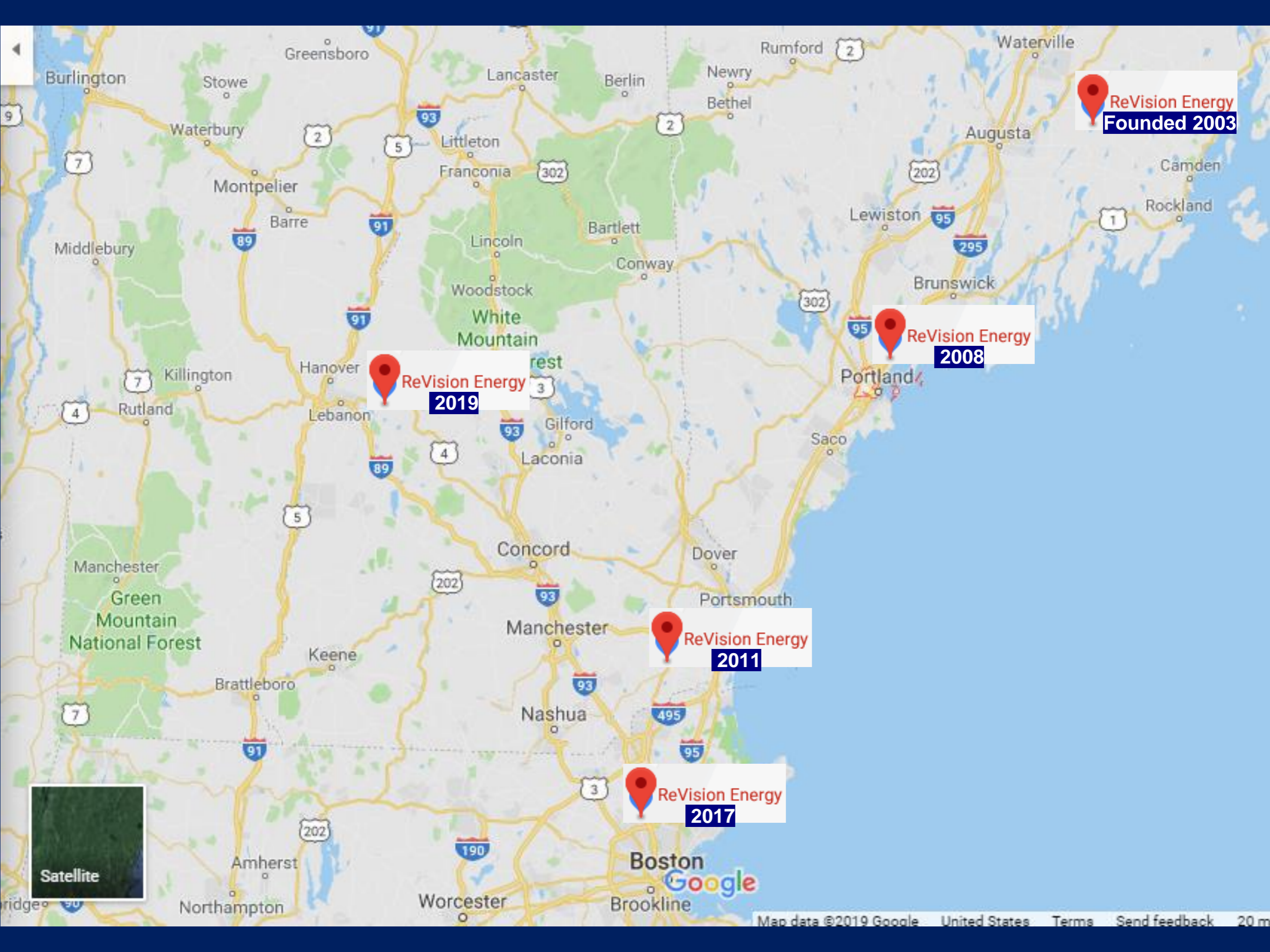
ReVision Energy  
2008

ReVision Energy  
2011

ReVision Energy  
2017

Satellite

Google



ReVision Energy  
Founded 2003

ReVision Energy  
2008

ReVision Energy  
2019

ReVision Energy  
2011

ReVision Energy  
2017

Satellite

Google





# ReVision Energy 2019



**Mission:** Lead Northern New England’s transition to a clean, solar-powered economy while creating positive social change as a B Corporation

**Team:** 260+ employee-owners in NH, ME, and MA designing and installing residential, commercial, and institutional/nonprofit clean energy systems. NABCEP certified, Master Trade Licenses. Engineers from MIT, Brown, Dartmouth, UNH, Bowdoin and Middlebury

*Contact Us:*  
(603) 279-1777  
ReVisionEnergy.com  
hello@revisionenergy.com  
Brentwood & Enfield NH

