The ReVision Solar PPA

Solar Energy for Affordable Housing Projects and other no

About ReVision Energy

Certified B Corporation bcorporation.net

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

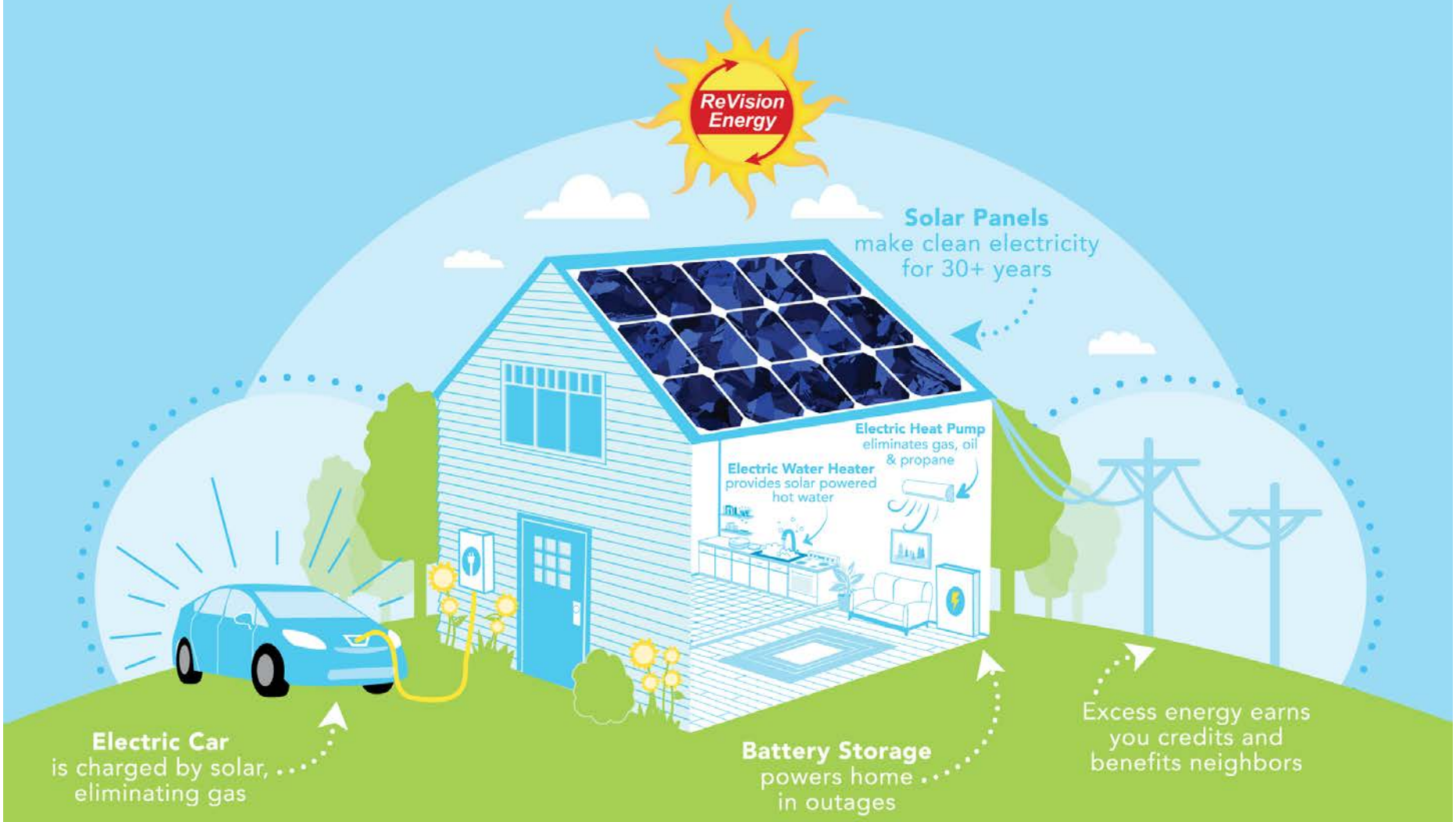
ReVision Energy's Mission

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

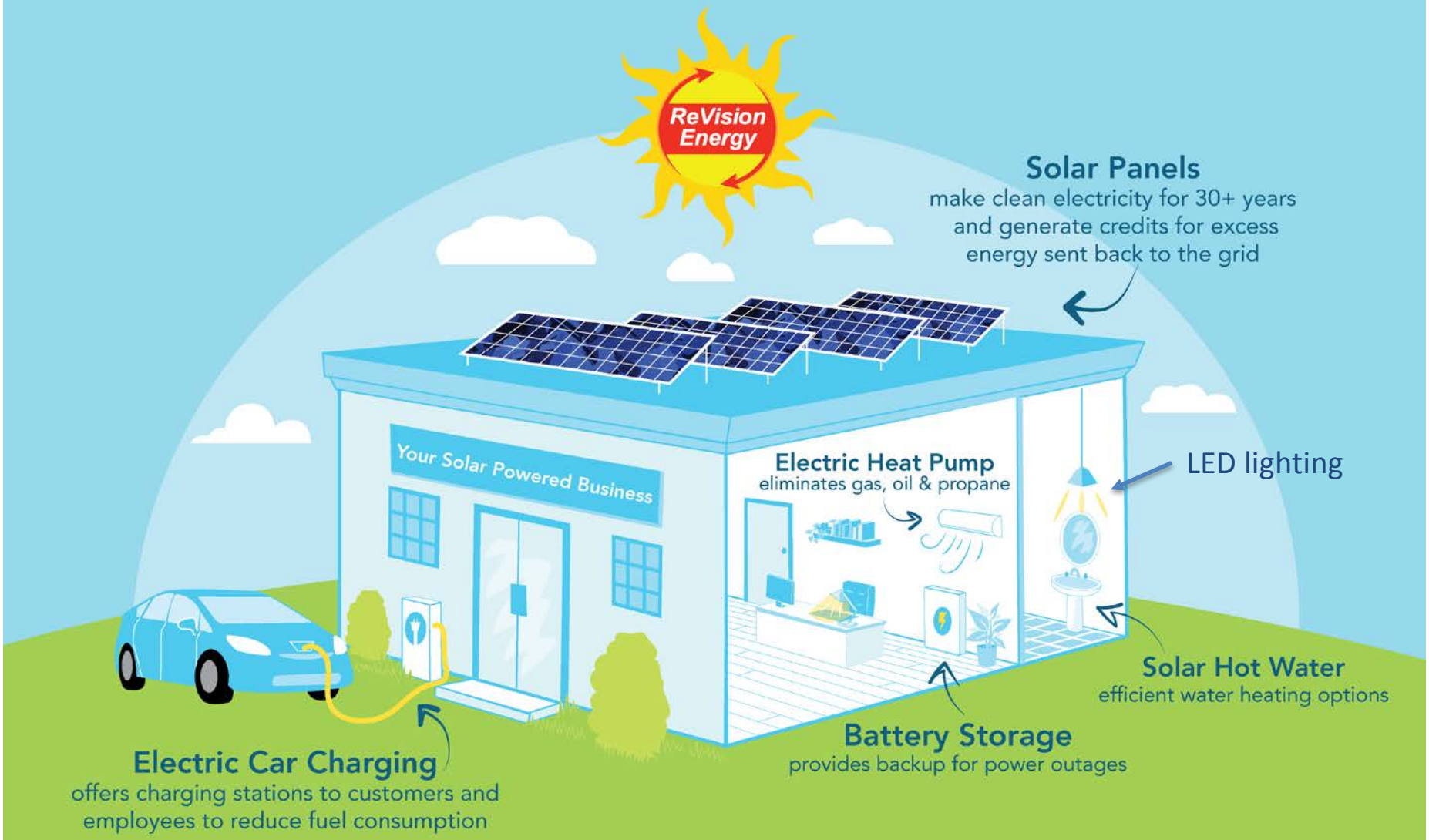
Affordable Technology Replaces Fossil Fuels



