

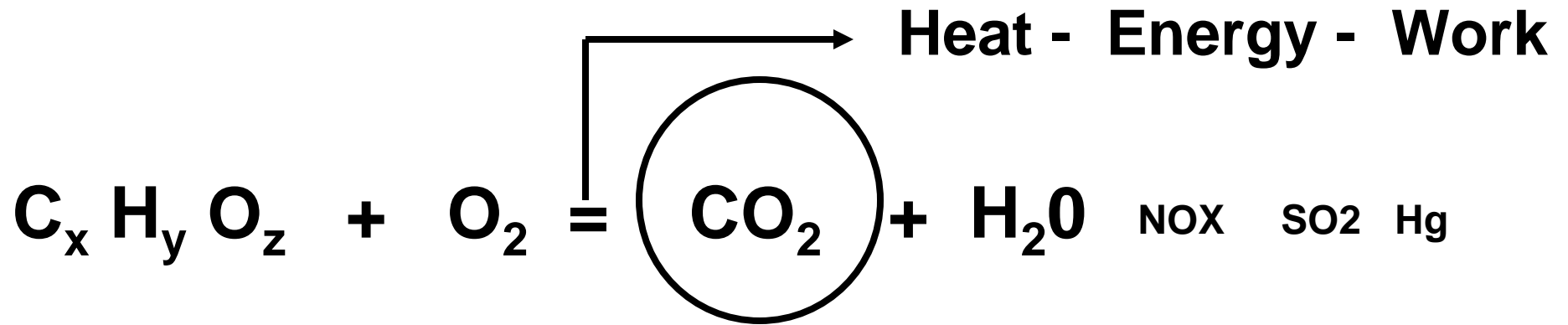


# Solar Program Presentation for Hunterdon County Planning Board

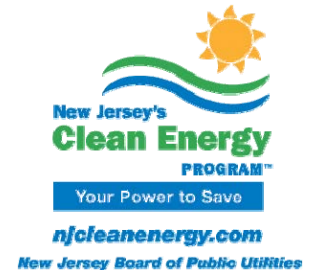
Michael Winka Director  
Office of Clean Energy  
New Jersey Board of Public Utility  
December 2, 2010



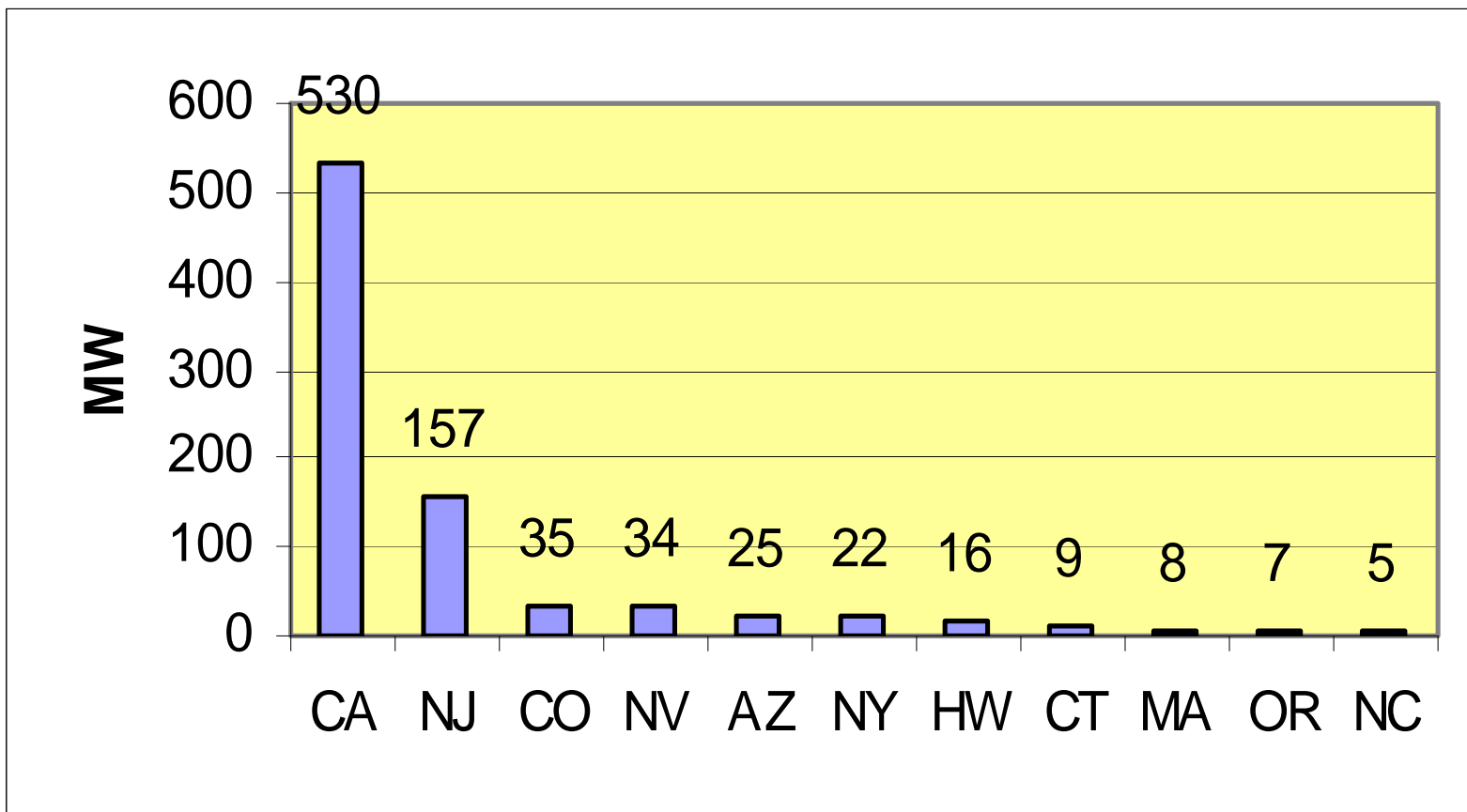
*Why are we Here ?*  
*Why are we Doing This ?*



