



HCT Bifacial Products for C&I Applications

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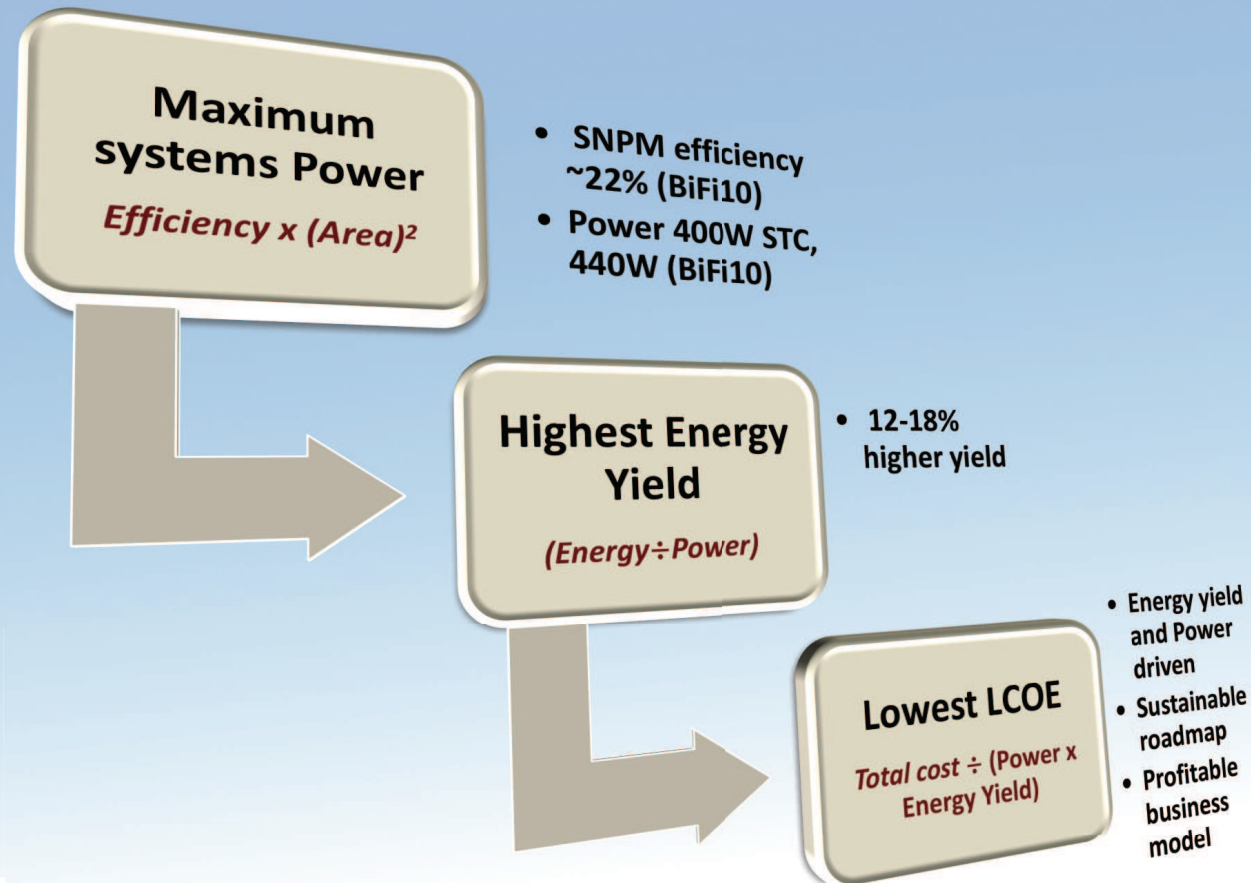


