



NY-SUN Performance Based (>200 kW) Program Draft Program Design

November 6, 2014

Prepared for
NYSERDA

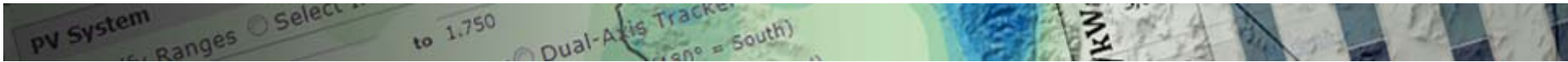
Prepared by
Clean Power Research



Key Program Design Assumptions

- Program budget of \$425M and installed PV capacity of 1.5 GW
- Program attrition rate of 20%
- Performed discounted cash flow analysis including PBI, bill savings, depreciation benefit, and O&M
- Aimed to achieve approximately 12% IRR at program initiation

Assumption	ConEd	ROS
Program Budget	\$125 million	\$300 million
2014 Installed PV Cost	\$3.00 per W-dc	\$2.10 per W-dc
2014 Bill Savings	\$0.125 per kWh	\$0.090 per kWh
2014 PV Commitment Rate	35 MW-dc per year	200 MW-dc per year



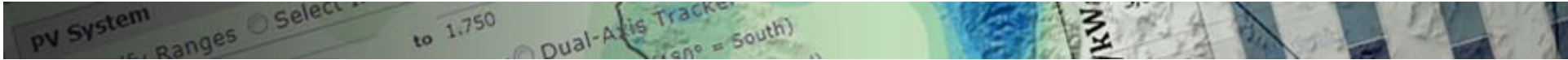
PV Installation and Commitments by Utility

- Installed and committed PV capacity is dependent on a number of variables one of which is bill savings
- Sufficiently strong trends in installed and committed PV capacity by utility are not present to justify breaking ROS into multiple regions

Utility Name	NYSERDA >200kW		
	2014 Total Sales in MWh (%) *	PV Program Capacity (%)	Large Commercial Bill Savings (\$/kWh) **
CHG&E	5.8%	3.2%	\$0.079/kWh
Con Ed	41.2%	14.6%	\$0.125/kWh
National Grid	29.1%	52.0%	\$0.095/kWh
NYSEG	14.8%	18.5%	\$0.084/kWh
O&R	3.3%	6.4%	\$0.127/kWh
RG&E	5.8%	5.4%	\$0.097/kWh
Total	100.0%	100.0%	n/a

* U.S. Energy Information Administration

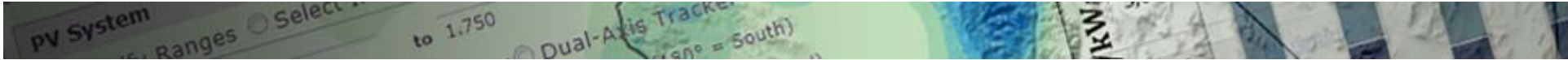
** Clean Power Estimator



Load-Weighted Average Bill Savings

- Load weighting bill savings demonstrates limited variability across Load Zones A-H

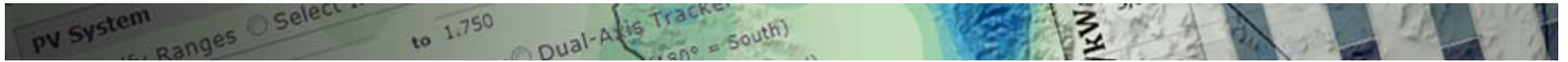
Region	City	Large Commercial Bill Savings (\$/kWh)	Utility Name	2014 Total Sales (MWh)	Average Large Commercial Bill Savings (\$/kWh)	Load Weighted Average Large Commercial Bill Savings (\$/kWh)	Average Large Commercial Bill Savings (\$/kWh)	Load Weighted Average Large Commercial Bill Savings (\$/kWh)
Zones A-F	Buffalo, NY	0.095	National Grid	29.1%	0.0913	0.0923	0.0923	0.0921
	Syracuse, NY	0.095	National Grid	29.1%				
	Ithaca, NY	0.084	NYSEG	14.8%				
	Utica, NY	0.095	National Grid	29.1%				
	Binghamton, NY	0.084	NYSEG	14.8%				
	Schenectady, NY	0.096	National Grid	29.1%				
	Oneonta, NY	0.084	NYSEG	14.8%				
	Rochester, NY	0.097	RG&E	5.8%				
Zones G-H	Middletown, NY	0.079	CHG&E	5.8%	0.0950	0.0896	0.0923	0.0921
	Middletown, NY	0.127	O&R	3.3%				
	Poughkeepsie, NY	0.079	CHG&E	5.8%				
Zones I-J	New York, NY	0.125	Con Ed	41.2%	0.1250	0.1250	0.1250	0.1250
	Yonkers, NY	0.125	Con Ed	41.2%				