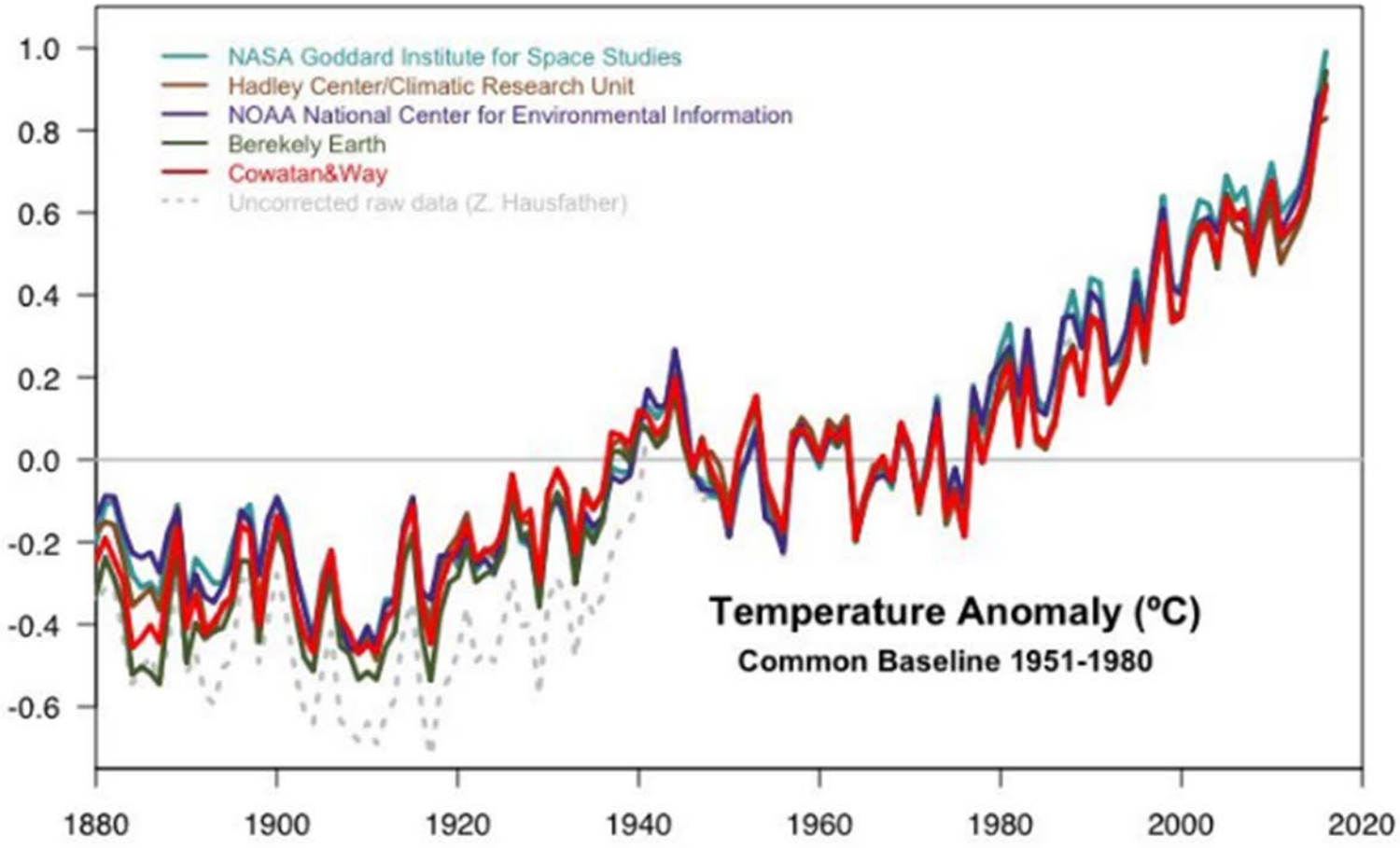
Own Your Power & Control Your Energy Costs Today