Industrial Power Plant in New Jersey
15MW of Sunpreme Bi-Facial Modules

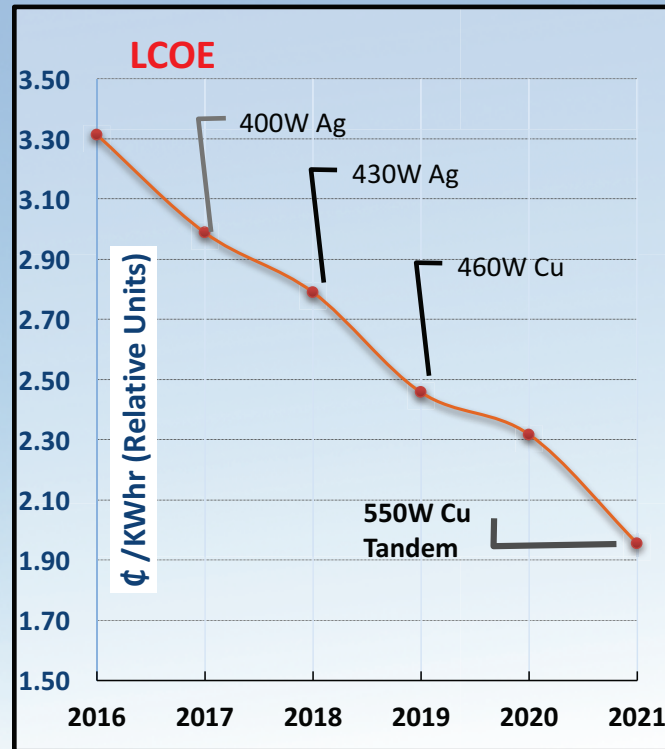
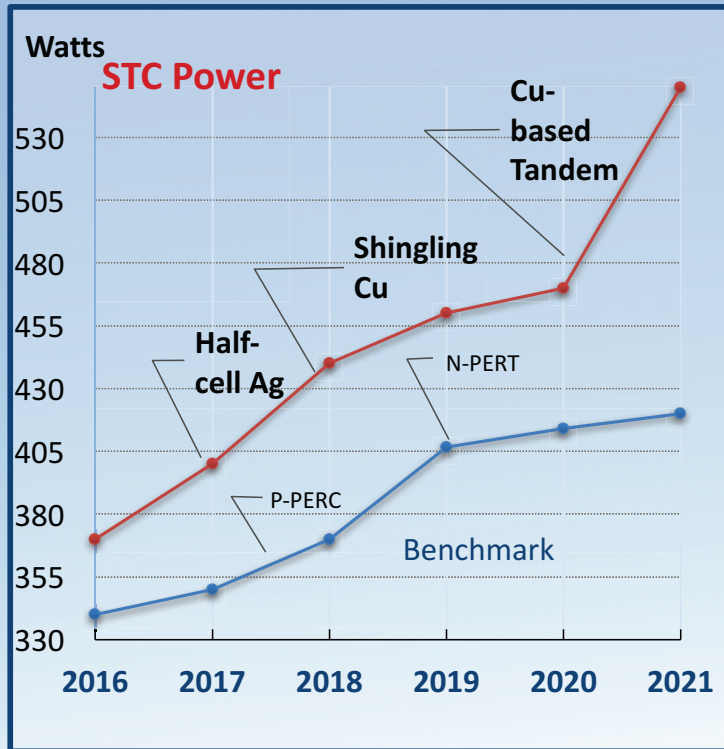


The Largest Commercial Roof-top Installation in the US
(Port of Los Angeles) 10MW of Sunpreme Bi-Facial Modules → 15MW

- **Sunpreme Offers Highest Possible Efficiency and Energy Yield at Lowest Cost**
 - *Well-positioned to satisfy unmet needs of the C&I market*



Sunprime Offers a “Truly Impressive” Low Levelized Cost of Energy (“LCOE”) Due to Higher Energy Yield



Sunprime LCOE 2018 worksheet

	430W
System Size (MW):	10MW
# Modules	23256
SINGLE AXIS TRACKER	
Actual Project Size (W)	10MW
Total Installed Cost (\$/W)	\$1.40
Module Cost(\$/W)	\$0.50
BoS Cost (\$/W)	\$0.90
Inverter	\$0.08
Tracker	\$0.11
Labor & Other Variable Costs	\$0.20
Electrical BOS inc. transformer	\$0.08
Other Costs (fence, roads, ground..)	\$0.14
Other Fixed Cost inc Grid / Land	\$0.13
EPC Margin	\$0.15
Specific Energy Production (kWh/kWp/year)	2321**
Productive years	25 (→ 30*)
1st Year Energy (Los Angeles area)	23,210,000
	530,288,76
Total Lifetime Energy Produced (kWh)	4
Calculated LCOE (¢/kWh) (Relative U.)	2.79***