**Make the Energy Cleaner or Renewable  
and/or  
Use the Energy More Efficiently**

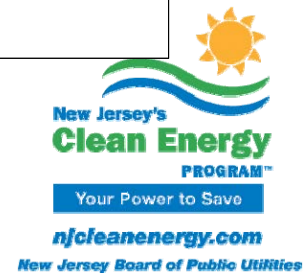


# Solar - We're Number #2 !

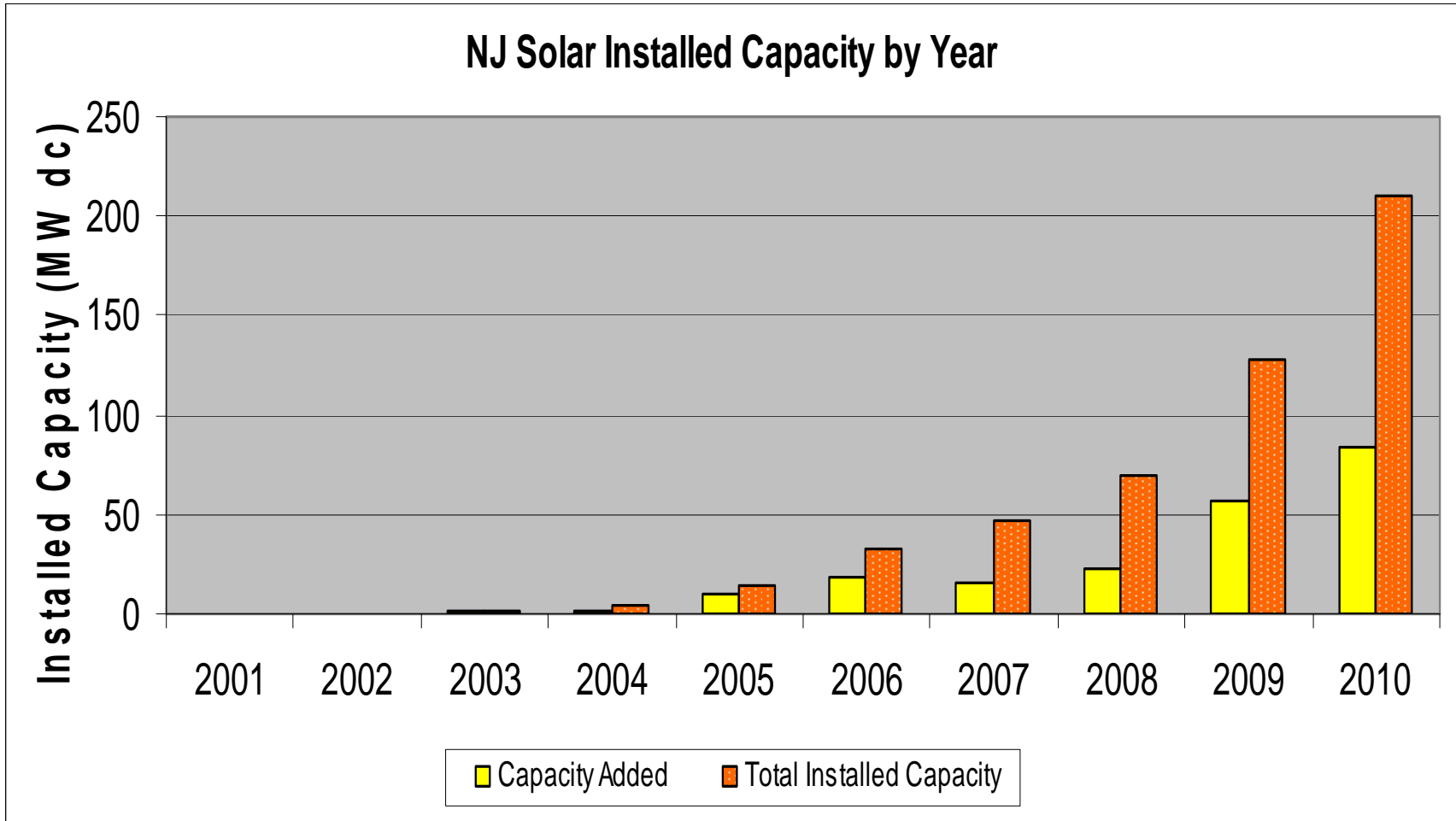


Dec 2009

State



# Strong Growth



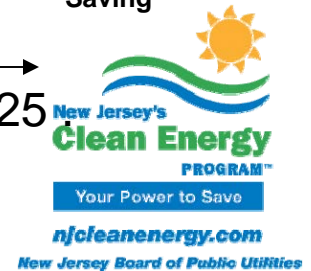
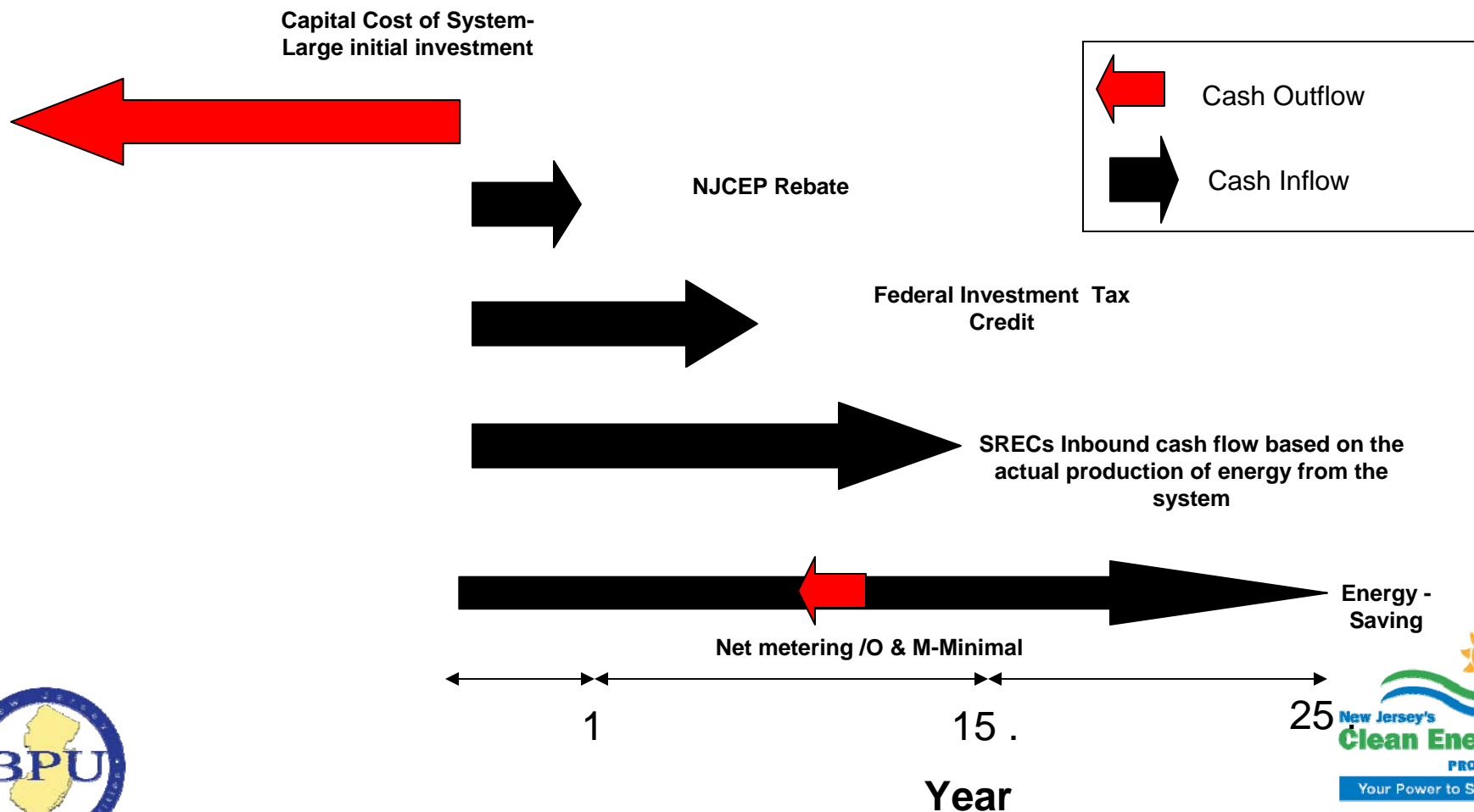


## So what drives the New Jersey Solar program

1. Net metering/interconnections requirements
2. Rebates
3. Solar Renewable Energy Portfolio Standard (RPS)
4. Solar Renewable Energy Certificate (SREC)
5. Federal Investment Tax Credit (ITC)
6. Right to Farm and Renewables



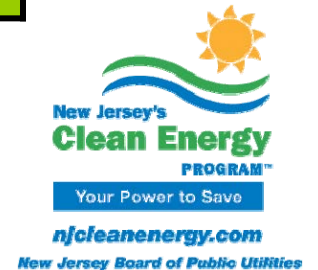
# Why is Solar so popular?



# Rebates – Effective 5/3/2010 for Funding Cycle 2



REIP Solar Systems	
Capacity	Current Rebate Amount
<b>Residential- existing and new</b>	
0 to 10,000 watts	\$0.75/watt up to 7.5 kW
Greater than 10,000 watts	No rebate
<b>Non Residential – Public / Not for Profits</b>	
0 to 50,000 watts	\$.75/watt up to 30 kW
Greater than 50,000 watts	No rebate



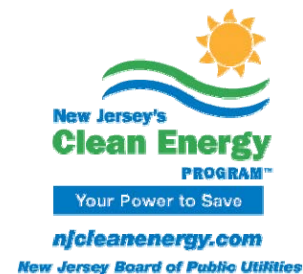


# 2010 Budget – revised 4-21-10 Board order



	Funding Cycle 1	Funding Cycle 2	Funding Cycle 3	Total Budget
Solar Residential	\$10 M	\$6.0 M*	\$5.2 M	\$21.2 M
Solar Non Residential	\$4.5 M	\$1.5 M*	\$1.4 M	\$7.4 M
Wind and Biomass	No Funding Cycle	No Funding Cycle	No Funding Cycle	\$4.5 M

