

**FIRST AMENDMENT TO  
ENERGY SERVICES AGREEMENT**

**THIS FIRST AMENDMENT TO ENERGY SERVICES AGREEMENT** (this "*First Amendment*") is entered into as of August 12, 2019, by and between Ameresco, Inc., a Delaware corporation having its offices at 111 Speen Street, Suite 410, Framingham, Massachusetts 01701 ("*Ameresco*"), and Pine Bush Central School District, having its principal place of business at 156 Route 302, Pine Bush, NY 12566 ("*Customer*").

**WITNESSETH:**

**WHEREAS**, Ameresco and Customer are parties to that certain Energy Services Agreement dated as of July 3, 2018 (the "*Original ESA*"; capitalized terms used and not otherwise defined herein shall have the meaning given to such terms in the Original ESA);

**WHEREAS**, in connection with the Original ESA, the New York State Education Department ("*NYSED*") has reviewed the Scope of Services and has requested modifications to the same prior to approving the same; and

**WHEREAS**, Ameresco and Customer wish to amend the Original ESA as expressly set forth in this First Amendment.

**NOW, THEREFORE**, in consideration of the covenants and mutual agreements hereinafter set forth and other good and valuable consideration, the receipt and sufficiency of which hereby are acknowledged, the Parties agree as follows:

**ARTICLE 1  
AMENDMENT OF THE ORIGINAL ESA**

**1.1** Section 3 Financial Services is hereby amended by replacing subsection (c) in its entirety with the following:

**Utility DSM Programs:** Ameresco anticipates the issuance of an amount equal to \$673,454 from rebates and/or incentives in connection with the Project (collectively, "*Ameresco's Rebate Recovery Amount*") over the Term. The Parties acknowledge that the Contract Cost has already been reduced by an amount equal to Ameresco's Rebate Recovery Amount to reflect Ameresco's direct receipt of such rebates and/or incentives. For incentives paid directly to Ameresco, Ameresco shall provide the Customer with written documentation of the amount of the rebates/incentives it received and an itemized breakdown of the origin of the rebates/incentives. Should the Project's actual rebate and/or incentives over the Term be less than Ameresco's Rebate Recovery Amount, Ameresco will incur such shortfall. Prior to the date on which Ameresco has recovered the total amount of Ameresco's Rebate Recovery Amount (the "*Total Recovery Date*"), Customer shall forward to Ameresco any amounts received directly by the Customer with respect to rebates and/or incentives to Ameresco to permit Ameresco to recover Ameresco's Rebate Recovery Amount. Customer hereby assigns the proceeds of all such rebates and/or incentives to Ameresco which Customer receives prior to the Total Recovery Date for the foregoing purpose. Following the Total Recovery Date, the

Customer shall be entitled to retain any further rebates and/or incentives issued with respect to the Project, and Ameresco will forward any amounts which Ameresco receives to Customer from and after the Total Recovery Date. Ameresco will assist the Customer in filing for and securing incentive payments available as a result of this Project from NYSERDA, DSM and SBC programs or other entity.

1.2 Section 6 is hereby amended by deleting the existing Table 6(a) and replacing with the following:

Year	Guaranteed Savings
1	\$402,201
2	\$406,070
3	\$410,042
4	\$414,119
5	\$418,304
6	\$422,598
7	\$427,004
8	\$431,525
9	\$436,162
10	\$440,917
11	\$445,794
12	\$450,795
13	\$455,922
14	\$461,178
15	\$466,565
16	\$472,087
17	\$477,746
18	\$483,545

1.3 ATTACHMENT F, Contract Cost, is hereby amended by replacing the Contract Cost of Seven Million Two Hundred Thirty Three Thousand Nine Hundred and Ninety Three Dollars and No Cents (\$7,233,993.00) with Six Million Five Hundred Sixty Thousand Five Hundred Thirty Nine Dollars and No Cents (\$6,560,539.00). The amended Contract Cost is \$6,560,539.00.

1.4 ATTACHMENT T, Comprehensive Energy Audit is hereby amended as follows:

- (a) By replacing the scope of work and calculations included in the Comprehensive Energy Audit, Section C, for the following ECMs
  - ECM 4 – Solar PV Array

with the revised write-up and savings calculations included in Appendix 1 hereto. This replacement is limited to buildings referenced in Appendix 1 and does not replace any write-ups or calculations other than those shown on Appendix 1.
- (b) By replacing tables and figures included in the Comprehensive Energy Audit with those referenced in Appendix 2 hereto.

**ARTICLE 2**

## ADDITIONAL PROVISIONS

**2.1** The Original Agreement and this Amendment set forth the entire understanding of the Parties relating to the subject matter hereof and thereof and supersede all prior agreements and understandings among or between any of the parties relating to the subject matter hereof and thereof. This Amendment shall be deemed to be a part of the Original Agreement and the rights and obligations of the Parties shall be governed by and interpreted, construed and enforced in the manner specified in the Original Agreement, as amended hereby. This Amendment shall be deemed to be a part of the Original Agreement and the rights and obligations of the Parties shall be governed by and interpreted, construed and enforced in the manner specified in the Original Agreement, as amended hereby. All other provisions of the Original Agreement not expressly modified by this Amendment shall remain in full force and effect. As used in the Original Agreement, the term "*Agreement*" shall refer to the Original Agreement as amended by this Amendment.

**2.2** In the event that any provision of this Amendment, or the application of any such provision, shall be determined to be invalid, unlawful, void or unenforceable to any extent, the remainder of this Amendment, and the application of the provisions other than those as to which it is determined to be invalid, unlawful, void or unenforceable, shall not be impaired or otherwise affected and shall continue to be valid and enforceable to the fullest extent permitted by law.

**2.3** Each Party warrants and represents to the other that:

(a) it has all requisite power, authority, licenses, permits and franchises, corporate or otherwise, to execute and deliver this Amendment and perform its obligations under the Agreement, as amended hereby;

(b) its execution, delivery and performance of this Amendment have been duly authorized by, and are in accordance with, its articles of incorporation and bylaws, and are not in breach of any applicable law, code or regulation;

(c) this Amendment has been duly executed and delivered by the signatories so authorized, and the Agreement, as amended hereby, constitutes each Party's legal, valid and binding obligation;

(d) its execution, delivery and performance of this Amendment shall not result in a breach or violation of, or constitute a default under, any agreement, lease or instrument to which it is a party or by which it or its properties may be bound or affected;

(e) it has not received any notice of, nor to the best of its knowledge there is no, pending or threatened violation of any applicable laws, ordinances, regulations, rules, decrees, awards, permits or orders which would materially adversely affect its ability to perform its obligations hereunder; and


(f) the person executing this Amendment on its behalf is duly authorized to do so.

**2.4** The headings contained in this Amendment are for convenience of reference only, shall not be deemed to be a part of this Amendment and shall not be referred to in connection with the construction or interpretation of this Amendment.

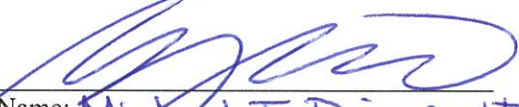
2.5 This Amendment may be executed in several counterparts, including counterparts by facsimile, each of which shall constitute an original and all of which, when taken together, shall constitute one agreement.

**IN WITNESS WHEREOF**, the parties hereto have caused this First Amendment to be duly executed and delivered by their proper and duly authorized officers as of the day and year first above written.

**PINE BUSH CENTRAL SCHOOL DISTRICT**

By:   
Name: MICHAEL PARILLA  
Title: ASSISTANT SUPERINTENDENT FOR BUSINESS

**AMERESCO, INC.**

By:   
Name: Michael J. Daigneault  
Title: Senior Vice President

**APPENDIX 1**  
**To First Amendment to Energy Services Agreement**

**Revised Write-ups and Savings Calculations**

## ECM 4: Solar PV Array

### ECM Overview

Ameresco recommends the installation of five (5) photovoltaic (PV) systems at Pine Bush Central School District (PBCSD). This system will generate approximately 1,816,355 kWh annually and assist the District in offsetting electrical energy purchase. Ameresco proposes to mount the PV system on the facility roofs with a ballast mounting system which will eliminate the need for roof penetration. The system will also be oriented in a southern direction to ensure maximum performance. We will install approximately 1.6 Megawatts (MW) schools as specified herein. Ameresco will also include a performance monitoring system with the PV system so that the school can use it as an education tool for its students. The implementation of the proposed system will provide substantial utility cost savings for the District.



Figure 4.1: Typical ballast mounted solar PV array.

### ECM Detail

#### Proposed System

Ameresco recommends the installation of 1.579 MWdc of solar PV at five (5) locations within the District. These locations are the roofs at Pine Bush High School, Circleville Middle School, Circleville Elementary School, Pine Bush Elementary School, and Russell Elementary School. The system will generate approximately 1,816,355 kWh annually and assist the District in offsetting electrical energy purchase.

Ameresco proposes to mount the PV system on the facility roofs with a ballast mounting system which will eliminate the need for roof penetration. The system will also be oriented in a southern direction to ensure maximum performance. The systems will be interconnected with the NYSEG and O&R electric systems, allowing the District to engage in net-metering.



The solar PV installation will be contingent upon the final interconnection agreement for each site and the applicable utility for the site. O&R for the Circleville, NY Schools and NYSEG for the school located in Pine Bush, NY. Ameresco has reviewed the preliminary system details with the applicable utilities and do not anticipate any interconnection issues or cost impacts. However, until the final interconnection agreements and system designs are completed and submitted for review additional cost impact may be applicable. Ameresco has also taken to following exception/exclusion to the proposed scope of work

- Any roof replacement or repair
- Any Structural upgrades to the existing roof structural steel
- Modification or extension of any existing roof warranty
- Electrical Service upgrades
- Interconnection fees beyond \$10,000 for each site.

*Table 4.1: Scope of Solar Array installations for each building*

<b>Building</b>	<b>Total kW DC</b>
Pine Bush High School	508
Circleville Middle School	532
Crispell Middle School	0
Crispell Industrial Arts	0
Circleville Elementary School	196
Pakanasink Elementary School	0
Pine Bush Elementary School	80
Russell Elementary School	263
Administration/District Office	0
District Storage/Central Receiving	0
<b>Totals</b>	<b>1,579</b>

The following table summarizes the specific warranties for the individual components we propose to use for this project. In Ameresco's experience, all active warranties are transferrable should the ownership of the system change.