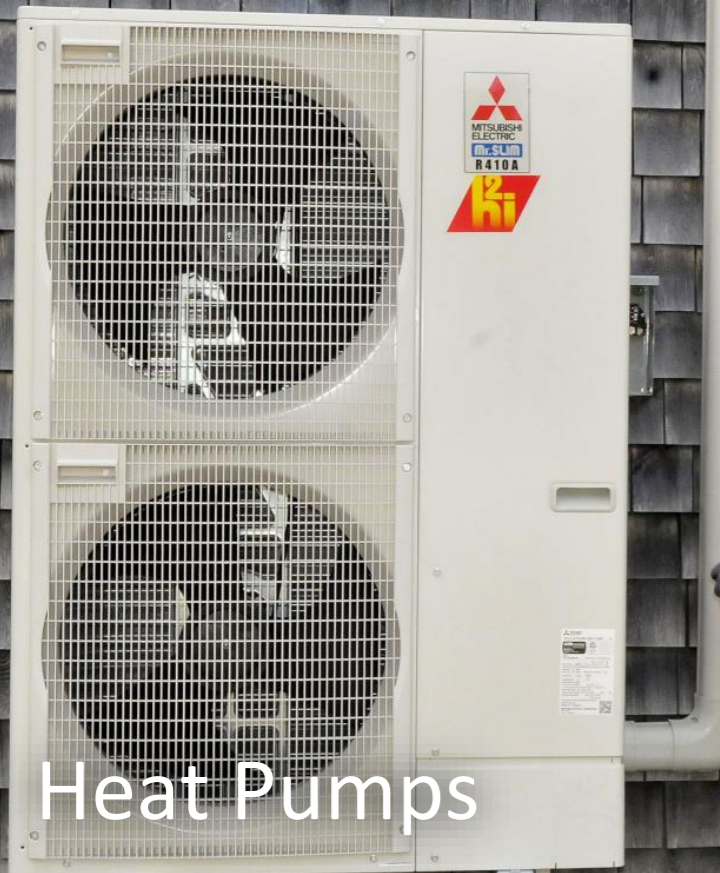
# Solar Rooftops



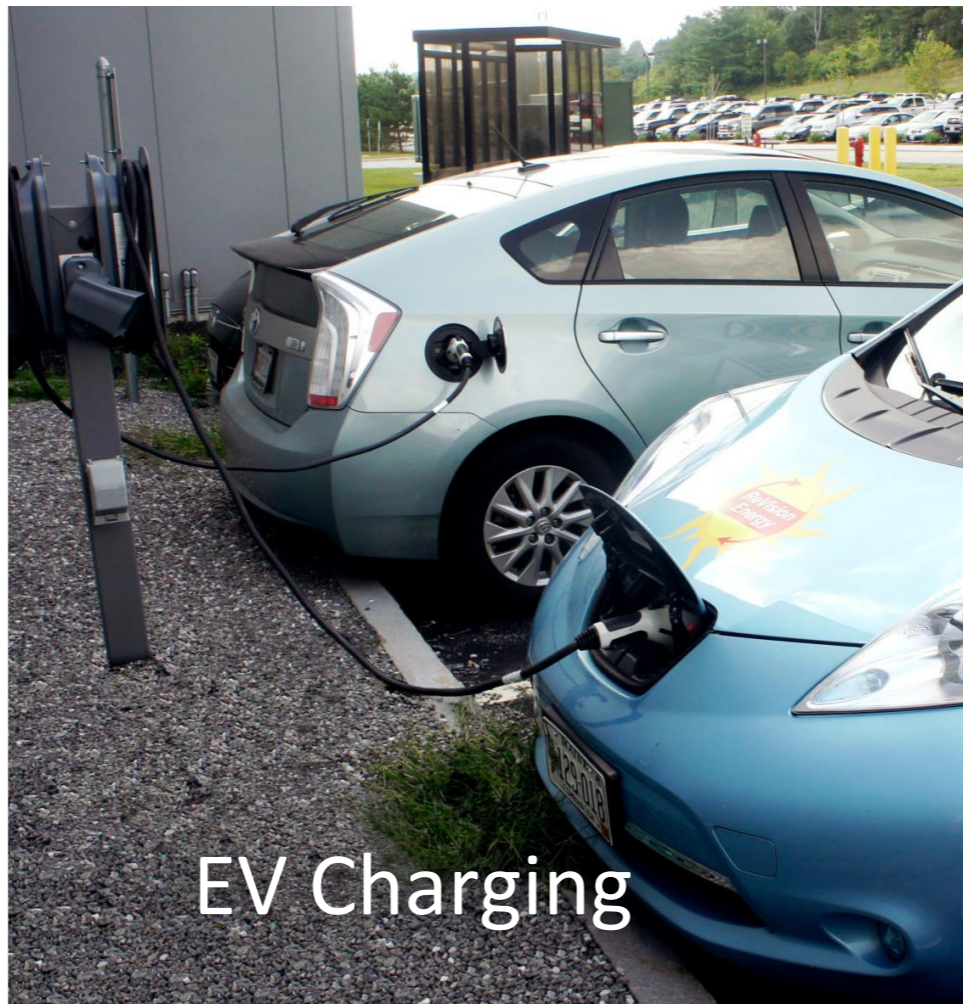
# Ground Mounts & Carports



Experience: 8,000+ solar electric systems, EV chargers, air source heat pumps, LED lighting, and battery systems installed since 2003



Heat Pumps



EV Charging



LED Lighting

# ReVision Energy Ranked #1 for Solar in New England, #5 in U.S.

*Solar Power World magazine rates ReVision the #1 rooftop solar contractor in New England*



**REVISION ENERGY**

# Commercial Clients include...

**L.L.Bean**



**grappone**  
AUTOMOTIVE GROUP

**MCFARLAND**



**CHAMBERLAIN**



**REVISION ENERGY**

# Nonprofit Clients include...



Dartmouth



Colby-Sawyer  
College

The Nature  
Conservancy 

MacDowell Colony



Plymouth State  
UNIVERSITY



PROCTOR 



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# Attracting Customers, Cutting Costs

## **Inc.**

### **Why Your Business Should (Finally) Go Solar**

Solar isn't just for Intel and Wal-Mart anymore: Time to shake off the old way of thinking and join the growing chorus of smart business owners that have discovered the commercial solar benefits for business.