\*Budgets could be increased by cancelled or expired projects







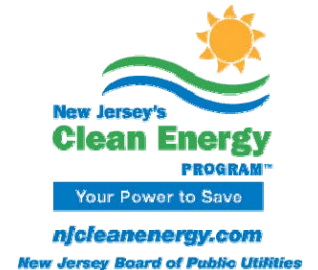
## NJCEP Solar Installation Projects by Program

Installed Projects 2001 to 4/30/2010

Program	# Projects	Total kW	Total Rebate \$
CORE Rebate	4,240	83,207.6	\$ 304,317,680
REIP Rebate	2,223	22,289.8	\$ 31,983,696
SREC Registration	504	105,243.1	\$ 0
<b>Total*</b>	<b>6,917</b>	<b>210,740.4</b>	<b>\$ 336,301,376</b>



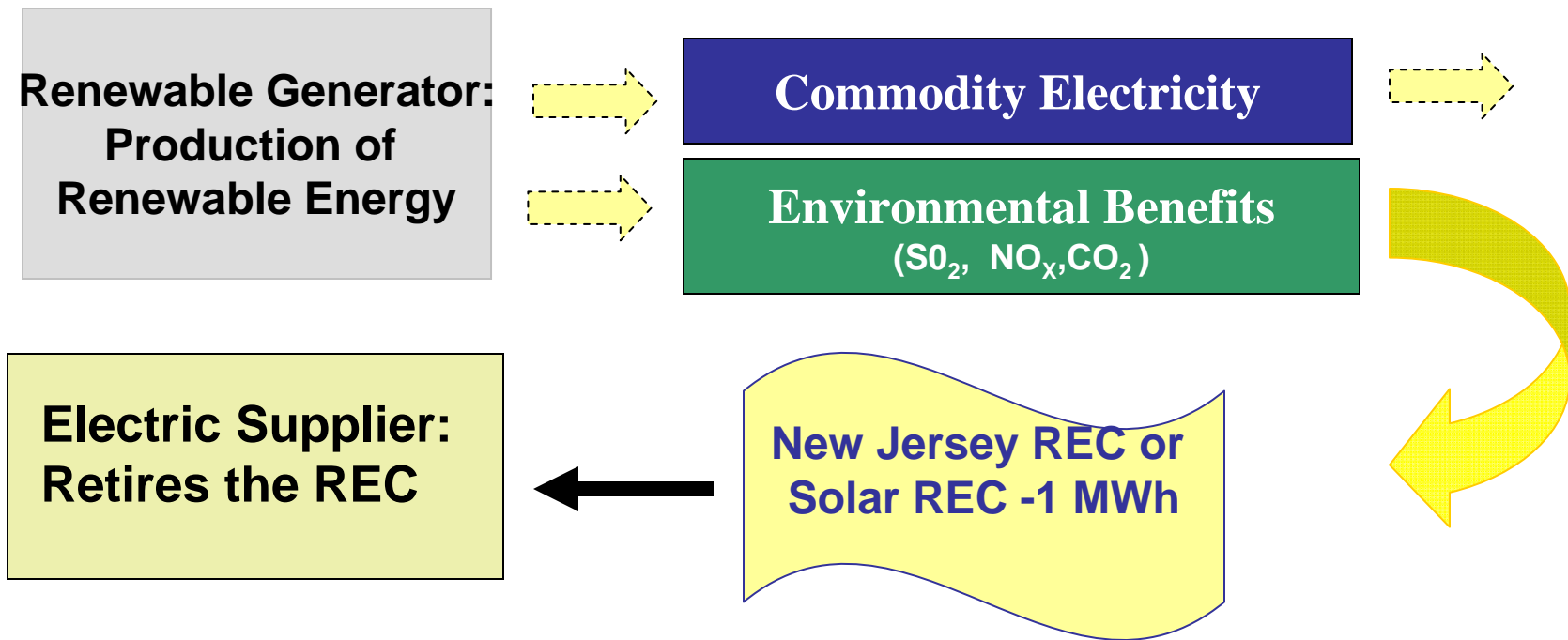
2,201 projects under construction for 139,000 kW



# New Jersey



## Renewable Energy Certificates (RECs)



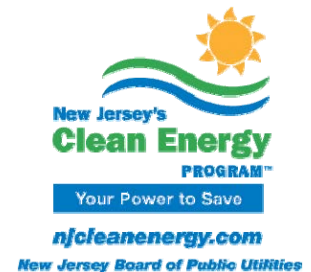
*Certificates represent the environmental benefits and other attributes associated with electricity generated from a renewable energy generator. May be traded independently of underlying electricity.*



# Solar Renewable Energy Credits (SRECs) & Class 1 RECs



- Renewable systems installed in NJ are eligible once interconnected to the distribution system
- SRECs/RECs earned for each 1 MWH (1,000 kWh) of generation
- A solar project can earn SRECs for 15 years, then earn RECs
- Wind and Biopower projects earn RECs for lifetime of system
- An SREC life is 3 years



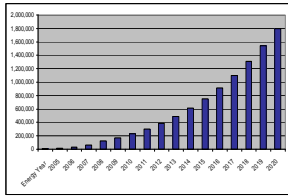
# The Solar Advancement Act (P.L.2009, c.289) vs. today's RPS



