



NY-Sun Performance-Based (>200kW) Program

September 25, 2014

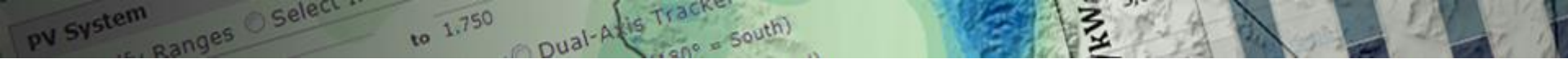
Prepared for
NYSERDA

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Clean Power Research



Proposed Agenda

- Analysis of Prior PONs
- NY-Sun Performance-Based (>200 kW) Program Design
- NY-Sun Performance-Based (>200 kW) Program Inputs



Analysis of Prior PONs

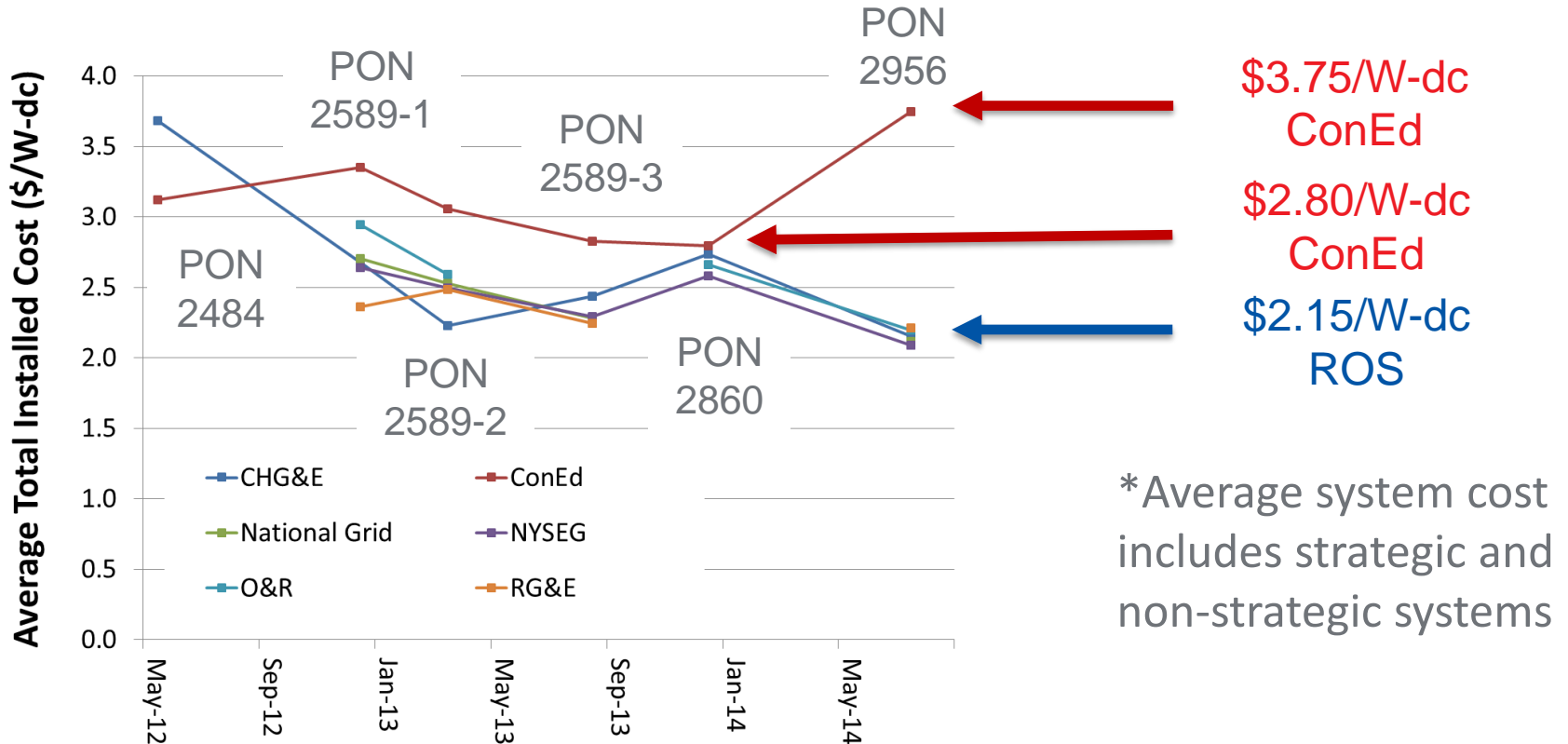
Large Commercial PON Summary

- Constrained financial analysis to PV systems >200 kW-dc and in PONs 2484 and later
- Installation rate analysis included data from all PV systems and all PONs