CUSTOMERS

## **Entrepreneur** MAGAZINE

### **6 Innovative Ways to Attract New Customers**



## **Harvard Business Review**

SUSTAINABILITY

### **For a Long-Term Stimulus, Invest in Green Energy**

## **Bloomberg Business**

Climate-Changed

### **Businesses Are Buying More Renewable Power Than Ever Before**

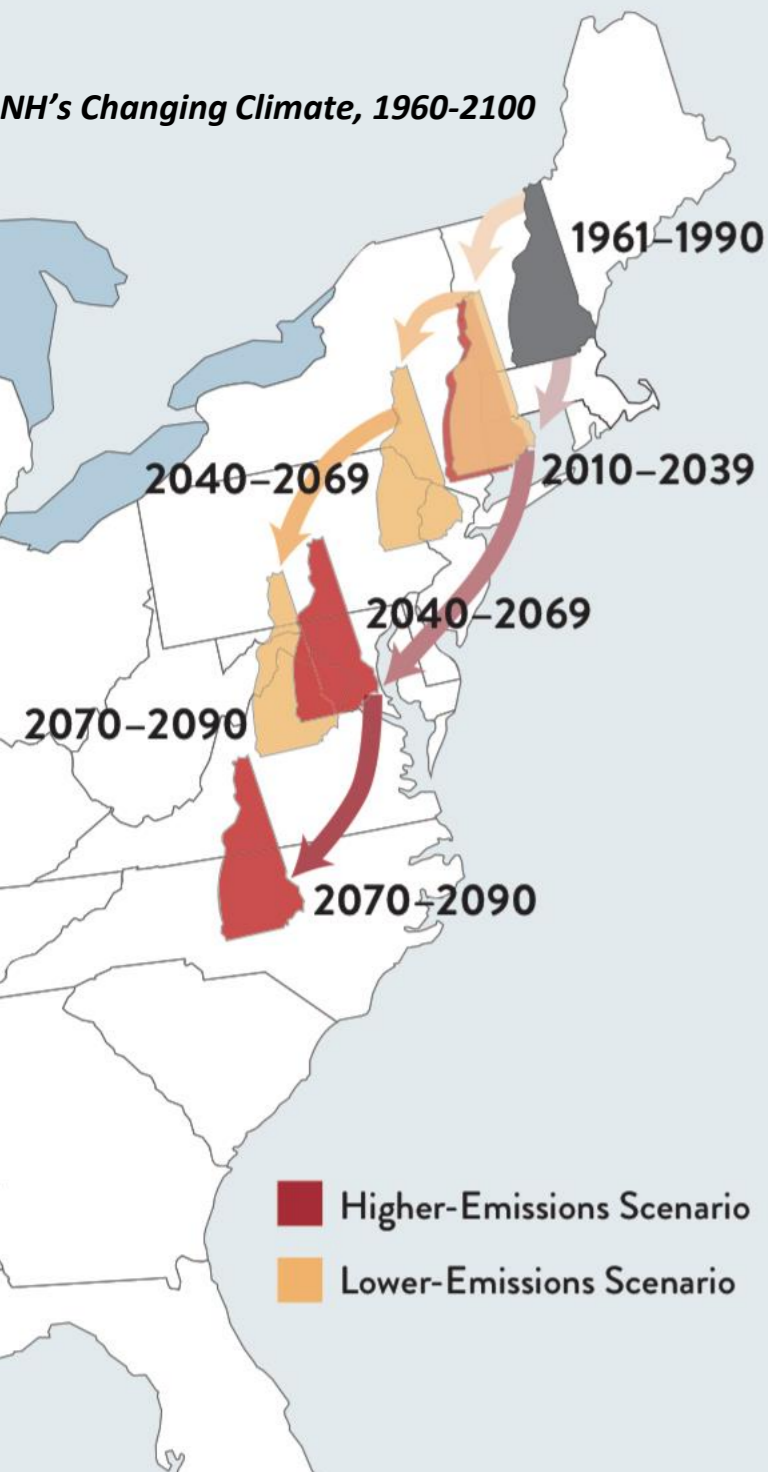


## **REVISION ENERGY**

# Why Clean Energy, Why Now? *Cost of Climate Change in NH*



# Problem: Energy Cost & Climate



- NH residents, nonprofits, and businesses spend \$6 billion/year importing non-renewable energy
- NH temperatures are projected to rise 6-10°F by 2100 if local CO<sub>2</sub> emissions trends continue
- Warming threatens NH's multi-billion dollar skiing, maple sugaring, and tourism industries and costs billions in remediation
  - 100 Granite Staters die annually due to CO<sub>2</sub> pollution, costing the public over \$1 billion a year



Sources: NHDES, NECIA, UNH, US EIA | Photo: Merrimack Station Power Plant in Bow, NH (O'Connor Constructors)



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# Challenge: 100% Clean Energy

NH 100% Clean Power Plan



Residential rooftop PV  
**4.5%**



Solar PV plants  
**24.2%**



Commercial/ govt  
rooftop PV  
**3.3%**



Onshore wind  
**40%**



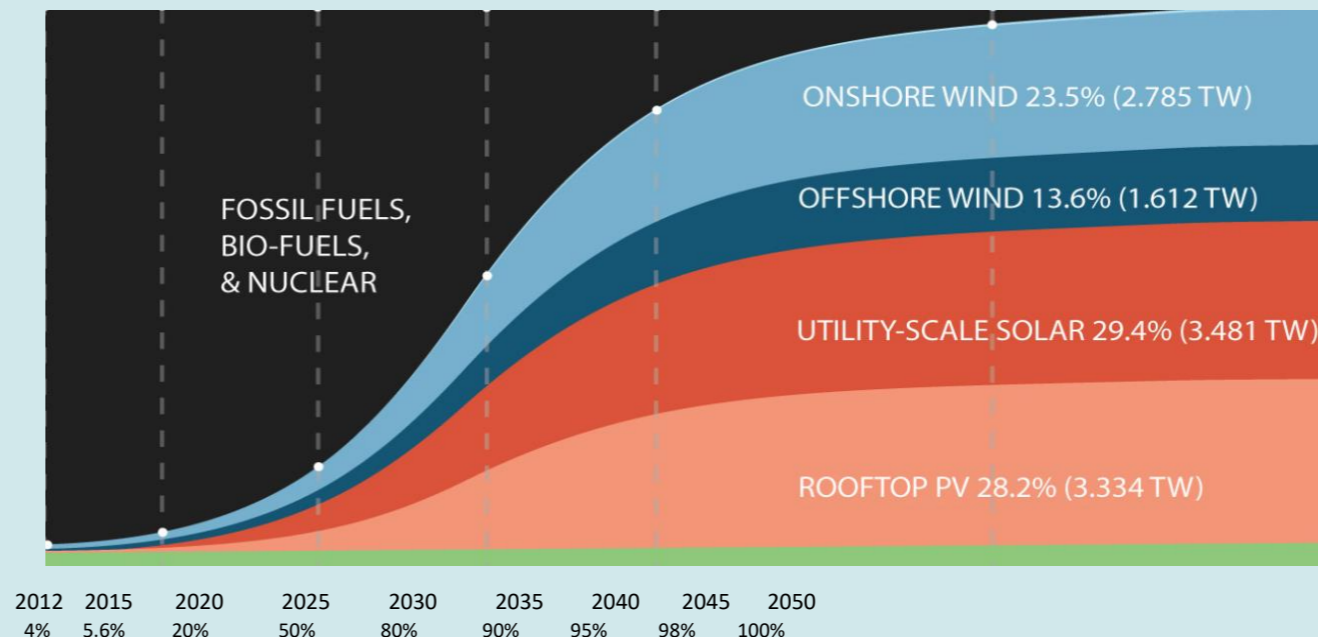
Offshore wind  
**20%**



Hydroelectric  
**6.5%**

- New Hampshire could transition from 85% non-renewable energy today to 100% clean energy by 2050 and cut emissions drastically
- 100% clean energy would create 16,000+ long-term NH jobs and take <2.5% of land