Equipment	Manufacturer	Warranty Provisions
<b>Modules</b>	JA Solar	<ul style="list-style-type: none"> <li>• During the first year, JA Solar guarantees the actual power output of the module will be no less than 97.5% of the labeled power output.</li> <li>• From year 2 to year 24, the actual annual power decline will be no more than 0.7%; by the end of year 25, the actual power output will be no less than 80.7% of the labeled power output</li> </ul>
<b>Inverter</b>	Solectria	<ul style="list-style-type: none"> <li>• Standard 10-year warranty</li> <li>• Warranty extensions to 15 and 20 years for all commercial (PVI 10-95kW) and utility-scale (SGI 225-500kW) inverters. Ameresco has extended the warranty to 20 years for this project.</li> </ul>
<b>Racking</b>	Panelclaw Polar Bear III	<ul style="list-style-type: none"> <li>• Warranty for products' durability for a period of twenty-five (25) years after the date the Project is Substantially Completed.</li> </ul>
<b>DAS</b>	Draker	<ul style="list-style-type: none"> <li>• Standard 5-year warranty on hardware features.</li> </ul>

## Equipment, Design, and Construction Documentation

Equipment will be identified in submittals provided to the District for approval prior to procurement. Documents will be submitted to the engineering maintenance department, for their review and comment. Upon approval, these will constitute the construction documents. Upon completion of the construction phase, the documents will be revised as needed to reflect "As-Built" conditions, and submitted in multiple to the District for record.

## Impact on Facility Operations and Performance

The new PV systems will allow the District to generate renewable energy to offset electrical energy purchase. The PV systems will not adversely affect school activities. The PV systems will also provide a valuable learning tool for teachers and students



## Appendix for ECM 4: Solar PV Array

### I. Energy Savings Calculations



<b>Pine Bush Central School District</b>	
<b>Energy and Demand Savings Summary</b>	
<b>Measure ID:</b>	4
<b>Measure Name:</b>	Solar PV Array
<b>Measure Location:</b>	
<b>Engineers:</b>	

<b>Site Name:</b>		<b>HS</b>	<b>Circleville_</b>	<b>Circleville_E</b>	<b>Pine_Bush_</b>	<b>Russell_ES</b>	<b>Summary</b>
<b>Item</b>	Units	Savings	MS	S	ES	Savings	
<b>Electricity</b>							
Energy On-Peak	kWh	582,940	611,510	228,450	89,820	303,635	1,816,355
Energy Off-Peak	kWh						0
Energy Total	kWh	582,940	611,510	228,450	89,820	303,635	1,816,355
Demand On-Peak, Monthly	kW						0.0
Demand On-Peak, Annual	kW	566.6	424.6	63.4	174.6	84.3	1,313.6
Demand Off-Peak, Monthly	kW						0.0
Demand Off-Peak, Annual	kW						0.0
<b>Fossil Fuel</b>							
Natural Gas (NG)	Therms						0
Liquid Propane Gas (LPG)	Gallons						0
Steam	Mlbs						0
Fuel Oil, #2	Gallons						0
Fuel Oil, #4	Gallons						0
Fuel Oil, #6	Gallons						0
Miscellaneous	Misc						0
<b>Water</b>							
Water Savings	kGallons						0
<b>Sewer</b>							
Sewer Savings	kGallons						0

Pine Bush Central School District  
Solar PV Array  
Pine Bush High School

Month	Production	Gen. kWh	% consumed onsite	Consumed kWh	Onsite Energy Savings	Exported kWh	Value Stack Credit	Total Savings
January	6%	32,170	56%	17,924	\$1,502	14,246	\$1,195	\$2,695
February	5%	31,983	54%	17,402	\$1,438	14,581	\$1,222	\$2,679
March	9%	54,316	49%	26,680	\$2,235	27,635	\$2,315	\$4,550
April	11%	61,255	47%	28,509	\$2,388	32,746	\$2,743	\$5,132
May	10%	57,415	53%	30,278	\$2,537	27,137	\$2,273	\$4,810
June	12%	70,406	54%	38,095	\$3,191	32,311	\$2,707	\$5,898
July	11%	65,102	49%	31,750	\$2,660	33,351	\$2,794	\$5,454
August	11%	65,079	49%	26,322	\$2,205	38,757	\$3,247	\$5,452
September	8%	48,850	56%	27,168	\$2,276	21,682	\$1,816	\$4,093
October	7%	40,061	53%	21,223	\$1,778	18,838	\$1,578	\$3,356
November	6%	32,336	56%	18,053	\$1,511	14,303	\$1,198	\$2,709
December	4%	23,968	67%	16,077	\$1,347	7,891	\$661	\$2,008
<b>Total</b>		<b>582,940</b>		<b>299,463</b>	<b>\$25,088</b>	<b>283,477</b>	<b>\$23,749</b>	<b>\$48,837</b>

49%

51%

Monthly Solar Hours per Day	Days per Month	Monthly Solar Hours	Average kW
9	31	279	115
11	28	308	104
11	31	341	139
13	30	390	157
15	31	465	123
15	30	450	156
15	31	465	140
13	31	403	161
11	30	330	148
11	31	341	117
9	30	270	120
9	31	279	86
		<b>4,321</b>	<b>135</b>
			<b>567</b>
			<b>359%</b>

Item	Value	Units	cell ref	Remarks
Size	508.0	kW	[ C23 ]	
Generation	582,940	kWh	[ C24 ]	
Consumption	1,698,128	kWh	[ C25 ]	
Net Export - Annual %	34%		[ C26 ]	= [ C24 ] / [ C25 ]
Onsite Solar Value (kWh portion of bill)	\$ 0.0838	\$/kWh	[ C27 ]	From Bills
			[ C28 ]	

Pine Bush Central School District  
 Solar PV Array  
 Circleville Middle School

Month	Production	Gen. kWh	% consumed onsite	Consumed kWh	Onsite Energy Savings	Exported kWh	Value Stack Credit	Total Savings
January	6%	33,722	65%	21,955	\$1,955	11,767	\$1,048	\$3,002
February	5%	33,525	64%	21,370	\$1,903	12,155	\$1,082	\$2,985
March	9%	57,027	59%	33,652	\$2,996	23,375	\$2,081	\$5,077
April	11%	64,414	56%	36,184	\$3,222	28,230	\$2,313	\$5,715
May	10%	60,271	62%	37,641	\$3,351	22,630	\$2,015	\$5,366
June	12%	73,875	64%	47,260	\$4,208	26,615	\$2,370	\$6,577
July	11%	68,241	59%	40,115	\$3,572	28,126	\$2,304	\$6,076
August	11%	68,217	50%	33,888	\$3,017	34,329	\$3,056	\$6,074
September	8%	51,206	66%	33,666	\$2,997	17,540	\$1,362	\$4,359
October	7%	41,991	62%	26,125	\$2,326	15,868	\$1,413	\$3,739
November	6%	33,895	66%	22,358	\$1,991	11,537	\$1,027	\$3,018
December	4%	25,123	77%	19,318	\$1,720	5,806	\$517	\$2,237
Total		611,510	61%	373,532	\$33,257	237,978	\$21,188	\$54,445

39%

Monthly Solar Hours per Day	Days per Month	Monthly Solar Hours	Average kW
9	31	279	121
11	28	308	109
11	31	341	167
13	30	390	165
15	31	465	130
15	30	450	164
15	31	465	147
13	31	403	169
11	30	330	155
11	31	341	123
9	30	270	126
9	31	279	90
		4,321	142
			425
			25%

Item	Value	Units	Remarks
Size	512.4	kW	cell ref
Generation	611,510	kWh	[ C23 ]
Consumption	1,702,289	kWh	[ C24 ]
Net Export - Annual %	36%		[ C25 ]
Onsite Solar Value (kWh position of bill)	\$ 0.0890	\$/kWh	[ C26 ] = [ C24 ] / [ C25 ] From Bills
			[ C27 ]
			[ C29 ]

Pine Bush Central School District  
Solar PV Array  
Circleville Elementary School

Month	Production	Gen. kWh	% consumed onsite	Consumed kWh	Onsite Energy Savings	Exported kWh	Value Stack Credit	Total Savings
January	6%	12,596	51%	6,682	\$740	5,914	\$655	\$1,395
February	5%	12,523	52%	6,477	\$717	6,046	\$669	\$1,386
March	9%	21,309	46%	9,862	\$1,092	11,447	\$1,267	\$2,359
April	11%	24,073	44%	10,524	\$1,165	13,549	\$1,500	\$2,665
May	10%	25,522	50%	11,239	\$1,244	11,283	\$1,249	\$2,493
June	12%	27,598	51%	14,125	\$1,564	13,472	\$1,492	\$3,055
July	11%	25,490	46%	11,717	\$1,297	13,773	\$1,525	\$2,822
August	11%	23,481	38%	9,679	\$1,072	15,803	\$1,750	\$2,821
September	8%	19,127	53%	10,083	\$1,116	9,044	\$1,001	\$2,118
October	7%	15,686	50%	7,891	\$874	7,795	\$863	\$1,737
November	6%	12,661	53%	6,693	\$741	5,968	\$661	\$1,402
December	4%	9,384	64%	6,012	\$666	3,372	\$373	\$1,039
Total		228,450		110,985	\$12,287	117,465	\$13,005	\$25,292

49%

51%

Monthly Solar Hours per Day	Days per Month	Monthly Solar Hours	Average kW
9	31	279	45
11	28	308	41
11	31	341	62
13	30	390	62
15	31	465	48
15	30	450	61
15	31	465	55
13	31	403	63
11	30	330	58
11	31	341	46
9	30	270	47
9	31	279	34
		4,321	53
			63
			10%

Item	Value	Units	Remarks
Size	195.8	kW	cell ref
Generation	228,450	kWh	[ C23 ]
Consumption	315,166	kWh	[ C24 ]
Net Export - Annual %	72%		[ C25 ]
Onsite Solar Value (kWh portion of bill)	\$ 0.1107	\$/kWh	[ C26 ] = [ C24 ] / [ C25 ] From Bills
			[ C27 ]
			[ C28 ]