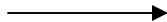
Comparison between Solar Advancement Act and RPS Solar % as of Jan. 2010						GWh Requirement Converted to % based upon Retail Sales			Solar RPS Requirement % as of 1/16/10
"Energy Year"	GWh Requirement	Converted to MW	Est. Add't Capacity Required over Current (from %)	NEG Scen. Converted to %	CON Scen. Converted to %	POS Scen. Con-verted to %			
2005	n/a	n/a	n/a	n/a	n/a	n/a	0.01%		
2006	n/a	n/a	n/a	n/a	n/a	n/a	0.0170%		
2007	n/a	n/a	n/a	n/a	n/a	n/a	0.0393%		
2008	n/a	n/a	n/a	n/a	n/a	n/a	0.0817%		
2009	n/a	n/a	n/a	n/a	n/a	n/a	0.1600%		
2010	n/a	n/a	n/a	n/a	n/a	n/a	0.2210%		
EY 2011	306 gwh	255 MW	6.68 MW	0.41%	0.38%	0.365%	0.3050%		
EY 2012	442 gwh	368 MW	47.55 MW	0.62%	0.54%	0.519%	0.3940%		
EY 2013	596 gwh	497 MW	92.03 MW	0.86%	0.73%	0.690%	0.4970%		
EY 2014	772 gwh	643 MW	137.74 MW	1.14%	0.95%	0.880%	0.6210%		
EY 2015	965 gwh	804 MW	181.33 MW	1.48%	1.19%	1.084%	0.7650%		
EY 2016	1,150 gwh	958 MW	202.79 MW	1.82%	1.41%	1.273%	0.9280%		
EY 2017	1,357 gwh	1131 MW	220.60 MW	2.23%	1.67%	1.480%	1.1180%		
EY 2018	1,591 gwh	1326 MW	240.56 MW	2.71%	1.95%	1.709%	1.3330%		
EY 2019	1,858 gwh	1548 MW	268.47 MW	3.28%	2.28%	1.966%	1.5720%		
EY 2020	2,164 gwh	1803 MW	308.53 MW	3.97%	2.66%	2.256%	1.8360%		
EY 2021	2,518 gwh	2098 MW	372.31 MW	4.82%	3.09%	2.587%	2.1200%		
EY 2022	2,928 gwh	2440 MW	n/a MW	n/a	n/a	n/a			
EY 2023	3,433 gwh	2861 MW	n/a MW	n/a	n/a	n/a			
EY 2024	3,989 gwh	3324 MW	n/a MW	n/a	n/a	n/a			
EY 2025	4,610 gwh	3842 MW	n/a MW	n/a	n/a	n/a			
EY 2026	5,316 gwh	4430 MW	n/a MW	n/a	n/a	n/a			
EY 2027+>	5,316 gwh	4430 MW	n/a MW	n/a	n/a	n/a			



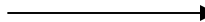
# How SREC Market Works



RPS



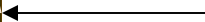
LSE's



Buy



SREC Market



Sell



Solar Projects



Or the LSE can Choose to pay the Solar Alternate Compliance Payment (SACP)







**Financing Model: Competitive, Multiple Year SACP for Solar Renewable Certificates w Rebates for Smaller Systems**

**Target IRR: 12% representative return**

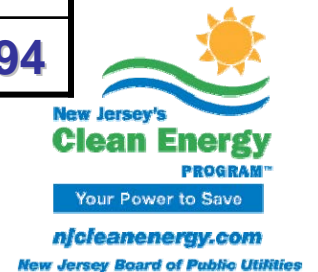
**SREC Life : 15 years and 2 year trading life (changes to 3 yrs.)**

**SACP Schedule: 8 year rolling Solar Alternate Compliance Payment**

**Rebates for small (LT 50 KW projects) 2009 through 2012**

**Legacy date based on date of installation interconnection**

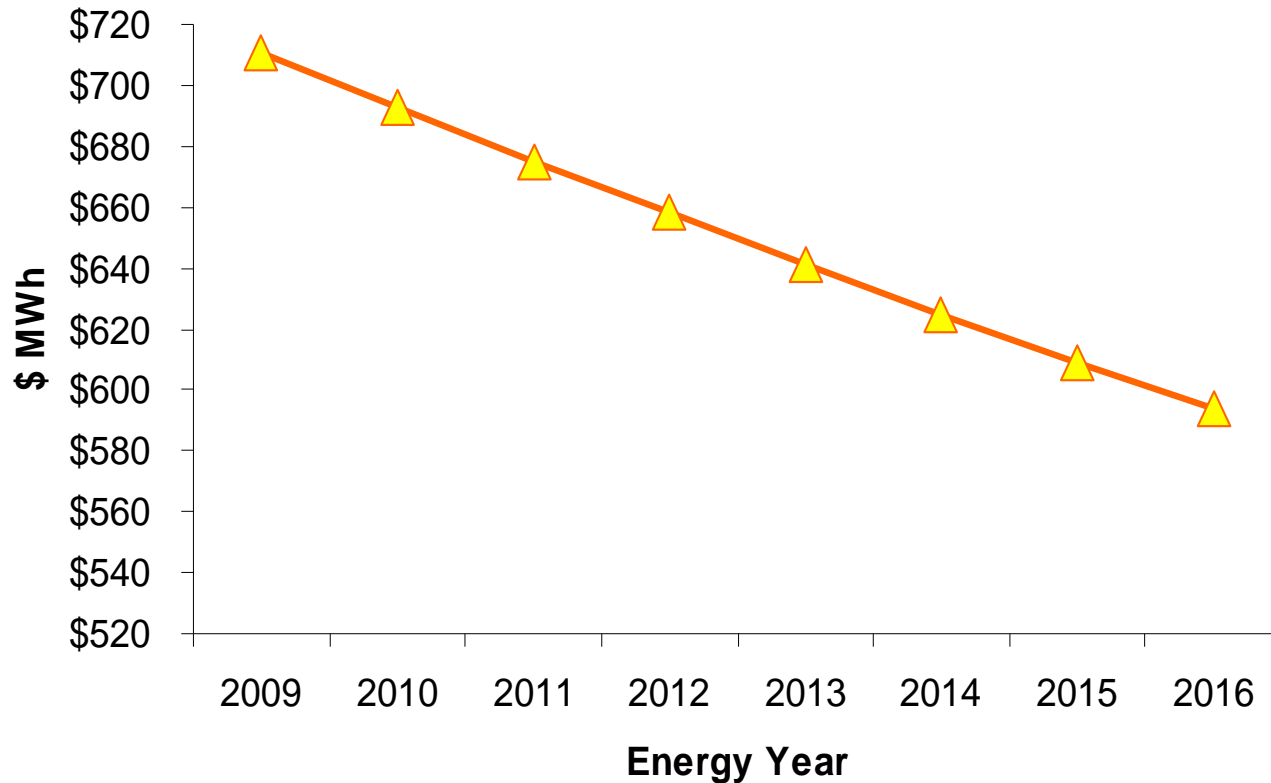
Energy Yr	2009	2010	2011	2012	2013	2014	2016	2017
\$/MWh	\$711	\$693	\$675	\$658	\$641	\$625	\$609	\$594