Pathway to 100% Clean Energy by 2050



Source: Solutions Project, Stanford University - 50 State Clean Energy Pathways



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# Highlighted Clients

*Northern New England Institutions &  
Municipalities*



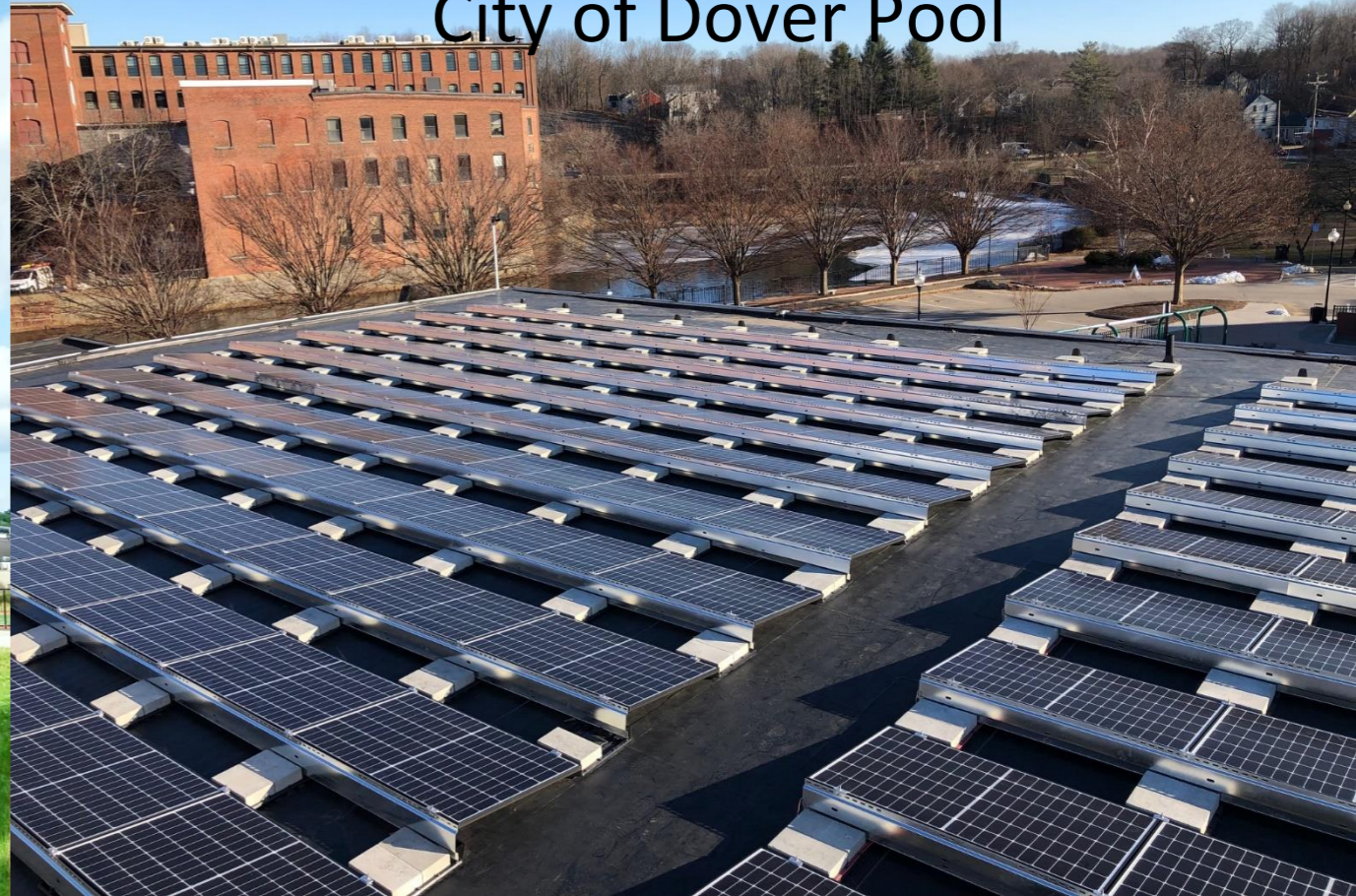
**REVISION  
ENERGY**

# Projects/Customers in the neighborhood ....

## Oyster River CSD



## Children's Museum of NH & City of Dover Pool



## Nottingham Fire Station & Community Center



## Philips Exeter Academy Fieldhouse



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# *Kennebec Sanitary District*

*968 kW, 2808 panels*



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*City of Portland, ME landfill*  
*1.6 MW,*



