

BATH COUNTY SCHOOL BOARD

AGENDA ITEM: INFORMATION { } ACTION { X } CLOSED MEETING { }

SUBJECT: SUPERINTENDENT’S REPORT - ACTION

Consider Approval of BARC Solar Project

BACKGROUND: Mike Keyser, BARC CEO and General Manager, will be in attendance for continued discussion regarding the proposed solar project.

Copies of the December 2016 and January 2017 presentations are included for your review.

RECOMMENDATION: A decision should be made whether or not to implement the BARC Solar Project.

Sue Hirsh

From: Mike Keyser <MKeyser@barcelectric.com>
Sent: Tuesday, January 31, 2017 10:18 AM
To: Sue Hirsh
Subject: Update on solar project
Attachments: 2017-01-09 Bath County Schools Solar Project - School Board Presentation 2.pdf;
2016-12-02 Bath County Schools Solar Project - School Board Presentation.pdf

Sue:

I spoke with our solar contractor this morning and we will be able to maintain the same project size, energy output and total cost as originally proposed through at least the end of February. The only change since I last briefed the school board is we may not be able to do the dual-axis tracking system in the front field at BCHS. We'll try to do something if funds allow, but panel prices have ticked up about 10% and there are still unknowns with regard to the geotechnical and engineering costs. I will plan to be there next Tuesday night to provide this update verbally. Since nothing has materially changed I don't intend to bring a new slide deck.

I've attached the December and January presentations for quick reference. Here is a very brief review of the project:

At least 937 kW (or more, if funds allow)

About 1.17 million kWhs produced in year 1 with degradation factor of .005 thereafter (roughly half of total energy consumption in year 1)

Approx. 737 kW metal roof mounted at Valley, BCHS and Millboro

\approx. 200 kW ground mounted array at Valley

\$130,237 fixed annual payment over 20 years, comprised of debt service on 20-year loan and fixed O&M

Roughly speaking, this is about the equivalent to today's energy rate that the school district pays for the equivalent amount of energy

After 20 years, school district owns it outright and can choose to continue the O&M agreement or not

Project should last 30-35 years with last 10-15 years being nearly free energy

Regards,



Michael Keyser



BARC Electric Cooperative

CEO & General Manager

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PST-2AL Dual Axis Tracker

Dominant System. Outstanding Performance

Trace the Sun, Capture the Benefit



Capturing Maximum Energy

The PST-2AL Dual Axis Tracker is the premium choice in modern technology. Thanks to our patented Real-Time Sensors that allow for optimum solar energy generation due to the ability to follow the sun at its maximum irradiation point both vertically and horizontally.

Advantages

- Produces 30-40% more power than traditional fixed arrays.
- High reliability and low maintenance
- No wasted energy
- No in-field welding

Benefits

- Real Time Sensing
- Low voltage DC motors which require low maintenance and minimum downtime
- Magnesium Alloy Coated Steel*
- Can accommodate any commercially available solar module
- Can be installed on any terrain
- Easy electrical plug and play connection
- Company support during the lifetime of the tracker (Operation & Troubleshooting)

COMPATIBILITY

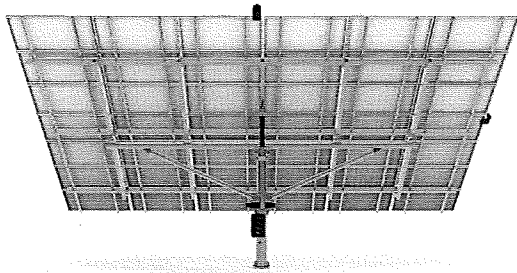
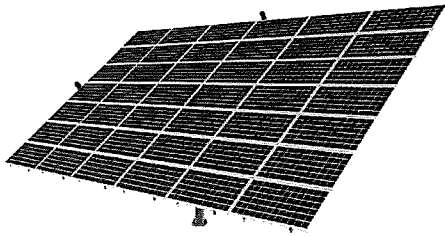
The PST-2AL is compatible with all commercially available modules on the market. The PST-2AL performs optimally throughout the entire day producing more energy per hour than single axis and fixed tilt. The increase in production can be up to 45% higher yields.

