The ReVision Solar PPA
Solar Energy for Affordable Housing Projects and other...
Experience: 10,000+ solar energy systems installed since 2003

Credentials: NABCEP Certifications, Master Trade Licenses, extensive professional training & certification

Vision: Transition Northern New England to a clean, solar energy powered economy while creating positive social change
To accelerate the transition from finite and polluting fossil fuels to clean, local renewable energy sources. To help local business, non-profits and everyone in our community access renewable energy through advantageous financing partnerships.

74 kilowatt PPA project at Proctor Academy in Andover, NH
THE 100% SOLAR HOUSEHOLD
Affordable Technology Replaces Fossil Fuels

Solar Panels make clean electricity for 30+ years

Electric Car is charged by solar, eliminating gas

Battery Storage powers home in outages

Excess energy earns you credits and benefits neighbors

Own Your Power & Control Your Energy Costs Today
THE SOLAR POWERED BUSINESS
Affordable Technology Replaces Fossil Fuels

Solar Panels
make clean electricity for 30+ years
and generate credits for excess
energy sent back to the grid.

Solar Hot Water
efficient water heating options

Battery Storage
provides backup for power outages

LED lighting

Electric Car Charging
offers charging stations to customers and
employees to reduce fuel consumption

Electric Heat Pump
eliminates gas, oil & propane
Rising Global Temperature
Maine:

Highest per capita oil & gas consumption in New England

Highest per capita CO2 emissions in New England

Source: www.eia.gov
U.S. Installed Cost of Solar Power ($/W)
Utility Rates Continue To Rise

Electricity prices have continued to increase unpredictably over time.

Average Monthly Retail Price of U.S. Residential Electricity
U.S. Energy Information Administration
Do we get enough sunshine in New England?
World Map of Solar Potential
Rooftop Solar Potential in the U.S.
Grid-Tied Solar Electricity

How It Works:

1. Sun hits panels, creating DC electricity

2. Solar inverter converts DC power into AC power for household needs such as lights, television, computers, etc.

3. Excess power is sent to the grid, crediting your monthly bill
Challenges of Solar for Non-Profits

• Schools/Governments/Non-Profits cannot directly monetize tax credits
  • Outright purchase ~20-25 year payback
• Capital availability
• Perceived Technical Risk

• Instead of buying outright, Power Purchase Agreement
  • No upfront cost to non-profit
  • Indirectly takes advantage of federal tax incentives
  • Speeds up payback period
# Solar PPA Structure

**Investor**

- Provide capital
- Build/Own/Operate > 6 years
- Recoup Investment through:
  - Federal Tax Credit
  - Depreciation & Tax Benefits
  - Energy Payments from Host
  - Grants, Rebates, REC Sales
  - Buyout Option (After Year 7)

**Host**

- Provides Roof/Ground Space
- Net Meters with Utility
- Off takes all electricity
- Buys out equipment after Year 7
BAYSIDE PROJECT INFO

PORTLAND, ME
45 UNITS: STUDIO, 1 BR & 2 BR
$142 / SF
4 STORIES
TAX CREDIT SUBSIDIZED RENTAL

PORTLAND HOUSING AUTHORITY
MAINE

AVESTA HOUSING
ReVision Energy Solar Power Purchase Agreement

- ReVision to build/own/operate a 55 kW rooftop PV system
- No upfront cost to PHA
- Long term power purchase agreement offered at existing CMP rate and with 2% escalator
- PHA has ‘buyout’ options after year 6
55.95 kW<sub>dc</sub> Photovoltaic System
Annual Production Estimate: 60,823 kWh

Project Design Notes –

DC System: 55.95 kW<sub>dc</sub> Photovoltaic Array
(167) 335-watt, 72-cell PV Modules
Module Type: LG335 S2W-G4 MonoX
Dimensions: 77.17" x 39.37" x 1.81"

AC System: 43.2 kW<sub>ac</sub>
(3) SolarEdge 14.4kW Grid-tied Inverters
(64) SolarEdge P700 DC Optimizers

Racking System: Panel Claw 5D HD III
Roof Mount, Ballasted Fixed Tilt
Array Tilt: 5° Array Azimuth: 228°
Intra-Row Spacing: 0.6'
Dead Load of Solar Array: 6 to 8 psf (typ)
Setback from Roof Edge: 4' (required)
Roof Dimensions: Shown
Roof Type: Fully Adhered EPDM or equivalent
Building Height: 67'

Clearances for Roof Access, HVAC Equipment
5' Wide Walkway
40-Year Cost Savings

- PPA (Y7 B/O): $163,722
- Utility (2.5% Esc.): $436,003
- Savings: $272,281
**40 Year Cost of Energy**