Remote Net Metering Advantage

- 82% of the MW awarded in PON 2956 utilize RNM
- 98% MW utilizing RNM are located in Zones A-H
- Majority of RNM systems are 'New Service', of which 79% have a large commercial meter as a satellite meter
- Small commercial non-demand bill savings are noticeably higher than large commercial bill savings for most utilities

Region	Typical Large Commercial Bill Savings (\$/kWh)	Typical Small Commercial Bill Savings (\$/kWh)
ROS	\$ 0.090	\$ 0.125
Con Ed	\$ 0.125	\$ 0.217



MW Block Structures



Relationship Between PBI Rate and Incentive Level

- PBI payments:
 - 25% of calculated amount paid up front (PBI X Estimated Annual Energy Production)
 - Remainder paid in three annual payments at end of year based on the lesser of measured annual energy production or calculated energy production (PBI X Actual Annual Energy Production)

- Assumptions:
 - 13.4% capacity factor
 - 0.5% annual PV degradation
 - 10% discount rate

- Example
 - Incentive Level of \$0.63/W-dc translates to PBI Rate of \$0.144/kWh

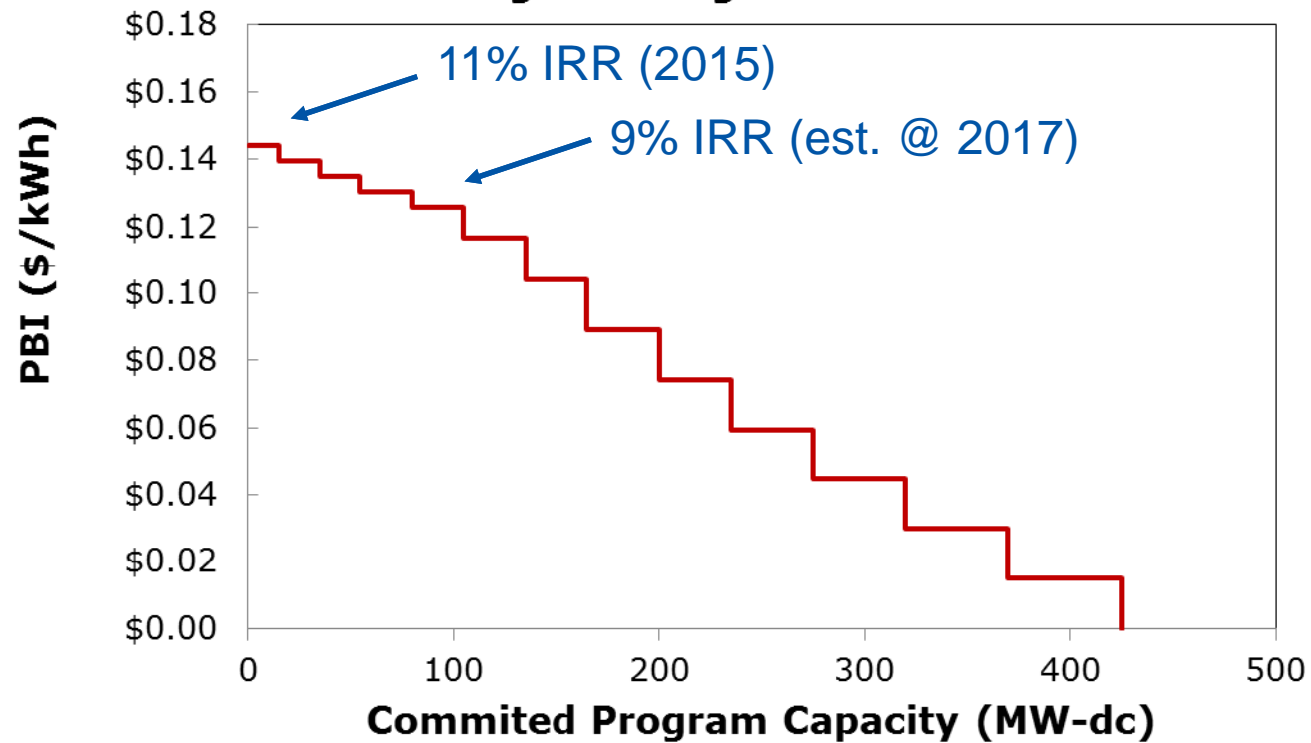


ConEd MW Block Structure

Budget: \$125M Installed Capacity: 340 MW

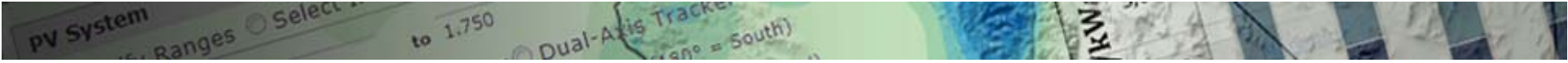
ConEd (\$0.125/kWh)

Program Budget Reached: 2021



Block #	Incentive Level (\$/W)	Block Volume (MW-dc)
1	\$0.63	15
2	\$0.61	20
3	\$0.59	20
4	\$0.57	25
5	\$0.55	25
6	\$0.51	30
7	\$0.46	30
8	\$0.39	35
9	\$0.33	35
10	\$0.26	40
11	\$0.20	45
12	\$0.13	50
13	\$0.07	55

*ConEd 2014 Commitment Rate of 35 MW/yr

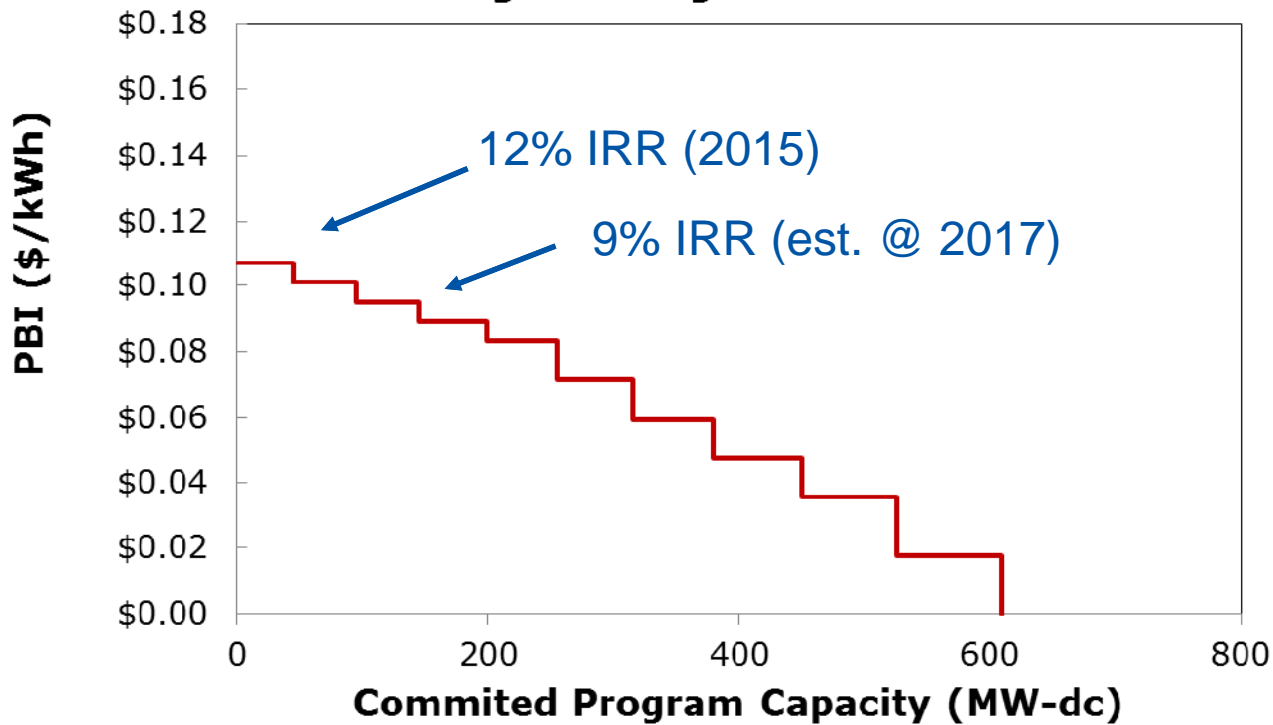


ROS Net Metered MW Block Structure

Budget: \$150M Installed Capacity: 490 MW

Rest of State NEM(\$0.090/kWh)