THE SOLAR POWERED BUSINESS

Affordable Technology Replaces Fossil Fuels



Rising Global Temperature

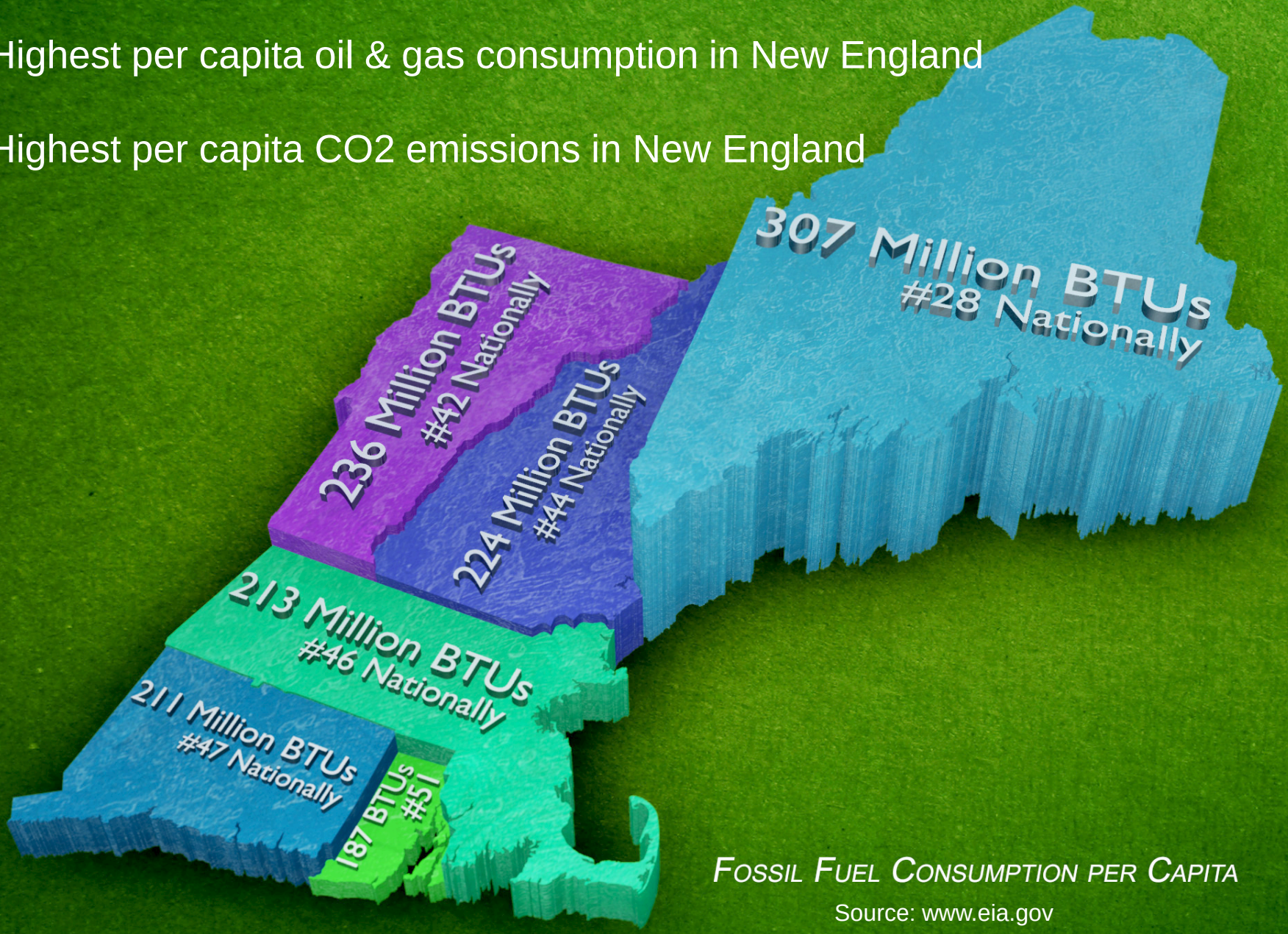



18,400 lbs. CO2

Maine:

Highest per capita oil & gas consumption in New England

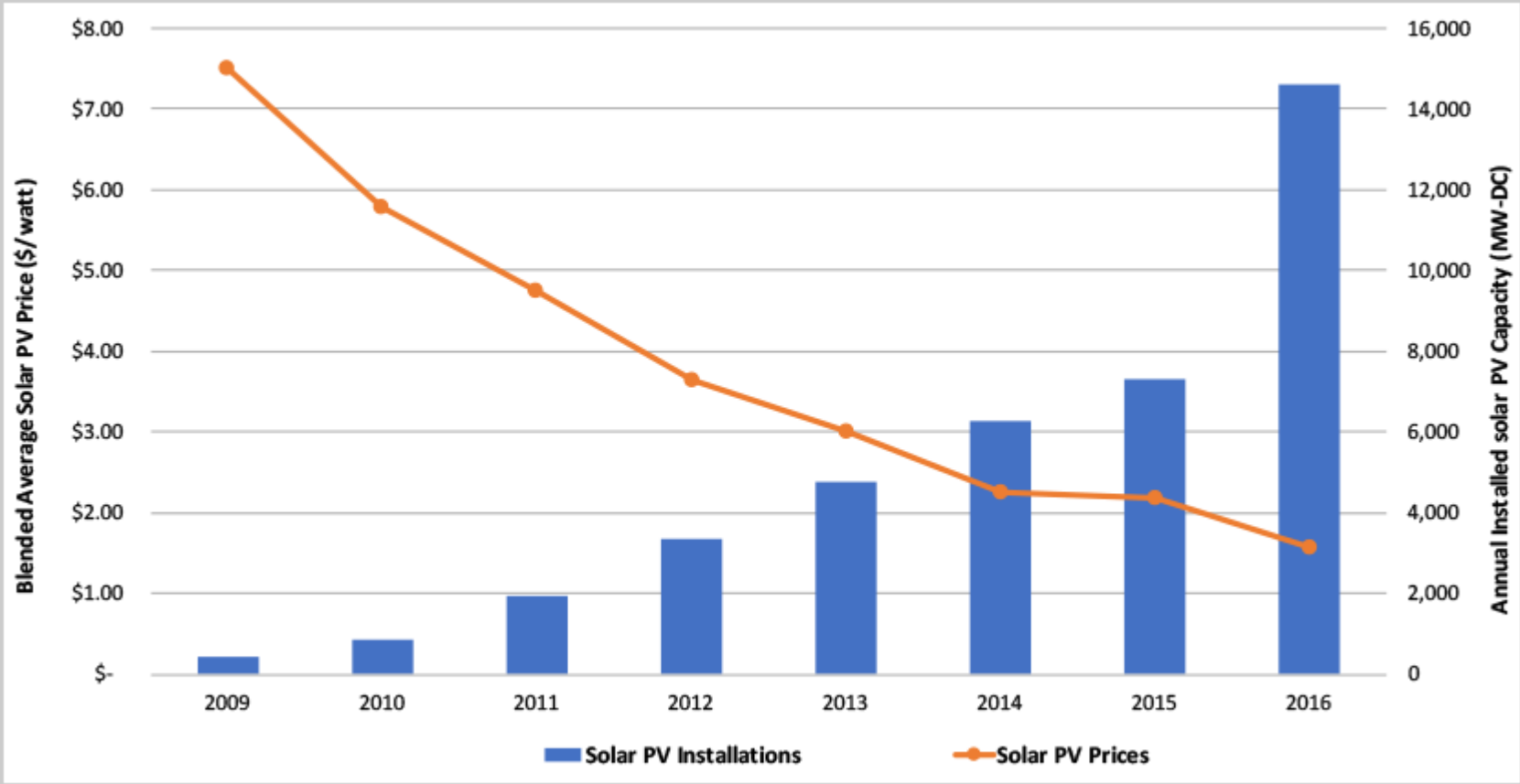
Highest per capita CO2 emissions in New England



Fossil Fuel Consumption per Capita

Source: www.eia.gov

U.S. Installed Cost of Solar Power ($/W)



gtmresearch SEIA Solar Energy Industries Association

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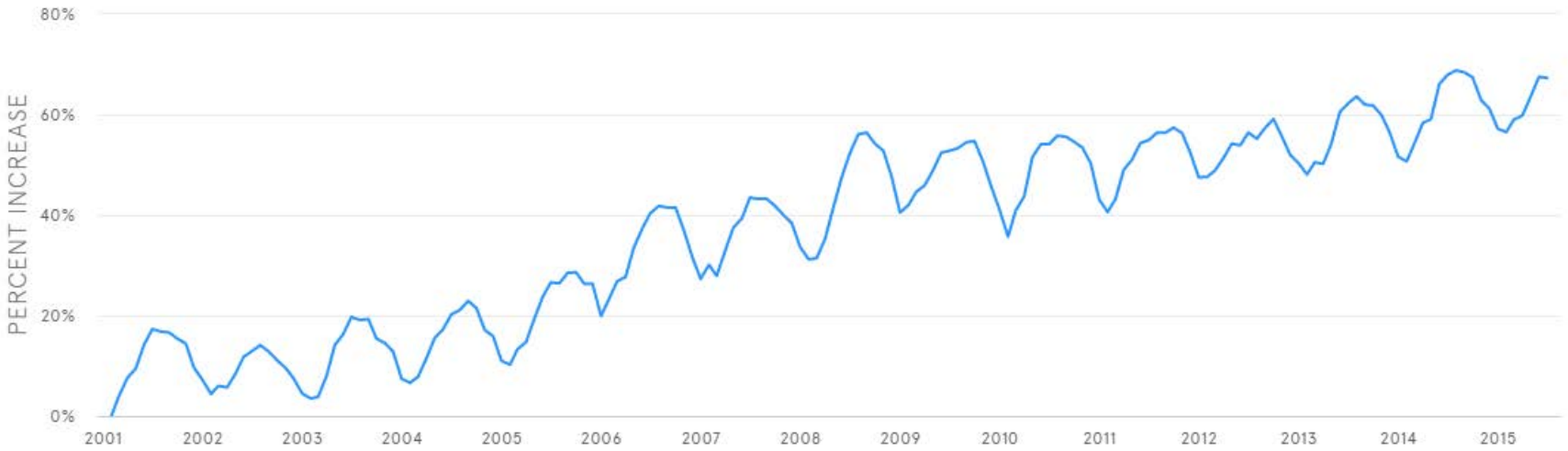
Utility Rates Continue To Rise

Electricity prices have continued to increase unpredictably over time.