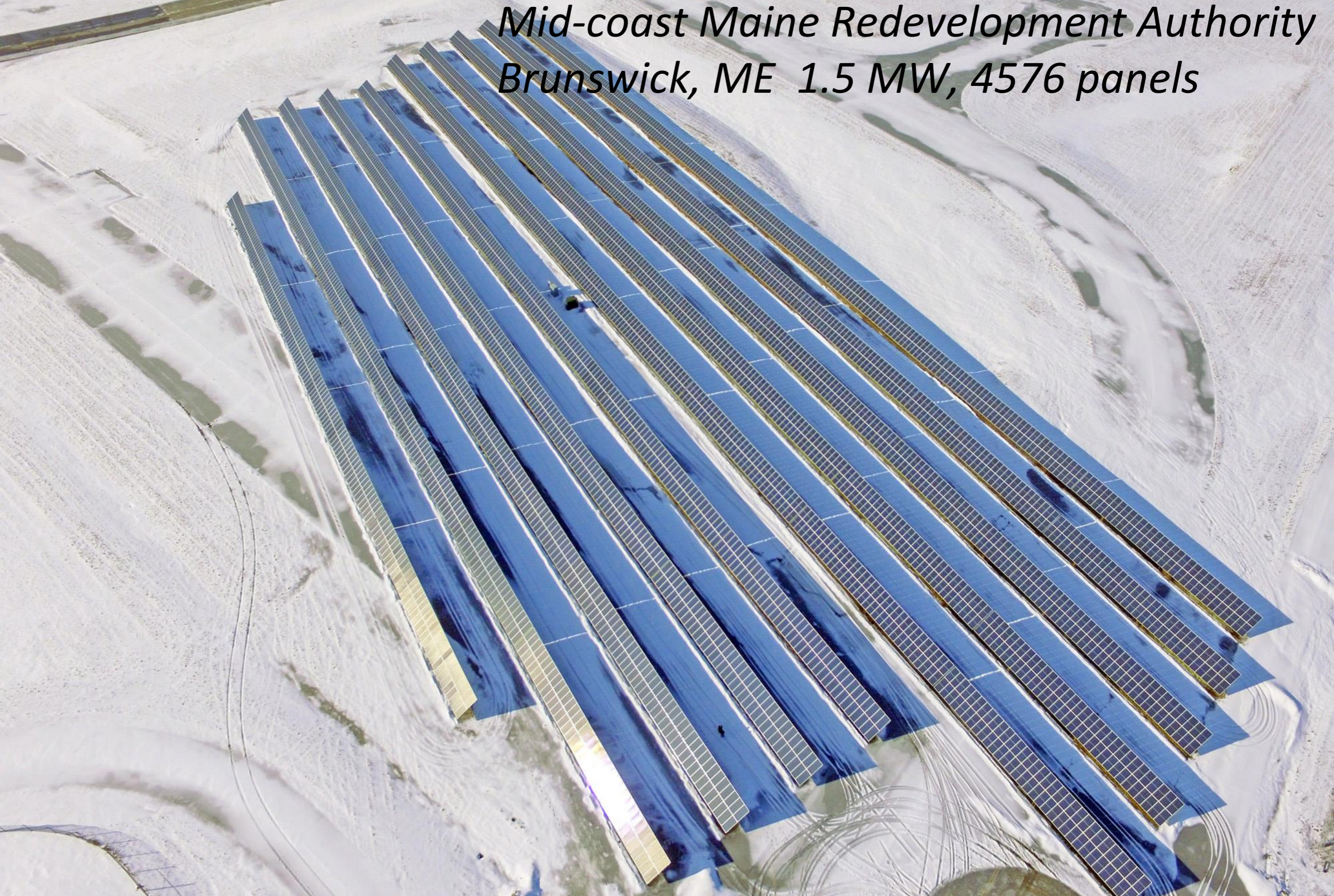
**REVISION ENERGY**

# *City of South Portland, ME landfill*



**REVISION ENERGY**

*Mid-coast Maine Redevelopment Authority  
Brunswick, ME 1.5 MW, 4576 panels*



**REVISION ENERGY**

# *Town of Durham Gravel Pit* *Lee, NH*



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*Maine Idyll Court Community Solar Farm  
Freeport, ME*



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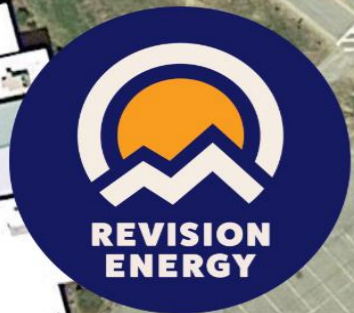
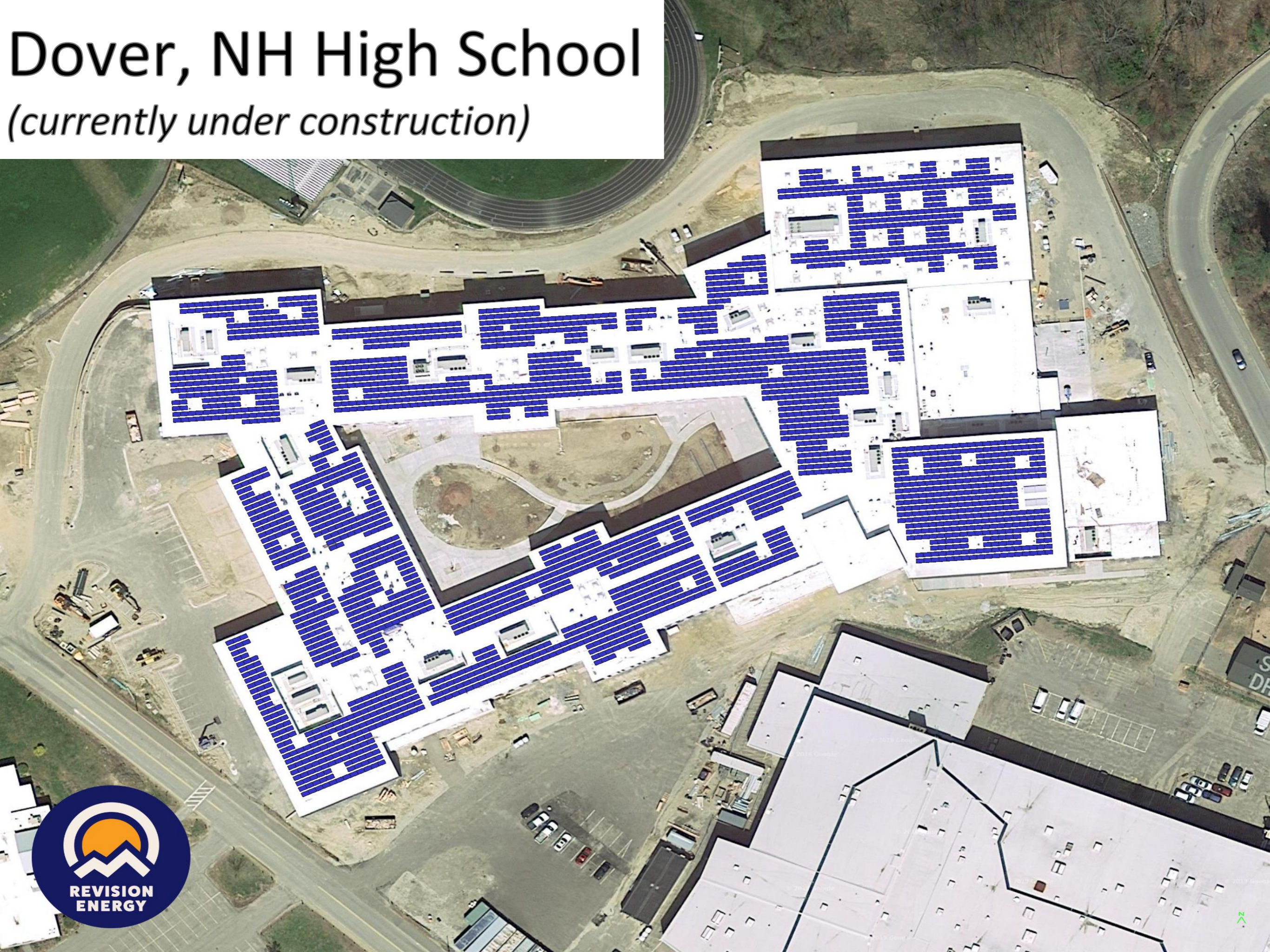
# Dartmouth College

