Solar Development Volatility in the New Jersey RPS

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Solar Development Volatility in the Context of NJ's RPS

Presentation Outline:

- Introduction to the New Jersey Board of Public Utilities
- Policy Context for New Jersey's Renewable Portfolio Standards;
  - > 1 Law (EDECA) & 3 + Amendments
  - > 1 Set of Rules for 4 Markets (SRECs, ORECs, NJ Class I and NJ Class II)
- The Solar Act of 2012
- Solar Development Volatility Proceeding & Report to the NJ Legislature

New Jersey Renewables Profile –

Policy, Programs, & Results, updated 7/31/14

Regulatory Framework

- Energy Master Plan
- Legislation: EDECA '99, OWEDA, SEAFCA '09 & Solar Act of '12
- Regulations: RPS, NM & INX rules
- SBC/NJCEP Incentives & ERB

NJ Class I Renewable Resources

"Class I renewable energy" means electric energy produced from solar technologies, photovoltaic technologies, wind energy, fuel cells, geothermal technologies, wave or tidal action, small scale hydropower facilities with a capacity of three megawatts or less and put into service after the effective date of P.L.2012, c.24, and methane gas from landfills or a biomass facility, provided that the biomass is cultivated and harvested in a sustainable manner;

Cumulative Installed Capacity

(2001 to 2014)

> 1.3 GWdc in 30,000 PV Solar

> 30 MW in 18 Biopower

> 9.5 MW in 43 Wind Energy

> 1.5 MW in 8+ (NG) Fuel Cells

Goals (or market potential)

> 2,644 MWdc Solar PV
(RPS: 4.10% in EY'28)

> 1,100 MW Offshore Wind
(OWEDA)

> 200 MW Onshore Wind
(2004 Market Potential Study)

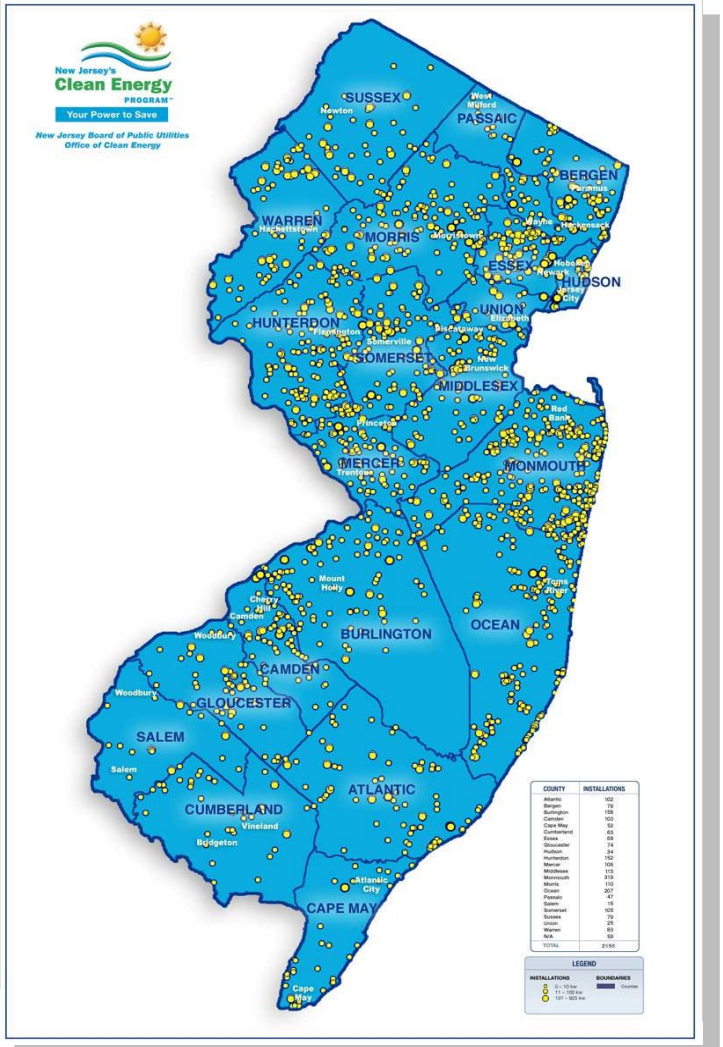
> 900 MW Biomass
(2006 RU Market Potential Study)

Solar Success in New Jersey

- As of August 31, 2014,
  New Jersey has installed:
  - **~ 30,191 renewable energy projects**
  - **~ 29,958 solar installed projects.**

- Over **1.34 GW** of sustainable energy is provided by solar, wind, biomass projects.