Average Monthly Retail Price of U.S. Residential Electricity
U.S. Energy Information Administration

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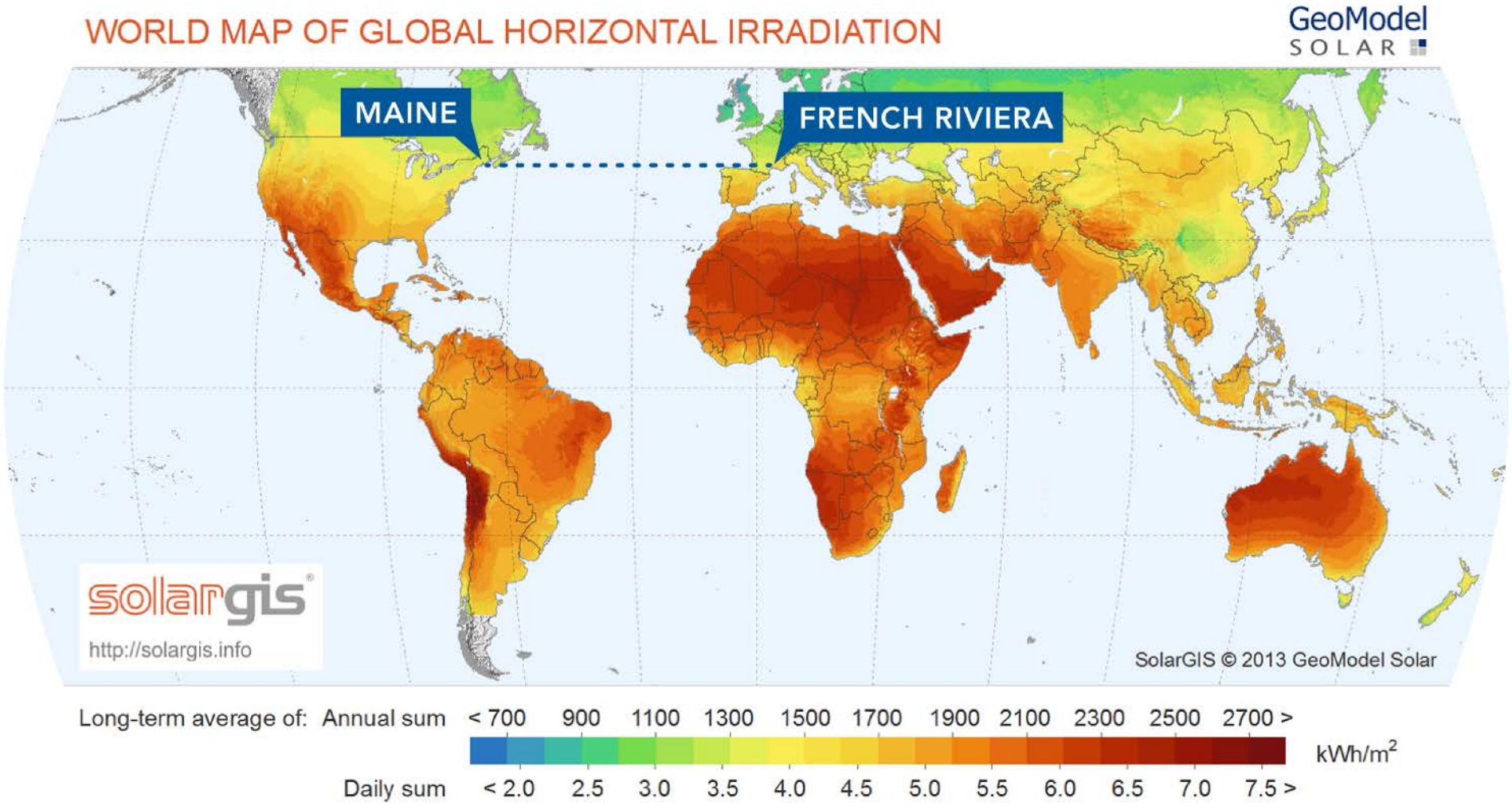
Do we get enough
sunshine in New England?

World Map of Solar Potential



Rooftop Solar Potential in the U.S.