*8 different campus rooftops*



# Dover, NH High School

*(currently under construction)*



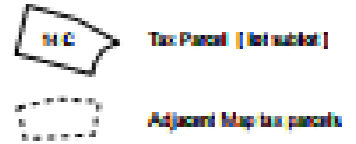



# Zoning and Planning Board considerations



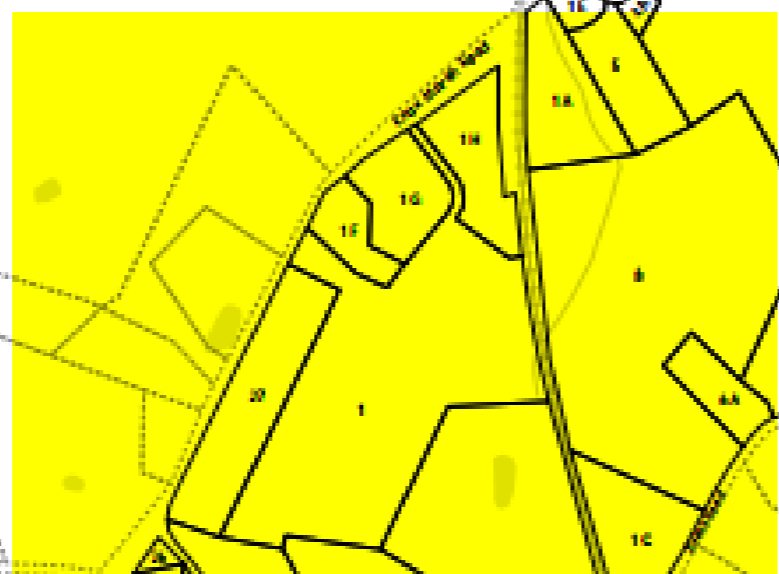
**REVISION ENERGY**

Town of Madbury, New Hampshire  
Tax Parcel Map 8



0 500 1,000 2,000 Feet

Surface water and wetland features from USGS/NOAA 1:25000 data. Revised 10/2014



Durham

Durham

DiBerto, Anthony 314 Knox Marsh Rd. Madbury NH

Looks like 3-phase power along the RR tracks (and elsewhere to /from the substation)

Eversource Sub-station





Ruler ✕

Line Path Polygon Circle 3D path 3D polygon

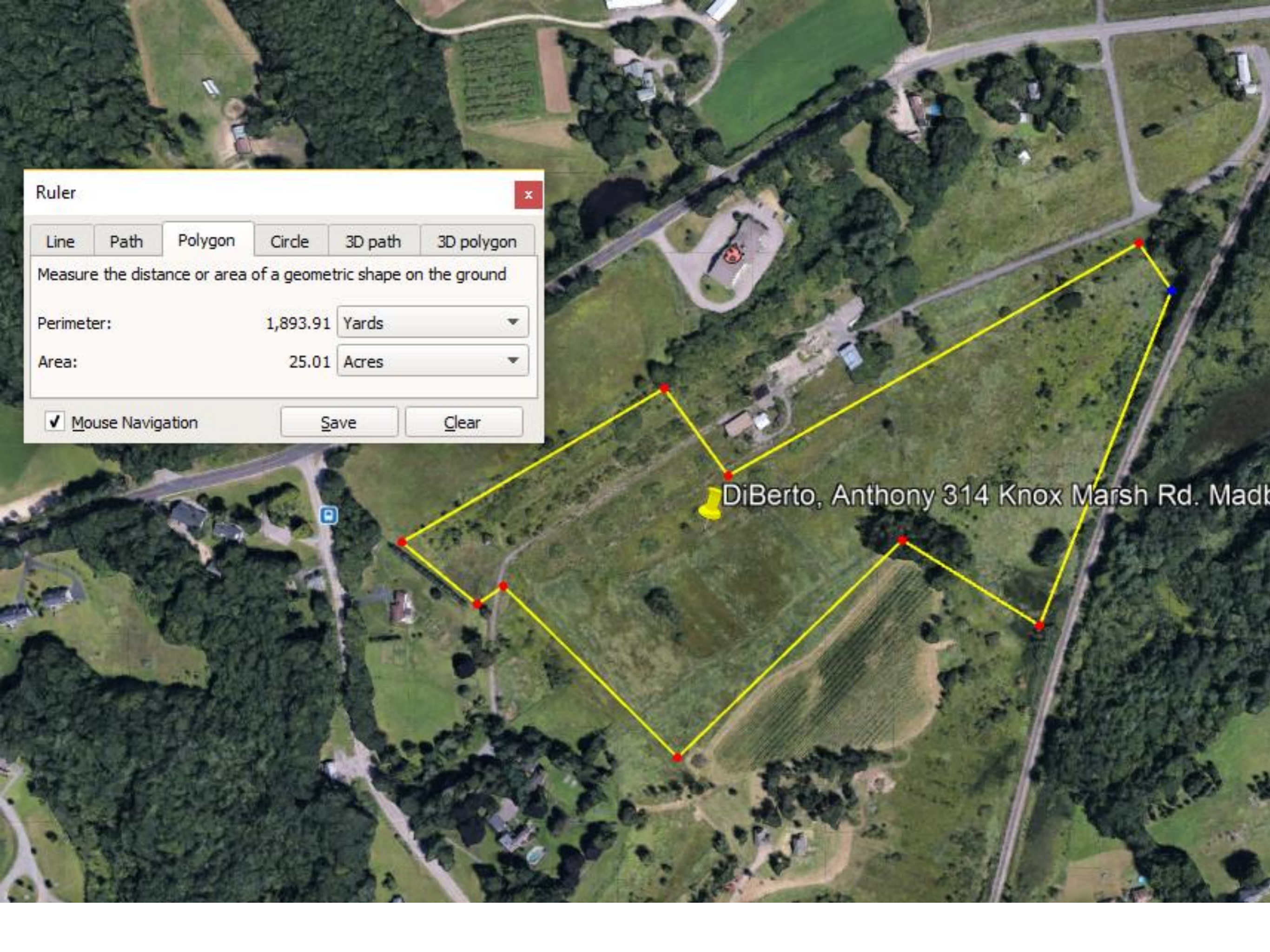
Measure the distance or area of a geometric shape on the ground

Perimeter: 1,893.91 Yards ▾

Area: 25.01 Acres ▾

Mouse Navigation Save Clear

DiBerto, Anthony 314 Knox Marsh Rd. Madh









April 29, 2019

**Wetlands**

-  Estuarine and Marine Deepwater
-  Estuarine and Marine Wetland

-  Freshwater Emergent Wetland
-  Freshwater Forested/Shrub Wetland
-  Freshwater Pond

-  Lake
-  Other
-  Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

# Client & Community Engagement *Partnership Opportunities*



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# Ribbon Cuttings & Public Events



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# Recent Media Attention in NH

## NEW HAMPSHIRE UNION LEADER NH Town Saving Money with Solar

Solar panels that power Brentwood municipal buildings

By JASON SCHREIBER  
September 1, 2017

BRENTWOOD — Under sunny skies, a newly built solar array in a field next to the Brentwood fire station was turned on for the first time Thursday to begin providing enough power to meet the demands of Brentwood's municipal buildings.

The solar panels that now fill the field began popping up outside the fire station at the corner of Routes 125 and 111A over the past few weeks as part of the town's effort to save thousands in tax dollars down the road.

"The fact that the system is large enough to cover the entire town of Brentwood's municipal electric costs is certainly notable," said James Hasselbeck, operations manager for ReVision Energy, the company that installed the array.