## New Jersey Solar Market Transition SACP/SREC Schedule



On September 12, 2007 the Board approved the following increase in the SACP and established an 8 year rolling SACP Schedule. The schedule reflects a 3% annual decrease to account for an expected decline in the cost of solar going forward and improved project economics.



The SACP declines gradually over an eight year time horizon

 **Solar Alternative Compliance Payment (SACP)**—Payment that utilities are required to pay if they do not meet the Renewable Energy Portfolio Standards (RPS) through purchasing SRECs.

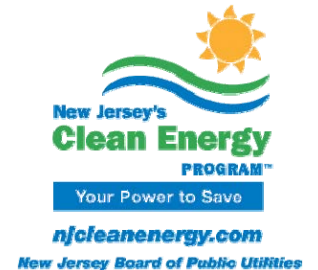




## SREC Market Basics

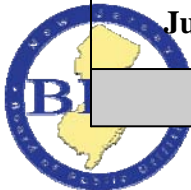


- The Board sets the SACP at a level to serve as an incentive for LSEs to buy SRECs and cap the costs to ratepayers.
- SRECs trade below the SACP, which acts as a ceiling price.
- SRECs are expected to trade below the SACP at a spread reflecting transaction costs.
- SRECs trade in a competitive market among owners, brokers, aggregators, auction participants and LSEs with pricing determined by supply (installed capacity) and demand (RPS).
- SRECs are a market instrument to assist in financing solar energy development. This additional revenue can help finance systems and significantly reduce the payback period for solar.
- The actual price of an SREC during a trading period can and will fluctuate depending on supply and demand, contract terms and other factor

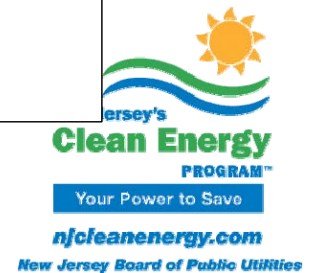
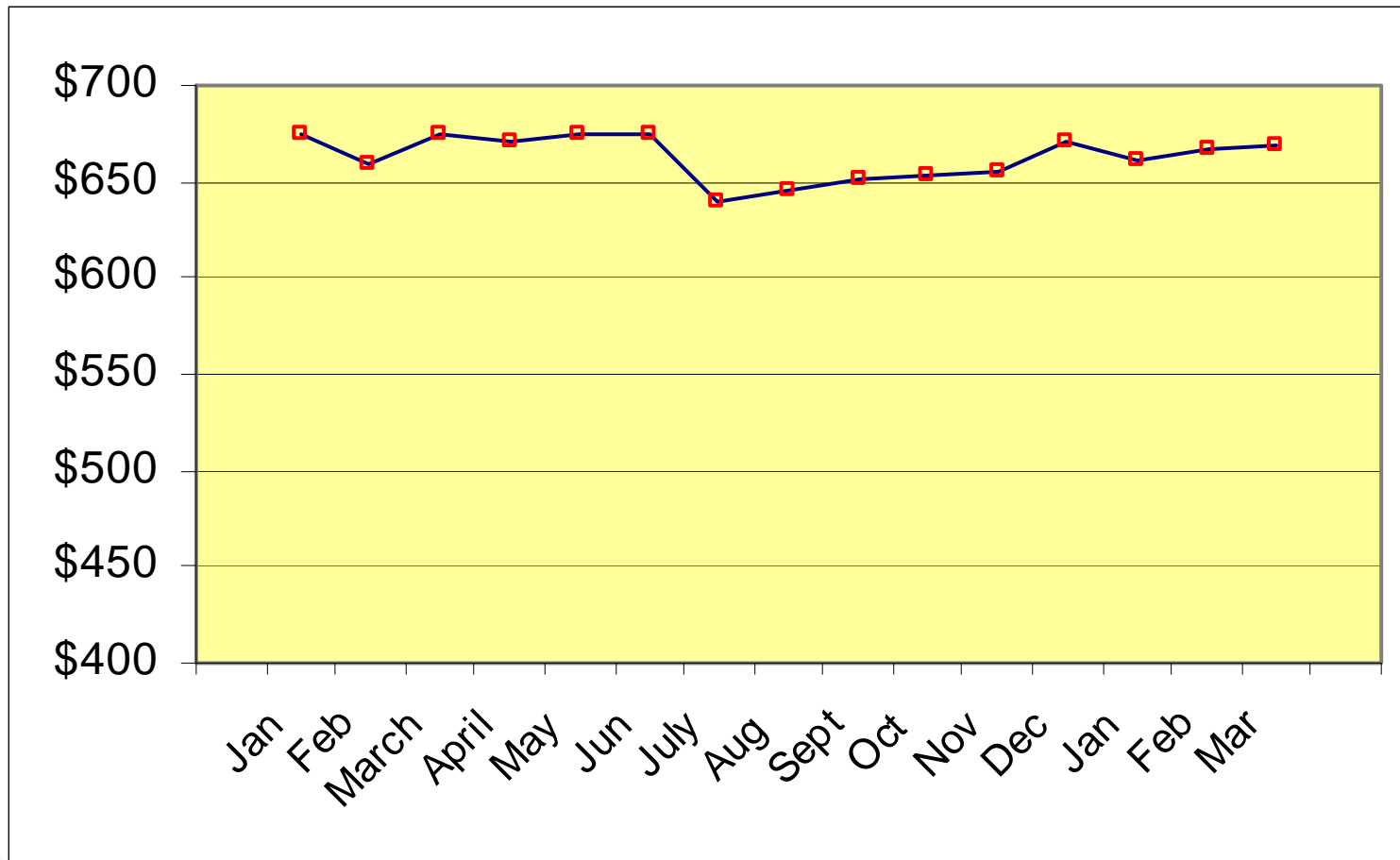