* 30 yr performance warranty at 85% linear residual power (Q3, 17)
 ** Location specific; in this case Southern California)
 *** Not including cost of land or debt financing

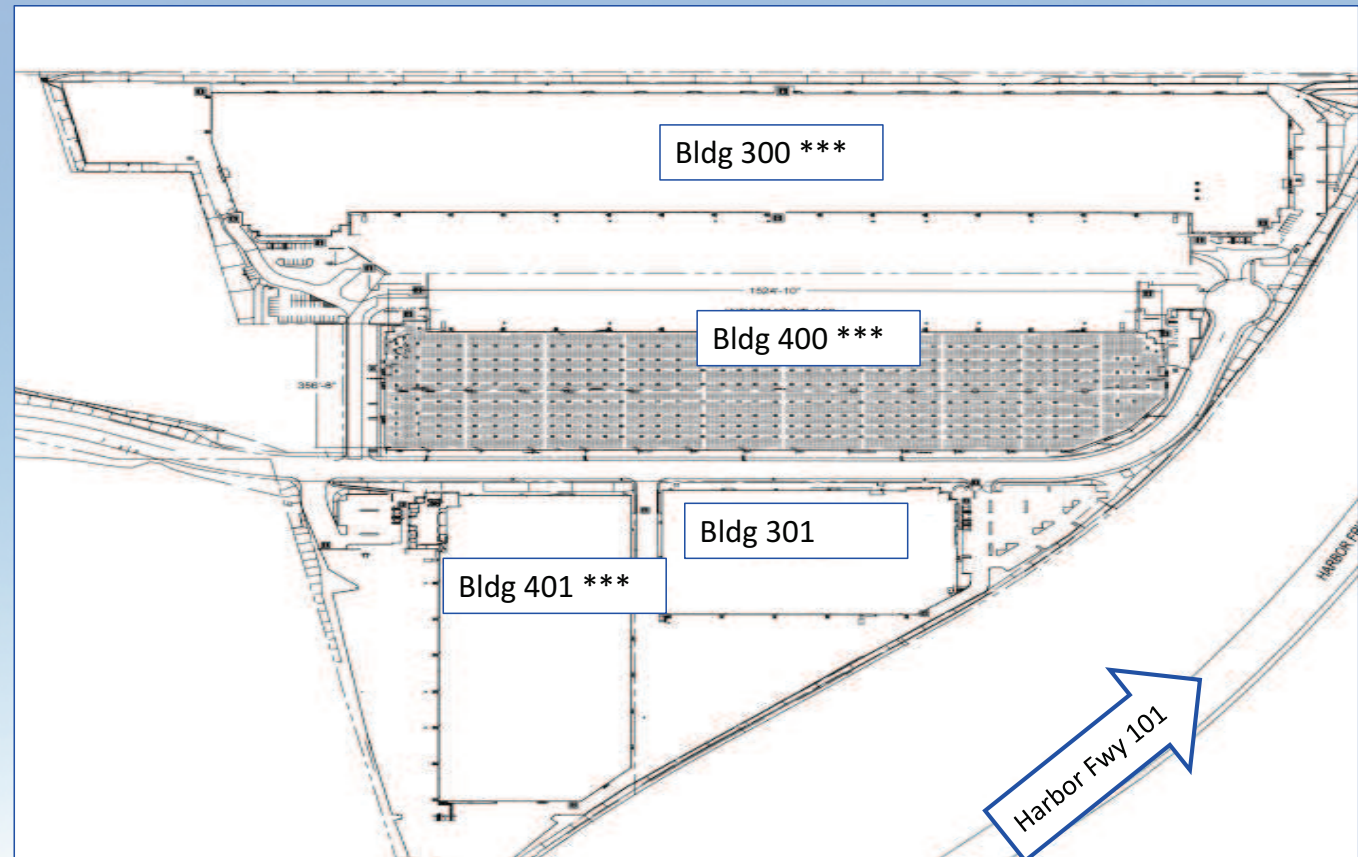
SITE DIAGRAM

Case Study:
Westmont
LA, Calif.