Pine Bush Central School District  
Solar PV Array  
Pine Bush Elementary School

Month	Production	Gen. kWh	% consumed onsite	Consumed kWh	Onsite Energy Savings	Exported kWh	Value Stack Credit	Total Savings
January	6%	5,694	38%	1,919	\$170	3,085	\$273	\$443
February	6%	4,954	38%	1,870	\$166	3,084	\$273	\$439
March	9%	8,334	32%	2,707	\$240	5,627	\$499	\$738
April	10%	9,253	31%	2,907	\$258	6,346	\$562	\$820
May	10%	8,806	36%	3,200	\$284	5,606	\$497	\$780
June	12%	10,739	37%	3,929	\$348	6,811	\$604	\$952
July	11%	10,070	32%	3,205	\$284	6,865	\$608	\$892
August	11%	10,083	26%	2,621	\$232	7,462	\$661	\$893
September	8%	7,588	37%	2,842	\$252	4,746	\$421	\$672
October	7%	6,230	36%	2,266	\$201	3,964	\$351	\$552
November	6%	5,030	38%	1,910	\$169	3,120	\$276	\$446
December	4%	3,728	48%	1,776	\$157	1,952	\$173	\$330
Total		89,820		31,153	\$2,761	58,667	\$5,199	\$7,959

35%

65%

Monthly Solar Hours per Day	Days per Month	Monthly Solar Hours	Average kW
9	31	279	18
11	28	308	16
11	31	341	24
13	30	390	24
15	31	465	19
15	30	450	24
15	31	465	22
13	31	403	25
11	30	330	23
11	31	341	18
9	30	270	19
9	31	279	13
		4,321	175
			70%

Item	Value	Units	Remarks
Size	79.6	kW	[ C23 ]
Generation	89,820	kWh	[ C24 ]
Consumption	535,455	kWh	[ C25 ]
Net Export - Annual %	17%		[ C26 ] = [ C24 ] / [ C25 ]
Onsite Solar Value (kWh portion of bill)	\$ 0.0886	\$/kWh	[ C27 ] From Bills
			[ C28 ]



## Appendix for ECM 4: Solar PV Array

### II. Manufacturer Specification Sheets

# Harvest the Sunshine

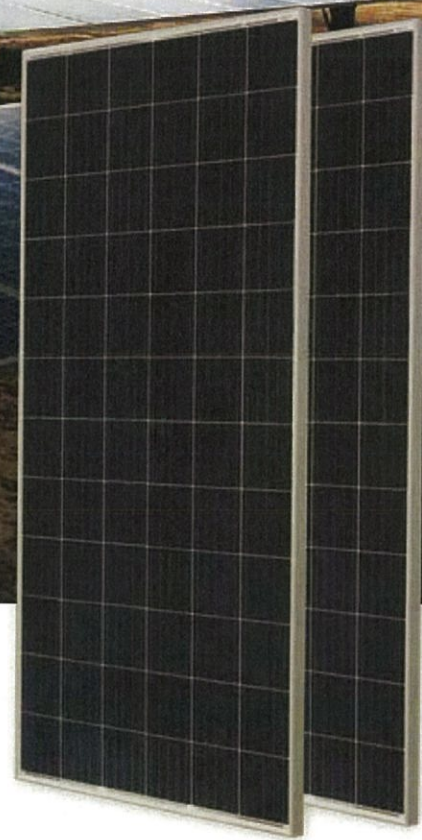


## 345W Module

JAP72S09 325-345/SC Series

### Introduction

This time-tested legacy module series has been proven to be one of the powerful and most reliable products offered by JA Solar and the most popular choice by PV system installers and customers around world.



5 busbar solar cell design



Low cost



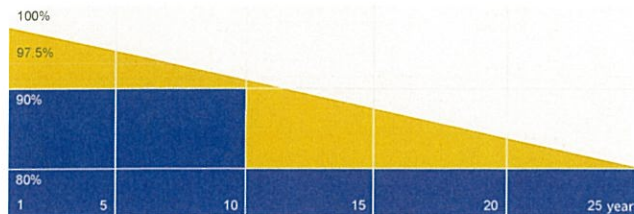
Anti-PID



Highly reliable due to strict quality control

### Superior Warranty

- 12-year product warranty
- 25-year linear power output warranty



■ JA Linear Power Warranty ■ Industry Warranty

### Comprehensive Certificates

- IEC 61215, IEC 61730
- ISO 9001: 2015 Quality management systems
- ISO 14001: 2015 Environmental management systems
- OHSAS 18001: 2007 Occupational health and safety management systems
- IEC TS 62941: 2016 Terrestrial photovoltaic (PV) modules – Guidelines for increased confidence in PV module design qualification and type approval



# JA SOLAR

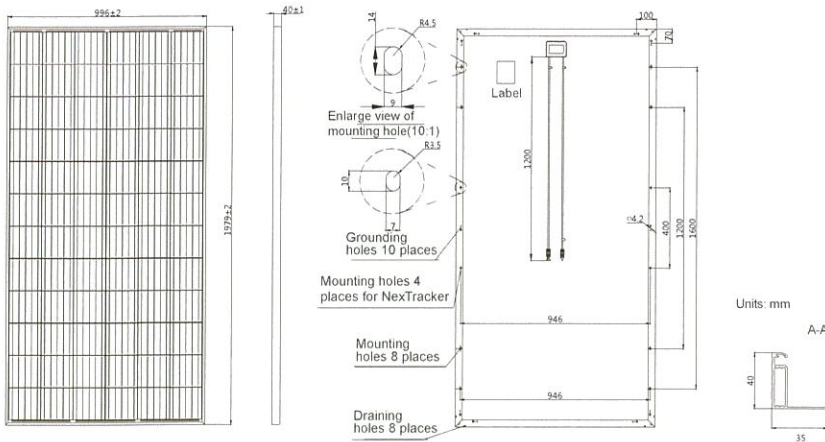
[www.jasolar.com](http://www.jasolar.com)

Specifications subject to technical changes and tests.  
JA Solar reserves the right of final interpretation.





**MECHANICAL DIAGRAMS**



Remark: customized frame color and cable length available upon request

**SPECIFICATIONS**

Cell	Poly
Weight	22.3kg±3%
Dimensions	1979±2mm×996±2mm×40±1mm
Cable Cross Section Size	4mm <sup>2</sup>
No. of cells	72(6×12)
Junction Box	IP67, 3 diodes
Connector	QC 4.10-35
Packaging Configuration	27 Per Pallet

**ELECTRICAL PARAMETERS AT STC**

TYPE	JAP72S09 -325/SC	JAP72S09 -330/SC	JAP72S09 -335/SC	JAP72S09 -340/SC	JAP72S09 -345/SC
Rated Maximum Power(Pmax) [W]	325	330	335	340	345
Open Circuit Voltage(Voc) [V]	45.56	45.83	46.10	46.39	46.68
Maximum Power Voltage(Vmp) [V]	36.90	37.18	37.45	37.74	38.04
Short Circuit Current(Isc) [A]	9.28	9.35	9.42	9.48	9.55
Maximum Power Current(Imp) [A]	8.81	8.88	8.95	9.01	9.07
Module Efficiency [%]	16.5	16.7	17.0	17.2	17.5
Power Tolerance			0~+5W		
Temperature Coefficient of Isc(α <sub>Isc</sub> )			+0.058%/°C		
Temperature Coefficient of Voc(β <sub>Voc</sub> )			-0.330%/°C		
Temperature Coefficient of Pmax(γ <sub>Pmp</sub> )			-0.400%/°C		
STC	Irradiance 1000W/m <sup>2</sup> , cell temperature 25°C, AM1.5G				

Remark: Electrical data in this catalog do not refer to a single module and they are not part of the offer. They only serve for comparison among different module types.  
\*For NexTracker installations static loading performance: front load measures 2400Pa, while back load measures 2400Pa

**ELECTRICAL PARAMETERS AT NOCT**

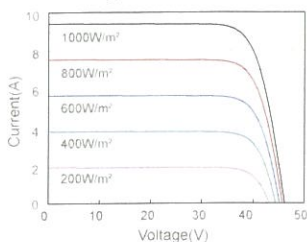
TYPE	JAP72S09 -325/SC	JAP72S09 -330/SC	JAP72S09 -335/SC	JAP72S09 -340/SC	JAP72S09 -345/SC
Rated Max Power(Pmax) [W]	240	244	248	252	256
Open Circuit Voltage(Voc) [V]	43.38	43.57	43.77	43.96	44.16
Max Power Voltage(Vmp) [V]	35.17	35.38	35.59	35.81	36.03
Short Circuit Current(Isc) [A]	7.33	7.40	7.47	7.55	7.62
Max Power Current(Imp) [A]	6.82	6.90	6.97	7.04	7.11
NOCT	Irradiance 800W/m <sup>2</sup> , ambient temperature 20°C, wind speed 1m/s, AM1.5G				

**OPERATING CONDITIONS**

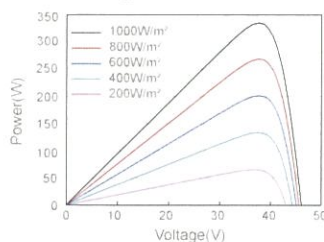
Maximum System Voltage	1000V/1500V DC(IEC)
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	20A
Maximum Static Load,Front*	5400Pa
Maximum Static Load,Back*	2400Pa
NOCT	45±2°C
Application Class	Class A