- **Third largest solar market in the U.S., in terms of absolute capacity. Top five in capacity per capita and square mile!***
  (Environment America, July 2014)



The Solar Act of 2012

P.L. 2012, c., 24 signed July 23, 2012

Commonly understood to provide the Board tools to "**stabilize the solar market**":

- **implements the Energy Master Plan**, preference to solar on brownfields, landfills, and other underutilized over facilities located on farmland and open space (Subsections t, s)
- **changes the RPS** SREC obligation for retail electricity suppliers and providers increasing requirements forward, i.e., (**doubled in EY14** over EY13) in the near term and decreased in later years, (re) expressed as a percentage of retail sales (Subsection d (3)), extended ***banking*** of SRECs to five years (p),
- **adds eligibility requirements** for proposed facilities anticipating interconnection with the electric grid as direct grid supply, wholesale power generators to participate in the New Jersey SREC market (Subsections q, r, s),
- ***an investigation of approaches to mitigate solar development volatility…****;*

…(b) *No more than 24 months following the date of enactment…the board shall complete a proceeding to investigate approaches to mitigate solar development volatility and prepare and submit…a report to the Legislature, detailing its findings and recommendations. As part of the proceeding, the board shall evaluate other techniques used nationally and internationally;* (Subsection d (3) b).

CEEEP (MCG & SEA)
Solar Development Volatility Report

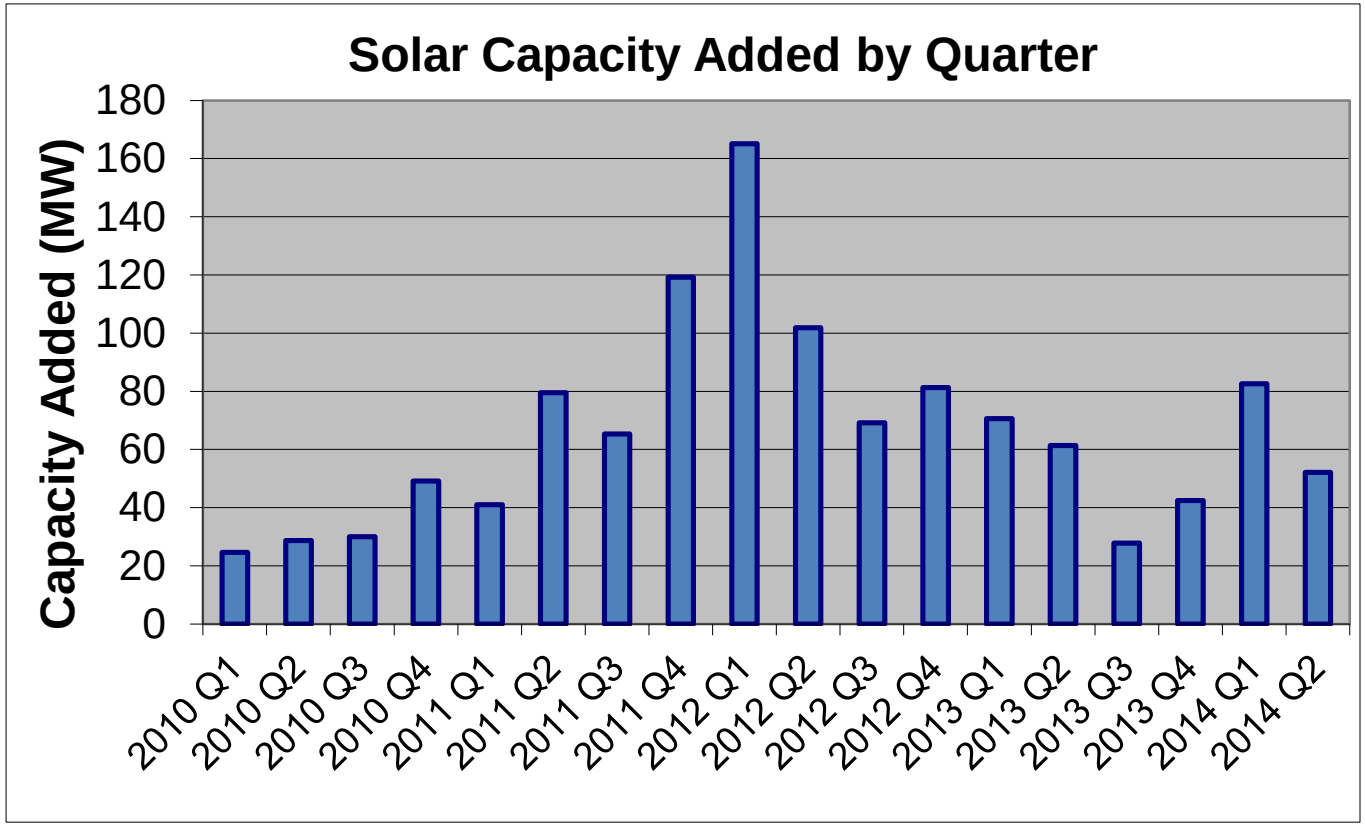
- Market Development Volatility Defined
- Analysis of Past Market Experience
- Market Development Volatility Drivers
- Example Policies
- Potential New Jersey Policy Options