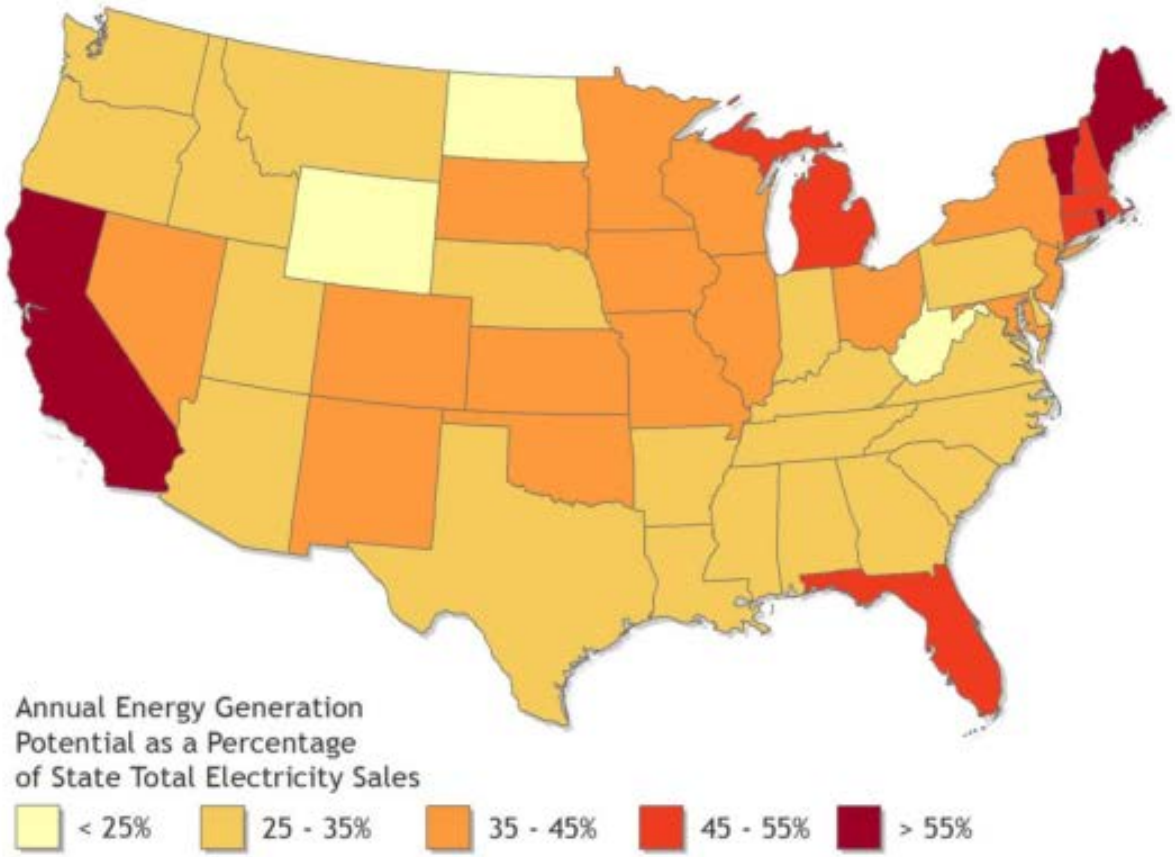


Figure ES-2. Potential rooftop PV annual generation from all buildings as a percentage of each state's total electricity sales in 2013

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
- Percieved 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

ReVision Energy

KAPLAN THOMPSON ARCHITECTS

WR
Wright-Ryan

BAYSIDE PROJECT INFO

PORTLAND, ME

45 UNITS: STUDIO, 1 BR & 2 BR

$142 / SF

4 STORIES

TAX CREDIT SUBSIDIZED RENTAL

STAFF GRAPHIC | MICHAEL FISHER

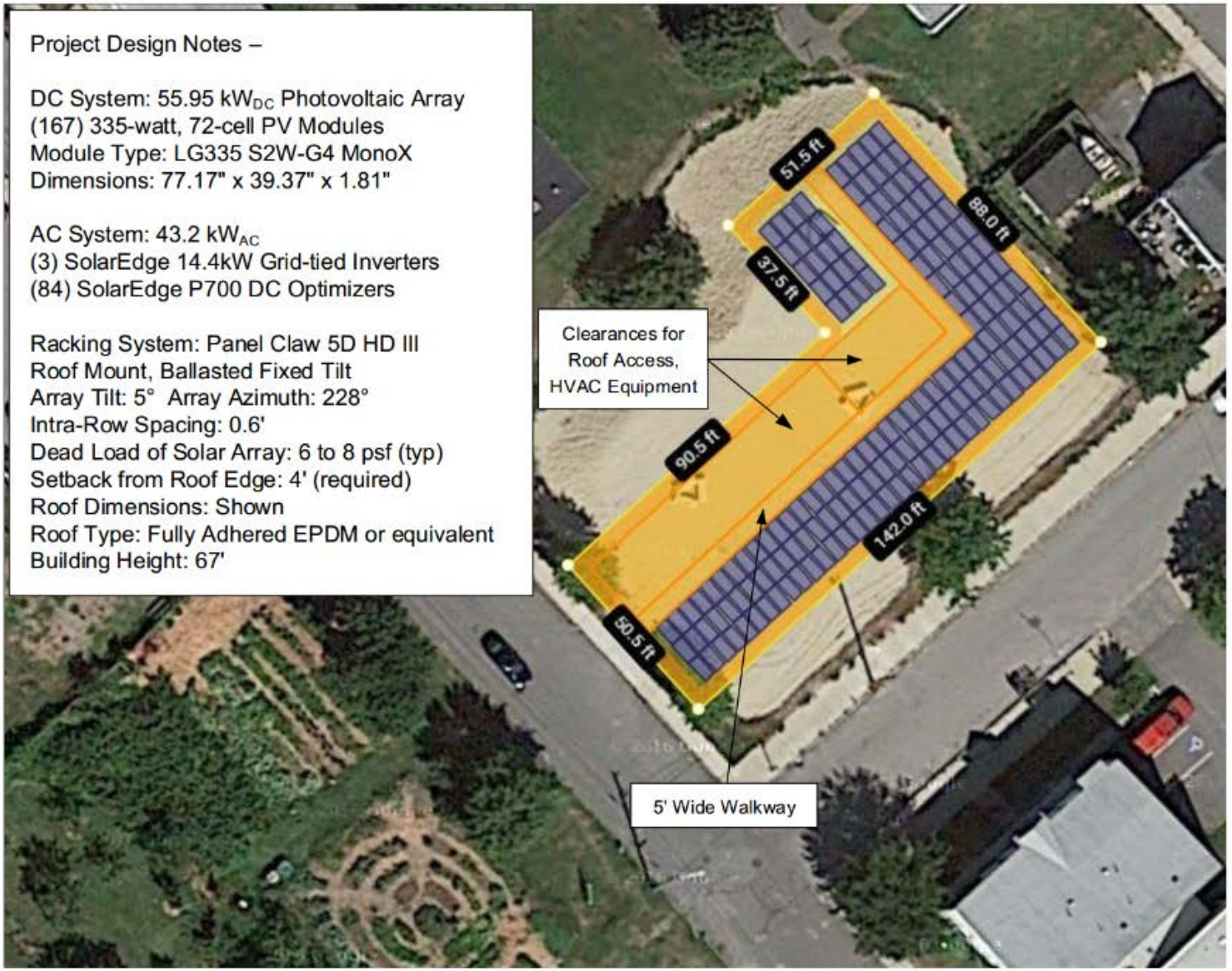
PORTLAND HOUSING AUTHORITY
MAINE

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_{DC} Photovoltaic System
Annual Production Estimate: 60,823 kWh



Project Design Notes –

DC System: 55.95 kW_{DC} 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_{AC}
(3) SolarEdge 14.4kW Grid-tied Inverters
(84) 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'

ReVision Energy
142 Presumpscot Street
Portland, ME 04103
(207) 221-6342

Customer Name:

Bayside Anchor (RFP)
81 East Oxford Street
Portland, ME 04101

System Type:

Photovoltaic Array

Designed by: LB

Date: June 24, 2016

SITE PLAN

SHEET A02

Annual Production Report produced by Josh Baston

For Construction - 2016.11.03 Bayside Anchor, 81 East Oxford Street, Portland ME 04101

Report

Project Name	Bayside Anchor
Project Address	81 East Oxford Street, Portland ME 04101
Prepared By	Josh Baston joshb@revisionenergy.com