**CHARACTERISTICS**

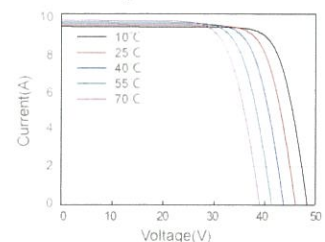
Current-Voltage Curve JAP72S09-335/SC



Power-Voltage Curve JAP72S09-335/SC



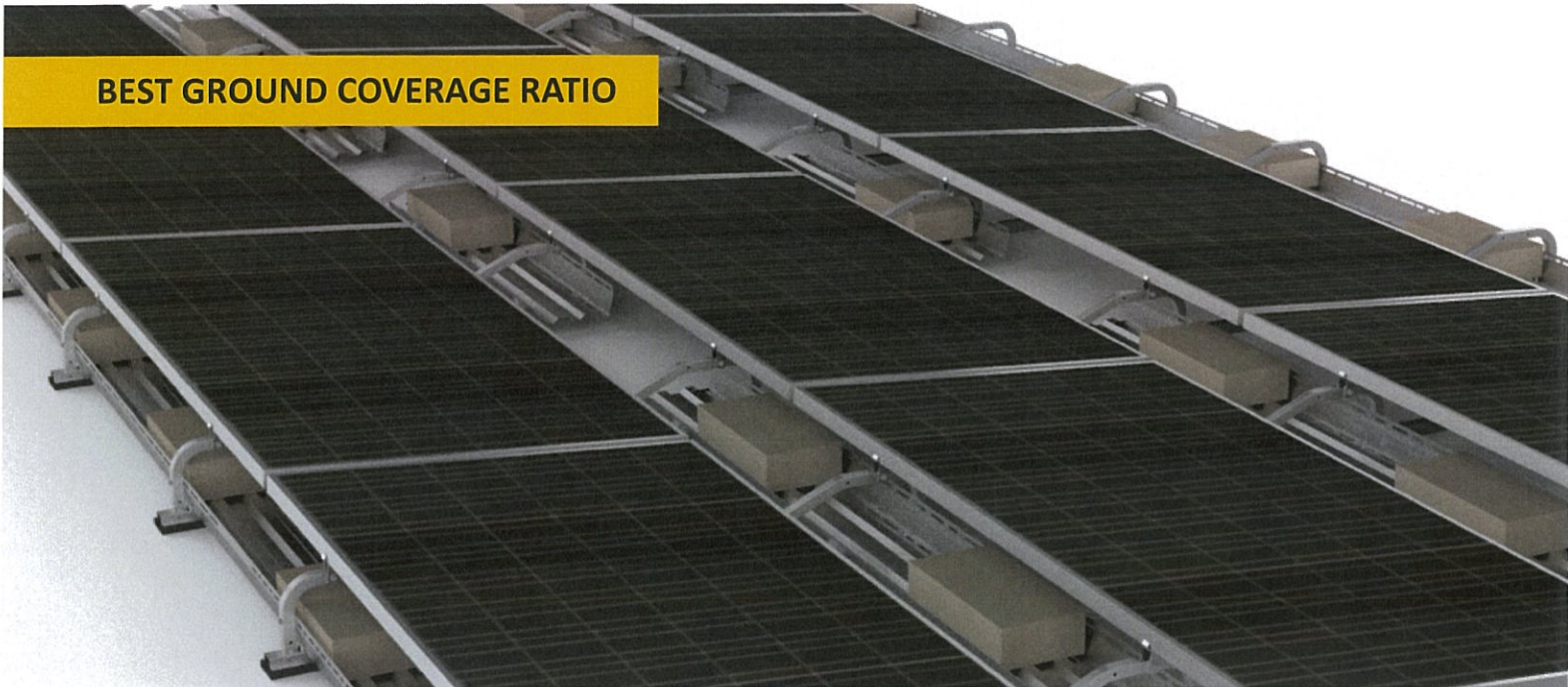
Current-Voltage Curve JAP72S09-335/SC





# Polar Bear III

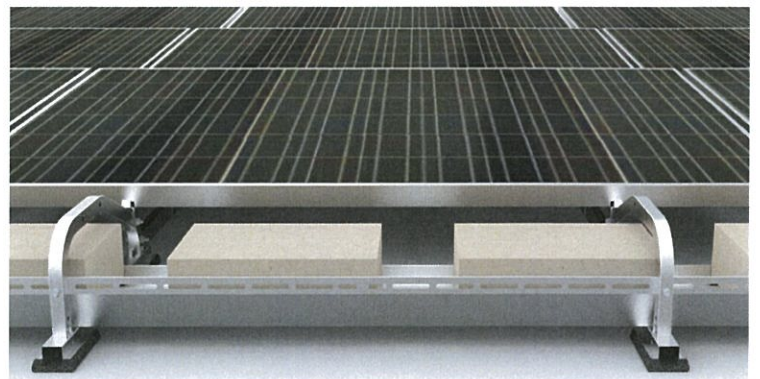
## 5 Degree Flat Roof Mounting System



### Maximize Power Density

The spacing between rows of modules is a critical design decision when it comes to system production. Polar Bear® III offers multiple row-spacing options to optimize designs and maximize power density. The new Five Degree system inherits roof protection and accelerated construction features from the existing Polar Bear III platform and provides the best ground coverage ratio on the market.

Drawing on experience from 500 MW of installed solar PV on commercial rooftops, PanelClaw continues to drive down total installed cost.





# Polar Bear III

## 5 Degree Flat Roof Mounting System



### BEST GROUND COVERAGE RATIO



**2:1**  
Shade Ratio



**3:1**  
Shade Ratio

### Applications

Flat roof (max slope 5°)  
Fully ballasted or  
mechanically attached

### Module Tilt Angle

5° nominal

### Module Orientation

Landscape

### Module Attachment

Standard module  
mounting holes

### Basic Wind Speed

Up to 150 mph  
(>150 mph by  
approval)

### Wind Exposure Category

B and C (D by approval)

### Seismic Compatibility

C, D, E and F

### Row Spacing

6.8" (2:1), 10.2" (3:1)

### Material Options

G90 steel and  
aluminum

### Warranty, Testing and Certifications

25 year warranty  
UL 2703 certification  
Boundary layer wind  
tunnel testing  
Third-party  
engineering review  
System Fire Rating  
Class A with Type 1  
and Type 2 modules

### Best Power Density

Polar Bear® III offers the best ground coverage ratio on the market. The tight-row spacing option allows for maximum roof capacity while the single module tilt up and walkway path facilitate system maintenance.

### Most Trusted on the Roof

The engineered design emphasizes built-in features to provide long-term roof protection:

- Mechanically secured rubber roof pads
- Fully captured ballast blocks
- Thermal compensation
- System allows free water flow

### Timesaving Project Accessories

Speed up total project completion with accessories for wire management, micro-inverter and solar optimizer attachment and shim pads to accommodate uneven areas of the roof.

### Three Components

#### Support

- Universal, light-weight component for quick and easy roof placement
- Integrated recycled rubber roof protection pads
- Pre-drilled holes for wire management cabling options
- Two row-spacing options to optimize ground coverage ratio

#### Ballast Tray

- Locking end-tab to fully capture ballast blocks
- Adjustable mounting location to fit all major module brands
- Nested design to provide high packaging density

#### Claw

- Attachment to module using standard module mounting holes
- UL 2703 certified for electrical bonding and grounding

(978) 688.4900 | [sales@panelclaw.com](mailto:sales@panelclaw.com)



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PVI 14TL  
PVI 20TL  
PVI 23TL  
PVI 28TL  
PVI 36TL

#### FEATURES

- 600 or 1000 VDC
- Best in class efficiency
- Touch-safe fuses
- Dual & wide MPP tracking zones
- Modbus communications
- Integrated DC fused string combiner
- DC arc-fault protection
- PVI 36TL - HECO and Rule 21 compliant

#### OPTIONS

- Web-based monitoring
- Shade cover
- DC/AC disconnect covers
- Roof mount array brackets
- DC combiners bypass

## 3-PH TRANSFORMERLESS STRING INVERTERS

Yaskawa - Solectria Solar's PVI 14TL, PVI 20TL, PVI 23TL, PVI 28TL, and PVI 36TL are compact, transformerless three-phase inverters with a dual MPP tracker. These inverters come standard with AC and DC disconnects, user-interactive LCD, and an 8-position string combiner. Its small, lightweight design makes for quick and easy installation and maintenance. These inverters include an enhanced DSP control, comprehensive protection functions, and advanced thermal design enabling highest reliability and uptime. They also come with a standard 10 year warranty with options for 15 and 20 years. Options include web-based monitoring, shade cover, DC/AC disconnect covers, DC combiners bypass, and roof mount array bracket.



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SPECIFICATIONS	PVI 14TL	PVI 20TL	PVI 23TL	PVI 28TL	PVI 36TL
<b>DC Input</b>					
Absolute Maximum Open Circuit Voltage	600 VDC		1000 VDC		
Operating Voltage Range	180-580 VDC	260-580 VDC	300-900 VDC		200-950 VDC
Max Power Input Voltage Range (MPPT)	300-540 VDC	300-550 VDC	480-800 VDC	500-800 VDC	540-800 VDC
MPP Trackers	2 with 4-fused inputs per tracker				
Maximum Operating Input Current	25 A per MPPT (50 A)	35 A per MPPT (70 A)	25 A per MPPT (50 A)	29 A per MPPT (58 A)	35 A per MPPT (70 A)
Maximum Available PV Current (Isc x 1.25)	45 A per MPPT (90 A)	45.5 A per MPPT (91 A)	41 A per MPPT (82 A)	48 A per MPPT (96 A)	53.5 A per MPPT (107 A)
Maximum PV Power (per MPPT)	9.5 kW	13.5 kW	15.5 kW	19 kW	27 kW
Strike Voltage	300 V		330 V		
<b>AC Output</b>					
Nominal Output Voltage	208 VAC, 3-Ph		480 VAC, 3-Ph		
AC Voltage Range (Standard)			-12%/+10%		
Continuous Output Power	14 kW	20 kW	23 kW	28 kW	36 kW
Maximum Output Current	39 A	25.5 A	27.7 A	33.7 A	43.5 A
Maximum Backfeed Current	0 A				
Nominal Output Frequency	60 Hz				
Output Frequency Range	59.3-60.5 Hz (adjustable 55-65 Hz)				57-63 Hz
Power Factor	Unity, >0.99 (±0.8 adjustable)	Unity, >0.99 (±0.9 adjustable)	Unity, >0.99 (±0.8 adjustable)		
Fault Current Contribution (1 Cycle RMS)	70.4 A	43.3 A	69.6 A		73.2 A
Total Harmonic Distortion (THD) @ Rated Load	< 3%				
Grid Connection Type	3ø+/N/GND (4-wire)				
<b>Efficiency</b>					
Peak Efficiency	96.9%	97.4%	98.6%	98.4%	
CEC Efficiency	96.0%	97.0%		98.0%	
Tare Loss	4 W		2 W		
<b>Integrated String Combiner</b>					
8 Fused Positions (4 positions per MPPT)	15 A (fuse by-pass available)		15 or 30 A (30 A only for combined inputs)		
<b>Temperature</b>					
Ambient Temperature Range	-13°F to +140°F (-25°C to +60°C) Derating occurs over +50°C		-13°F to +140°F (-25°C to +60°C) Derating occurs over +45°C		
Storage Temperature Range			-22°F to +158°F (-30°C to +70°C)	-40°F to +158°F (-40°C to +70°C)	
Relative Humidity (non-condensing)	0-95%				
Operating Altitude	13,123 ft/4,000 m (derating from 6,562 ft/2,000 m)				13,123 ft/4,000 m (derating from 9,800 ft/3,000 m)
<b>Data Monitoring</b>					
Optional SolrenView Web-based Monitoring			Integrated		
Optional Revenue Grade Monitoring			External		
External Communication Interface	RS-485 Modbus RTU				
<b>Testing &amp; Certifications</b>					
Safety Listings & Certifications	UL 1741/IEEE 1547, CSA C22.2#107.1, FCC part 15 B				
Testing Agency	ETL		CSA		
<b>Warranty</b>					
Standard	10 year				
Optional	15, 20 year; extended service agreement				
<b>Enclosure</b>					
dBA (Decibel) Rating	< 50 dBA @ 3 m				
AC/DC Disconnect	Standard, fully-integrated				
Dimensions (H x W x D)	41.6 in. x 21.4 in. x 8.5 in. (1057 mm x 544 mm x 216 mm)		39.4 in. x 23.6 in. x 9.1 in. (1001 mm x 600 mm x 232 mm)		
Weight	141 lbs (64 kg)	132 lbs (60 kg)	104 lbs (47.2 kg)	121 lbs (55kg)	
Enclosure Rating	Type 4				Type 4X
Enclosure Finish	Polyester powder coated aluminum				