CEEEP (MCG & SEA)
Solar Development Volatility Report

S.D.V. = significant and rapid changes in rate of market capacity additions over time…

Analysis performed on a quarterly basis, other timeframes could be valid..provides some data smoothing but still allows for granularity. Aligns with standard economic and business reporting data…

Installed Capacity		
	By Quarter	%
Qtr	kW (dc)	Chng
2010 Q1	24,616.0	
2010 Q2	28,625.6	16.3%
2010 Q3	29,947.6	4.6%
2010 Q4	49,194.2	64.3%
2011 Q1	41,031.8	16.6%
2011 Q2	79,539.3	93.8%
2011 Q3	65,351.6	17.8%
2011 Q4	119,276.2	82.5%
2012 Q1	165,110.2	38.4%
2012 Q2	101,814.3	38.3%
2012 Q3	69,127.3	32.1%
2012 Q4	81,292.5	17.6%
2013 Q1	70,543.2	13.2%
2013 Q2	61,393.3	13.0%
2013 Q3	27,838.9	54.7%
2013 Q4	42,477.3	52.6%
2014 Q1	82,637.4	94.5%
2014 Q2	52,130.8	36.9%
	Avg.	40.4%



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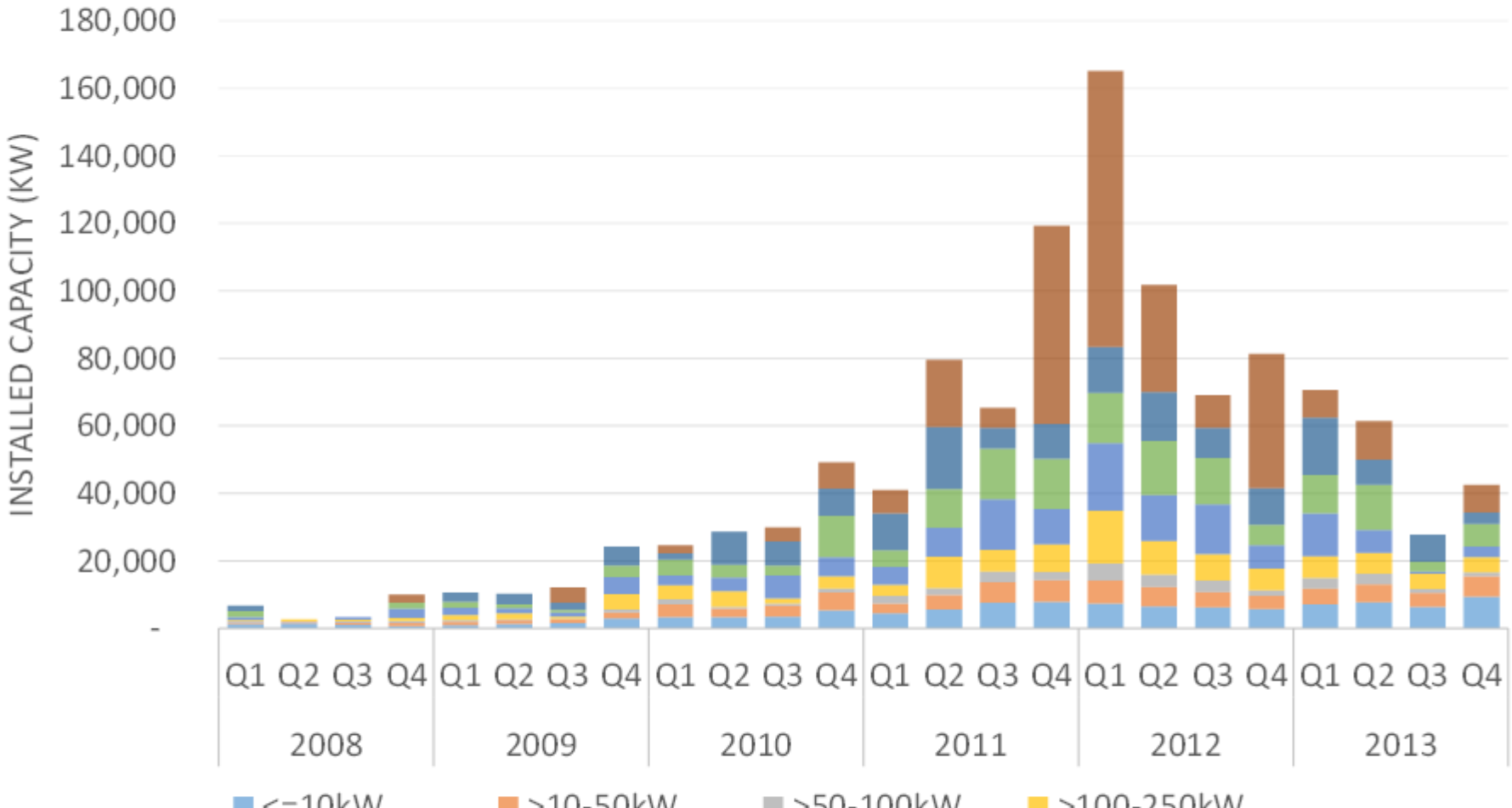
Market Performance by System Size