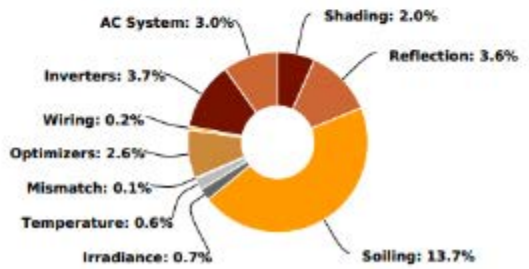
System Metrics

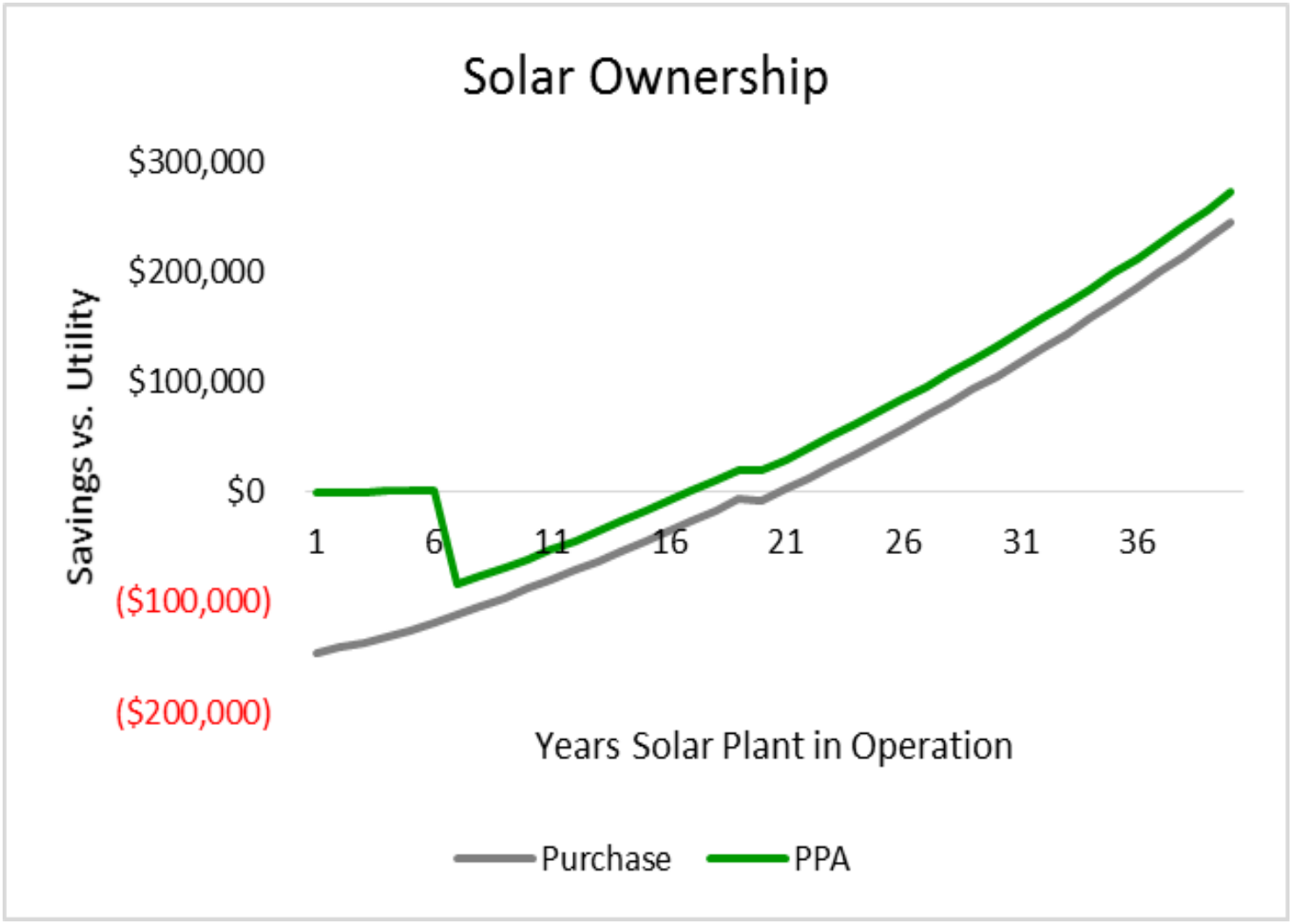
Design	For Construction - 2016.11.03
Module DC Nameplate	55.9 kW
Inverter AC Nameplate	43.5 kW Load Ratio: 1.29
Annual Production	63.15 MWh
Performance Ratio	73.7%
kWh/kWp	1,128.7
Weather Dataset	TMY, PORTLAND, NSRDB (tmy2)
Simulator Version	153 (443094f0ad-ea93f843ef-fce6caf820-00aa14f623)