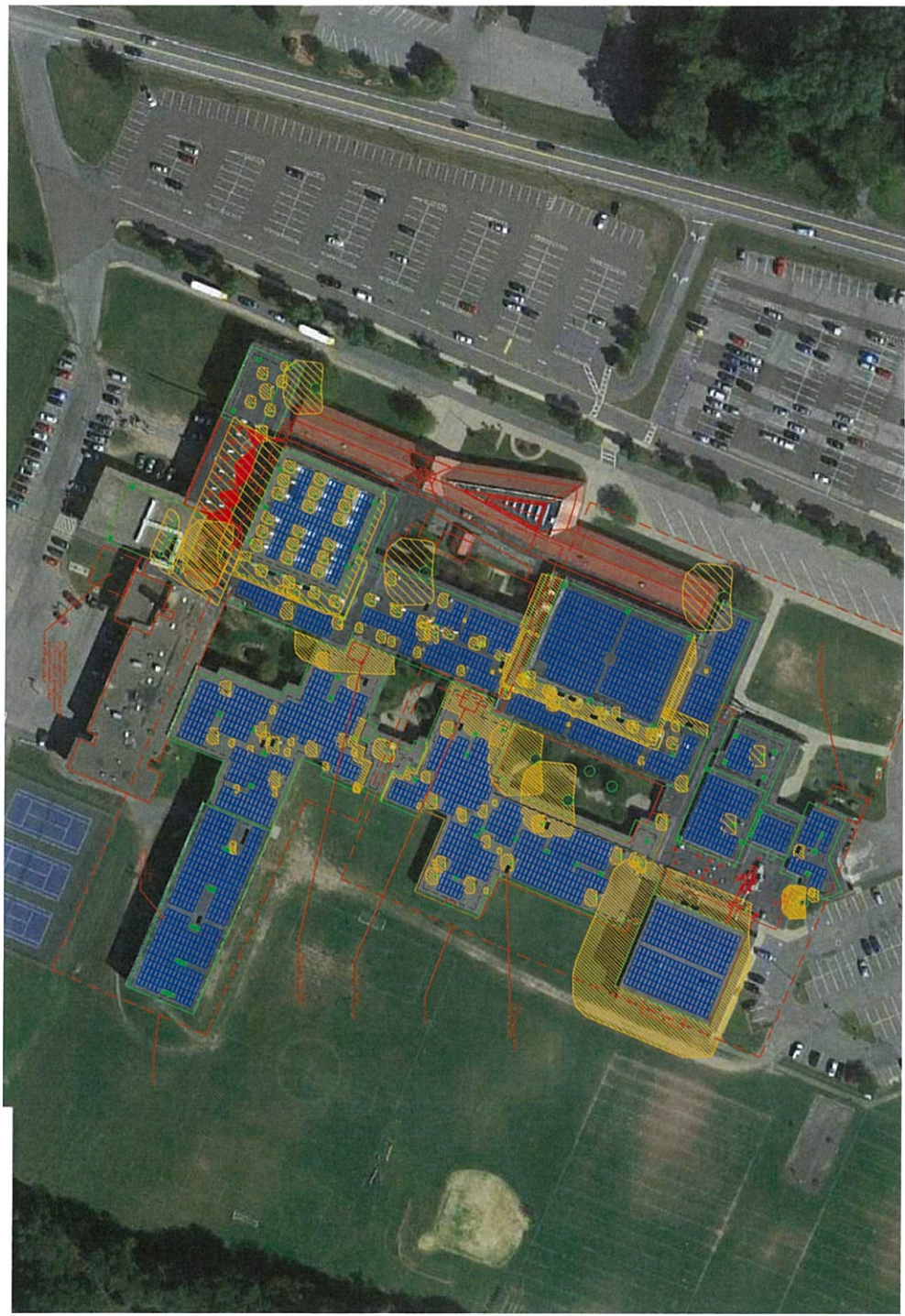




## Appendix for ECM 4: Solar PV Array

### III. Solar PV Array Layouts





OVERALL LAYOUT  
SCALE: 1" = 20'

ARRAY		MOUNT				INVERTER				TRANSFORMER		
LOCATION	# OF MODULES	WV	AM/UTH	PITCH	TYPE	SIZE (WxH)	QTY	DC EFFICIENCY	WVAC	TYPE	QTY	RATING
ARRAY 1	792	30W/72-CELL	200	5	PANEL CLAW/POLAR BEAM	30x72	2	98.7%	48.5			NONE
ARRAY 2	792	30W/72-CELL	200	5	PANEL CLAW/POLAR BEAM	30x72	4	98.7%	193.2	PAD MOUNT	1	(600V/200A/120V)
TOTAL	1,584						14	98.7%	241.7			

- NOTES:
1. DRAWING SYSTEM TAKES INTO ACCOUNT SITE UTILIZE AND LONGITUDE.
  2. SHADING FOR OBJECTS NOT IMPACTING RACK PV SYSTEMS ARE NOT SHOWN.
  3. THE PV SYSTEM IS NOT SHOWN.

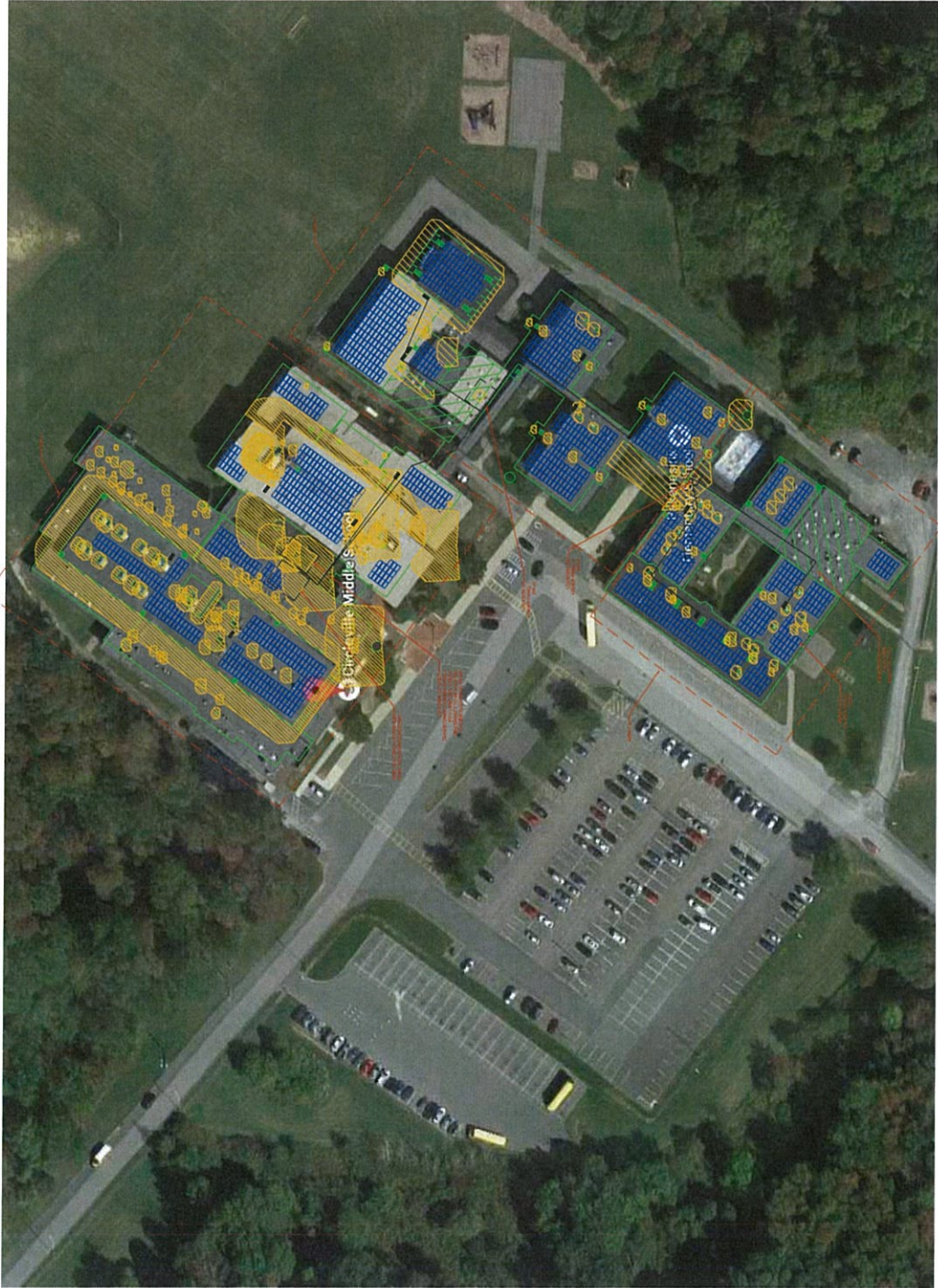




**NOTES:**

1. SHADING INTERFERES PANELS INTO ACCOUNT
2. SHADING FOR OBJECTS NOT IMPACTING
3. THE PV SYSTEM IS NOT SHOWN.

ARRAY		POWER TABLE			INVERTER					
LOCATION	# OF MODULES	MODULE TYPE	WVP	AMPHIT	PITCH	TYPE	SIZE (WV)	QTY.	DC/AC EFFICIENCY	INWAC
ARRAY 1	558	300W-72 CELL	187.2	276	5	PANEL CLAMP/POLE BEAM B	SOLECTRA PV	23	98.7%	46.0
ARRAY 2	1,008	300W-72 CELL	347.2	276	5	PANEL CLAMP/POLE BEAM B	SOLECTRA PV	38	98.7%	212
<b>TOTAL</b>	<b>1,566</b>		<b>534.4</b>					<b>61</b>		<b>418</b>