# RY10 SREC Prices

Month	Year	Active kW DC	SREC Quantity		Monthly		Cumulative	
			Issued in Month	Traded in Month	High (\$/MWh)	Low (\$/MWh)	# of SRECs Traded	Weighted Avg Price (\$/MWh)
Sept	2010	168,254	2,978	63,249	\$693	\$215	248,030	\$615.50
Aug	2010	157,129	1,107	49,872	\$693	\$175	184,781	\$617.01
Jul	2010	151,850	5,024	43,358	\$691	\$170	134,909	\$605.97
Jun	2010	140,709	26,275	15,636	\$690	\$170	91,551	\$588.96
May	2010	132,956	16504	8,737	\$700	\$170	75,915	\$578.80
Apr	2010	123,892	12,546	6,773	\$700	\$170	67,178	\$573.95
Mar	2010	119,829	5,814	9,522	\$700	\$209	60,405	\$568.66
Feb	2010	113,770	6,784	9,720	\$685	\$170	50,883	\$552.69
Jan	2010	103,857	5,249	11,731	\$675	\$110	41,163	\$533.15
Dec	2009	100,086	7,862	7,582	\$700	\$195	29,432	\$566.91
Nov	2009	97,491	6,191	7,292	\$688	\$170	21,850	\$559.45
Oct	2009	93,412	8,085	7,004	\$680	\$170	14,558	\$549.84
Sept	2009	92,032	8,796	5,119	\$700	\$170	7,554	\$524.90
Aug	2009	89,660	10,320	2,435	\$685	\$170	2,435	\$492.18
Jul	2009	83,807	6,626	Due to low trade volume, the July trade are reported with the cumulative pricing data starting in August.				
	Total		130,161	248,030				



# SREC Pricing 1/09-3/10



# New Jersey RPS Solar Carve-Out (MWh)



**RY 10 June 1 2009 to May 31, 2010**

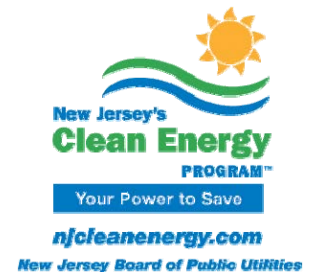
**– 0.221% of Retail Sales 77,600,000 MWh – 171,496 MWh**

**123,477 MWh or SREC generated and sold @ \$600/MWh (SREC) =  
\$74,086,200**

**48,019 MWh of SACP @ \$693 = \$33,277,167**

**Total solar funding to solar generators \$107,363,367  
0.9 % rate impact – \$10-20 per HH**

**171,496 MWh = 143 MW or 143,000,000 watts @ \$3/watt=  
\$429,000,000 or 3.9% rate impact - \$40 – 90 per HH**





**New Jersey Residential 10 kw Solar Electric System**

**Installed Cost: \$77,500**



assuming a 10,000 kWh annual energy usage

NJCEP Rebate:  
\$38,000

2008  
\$5.00/hh/yr

Federal Tax  
Credit: \$2,000

Out of Pocket  
Expense :\$37,500

Electric cost savings /  
Net Metering: \$1,500/ yr

SRECs Income:  
\$2,400 / yr

2008 \$1.40/hh/yr

Total savings :  
\$3,900

**Payback Period: 9.6 yrs**





# New Jersey Residential 10 kW Solar Electric System



Installed Cost: **\$77,500**



assuming a 10,000 kWh annual energy usage

NJCEP Rebate:  
\$0.00

Federal Tax  
Credit: \$23,200

Out of Pocket  
Expense : \$52,300

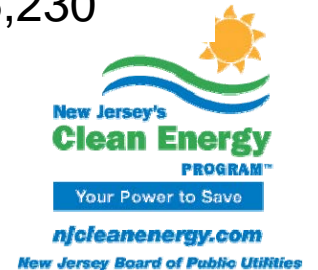
Electric cost savings /  
Net Metering: \$1,500/ yr