Talk of going solar began at the 2016 town meeting when resident Jane Byrne proposed the idea. Residents weren't ready to support it at the time, but they wanted to study the feasibility. After further investigation, the town decided to move ahead with the project this year and signed a 20-year contract with ReVision Energy, which has an office in Brentwood.

Malcolm Allison, a member of the town's solar committee who also serves on the budget committee, said the town didn't have to pay for the solar array or its installation.

ReVision Energy will own the array, but the town will have the option to purchase it after six years at a significantly reduced cost.

The array is expected to generate 160,000 kilowatts of electricity annually. The solar power will feed back into the grid to offset the town's annual \$26,000 electric bill from Eversource.

Allison said that the amount of power generated by the solar array will be enough to cover about 75 percent of the cost of providing electricity to all town buildings.



Chris Lee of ReVision Energy

"In the long run, that would normally mean taxes to pay the array.

Through its investment, the town will pay ReVision Energy for the kilowatt hour of electricity it produces. Allison said that the array will produce about 160,000 kilowatt hours of electricity each year, which is equivalent to offsetting more than 45,000 pounds of carbon pollution.

ReVision Energy will own the system through a Power Purchase Agreement (PPA) with NSKS. The agreement is an innovative financing tool that allows nonprofits to benefit from solar power on a cashflow-neutral basis. Under the terms, the nonprofit agrees to purchase electricity from ReVision Energy at a fixed rate below its current cost of electricity. At year seven of the agreement, the nonprofit will have the option to purchase the system at a significant

## BUSINESSNH MAGAZINE

### Nashua Soup Kitchen to Become First Solar-Powered Nonprofit, Save \$176,282

October 10, 2017

The Nashua Soup Kitchen & Shelter, which provides food and shelter to thousands of local residents in need, is set to become the first solar-powered nonprofit organization in Nashua. The Nashua Soup Kitchen & Shelter (NSKS) board recently contracted with ReVision Energy for the installation and operation of a 39.3-kilowatt solar array, augmenting its longstanding commitment to energy efficiency and sustainability while saving thousands of dollars in electricity costs per year.

According to NSKS Executive Director Michael Reinke, "The Nashua Soup Kitchen & Shelter is committed to being a good steward of the earth's resources. We feed the hungry and shelter those without a home. Our mission is possible only because of our volunteers, our supporters, and, as an organization, we are able to direct the generous bounty of the earth to those in need. Partnering with ReVision Energy, we will model best practices and devote even more of our donor's dollar to helping meet the most basic needs of our community."

The solar project will include 131 solar panels mounted on both flat and pitched roof sections of the NSKS facility at 2 Quincy St. facility in downtown Nashua. The system also includes two SolarEdge inverters, which will convert direct current (DC) electricity generated by the array into alternating current (AC) used by the facility. A web-based monitoring platform will allow the nonprofit to track the solar array's performance in real time.

Nashua Soup Kitchen & Shelter is expected to save roughly \$176,282 over the life of the system, offsetting a significant share of its electric load. The array is expected to produce approximately 43,080 kilowatt hours of clean energy each year, which is equivalent to offsetting more than 45,000 pounds of carbon pollution.

ReVision Energy will own the system through a Power Purchase Agreement (PPA) with NSKS. The agreement is an innovative financing tool that allows nonprofits to benefit from solar power on a cashflow-neutral basis. Under the terms, the nonprofit agrees to purchase electricity from ReVision Energy at a fixed rate below its current cost of electricity. At year seven of the agreement, the nonprofit will have the option to purchase the system at a significant



discount, enabling the facility to generate free solar power for decades to come.

The PPA arrangement gives the nonprofit the ability to leverage the economic and environmental benefits of solar power while allowing ReVision Energy the opportunity to make community investments that align with its core values of creating positive change in the world.

Going solar isn't the first step NSKS has taken to save money and be a responsible steward of the environment. After a \$2.7 million capital campaign, NSKS completed renovations of a former VFW building in 2014 including comprehensive weatherization and other energy efficiency measures. Its food pantry and community kitchen provide a means to reduce food waste and encourage the consumption of healthy and nutritious food while setting an example for the larger community.

From a financial perspective, the solar array will also benefit the NSKS bottom line. Its current budget includes more than \$20,000 a year in electric costs. An investment in solar energy allows NSKS to lower its energy costs and devote more funding to its primary mission of providing food and shelter while reducing its impact on the environment. The project has also received a \$7,000 challenge grant from the New Hampshire Charitable Foundation, which is expected to be matched by the Nashua Soup Kitchen & Shelter's fundraising campaign.



## EAGLE TIMES

### Solar array to offset \$836,000 in power costs at city wastewater plant

By TIMOTHY LAROCHE  
September 29, 2017

CLAREMONT — City Councilors unanimously passed a resolution to appropriate almost \$320,000 from the Sewer Enterprise Fund for the construction of a solar array at the wastewater treatment plant. The funding for the project will come out of the retained earnings for the Sewer Enterprise Fund, and the resolution specifies that there will be [no] impact on the tax rate.

ReVision Energy is set to build the solar array on the land adjacent to the wastewater treatment plant on Plains Road. ReVision Director of Community Solar Initiatives Jack Ruderman explained at Wednesday's meeting that the installation is expected to last about 40 years, and generate about a quarter of the annual energy demand at the plant.

Previously, the town's reason when they put out a request was to save money. It's cost effective," Ruderman said of Claremont's purchasing of the array will be paid back over the course of 13 years.

According to estimates provided by Ruderman, the array is expected to save the city about \$40,000 in electricity costs after 15 years and gradually represent annual savings if energy rates continue to rise. After 30 years, savings are expected to total about \$460,000. By the end of the projected 40-year lifespan, the company estimates that the array will have saved about \$836,000.

"Utility rates will be over that 40-year period per year. Historically, the New Hampshire rate has gone up at about 3.6 percent per year in the last two decades."

ReVision Energy is the only other major solar array in the area that is a reverter, which typically lasts for about 20 years before replacement.



A 260-kilowatt solar array installed by ReVision Energy in 2016 powers the Eastman Village District wastewater treatment plant in Springfield, NH near Claremont. Dan Weeks, ReVision Energy

"It serves as a hedge for the city against rising energy prices," Ruderman said. "So by buying a solar panel, you're locking in your energy price for 40 years. If there is some geopolitical event or some climate event — like the brutal winter we had three years ago, when natural gas prices went crazy — this is some protection against price flux."

The city put the project out to bid in May, receiving interest from three companies. ReVision, the most locally-based of the three companies, ended up being awarded the project.