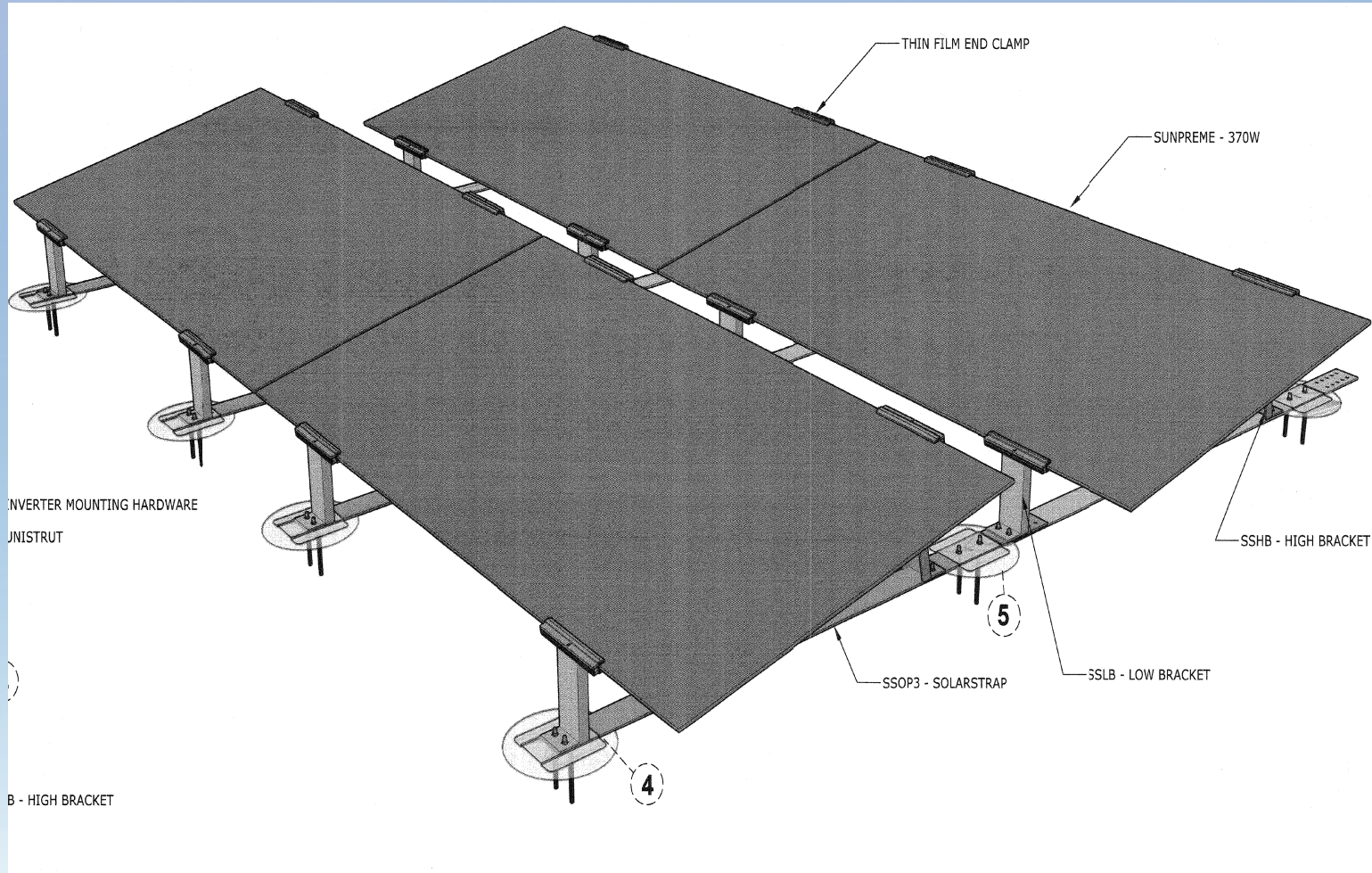
33°45'58.1"N 118°17'11.6"W

***** Sunpreme Inside**

10 MW out of 16.4 MW

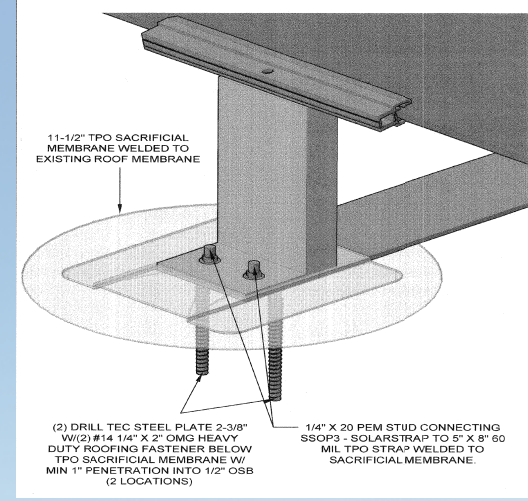


An innovative Solar Strap Mounting Design for Bifacial Modules from PermaCity



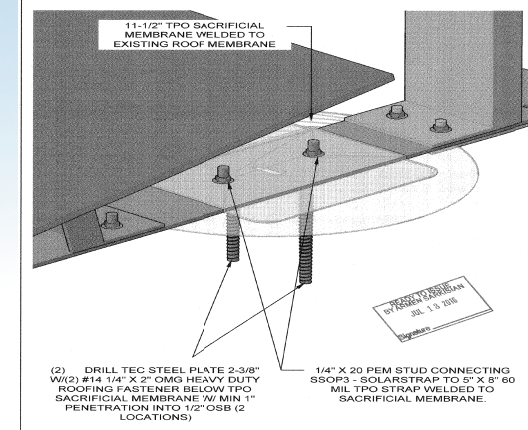