Program Budget Reached: 2021



Block #	Incentive Level (\$/W)	Block Volume (MW-dc)
1	\$0.47	45
2	\$0.44	50
3	\$0.42	50
4	\$0.39	55
5	\$0.36	55
6	\$0.31	60
7	\$0.26	65
8	\$0.21	70
9	\$0.16	75
10	\$0.08	85

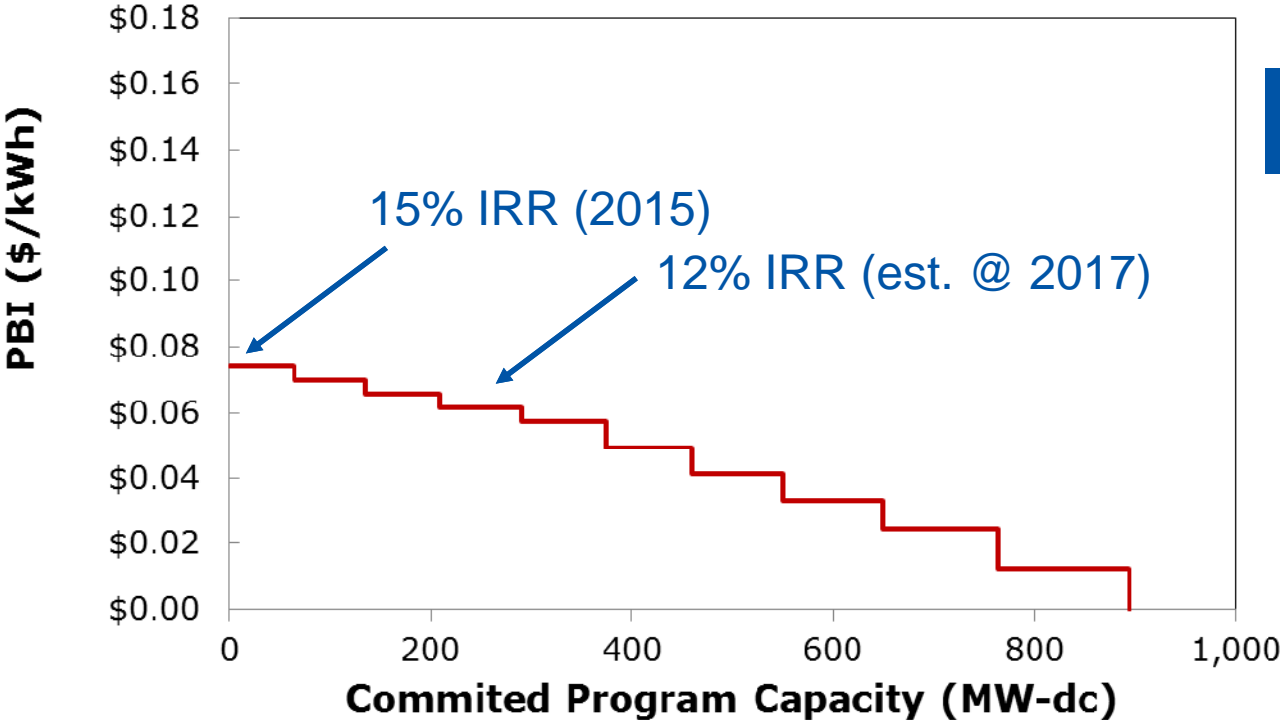
*ROS NM 2014 Commitment Rate of 35 MW/yr



ROS Remote Net Metered MW Block Structure

Budget: \$150M Installed Capacity: 715 MW

**Rest of State RNEM(\$0.125/kWh)
Program Budget Reached: 2020**



Block #	Incentive Level (\$/W)	Block Volume (MW-dc)
1	\$0.32	65
2	\$0.31	70
3	\$0.29	75
4	\$0.27	80
5	\$0.25	85
6	\$0.22	85
7	\$0.18	90
8	\$0.14	100
9	\$0.11	115
10	\$0.05	130

*ROS RNM 2014 Commitment Rate of 165 MW/yr