Technical Report by
Black & Veatch



720 kW - VES avg use
710 kW - production

Our most powerful Dual Axis Tracker



Tracking Type	Dual Axis
Model	PST-2AL
Module Area (Max)	85m ² [42 modules 72-cell] or [49 modules 60-cell]
System Weight	1,970kg, without modules & foundation
Tracking Axis	Dual Axis: azimuth & vertical
Tracking Range of Motion	Azimuth: -135° to +135° Vertical: 0° to 60°
Azimuth Rotation	Slew drive
Vertical Tilt	Linear actuator
Power Supply to Controller	100-240VAC / 50 - 60Hz
Materials	Magnesium Alloy Coated Steel/ Hot Dip Galvanized
Solar Tracking Method	Real-Time Solar Sensor
Max Wind Speed	Standard 47m/s (105MPH)
Safety Mode (Automatic horizontal)	•Wind Mode •Less than 3,000 lux
(Tilted Position)	•Snow Mode
Temperature Range	-25 to 55°C (-13 to 131°F)

*The above specifications could vary according to local conditions

COMPONENTS

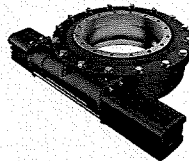
The PST-2AL utilizes our Power of Four components that offer unlimited flexibility and help increase production. With increase in design, they deliver great results and require minimal maintenance.