PON	Proposal due date	Size (each site)	Eligible Zones (PV*)	Assigned Capacity Factor (PV*)	Strategic Location Bonus
2156-1	5/24/2011	> 50 kW-dc	G&H, I&J	15%	15%
2156-2	8/10/2011	> 50 kW-dc	G&H, I&J	15%	15%
2484	5/24/2012	> 50 kW-dc	G&H, I&J	11%	15%
2589-1	12/5/2012	> 200 kW-dc	A-F, G&H, I&J	11%	15%
2589-2	3/14/2013	> 200 kW-dc	A-F, G&H, I&J	11%	15%
2589-3	8/29/2013	> 200 kW-dc	A-F, G&H, I&J	11%	15%
2860	12/30/2013	> 200 kW-dc	G&H, I&J	13.4%	25%
2956	07/17/2014	> 200 kW-dc	A-F, G&H, I&J	13.4%	25%

Average Total Installed Cost

- ROS average system costs are decreasing
- ConEd average system costs vary

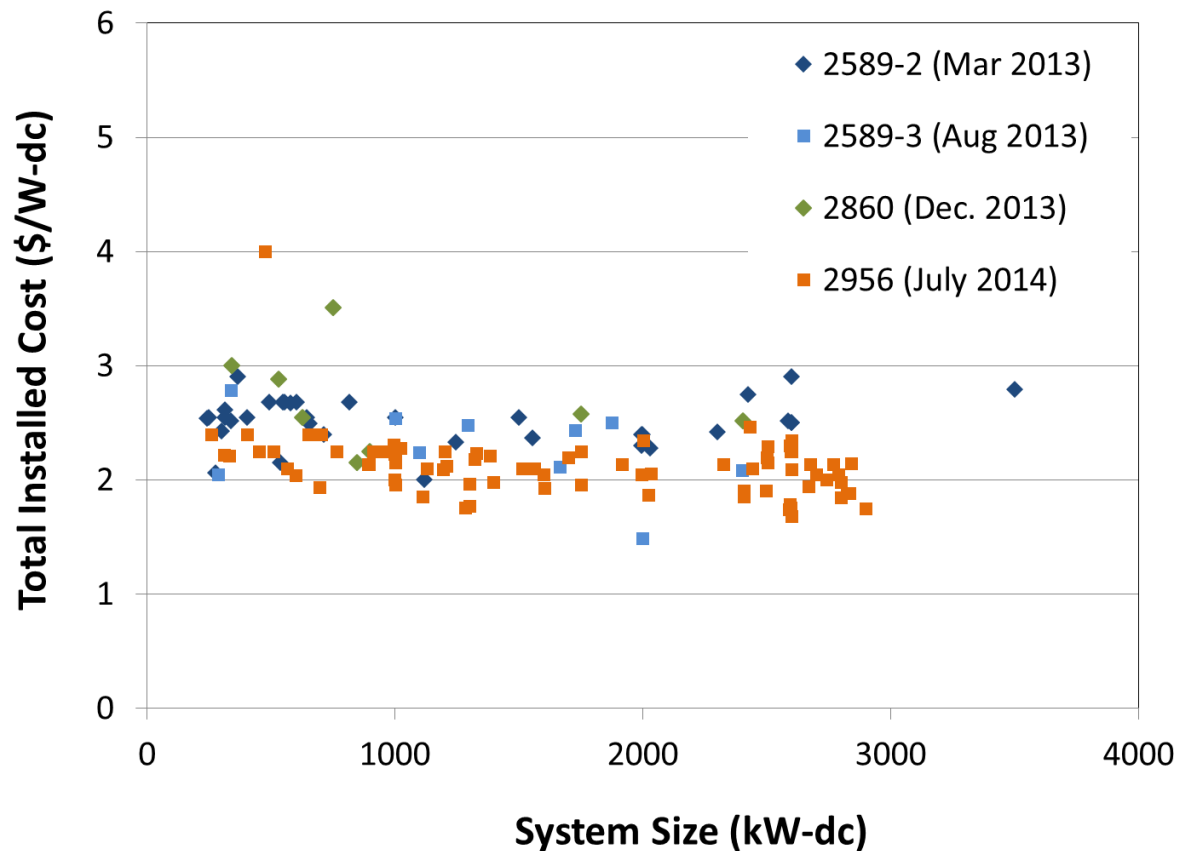


*Average system cost includes strategic and non-strategic systems

$$\text{AverageSystemCost} \left(\frac{\$}{W - dc} \right) = \frac{\sum_{k=1}^n \left(\frac{\text{SystemCost}_k (\$)}{\text{SystemSize}(W - dc)} \right)}{\text{Number of Systems}}$$