4 FRONT ATTACHMENT DETAIL

SCALE: NTS



5 MID ATTACHMENT DETAIL

SCALE: NTS



Commissioning Data Summary vs other top rated providers

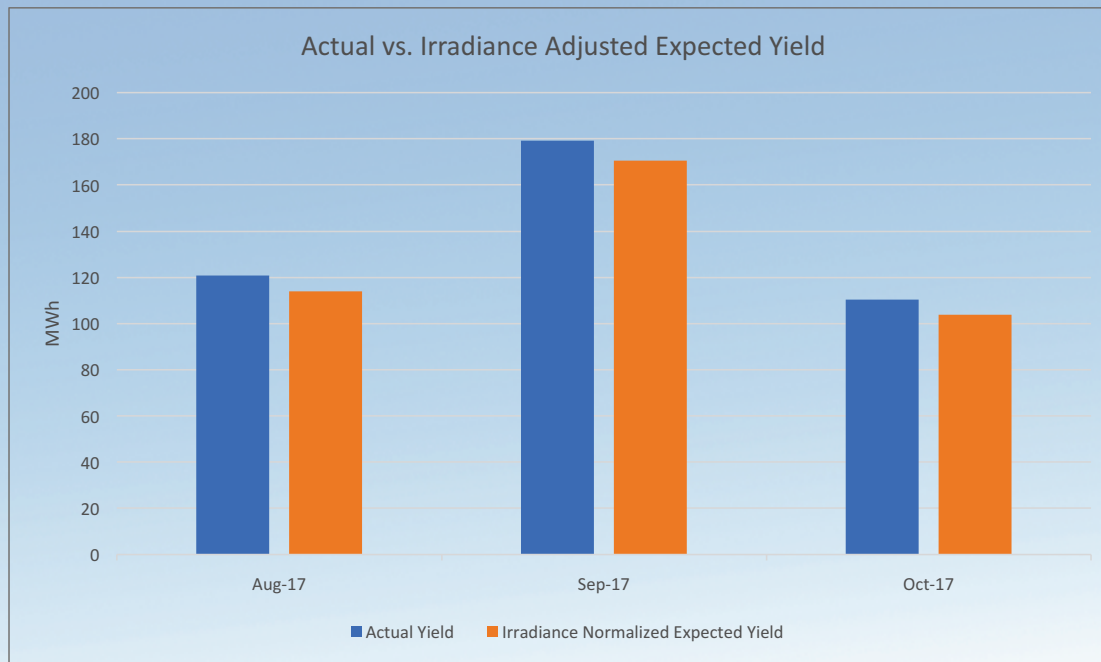
SUPPLIER	CAPACITY MW	STC	PTC/STC	AC/STC
SNPM HCT	10.15	370W	0.94	0.92
A	3.0	330W	0.92	0.90
B	3.25	285W	0.91	0.89
Total	16.4			