"ReVision was the most localized and familiar with Eversource's energy system and were very responsive compared to the other two," Department of Public Works Assistant Director Victor St. Pierre said of the bidding process.

Since the company uses panels manufactured outside of the United States, the city moved to lock in the details of the project before the end of September, when tariffs on the import of solar panels were expected to be enacted.

ReVision has also installed such panels in nearby towns as those at Inter-Lakes Regional High School and the Durham Gravel Pit.

ReVision provides a five-year workmanship warranty for their installation work, but the system itself has a 12-year product warranty and a 25-year linear performance guarantee. As the system ages, the performance is expected to degrade slightly each year. The linear performance guarantee ensures that the product will produce at least 83 percent of its initial performance.



# REVISION ENERGY

# Displays and Real-Time Monitoring

## SOLAR AT The Nature Conservancy!

The Nature Conservancy & REVISION ENERGY

**160**  
SOLAR PANELS

WHICH GENERATE

**48,972**  
KILOWATT HOURS OF ELECTRICITY

EACH YEAR, THIS OFFSETS

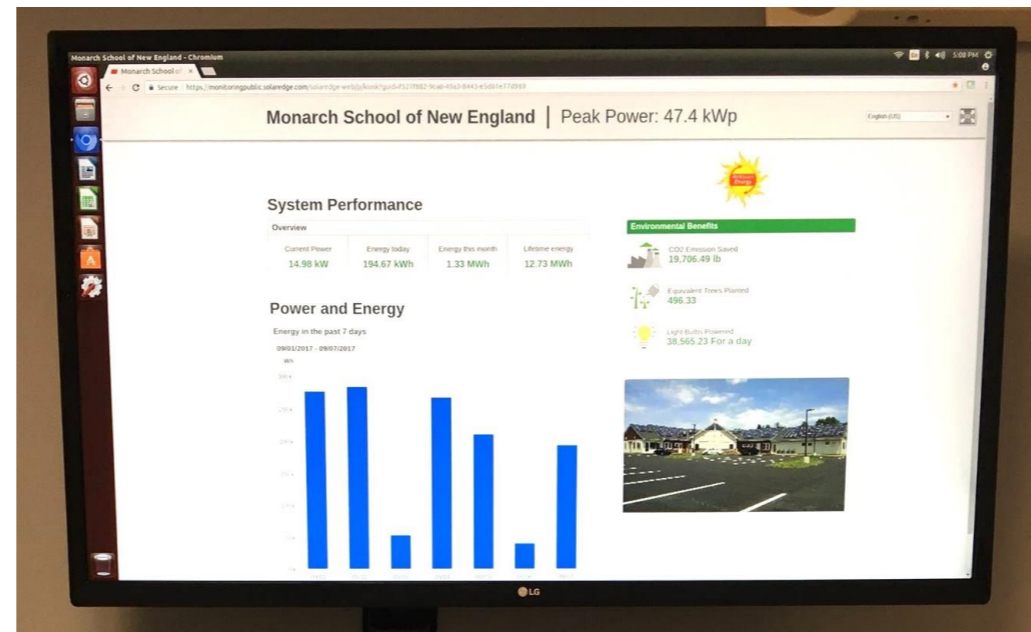
**2,900**  
GALLONS OF GASOLINE

OR

**64,789**  
MILES DRIVEN BY AN AVERAGE SEDAN

OR

**23,776**  
LBS OF COAL

279 Main Street, Lisbon, Maine, United States

9.01 kWp 48°F

Last Update June 4, 2018, 9:15 AM

Current Power **820 W**

Today	This Month	Lifetime
2.5 kWh	161.2 kWh	21.65 MWh

ReVision Energy & BRENTWOOD, NEW HAMPSHIRE 1742

## Brentwood Solar Array

**434 SOLAR PANELS**

OFFSETS MUNICIPAL ELECTRIC LOAD

## Sunshine Powers Brentwood!

Our 434-panel solar array outside the fire station offsets our town's electric load, with the exception of Swasey School. ReVision Energy installed the ground-mounted array in 2017. Harnessing the sun to generate 165,300 kilowatt-hours of electricity will save the Town of Brentwood as much as \$1 million over the life of the system while also drastically minimizing our impact on the environment. If all of the solar panels were laid end-to-end, lengthwise, the panels would span nearly one-half mile.

ReVision Energy is leading Northern New England's clean energy transition. The company is a Certified B Corporation, using business as a force for good to solve social and environmental issues. Learn more at [revisionenergy.com](http://revisionenergy.com).

[brentwoodnh.gov](http://brentwoodnh.gov) | [revisionenergy.com](http://revisionenergy.com)

ANNUALLY, OUR ARRAY OFFSETS:

- 175,879 POUNDS OF COAL BURNED
- 278,417 MILES DRIVEN BY A SEDAN

## Solar at White Heron!

WHITE HERON TEA & COFFEE COMMUNITY & ReVision Energy

**114**  
SOLAR PANELS

WHICH GENERATE

**37,453**  
KILOWATT HOURS OF ELECTRICITY

EACH YEAR, THIS OFFSETS

**2,013**  
GALLONS OF GASOLINE

OR

**1b**  
39,437 LBS OF CARBON

OR

**19,571**  
REPLINKS PER



**REVISION ENERGY**

# Interactive Education Events



**REVISION ENERGY**

# Helping us Help Schools & Nonprofits

- Over 100 solar projects for New England schools, towns, churches, shelters, etc. that couldn't otherwise afford solar power
- Over 7 megawatts (MW) of installed solar capacity for nonprofits in NH, ME, MA
- \$25+ million invested in bringing solar to local nonprofits through power-purchase agreements (PPAs), saving millions per year

## Sample NH Nonprofit Projects:

- *346 kW - Inter-Lakes School*
- *331 kW - Avesta Public Housing*
- *151 kW - City of Claremont*
- *145 kW - MacDowell Colony*
- *132 kW - Brentwood Fire Department*
- *72 kW - Appalachian Mountain Club*
- *58 kW - Hopkinton Fire Station*
- *66 kW - Concord Second Start*
- *64 kW - Pine Haven Boys Ctr.*
- *40 kW - Nashua Soup Kitchen & Shelter*
- *18 kW - Crossroads House Shelter*
- *26 kW - Farmington Children's Center*
- *25 kW - Exeter Public Housing*
- *12 kW - Friends Forever (Durham)*



# Complementary Technologies

*Energy Efficiency/Clean Energy Options*



**REVISION ENERGY**



# SolarEdge inverters (indoors)



# LED lighting (indoors)



# LED lighting (outdoors)





# Sample metal roof installation





# *Solar Parking Canopy – Hyatt Place Portland ME*



# Sample Carports