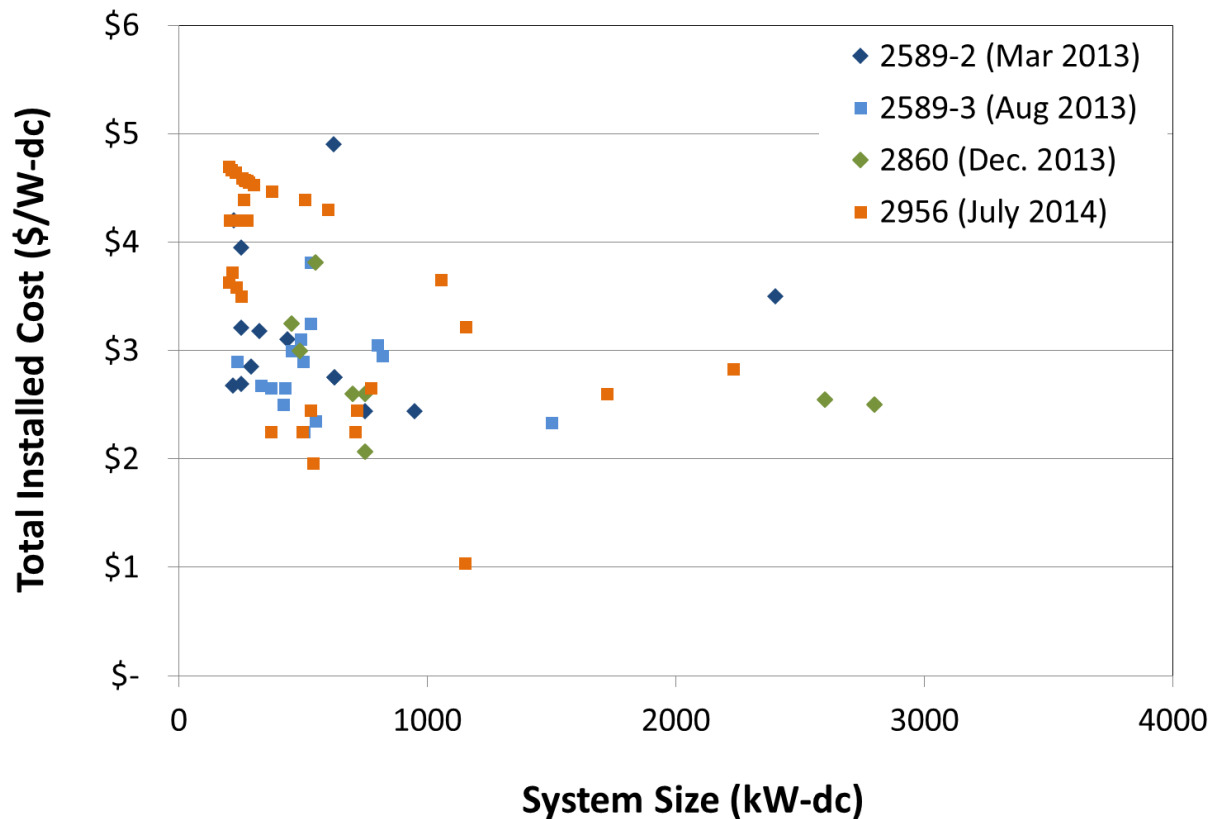
Total Installed Cost by System Size – ROS

- Total installed costs exhibit no dependence on system size



Total Installed Cost by System Size – ConEd

- A number of ConEd systems have been installed for less than \$3/W-dc
- Highest system costs in PON 2956 are for schools





NY-Sun Performance-Based ($>200\text{kW}$) Program Design

Incentive Design Tool

- *Incentive Design Tool* uses market-based inputs to set performance-based-incentives (PBI) and MW block sizes

Inputs – EXAMPLE Numbers	
Total Program Budget	\$287.5 million
PV Capital Cost	\$2.15/W-DC
Bill Savings	\$0.090/kWh
Simple Payback	10 Years*
PV Installation Rate	120 MW-dc/yr
PBI Length	3 Years