- Recently, Sunprime released products going from 370 → 380 → 400W
- The GxB 380 has an optional integrated optimizer for Bifaciality enhancement
- The HxB 400 is half cell product with frame and 1500V rating, at a thermal coefficient of $-0.26\%/C$
- Past performance and new products led the customer to sign an MSA for 150MW of Bifacial HCT modules
- Need **systems level models** for annualized energy gains for longer strings and non-uniform lighting conditions

True Green – Westmont, Bldg. 300. San Pedro, CA

Initial Systems Optimization Results

Module Quality: Zero Field Failures reported since commission, No signs of Degradation.
Bifacial Energy Gain : 6% Gain Observed in spite of 2% Clipping



Specific Production:

- Expected: 1556 kwh/kWp/Year
- Actual: 1649 kwh/kWp/Year with 2% Clipping. 6% Gain.
- 1.176 MW System.

Ground Mount, 10 Deg. Tilt

System Size = 1176 KW

Azimuth = South

Modules = GxB 370

Commissioned = July 2017

Overall output since July = 550 MWh

Normalized Peak Power = 85 to 90%

* All expected are normalized by irradiance.

* Expected PVSYST Output does not include Bifacial Boost.

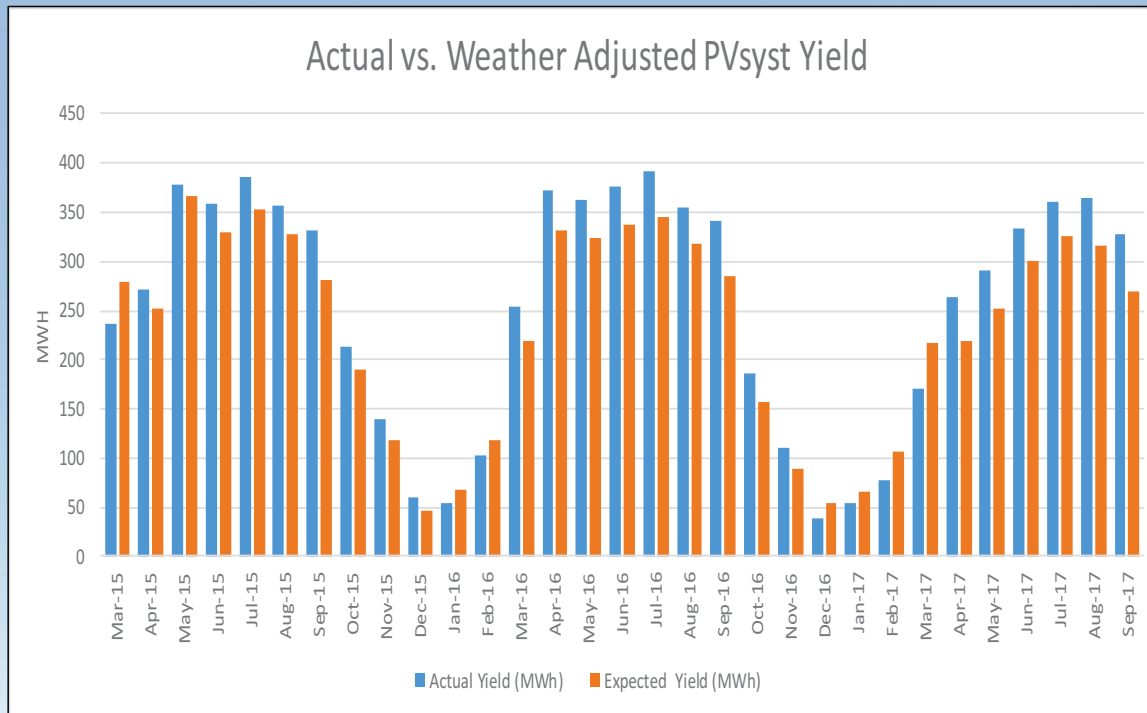
Customer : True Green Capital

Contact: Nicholas Lindsholm

nlindsholm@distributedassetsolutions.com

Essex Capital – Barton Site, VT

Output: Actual vs. Weather Adjusted PVSYST over 25 months (March 2015 - April 2017)
Module Quality: Zero Field Failures reported since commission, No signs of Degradation..
Bifacial: 8% Gain Observed Annually in spite of 3% Clipping.