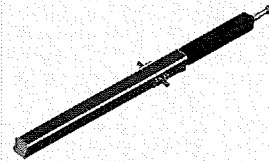
Control Box



Real Time Sensor



Slew Drive



Linear Actuator

Experience the PST-2AL

Watch Video



Sun Action Trackers

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Email: info@sat-energy.com

www.sat-energy.com

BATH COUNTY SCHOOLS SOLAR

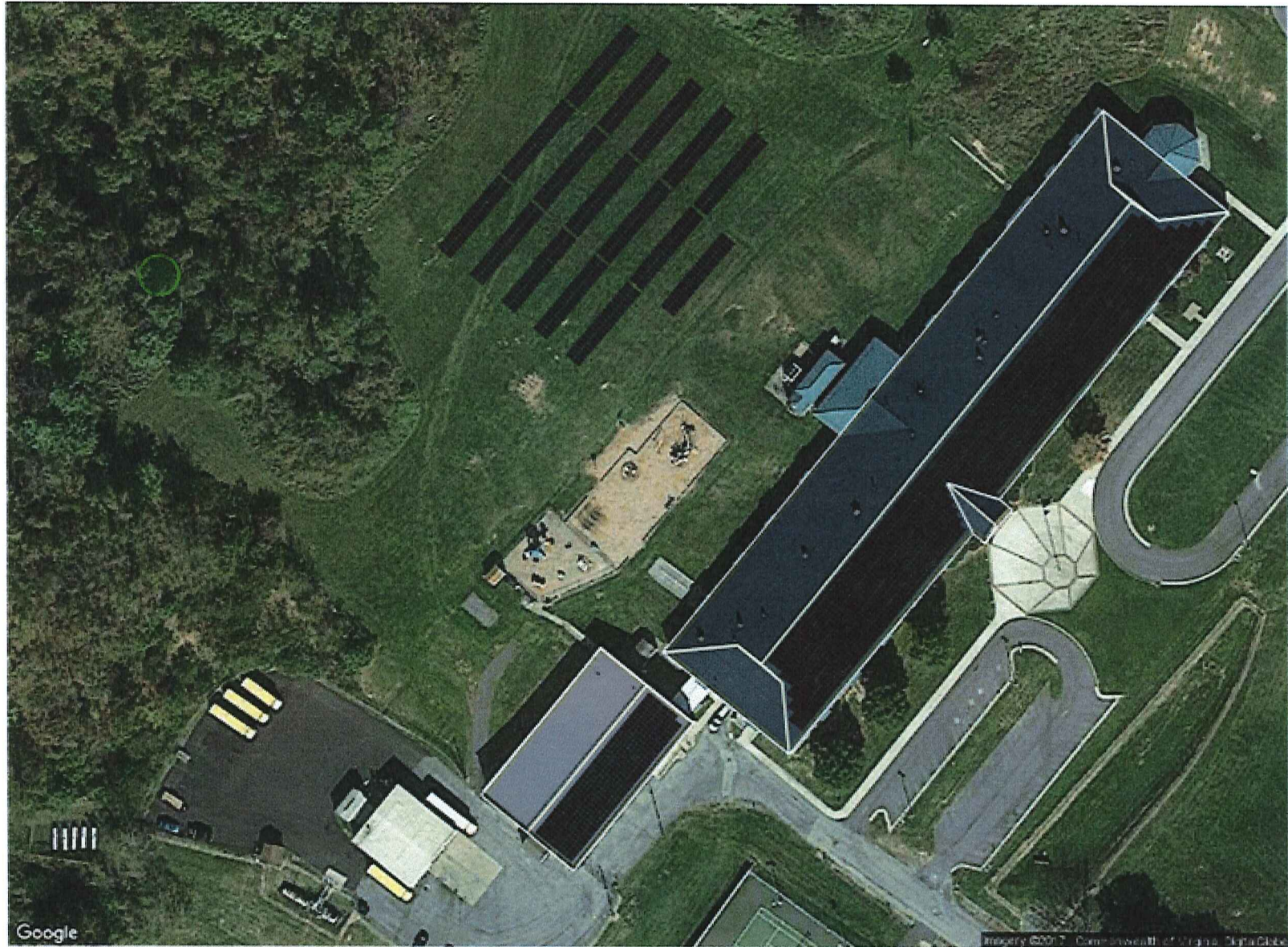
JANUARY 2016



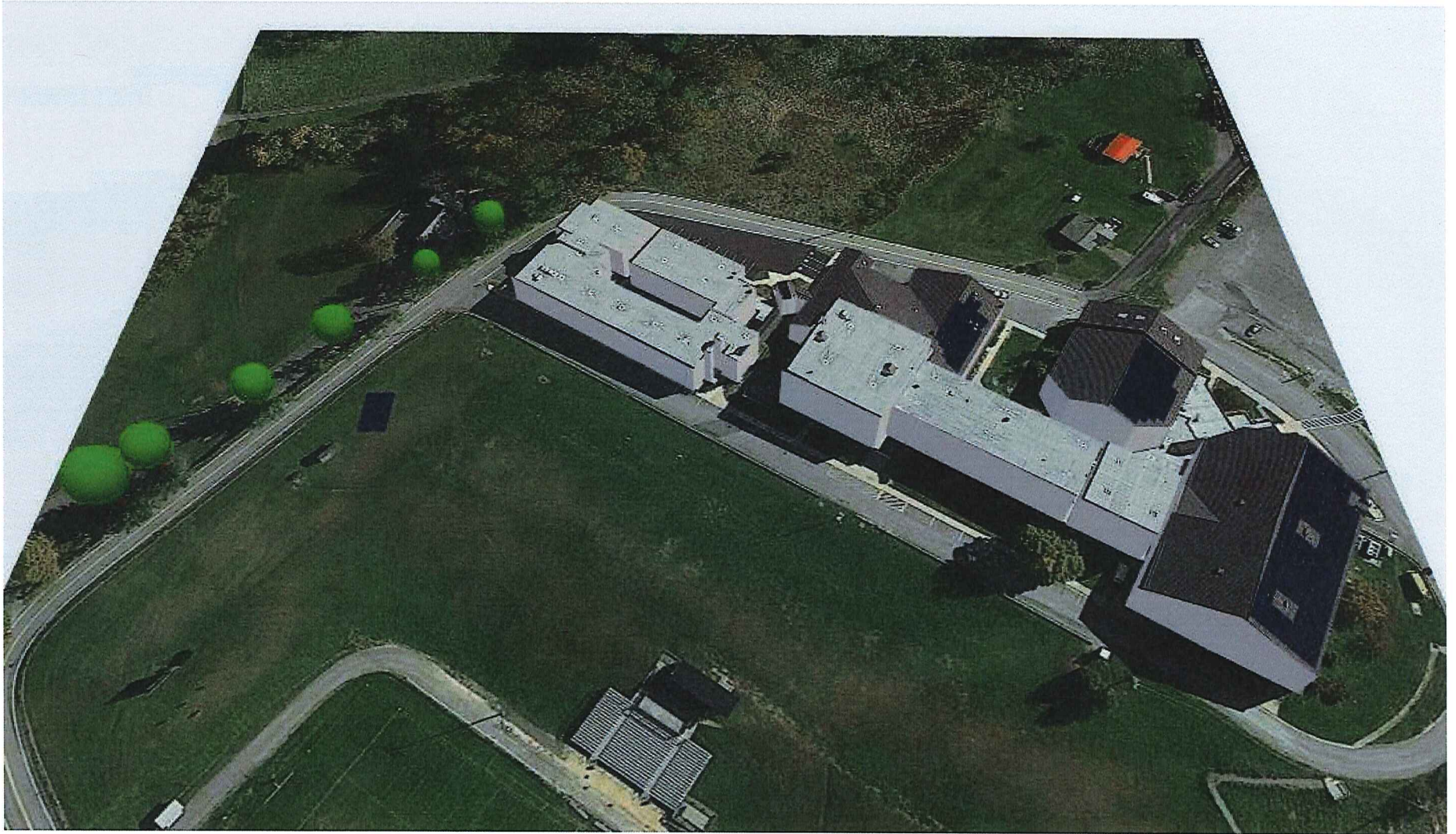
Project Updates

- Flat roof update
- Alternate option: 1 acre ground mounted
(Pricing remains the same)

Valley Elementary (v2)



Bath County High School



Millboro Elementary School



Summary

- \$130,237 fixed annual payment
 - ▣ \$119,186 – debt service*
 - ▣ \$11,051 – O&M
- BCSD pays no premium today and fixes nearly half of its energy costs for 20 years
- Tremendous educational opportunity at all 3 schools
- Movable/removable as needed
- Targeting spring/summer 2017 for installation

Key Terms

- Three agreements:
 - ▣ EPC agreement
 - ▣ Loan document(s)* and
 - ▣ O&M agreement
- Project is transferrable to a new location at actual cost (outside of fixed payments)
- Owned/insured by BCSD
 - ▣ O&M agreement handles normal wear & tear; equipment replacement; warranty claims
- Structural engineering review included in fixed rates
 - ▣ Actual improvements outside of rates
- REL will facilitate warranty claims on BCS' behalf
- Security interest in asset until loan paid off

*Backup option: lease to own

BATH COUNTY SCHOOLS SOLAR

DECEMBER 2016



About BARC Electric

- Not-for-profit, customer-owned cooperative
- All margins are returned to customers in the form of patronage capital
- In 2012, formed Reliable Energy, LLC, a wholly owned subsidiary of BARC Electric
- REL provides unregulated services complimentary to BARC's mission of serving our customer-owners