OVERALL LAYOUT  
SCALE: 1"=50'

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Farmington, Massachusetts 01701  
(508) 661-2200

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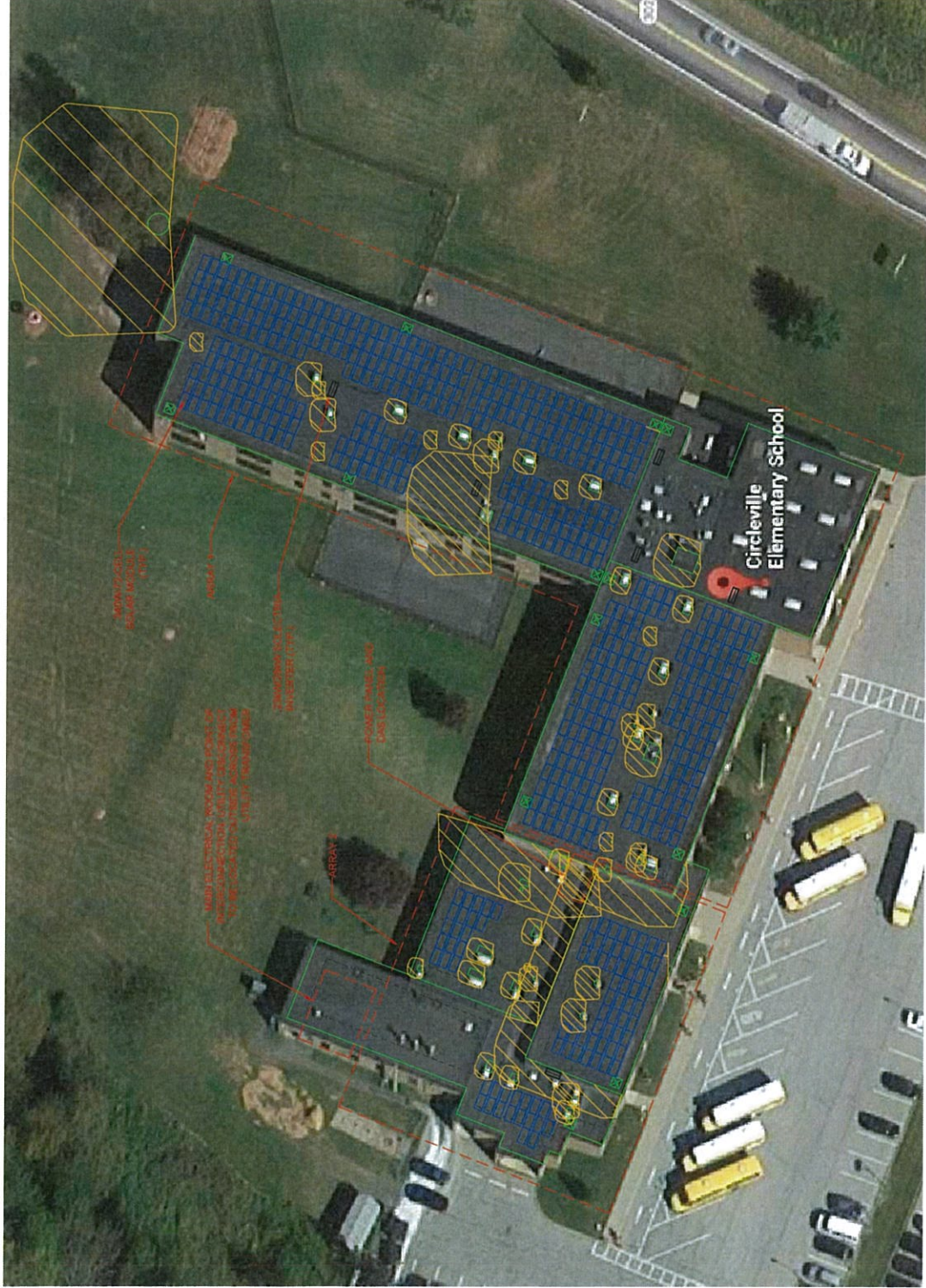
CIRCLEVILLE MIDDLE SCHOOL &  
PAKANASINK ELEMENTARY SCHOOL  
1951 NY-302, CIRCLEVILLE, NY 10919  
PINE BUSH PHASE II  
532.44 kWp DC STC PV ARRAY INSTALLATION  
OVERALL LAYOUT

SCALE: AS SHOWN  
SHEET SIZE: 24" X 36"  
DRAWN BY: RG  
CHECKED BY: AS  
DATE: 07/19/2019  
REVISIONS:



- NOTES:**
1. SHADING PATTERN TAKES INTO ACCOUNT SITE LATITUDE AND LONGITUDE.
  2. SHADING FOR OBJECTS NOT IMPACTING ROSTER EQUIPMENT NOT IMPACTING.
  3. THE PV SYSTEM IS NOT SHOWN.

ARRAY		MODULE TYPE		ADJUSTS		PITCH		TYPE		INVERTER	
LOCATION	# OF MODULES	WV	WV	ADJUSTS	PITCH	TYPE	TYPE	SIZE (KW)	QTY	DC EFFICIENCY	WVAC
ARRAY 1	460	340V-72 CELL	160.24	201	5	PANEL CLAMP/POLE BEAM B	SOLELETRAMP	20	2	19.00%	50.0
ARRAY 2	60	340V-72 CELL	20.00	201	5	PANEL CLAMP/POLE BEAM B	SOLELETRAMP	20	1	19.00%	21.0
<b>TOTAL</b>	<b>520</b>		<b>180.24</b>								<b>141.0</b>



OVERALL LAYOUT  
SCALE 1"=25'

NOT FOR CONSTRUCTION

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115 Speen Street, Suite 410  
Framingham, Massachusetts 01701  
(508) 661-2200

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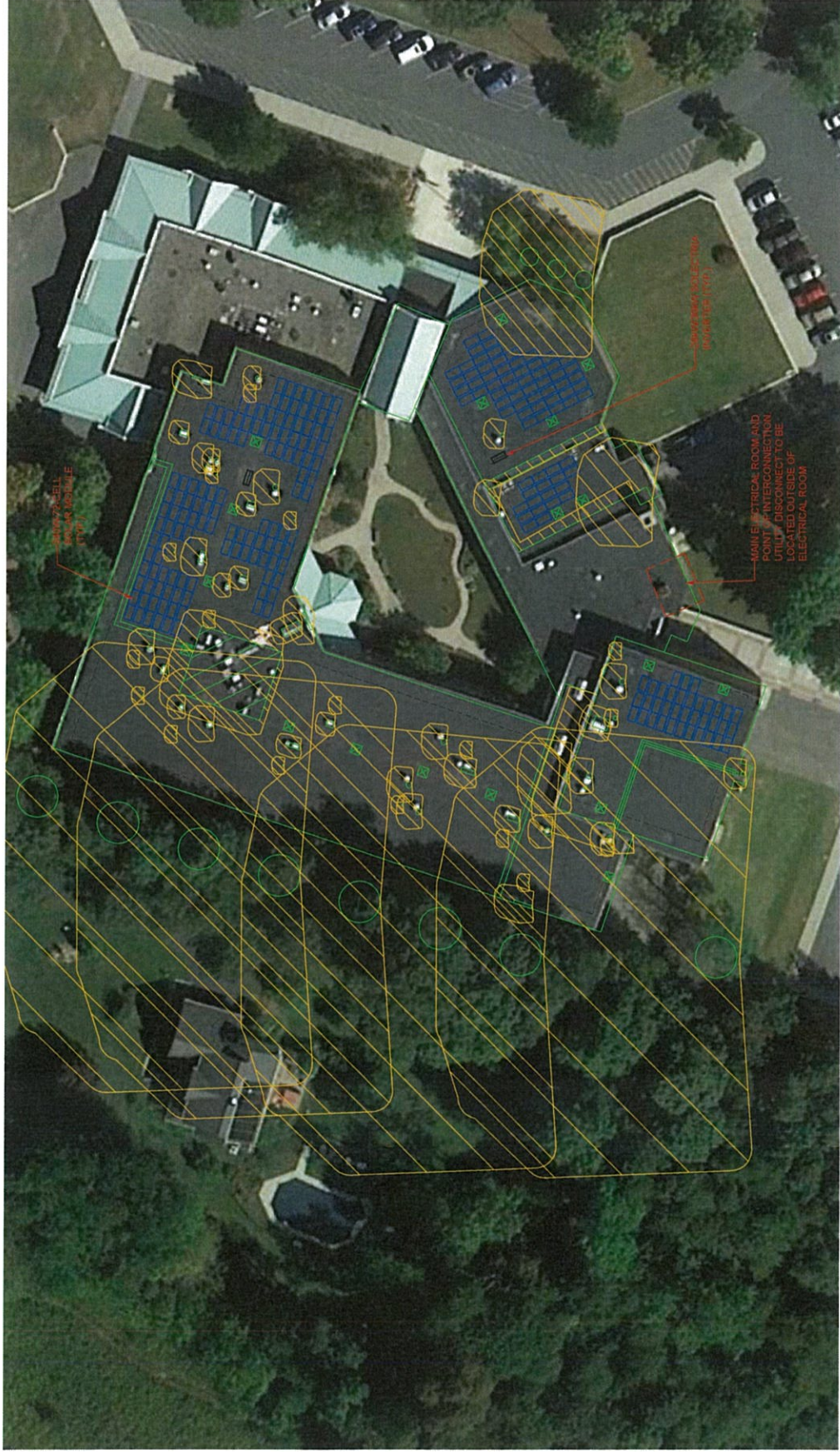
CIRCLEVILLE ELEMENTARY SCHOOL  
2000 NY-302  
CIRCLEVILLE, NY 10919  
PINE BUSH PHASE II  
195.84 kWp DC STC PV ARRAY INSTALLATION  
OVERALL LAYOUT