Specific Production:
 - PVSYST: 912 kwh/kwp/Year
 - Actual Output:
 990 kwh/kwp/Year.

Ground Mount 25 Deg. Tilt
 System Size = 2.6MW
 Azimuth = South
 Modules = GxB 340
 DC capacity of 2.6MW;
 capped at 1.89MW
 Overall output = 8 Gigawatt
 Hours

- * All expected energy simulations are done using PVsyst with weather adjusted.
- * Expected PVSYST Output does not include Bifacial Boost.

Customer: Charlie Grant
 Contact: cgrant@essexcapitalpartners.com

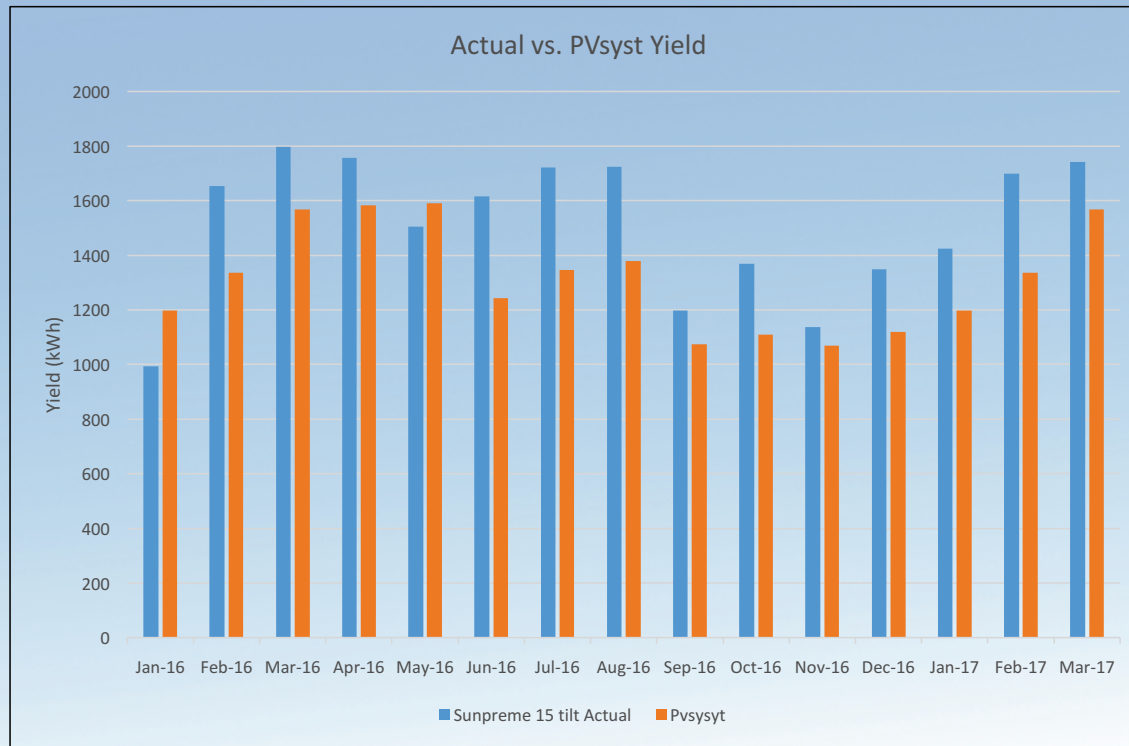


Canon – Gumma Site, Japan

Output: Actual vs. PVSYST (Not Weather Adjusted) over 15 months (Jan 2016 – March 2017)

Module Quality: Zero Field Failures reported since commission, No signs of Degradation..

Bifacial: 14% Gain Observed Annually



Specific Production:

- PVSYST: 1239

kwh/kwp/Year

- Actual Output:

1414 kwh/kwp/Year.

Roof top, 15 Deg. Tilt

System Size = 12.6KW

Azimuth = South

Modules = GxB 310 SL

Commissioned = Jan 2016

Overall output = 1527 KWH

* All expected energy simulations are done using PVsyst with PVsyst weather data.

* Expected yields do not include Bifacial Boost.