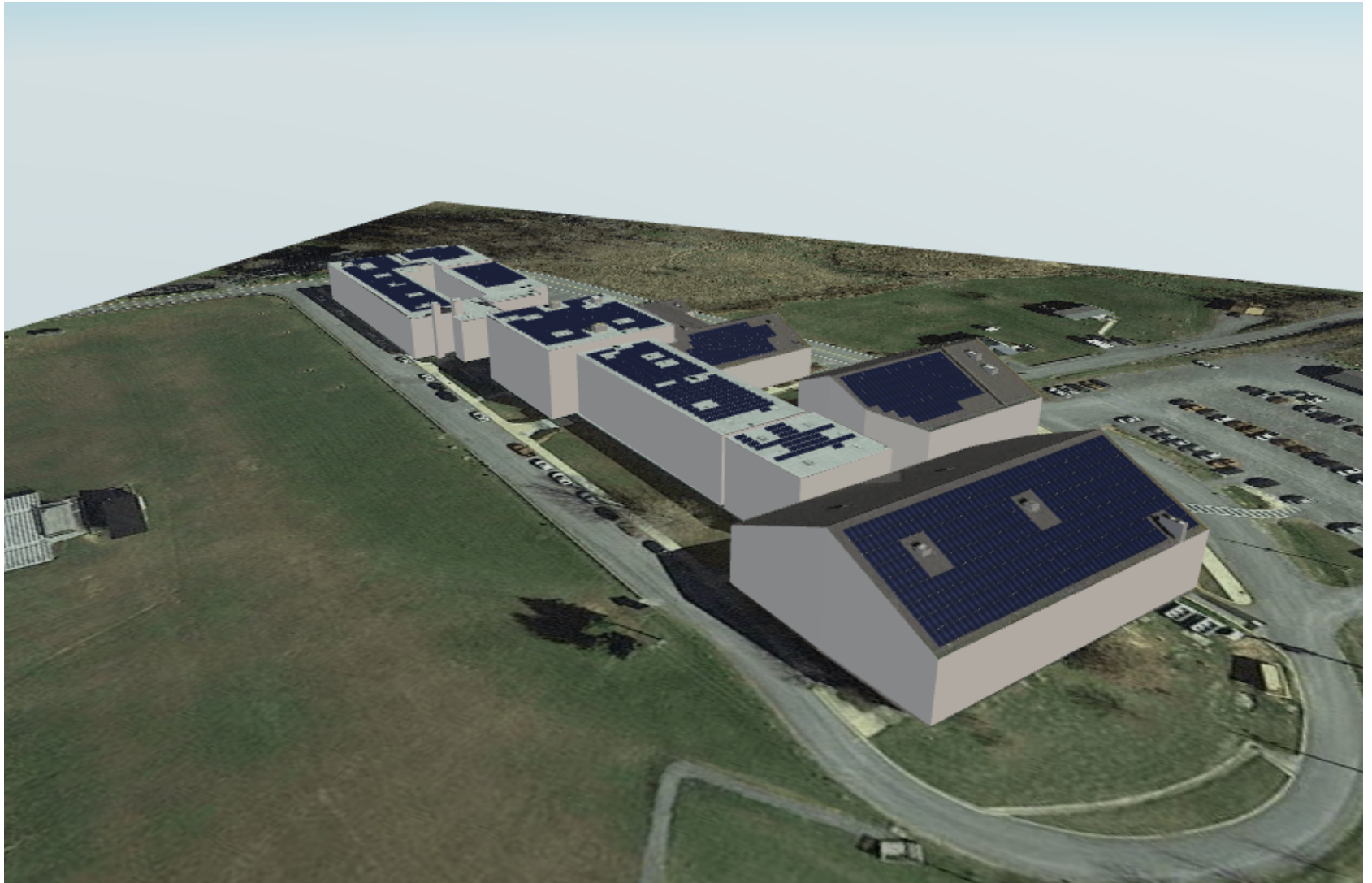
Project Overview

- 937 kW across rooftops of all 3 schools
 - Bath County High School
 - Millboro & Valley Elementary Schools
- Provides 50% of total annual energy needs
 - 2.4m kWhs consumed / 1.2m kWhs produced
- No roof penetration
 - Affixed to metal roofs with clip system
 - Ballasted system on flat roofs
- Removable/movable as needed

Project Benefits

- No upfront cost
- No maintenance responsibilities
- No premium to today's electric costs
- Fixed monthly payments over 20 years
- Hedge nearly half of annual energy costs for 20 years
- Educational opportunities:
 - Monitoring software provided for use in classrooms
 - O&M visits could be incorporated into class study
 - Opportunity for energy management studies