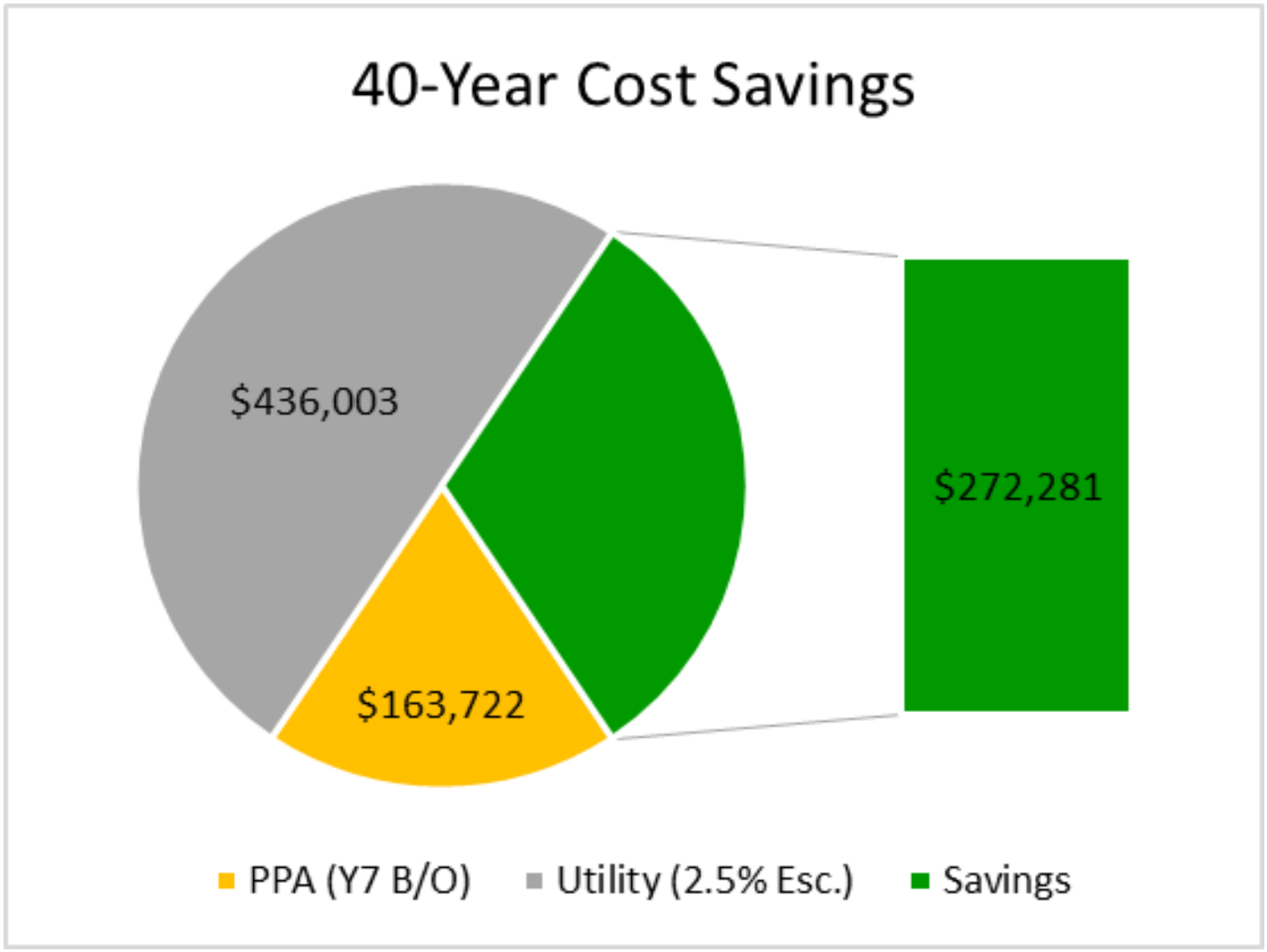
Project Location

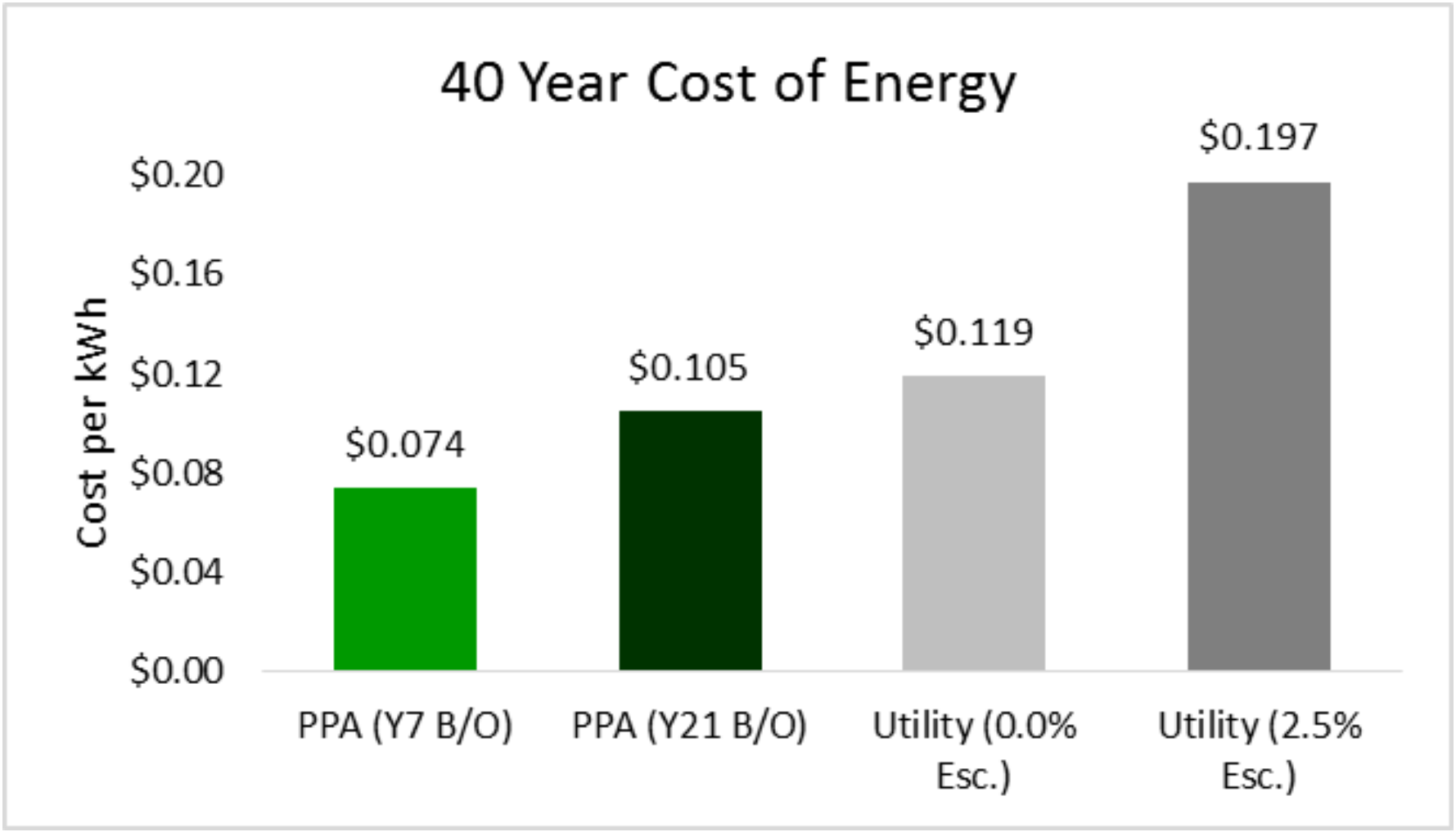
Monthly Production

Sources of System Loss




Solar Ownership
$300,000
$200,000
$100,000
$0
($100,000)
($200,000)
Savings vs. Utility
1
6
11
16
21
26
31
36
Years Solar Plant in Operation
Purchase
PPA


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


40 Year Cost of Energy
Cost per kWh
$0.20
$0.16
$0.12
$0.08
$0.04
$0.00
$0.074
$0.105
$0.119
$0.197
PPA (Y7 B/O)
PPA (Y21 B/O)
Utility (0.0% Esc.)
Utility (2.5% Esc.)

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

55.95 kW_{DC}, 43.2 kW_{AC} Photovoltaic System
Annual Production Estimate: 60,823 kWh

(167) LG 335W PV Modules Total
Inverters 1-2: (56) Modules, (28) 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" EMT w/ (5) #8 THWN-2
per conduit: L1,L2,L3,N,G

Inverter: SE 14.4KUS
with Integrated Safety Switch

Inverter: SE 14.4KUS
with Integrated Safety Switch

Inverter: SE 14.4KUS
with Integrated Safety Switch

(+) (-) DC AC

50 50 50 15

CT metered, Private
REC Meter

Dedicated Solar main lug
AC Combiner Panel
200A Rated, 208Y/120 Vac, 3φ
With (3) 3p 50-amp Breakers,
(1) 3p 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

150

400A Main Lug
Panel
208Y / 120 V

(6) #6 THWN-2, +,- (1) #6
ground (1 sting per inverter,
combine 3 strings in parallel
at roof box). 2" PVC, EMT

Note:

Per conversation with Apex Engineering, adjustable trip main breaker in meter main was set at 300A down from the factory setting of 400A.

ReVision Energy
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(207) 221-6342

Customer Name:

Bayside Anchor (RFP)
81 East Oxford Street
Portland, ME 04101

System Type:

Photovoltaic Array

Designed by: LB

Date: November 19, 2016

ONE-LINE DIAGRAM

SHEET E01

Modules

LG
Life's Good

Innovation for a Better Life™

LG Mono X® 72cell LG335S2W-G4

72 cell

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.

Intertek

Enhanced Performance Warranty
LG Mono X® 72cell 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%/yr to -0.6%/yr.

Reduced LID (LiLY Technology)
LG Mono X® 72cell has improved the initial degradation by applying LG's new LiLY(LID-improvement for Lifetime Yield) Technology, which controls formation of Boron-Oxygen pair, the key factor of LID.

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

Light and Convenient
LG Mono X® 72cell is carefully designed to benefit installers by allowing quick installation with a weight of just 44.75 lb. and better grips.