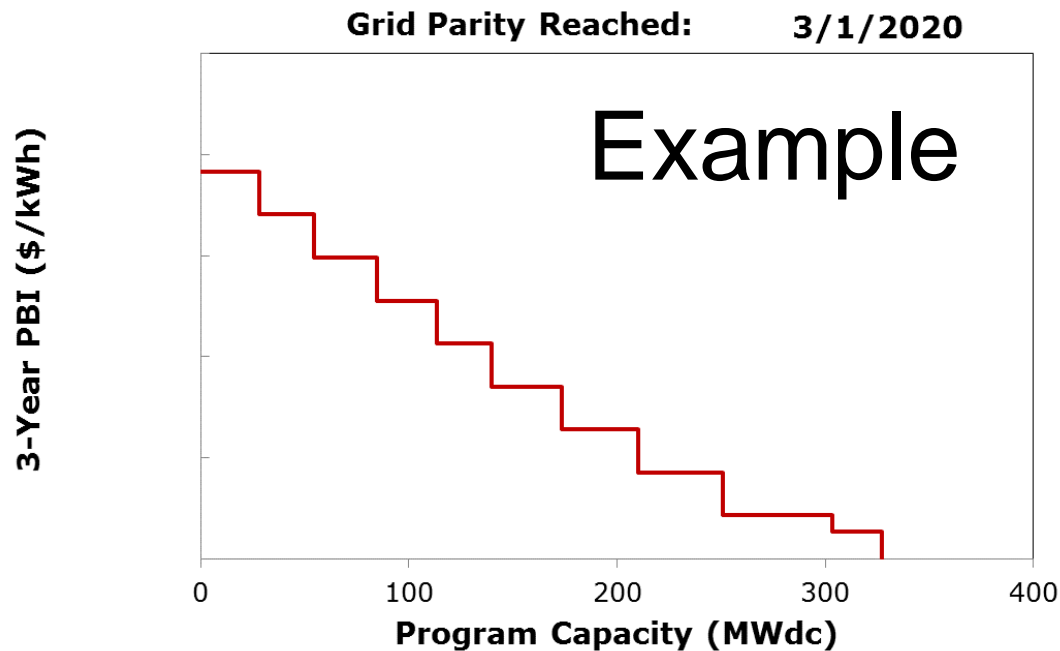


Outputs
PBI (\$/kWh)
MW Block Size (MW-dc volume)
Total Program Volume (MW-dc)
Annual Program Budget (\$/yr)
Program Length (Years)

*Corresponds to target 12% IRR

Incentive Design Tool

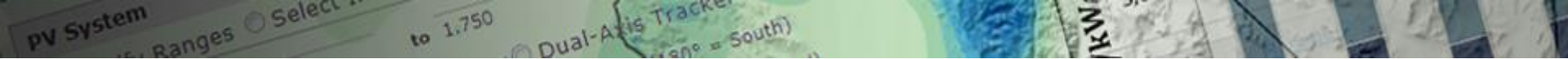
- *Incentive Design Tool* calculates PBI required to achieve the target customer cost-effectiveness
- Adjusts PBI based upon anticipated market prices and calculates program budget based upon anticipated PV installation rates





Program Design Guidelines

- PBI not allowed to increase when the federal investment tax credit is reduced at the end of 2016
- Target spending 90-95% of the program budget by the anticipated grid parity date
- Adjust PV installation growth rates to correspond with anticipated customer cost effectiveness



NY-Sun Performance-Based ($>200\text{kW}$) Program Inputs

NY-Sun Performance-Based (>200kW) Preliminary Program Design Inputs

	Assumption	ConEd	ROS
→	Program Budget	\$125 million	\$287.5 million
→	Installed PV Cost	\$3.00 per W-dc	\$2.15 per W-dc
→	Bill Savings	\$0.125 per kWh	\$0.090 per kWh
→	Customer Cost-Effectiveness	10-year simple payback*	10-year simple payback*
→	PV Installation Rate	25 MW-dc per year	120 MW-dc per year

*Corresponds to target 12% IRR

Bill Savings by Utility

- Bill savings is the customer's annual bill decrease divided by the annual energy production of the PV system

ConEd

Region	City	Bill Savings (\$/kWh)	Provider
Zones I-J	New York, NY	\$ 0.125	ConEd
	Yonkers, NY	\$ 0.125	ConEd

\$0.125/kWh

\$0.090/kWh

ROS

Region	City	Bill Savings (\$/kWh)	Provider
Zones A-F	Buffalo, NY	\$ 0.095	National Grid
	Syracuse, NY	\$ 0.095	National Grid
	Ithaca, NY	\$ 0.084	NYSEG
	Utica, NY	\$ 0.095	National Grid
	Binghamton, NY	\$ 0.084	NYSEG
	Schenectady, NY	\$ 0.096	National Grid
	Oneonta, NY	\$ 0.084	NYSEG
	Rochester, NY	\$ 0.097	RG&E
Zones G-H	Middletown, NY	\$ 0.079	CHG&E
	Middletown, NY	\$ 0.127	O&R
	Poughkeepsie, NY	\$ 0.079	CHG&E
	Poughkeepsie, NY	\$ 0.087	CHG&E

- Analysis for large commercial rate classes