SCALE: AS SHOWN  
SHEET SIZE: 24" X 36"  
DRAWN BY: RS  
CHECKED BY: AS  
DATE: 07/31/2019  
REVISIONS:



- NOTES:**
1. SHADING ANTERIOR FACES IN ACCORD WITH LATITUDE AND LONGITUDE.
  2. SHADING FOR OBJECTS NOT IMPACTING THE PV SYSTEM IS NOT SHOWN.
  3. THE PV SYSTEM IS NOT SHOWN.

POWER TABLE												
LOCATION	# OF MODULES	MODULE TYPE	WVA	AZIMUTH	PITCH	MOUNT		INVERTER		TRANSFORMER		
						TYPE	SIZE (WVA)	QTY	CEC EFFICIENCY (%)	WVA/C	TYPE	QTY
ARRAY 1	135	MONO-CRISTALLINE	42.5A	180	5	PANEL CLAMP FOUR BEAR B	SOLETRIM PVA	30	1	90.7%	30.0	75KVA
ARRAY 2	135	MONO-CRISTALLINE	42.5A	180	5	PANEL CLAMP FOUR BEAR B	SOLETRIM PVA	30	1	90.7%	30.0	75KVA
<b>TOTAL</b>	<b>270</b>		<b>75.0A</b>	<b>180</b>	<b>5</b>			<b>60</b>	<b>2</b>			<b>150.0</b>



OVERALL LAYOUT  
SCALE: 1" = 200'

SCALE: AS SHOWN  
SHEET SIZE: 24" X 36"  
DRAWN BY: RG  
CHECKED BY: 07/13/2019  
DATE: 07/13/2019  
REGIONS:

PINE BUSH ELEMENTARY SCHOOL  
21 ULSTERVILLE ROAD  
PINE BUSH, NY 12566  
PINE BUSH PHASE II  
79.56 KWp DC STC PV ARRAY INSTALLATION  
OVERALL LAYOUT

DRAFT

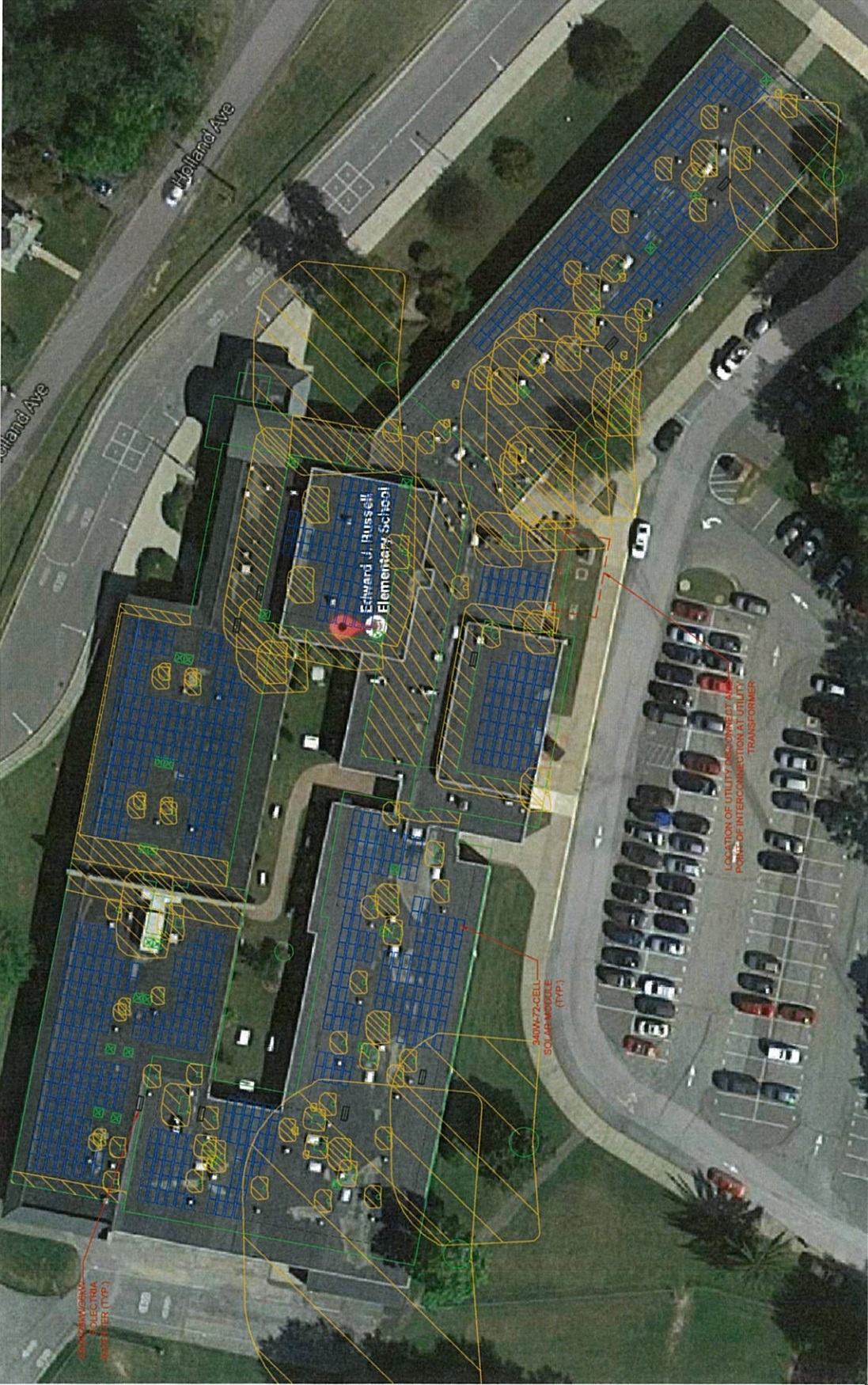
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E-100



- NOTES:**
1. ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SPECIFIED.
  2. SHADING FOR OBJECTS NOT IMPACTING THE PV SYSTEM IS NOT SHOWN.
  3. THE PV SYSTEM IS NOT SHOWN.

ARRAY		MODULE TYPE		MW		PITCH		MOUNT		INVERTER		TRANSFORMER	
LOCATION	# OF MODULES	TYPE	SIZE (W x H)	TYPE	SIZE (W x H)	TYPE	SIZE (W x H)	TYPE	SIZE (W x H)	TYPE	QTY	TYPE	QTY
ARRAY 1	500	340W-72-CELL	214x20	5	PANEL CLEAN POLAR BEAR B	SOLELECTRA PV	35	3	98.5%	200.5	20.0	PAN MOUNT	1
ARRAY 2	144	340W-72-CELL	48.96	5	PANEL CLEAN POLAR BEAR B	SOLELECTRA PV	35	1	98.5%	20.0	25.0		
<b>TOTAL</b>	<b>644</b>												



OVERALL LAYOUT  
SCALE: 1" = 200'

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AMERESCO is a leading provider of energy storage solutions for commercial and industrial applications. Our products are designed to be safe, reliable, and easy to install. We offer a wide range of products to meet your needs. For more information, please contact us at (508) 661-2200.

**DRAFT**

EDWARD J. RUSSELL ELEMENTARY SCHOOL  
78 HOLLAND AVE  
PINE BUSH, NY 12566  
PINE BUSH PHASE II  
263.16 KWP DC STC PV ARRAY INSTALLATION  
OVERALL LAYOUT

SCALE: AS SHOWN  
SHEET SIZE: 24" x 36"  
DRAWN BY: RG  
CHECKED BY:  
DATE: 07/13/2019  
REVISIONS:

**E-100**



**APPENDIX 2**  
**To First Amendment to Energy Services Agreement**

**Replacement Figures and Tables**

## Executive Summary Replacements:

*Table 1: Project Summary*

Project Financial Summary	CEA
Design and Specification	\$506,380
Energy Efficiency Measure Project Costs	\$6,054,159
<b>Total Implementation Costs</b>	<b>\$6,560,539</b>
Total Project Savings over the Project Term	\$7,922,575
NYS Building Aid	\$4,099,635
<b>Total Project Value</b>	<b>\$12,022,210</b>

*Table 2: Projected Savings and Costs*

### Pine Bush Central School District

#### Project Savings Summary

Ecm #	ECM Name	Annual kW	Total kWh	#2 Fuel Oil (Gallons)	Energy Savings	O&M Savings	Total Project Savings	Total Project Costs
1	Interior Lighting System Improvements	1,266	316,766	(4,059)	\$ 28,376	\$ 11,865	\$ 40,241	\$ 1,039,256
2	Exterior Lighting System Improvements	-	281,459	-	\$ 25,030	\$ 2,000	\$ 27,030	\$ 311,883
3	Pneumatic System Replacement	-	142,751	41,886	\$ 114,491	\$ -	\$ 114,491	\$ 1,534,480
4	Solar PV Array	1,314	1,816,355	-	\$ 172,728	\$ -	\$ 172,728	\$ 3,093,707
5	Infiltration Reduction	-	836	13,848	\$ 33,506	\$ -	\$ 33,506	\$ 287,617
6	Kitchen Exhaust Hood Controls	-	7,175	1,156	\$ 3,347	\$ -	\$ 3,347	\$ 46,992
7	DHW System Upgrades	-	-	23	\$ 56	\$ -	\$ 56	\$ 92,414
8	Replace Bath Faucet Aerators	-	578	2,491	\$ 6,016	\$ -	\$ 6,016	\$ 29,355
9	Unit Ventilator Replacements	-	-	63	\$ 152	\$ -	\$ 152	\$ 124,834
	Incentives over Term						\$ -	\$ -
		<b>2,579</b>	<b>2,565,920</b>	<b>55,408</b>	<b>\$ 383,701</b>	<b>\$ 13,865</b>	<b>\$ 397,566</b>	<b>\$ 6,560,539</b>