<table>
<thead>
<tr>
<th>Cost per kWh</th>
<th>PPA (Y7 B/O)</th>
<th>PPA (Y21 B/O)</th>
<th>Utility (0.0% Esc.)</th>
<th>Utility (2.5% Esc.)</th>
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<td>$0.074</td>
<td>$0.105</td>
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55.95 kW<sub>DC</sub>, 43.2 kW<sub>AC</sub> Photovoltaic System
Annual Production Estimate: 60,823 kWh

- Inverter 1: Strings 1-3
- Inverter 2: Strings 4-6
- Inverter 3: Strings 7-9

(167) LG 335W PV Modules Total
Inverters 1-2: (56) Modules, (20) P700 Optimizers: 2 Strings of 19, 1 String of 18
Inverter 3: (55) Modules, (28) P700 Optimizers: 1 String of 19, 2 Strings of 18

(3) 1<sup>st</sup> EMT w/ (5) #8 THWN-2 per conduit: L1,L2,L3,N,G

Inverter: SE 14.4KUS with Integrated Safety Switch

Dedicated Solar main lug
AC Combiner Panel
200A Rated, 208Y/120 Vac, 3<sup>φ</sup>
With (3) 3<sup>φ</sup> 50-amp Breakers,
(1) 3<sup>φ</sup> 15-amp voltage sense breaker

(3) 1/0 THWN-2 L1,L2,L3
(2) #6 THWN-2 N.G. 1½" EMT

Utility Meter
To Utility

300A Meter Main

400A Main Lug Panel
208Y / 120 V

Note:
Per conversation with Apex Engineering, aquaside rp main breaker in meter main was set at 300A down from the factory setting of 400A.
Modules

LG Mono X® Plus is LG Electronics' high-quality monocrystalline module. The quality is the result of our strong commitment to developing a module to improve benefits for customers. Features of Mono X® Plus include durability, convenient installation, and aesthetic exterior.

72 cell

Enhanced Performance Warranty
LG Mono X® 72 cell comes with the enhanced performance limited warranty. The initial degradation has been improved from -3% to -2%, and the annual degradation has also changed from -0.7% to -0.6%.

Improved Product Warranty
In addition to the enhanced performance limited warranty, LG has extended the limited product warranty of LG Mono X® 72 cell for additional 2 years with its newly reinforced frame design.

Reduced LID (LILY Technology)
LG Mono X® 72 cell has improved the initial degradation by applying LG’s new LILY(LOW Impedance Lifetime Yield) Technology, which controls formation of Mono-Crystalline pali, the key factor of LID.

Light and Convenient
LG Mono X® 72 cell is carefully designed to benefit installers by allowing quick installation with a weight of just 44.79 lb. and better grips.
Inverters

SolarEdge Three Phase Inverters for the 208V Grid for North America

SE9KUS / SE14.4KUS

The best choice for SolarEdge enabled systems
- Specifically designed to work with power optimizers
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- UL1741 SA certified, for CUPC Rule 21 grid compliance
- Built-in module-level monitoring
- Internet connection through Ethernet or Wireless
- Small, lightweight and easy to install outdoors or indoors on provided bracket
- Fixed voltage inverter for longer strings
- Integrated Safety Switch and DC fuses (plus & minus)
Ballasted Racking

EcoFoot2+

The next step in the EcoFoot Line:
The PV installation professionals tested EcoFoot2, helped us find ways to make it better, and the result is EcoFoot2+. More validation, fewer parts, and increased design flexibility.

Three main components (six with the push pin & nut)

The Foot
The white UL listed resists heat deflection properties are an advantage on fully exposed roof tops.

Preassembled Universal Clamp
The new preassembled universal clamp achieves integrated grounding without the use of grounding washers.

Wind Deflector
Our deflector is manufactured with a 6063-T6601 aluminum or if you rather you can select the aluminum option.
39.4 kW – Bartlett Woods
Combination pitched and flat roof System
installed in Yarmouth, ME
54 kW Ground Mount System
installed in Gorham, ME
50 kW (multi) Roof Mount System
installed in Antrim, NH
200 kW Ground Mount System
installed in Westbrook, ME
“That [energy] plan seeks to provide Thomas College with diverse renewable energy sources that will lower long-term energy expenses and keep tuition costs down.”

-Laurie Lachance, President, Thomas College

(170 kW PPA Project for Thomas College in Waterville, ME)
“Every cent that we save on this electric bill will go to scholarships for kids who need help. That’s the biggest win for us.”

- Glenn Cummings, President, Good Will Hinckley School.
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