ReVision Energy

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 CPUC 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)

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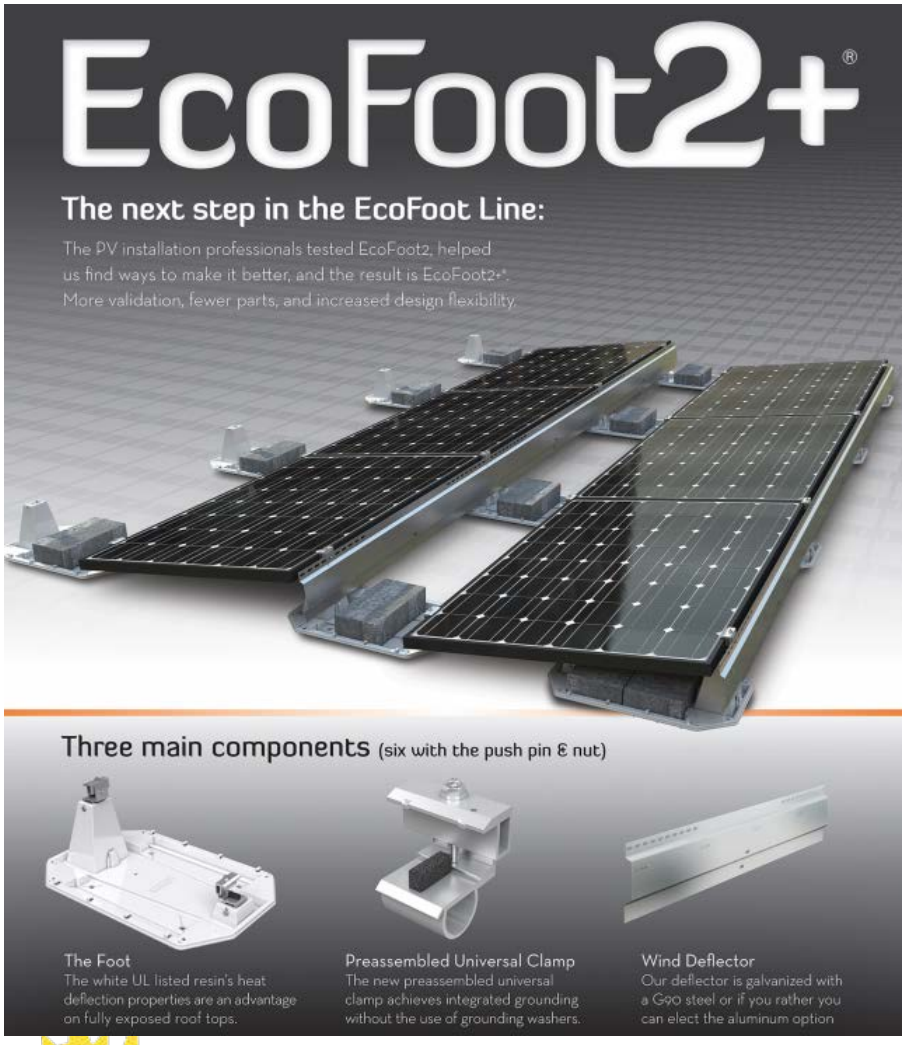
Ballasted Racking



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

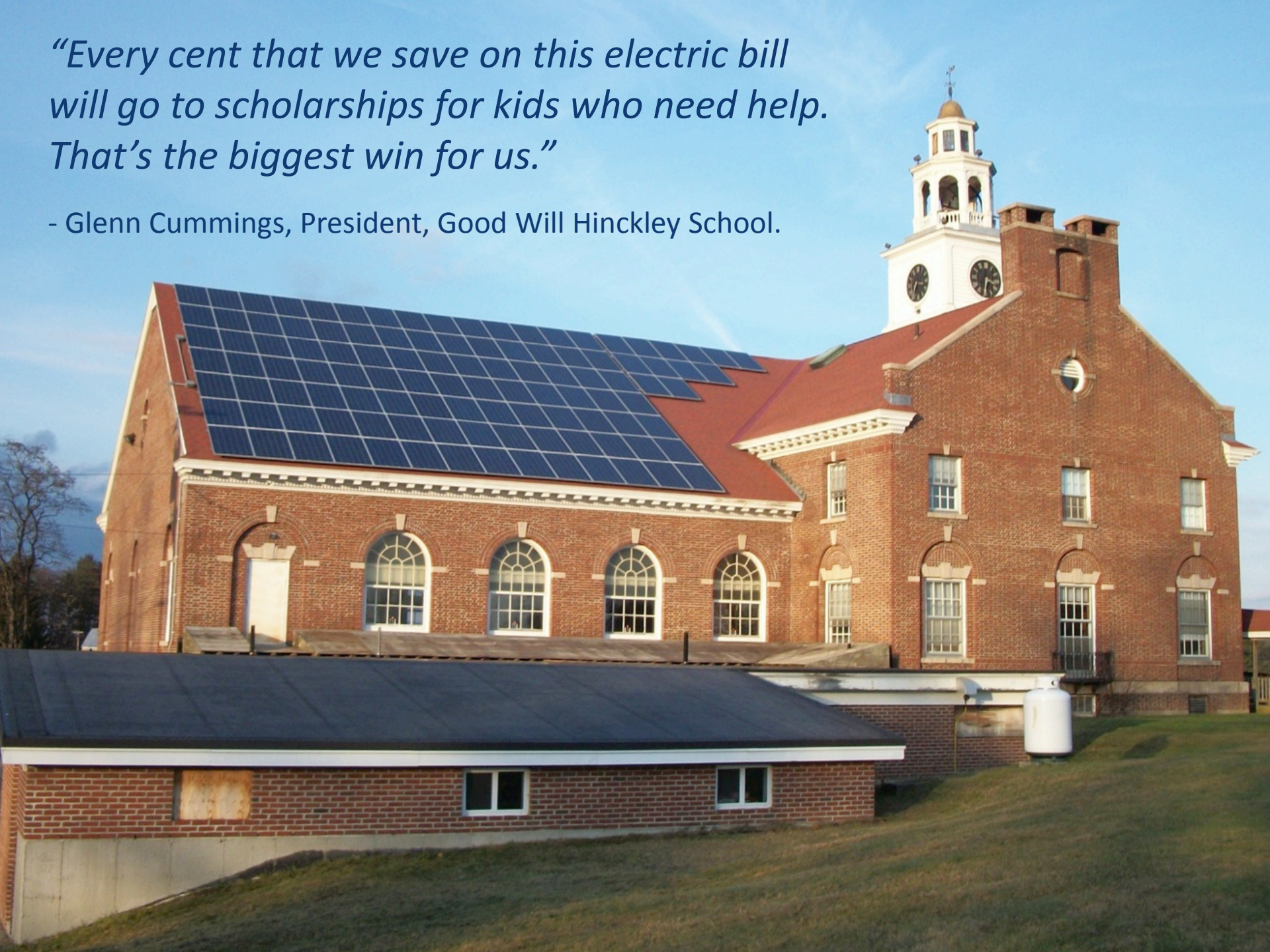
"That [energy] plan seeks to provide Thomas College with diverse renewable energy sources that will lower long-term energy expenses and keep tuition costs down."

-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.



Fortunat Mueller P.E.

Co Founder/ Managing Partner

ReVision Energy

142 Presumpscot Street in Portland, ME 04102

(207) 221-6342 fortunat@ReVisionenergy.com