Bath County High School



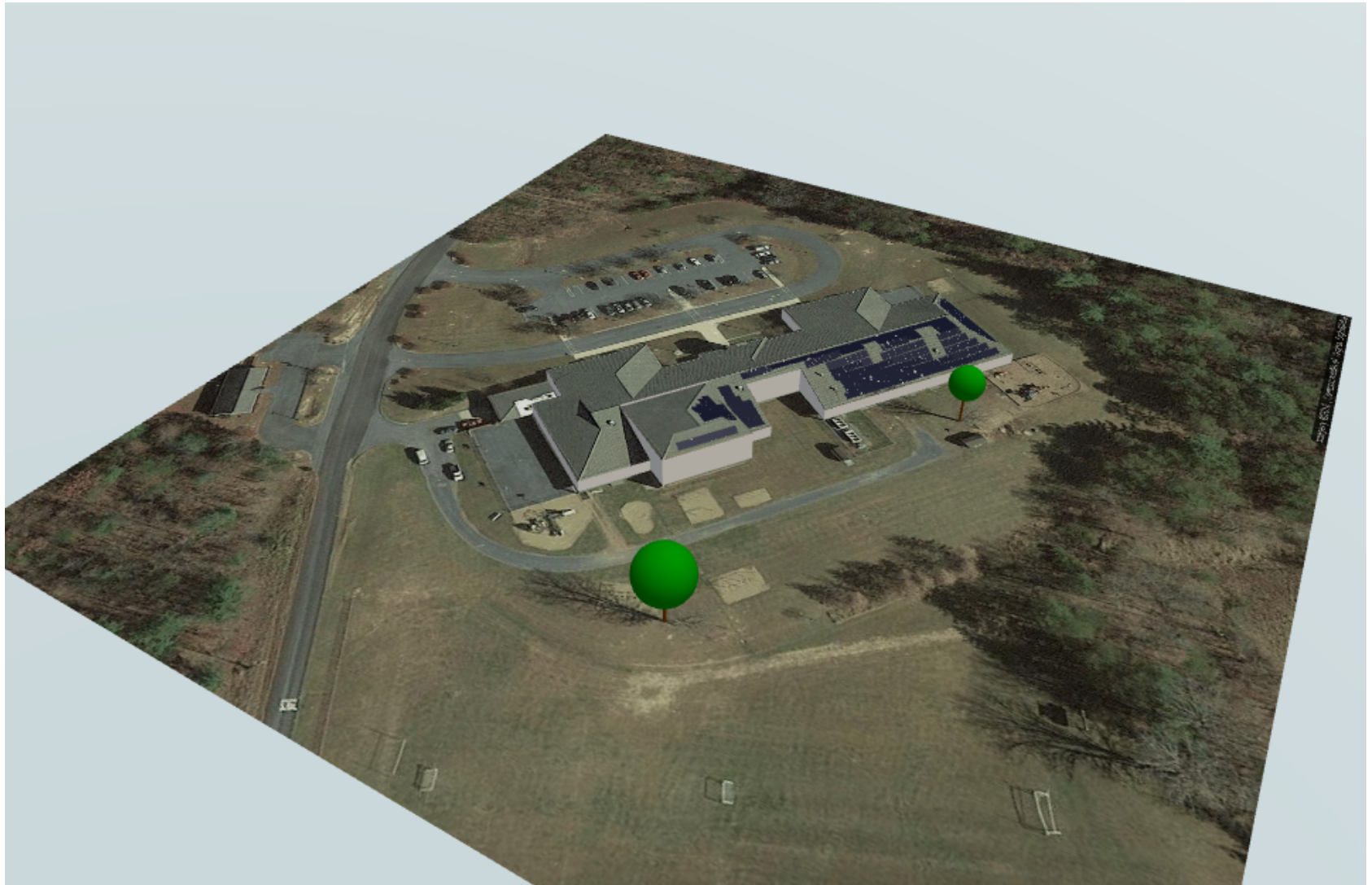
Bath County High School



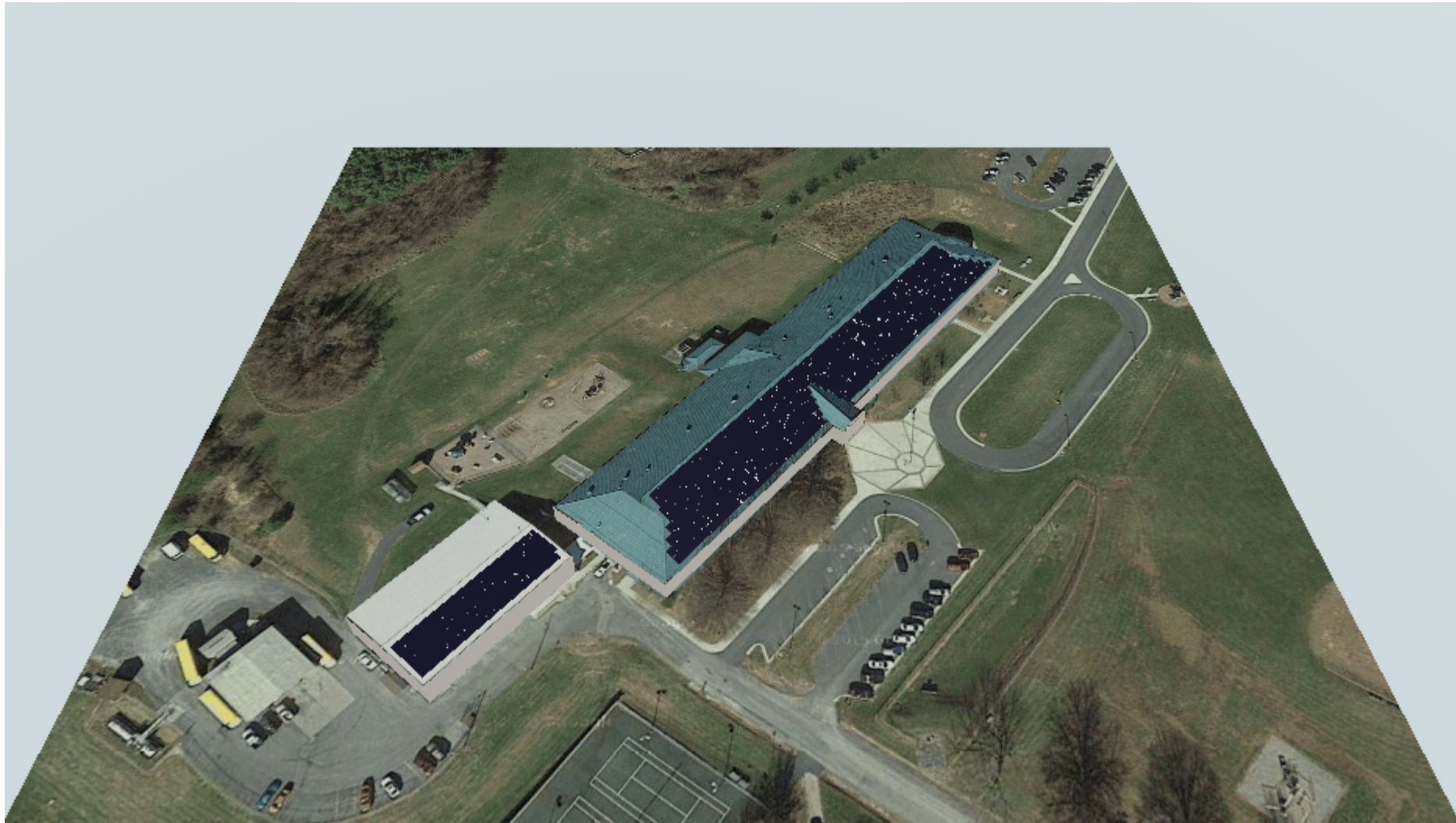
Millboro Elementary School



Millboro Elementary School



Valley Elementary School



Completely Turnkey

- REL will be the EPC/general contractor
- REL will lend the necessary capital to BCSD
 - 20 year term; 3% fixed interest rate
 - Plan B: lease to own (same rate)
- REL will provide the ongoing O&M
- Project will be owned by BCSD and solar production will be net metered (offsets kWh portion of rates); also offsets kW
- REL bears the panel/equipment failure risk and cost of replacement

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HISTORICAL USAGE

	Annual Monthly Bill	Less Basic Charge x 12 Months	Average Cost Per kWh	Ave. Monthly kWh Usage	Ave. Monthly kW Usage
Bath County School Building	122,021.88	661.56	0.10801	93,630	265.70
Mertz Building	16,766.04	661.56	0.12245	10,960	43.60
Millboro Elementary	47,466.12	661.56	0.13065	29,853	139.75