*Table 4: Financial Benefits to the District*

<b>Financial Terms</b>	
Financing Term (years)	15
Savings Guarantee Period (years)	18
Capital Investment	\$6,560,539
Energy Cost Escalation (Annually)	2.0%
Annual Project Savings (Initial)	\$397,566

## Section D Replacements:

*Table 1*

<b>Initial Project Costs</b>	
Design and Specifications	\$506,380
Implementation Costs	\$6,054,159
<b>Total Initial Project Costs</b>	<b>\$6,560,539</b>
Estimated Rebates and Incentives over Term (incentives already netted from Total Initial Project Costs)	\$0

# Pine Bush Central School District - Pro-Forma

Initial Project Costs:	
District A/E Design and Specifications	\$ 506,380
Implementation costs for the energy efficiency measures	\$ 6,054,159
<b>Total Initial Project Costs</b>	<b>\$ 6,560,539</b>
Estimated Initial Incentives	\$ -
<b>Net Project Costs after rebates</b>	<b>\$ 6,560,539</b>

Financial Assumptions	
Improvements excluded from State Aid	\$ 1,919,666
Term of Project (yrs)	18.0 yrs
Term of Financing (yrs)	15.0 yrs
Gross Financing Rate	3.00%
Resulting annual payments	see below
Discount Rate	4.00%
SED contribution ratio	71.5%
Energy escalation rate (annual)	2.00%
Cost escalation rate (annual)	3.00%
<b>Project Simple Payback</b>	<b>17.574</b>

Pro-forma	Initial Values	Year									
		1	2	3	4	5	6	7	8	9	10
1 Annual energy costs without improvements	\$ 1,328,398	\$ 1,354,966	\$ 1,382,065	\$ 1,409,707	\$ 1,437,901	\$ 1,466,659	\$ 1,495,992	\$ 1,525,912	\$ 1,556,430	\$ 1,587,559	\$ 1,619,310
2 Annual energy costs with improvements	\$ 944,697	\$ 967,046	\$ 990,705	\$ 1,014,815	\$ 1,039,387	\$ 1,064,428	\$ 1,089,949	\$ 1,115,960	\$ 1,142,469	\$ 1,169,488	\$ 1,197,026
3 Annual energy cost savings (1-2)	\$ 383,701	\$ 387,921	\$ 391,361	\$ 394,891	\$ 398,514	\$ 402,231	\$ 406,043	\$ 409,952	\$ 413,961	\$ 418,071	\$ 422,284
4 O&M Savings	\$ 13,865	\$ 14,281	\$ 14,709	\$ 15,151	\$ 15,605	\$ 16,073	\$ 16,556	\$ 17,052	\$ 17,564	\$ 18,091	\$ 18,633
5 Additional PV Incentives	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
6 Total Project Savings	\$ 397,566	\$ 402,201	\$ 406,070	\$ 410,042	\$ 414,119	\$ 418,304	\$ 422,598	\$ 427,004	\$ 431,525	\$ 436,162	\$ 440,917
7 Payments for financing equipment	\$ -	\$ 532,514	\$ 535,274	\$ 538,104	\$ 541,004	\$ 543,974	\$ 546,914	\$ 549,824	\$ 552,704	\$ 555,554	\$ 558,374
8 Payments for on-going services	\$ 14,195	\$ 14,621	\$ 15,059	\$ 15,511	\$ 15,977	\$ 16,457	\$ 16,951	\$ 17,459	\$ 17,981	\$ 18,517	\$ 19,067
9 Annual PV Maintenance Costs	\$ 21,679	\$ 22,330	\$ 23,000	\$ 23,690	\$ 24,400	\$ 25,132	\$ 25,886	\$ 26,663	\$ 27,463	\$ 28,287	\$ 29,135
10 (reserved)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
11 Net annual benefits ((6 - (7+8+9+10)) without State financial assistance)	\$ -	\$ (167,264)	\$ (167,263)	\$ (167,263)	\$ (167,262)	\$ (167,262)	\$ (167,262)	\$ (167,263)	\$ (167,263)	\$ (167,262)	\$ (167,263)
12 State financial assistance	\$ -	\$ 273,309	\$ 273,309	\$ 273,309	\$ 273,309	\$ 273,309	\$ 273,309	\$ 273,309	\$ 273,309	\$ 273,309	\$ 273,309
13 Net annual benefits (11 + 12) with State financial assistance	\$ -	\$ 106,045	\$ 106,046	\$ 106,046	\$ 106,047	\$ 106,047	\$ 106,047	\$ 106,046	\$ 106,046	\$ 106,047	\$ 106,046
14 Cumulative cash flow with State financial assistance	\$ 2,916,543	\$ 1,06,045	\$ 212,091	\$ 318,137	\$ 424,184	\$ 530,231	\$ 636,278	\$ 742,324	\$ 848,370	\$ 954,417	\$ 1,060,463
15 <b>Net Present Value of cash flow with State financial assistance</b>	\$ 1,859,880										
16 Interest Rate	3.00%										
17 Discount Rate	4.00%										

Line #	Year										Totals
	11	12	13	14	15	16	17	18	19	20	
1	\$ 1,651,696	\$ 1,684,730	\$ 1,718,425	\$ 1,752,793	\$ 1,787,849	\$ 1,823,606	\$ 1,860,078	\$ 1,897,280	\$ 1,935,239	\$ 1,973,968	\$ 2012,468
2	\$ 1,225,094	\$ 1,253,703	\$ 1,282,864	\$ 1,312,587	\$ 1,342,885	\$ 1,373,768	\$ 1,405,249	\$ 1,437,339	\$ 1,469,940	\$ 1,503,164	\$ 1,536,014
3	\$ 426,602	\$ 431,027	\$ 435,561	\$ 440,206	\$ 444,964	\$ 449,838	\$ 454,829	\$ 459,940	\$ 465,174	\$ 470,534	\$ 476,024
4	\$ 19,192	\$ 19,768	\$ 20,361	\$ 20,972	\$ 21,601	\$ 22,249	\$ 22,917	\$ 23,604	\$ 24,311	\$ 25,039	\$ 25,787
5	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
6	\$ 445,794	\$ 450,795	\$ 455,922	\$ 461,178	\$ 466,565	\$ 472,087	\$ 477,746	\$ 483,545	\$ 489,484	\$ 495,564	\$ 501,784
7	\$ 583,047	\$ 587,148	\$ 591,348	\$ 595,648	\$ 600,052	\$ 604,561	\$ 609,170	\$ 613,879	\$ 618,588	\$ 623,297	\$ 628,006
8	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
9	\$ 30,009	\$ 30,910	\$ 31,837	\$ 32,792	\$ 33,776	\$ 34,789	\$ 35,833	\$ 36,908	\$ 37,994	\$ 39,091	\$ 40,191
10	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
11	\$ (167,262)	\$ (167,263)	\$ (167,263)	\$ (167,262)	\$ (167,262)	\$ (167,263)	\$ (167,263)	\$ (167,262)	\$ (167,262)	\$ (167,263)	\$ (167,263)
12	\$ 273,309	\$ 273,309	\$ 273,309	\$ 273,309	\$ 273,309	\$ 273,309	\$ 273,309	\$ 273,309	\$ 273,309	\$ 273,309	\$ 273,309
13	\$ 106,047	\$ 106,046	\$ 106,046	\$ 106,047	\$ 106,047	\$ 106,046	\$ 106,046	\$ 106,047	\$ 106,046	\$ 106,047	\$ 106,046
14	\$ 1,166,510	\$ 1,272,556	\$ 1,378,602	\$ 1,484,649	\$ 1,590,695	\$ 2,027,993	\$ 2,469,906	\$ 2,916,543	\$ 3,363,190	\$ 3,809,837	\$ 4,256,484
15	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
16	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Notes:  
 1 This Proforma Cash Flow reflects an estimated tax exempt lease rate of 3%. The actual rate will increase or decrease based on market conditions at the time of lease funding.  
 2 Energy unit prices are estimated based on utility rate structures and information provided for purposes of this RFP

**Pine Bush Central School District**

**Project Savings Summary**

ECM #	ECM Name	Annual kW	Total kWh	#2 Fuel Oil (Gallons)	Energy Savings	O&M Savings	Total Project Savings	Total Project Costs
1	Interior Lighting System Improvements	1,266	316,766	(4,059)	\$ 28,376	\$ 11,865	\$ 40,241	\$ 1,039,256
2	Exterior Lighting System Improvements	-	281,459	-	\$ 25,030	\$ 2,000	\$ 27,030	\$ 311,883
3	Pneumatic System Replacement	-	142,751	41,886	\$ 114,491	-	\$ 114,491	\$ 1,534,480
4	Solar PV Array	1,314	1,816,355	-	\$ 172,728	-	\$ 172,728	\$ 3,093,707
5	Infiltration Reduction	-	836	13,848	\$ 33,506	-	\$ 33,506	\$ 287,617
6	Kitchen Exhaust Hood Controls	-	7,175	1,156	\$ 3,347	-	\$ 3,347	\$ 46,992
7	DHW System Upgrades	-	-	23	\$ 56	-	\$ 56	\$ 92,414
8	Replace Bath Faucet Aerators	-	578	2,491	\$ 6,016	-	\$ 6,016	\$ 29,355
9	Unit Ventilator Replacements Incentives over Term	-	-	63	\$ 152	-	\$ 152	\$ 124,634
		<b>2,579</b>	<b>2,565,920</b>	<b>55,408</b>	<b>\$ 383,701</b>	<b>\$ 13,865</b>	<b>\$ 397,566</b>	<b>\$ 6,560,539</b>