SRECs Income:  
\$3,730 / yr

\$373/ SREC

Total savings :  
\$5,230

**Payback Period: 10 yrs**



## EDC Solar Finance Options



## EDC Solar Finance Programs

- JCP&L, RECO and ACE SREC Long Term Contract / Solicitation Programs
- PSE&G Solar Loan Programs

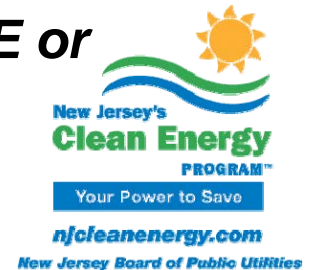






# EDC Long Term Contracting

<b><i>Contract Term:</i></b>	<b><i>10 to 15 years</i></b>
<b><i>EDC Program Size:</i></b>	<b><i>Y1-60%. Y2- 50%, &amp; Y3- 40%</i></b>
<b><i>Market Segments:</i></b>	<b><i>LTE 50 kW and LT 500 kW</i></b>
<b><i>Developer Caps:</i></b>	<b><i>20% cap per entity</i></b>
<b><i>Legacy Projects:</i></b>	<b><i>No projects that received CORE rebates</i></b>
<b><i>EDC SREC Sale:</i></b>	<b><i>Through Centralized Auction</i></b>
<b><i>Admin Systems:</i></b>	<b><i>Centralized Through OCE or Utilities</i></b>



# SREC-Based Financing Overview

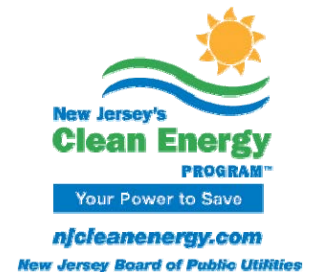


## For JCP&L, Atlantic City Electric and Rockland Electric Co. Customers:

- Designed to enable financing for new solar projects based on price and potential revenues from SREC generation
- Not a loan program
- The Program is only for the purchase of SRECs. ACE, JCP&L and RECO will not purchase the energy or capacity from solar projects
- Consistent with Stipulation and Orders
  - 10 to 15 year term purchase agreements
  - Anticipate three solicitations each year
  - Requires completion of Initial Application/Registration Process with State Programs (either REIP or SRP)



Visit the EDC Solar Web Site: [www.NJEDCsolar.com](http://www.NJEDCsolar.com)



# SREC-Based Financing Overview

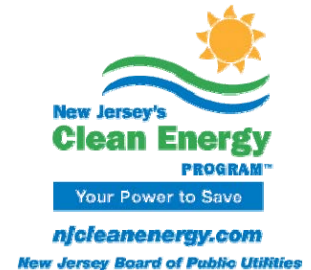


## PSEG Loan Program:

- Designed to enable financing for new solar projects based on price and potential revenues from SREC generation
- Is a loan program
- The Program is a loan for 50% of the Project
- PSE&G owns the SRECs and does not purchase the energy or capacity from solar projects
- Consistent with Stipulation and Orders
  - 10 to 15 year term
  - Available for three years
  - Requires completion of Initial Application Process with State Programs (either REIP or SRP)



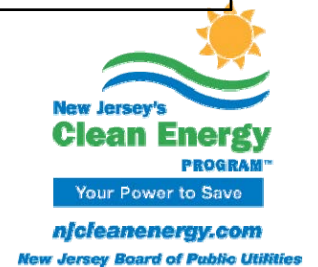
Visit PSEG's Web Site: [www.PSEG.com](http://www.PSEG.com)



*EDC Solar Capacity for 3 years  
for SREC Financing*



<b>NJ EDC Solar Finance Program Capacity: Long Term Contract Solicitation Size and Solar Loan Program Size</b>					
<b>Energy Year</b>	<b>JCPL</b>	<b>ACE</b>	<b>PSEG*</b>	<b>RECo</b>	<b>total</b>
<b>2010 plus shortfall</b>	<b>23</b>	<b>10</b>	<b>46</b>	<b>2</b>	<b>81</b>
<b>2011</b>	<b>10</b>	<b>5</b>	<b>21</b>	<b>1</b>	<b>37</b>
<b>2012</b>	<b>9</b>	<b>4</b>	<b>18</b>	<b>1</b>	<b>32</b>
<b>Total</b>	<b>42</b>	<b>19</b>	<b>84</b>	<b>4</b>	<b>147</b>



# SREC Levels in EDC Programs



## PSEG Solar Loan II Program

Segment	Q3-Q4	Q5-Q6	Q7-Q8
Residential	\$435	\$420	\$400
Comm. 0-150 KW	\$395	\$380	\$360
Comm. 150-500 KW	\$365	\$350	\$330
Comm. 500-2000 KW	TBD	TBD	TBD

## NJ EDC Solar Long Term Contracting (ACE, JCPL, RECO)

Third Round of the Solicitations =  
\$450/MWH for 10 year average & \$230/MWh for low price

**Total capacity – 19 MW out of 35 MW**





More information on  
New Jersey's Clean Energy Program  
at [www.NJCleanEnergy.com](http://www.NJCleanEnergy.com)  
or [benjamin.hunter@bpu.state.nj.us](mailto:benjamin.hunter@bpu.state.nj.us)  
(973) 648-4370