Valley Elementary	86,451.84	661.56	0.12221	58,500	210.33
	272,705.88	2,646.24	0.11664	192,943	659.38

PROFORMA USAGE

10AM NCP	Annual Monthly Bill	Less Basic Charge x 12 Months	Average Cost Per kWh	Ave. Monthly kWh Usage	Ave. Monthly kW Usage
Bath County School Building	58,728.96	661.56	0.09972	48,527	111.77
Mertz Building	8,654.40	661.56	0.11726	5,680	18.34
Millboro Elementary	23,022.60	661.56	0.12043	15,472	58.79
Valley Elementary	40,289.76	661.56	0.10892	30,320	88.48
	130,695.72	2,646.24	0.10671	100,000	277.38

PROFORMA USAGE

9AM NCP	Annual Monthly Bill	Less Basic Charge x 12 Months	Average Cost Per kWh	Ave. Monthly kWh Usage	Ave. Monthly kW Usage
Bath County School Building	67,815.00	661.56	0.11532	48,527	162.58
Mertz Building	9,567.00	661.56	0.13064	5,680	26.68
Millboro Elementary	26,673.60	661.56	0.14010	15,472	85.51
Valley Elementary	46,325.16	661.56	0.12551	30,320	128.70
	150,380.76	2,646.24	0.12311	100,000	403.48

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Thank You