Large Systems Dominate Volatility Spike



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Solar Development Volatility Report

POTENTIAL MARKET VOLATILITY DRIVERS

- SREC Price Volatility
- Concern that future instability could lead to boom bust development cycles
- Lack of Long term SREC Contracting
- Limited Market Transparency, key to functioning of competitive markets
- Potential for Regulatory Change; expectations for demand schedule changes in future, incentives to look beyond current supply and demand
- Vertical Demand Curve
- SREC Requirement Schedule
- 15 Year SREC Life
- Federal Tax Credit Expiration

MARKET DEVELOPMENT VOLATILITY MITIGANTS

EXISTING MARKET CHARACTERISTICS

- EDC Programs
- Regular capacity additions promote market stability
- Agreements to adjust programs to prevent
- SREC market over-supply
- Solar Act Constraints on Grid-Supply Projects
- Reduces future potential for rapid market imbalances
- Relatively High Electricity Revenues; creates substantial and relatively stable PV project revenue stream
- BGS Auction – Three Year Tranches supports 3 year forward SREC market hedging

Solar Development Volatility Report

Policy Evaluation Criteria

Market Development Stability	• Stable quarterly market capacity growth rate
Ratepayer Cost	• Relative cost imposed on ratepayers per quantity of installed PV capacity
Ratepayer Cost Volatility	• Variability of ratepayer costs for MWs of installed solar systems over time
Implementation Feasibility	• How difficult is policy implementation • Likelihood of changes being broadly acceptable to stakeholders
Market Diversity	• Support variety of supplier and host-project types • Allow both large & small firms and hosts
Long-term incentive reduction	• Encourage market to move away from incentives
Consistency with Current Framework	• Consistent with existing RPS & SREC framework • Operate best as a stand-alone or separate policy

Solar Development Volatility Report

Example Policies

- Expand EDC Programs
- Green Bank Financing
- Standard Offer Contracts with Volume-based Price
- Competitive Procurement of Long-term Contracts
- SREC Price Floor
- Supply-responsive Demand Formula
- BGS SREC Auction Tranche
- RPS Assignment to EDCs

Solar Development Volatility Report

Potential Policy Options

Option 1:
No future policy intervention

Option 3:
Moderate intervention in current framework
-Supply-Responsive Demand
-Price floor

Limited Policy Adjustments

Transformation of Policy Framework

Option 2:
Establish complementary policies
-Green Banks
-EDC Program

Option 4:
Adjust market structure to *capped quantity incentives*
-Procurement Model

The Board's Solar Development Volatility Recommendations

1) After review of the CEEEP report, the Board directed staff to continue to:

i. **monitor solar market development activity** and associated metrics including but not limited to capacity installation rates, SREC registration activity, EDC finance program participation, and SREC prices; and

ii. **work with stakeholders** to identify gaps in New Jersey solar market data availability and improve data transparency to benefit market participants, decision makers and

2) Should "significant solar development volatility" extend for **three consecutive quarters**, with significant volatility defined as **40% or more change** in quarter over quarter market capacity additions, the Board recommends the following action:

i. Evaluating whether the quarterly changes in the market **reflect typical market cycles** and/or normal variations not requiring regulatory intervention;

ii. **Engaging stakeholders** in developing appropriate responses such as limiting EDC sales of SRECs to recover costs for their EDC owned solar investments, exercising the Board's statutory authority to authorize retail electricity suppliers and providers to **cease offering net metering for large solar** electric generation facilities since the aggregate net metered capacity has exceeded 2.5% of statewide peak electricity demand, or consider other approaches to mitigating solar development volatility, and

iii. Considering possible means of **further restricting eligibility to participate in the SREC** market of projects which present potential and significant SREC market impacts.

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Thank You.
Questions?

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