

# New York State Renewable Portfolio Standard

2013 Program Review  
Technical Conference

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# NYS Renewable Portfolio Standard

Main Tier 2013 Program Review  
Customer-Sited Tier Program Review

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# Main Tier 2013 Program Review

## Approach and Structure

- Many areas of the Program were extensively considered in the 2009 RPS Program Evaluation Report and addressed through subsequent Commission Orders
- 2013 Program Review focused on:
  - Main Tier Status (Volume 1)
  - Main Tier Current Portfolio Analysis (Volume 2)
    - Direct economic impacts
    - Benefit-Cost Analyses; and
    - Macroeconomic analysis.
  - Projected Impact from Using Available Uncommitted Funds (Volume 3)

# Main Tier 2013 Program Review

## Main Tier Status – December 31, 2012

- 7 Completed Main Tier Solicitations:
  - 1,834 MW of new renewable capacity under contract
- 8<sup>th</sup> Solicitation in Progress

Contracted Progress (MWh)	2015 Target (MWh)	% Progress
4,486,656	9,519,765	<b>47%</b>
Committed (millions \$)	Budget (millions \$)	% of Budget Committed
\$876.6	\$2,301.3	<b>38%</b>

# Main Tier 2013 Program Review

## Current Portfolio Analysis

- **Direct Cost: Main Tier expenditures**
- **Direct Investments in New York**
- **Electric System Impacts**
- **Environmental Impacts**
- **Benefits and Costs**
- **Macroeconomic Analysis**

# Main Tier 2013 Program Review

## Current Portfolio Analysis

### Direct Investments in New York

- Every \$1 of State RPS funding invested catalyzes \$3 in direct investment in New York
- Committing nearly \$877 million leads to approximately \$2.7 billion of direct investments in New York over projected life of renewable energy facilities

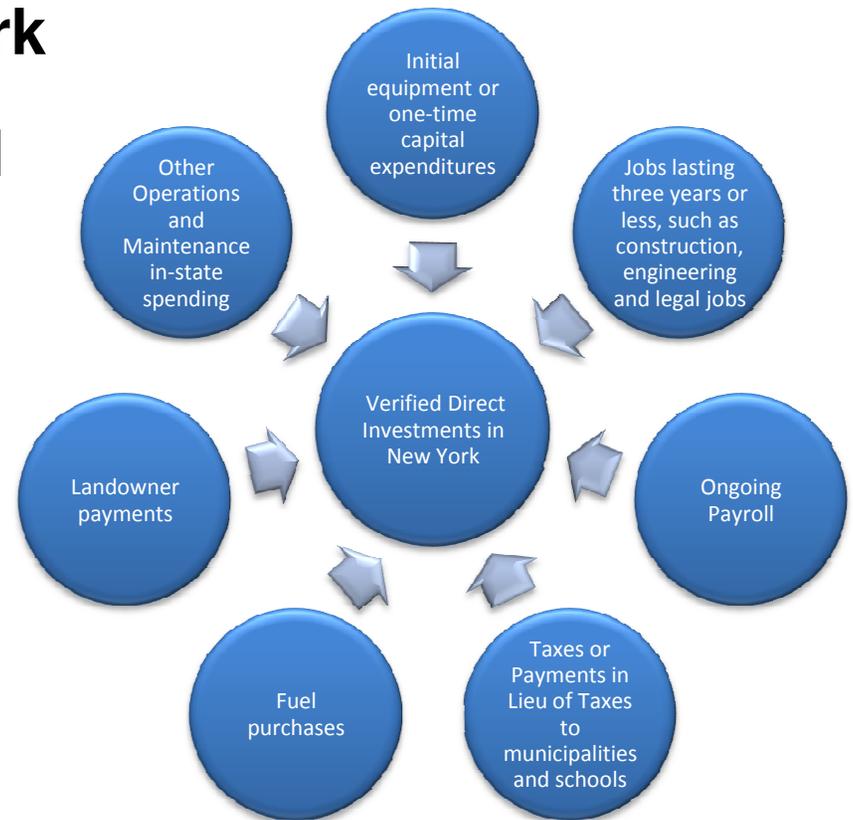
Note: This is direct investment that remains in New York. It does not reflect the cost of the equipment sourced from outside New York

# Main Tier 2013 Program Review

## Current Portfolio Analysis

### Direct Investments in New York

- Extensive data was collected as part of RPS program administration to verify direct investments in New York claims made in proposals
- This data was used as an input to Benefit-Cost and Macroeconomic analyses



# Main Tier 2013 Program Review

## Current Portfolio Analysis

### Electric System Impacts

- New renewable energy generation primarily displaces generation from natural gas resources and imported electricity
  - 320 MW of natural gas combined-cycle capacity additions are displaced, leading to reduced investments in New York
  - Net electricity imports are expected to decline by approximately 4.7%, or an average of 1.17 million MWh per year, stimulating in-state economic activity
- On average wholesale electricity prices are less than 1% lower, which benefits ratepayers

# Main Tier 2013 Program Review

## Current Portfolio Analysis

### Environmental Impacts

- Fossil fuel usage is reduced by 1% or approximately 130 trillion Btus
- CO<sub>2</sub> emissions are reduced by more than 50 million tons
  - Corresponds to 2.6 million tons per year during 2014-2025 peak RPS generation period, equivalent to removing 510,000 cars from the road
- 15 million tons each of NO<sub>x</sub> and SO<sub>2</sub> emissions reductions are also expected

# Main Tier 2013 Program Review

## Current Portfolio Analysis

### Benefits and Costs

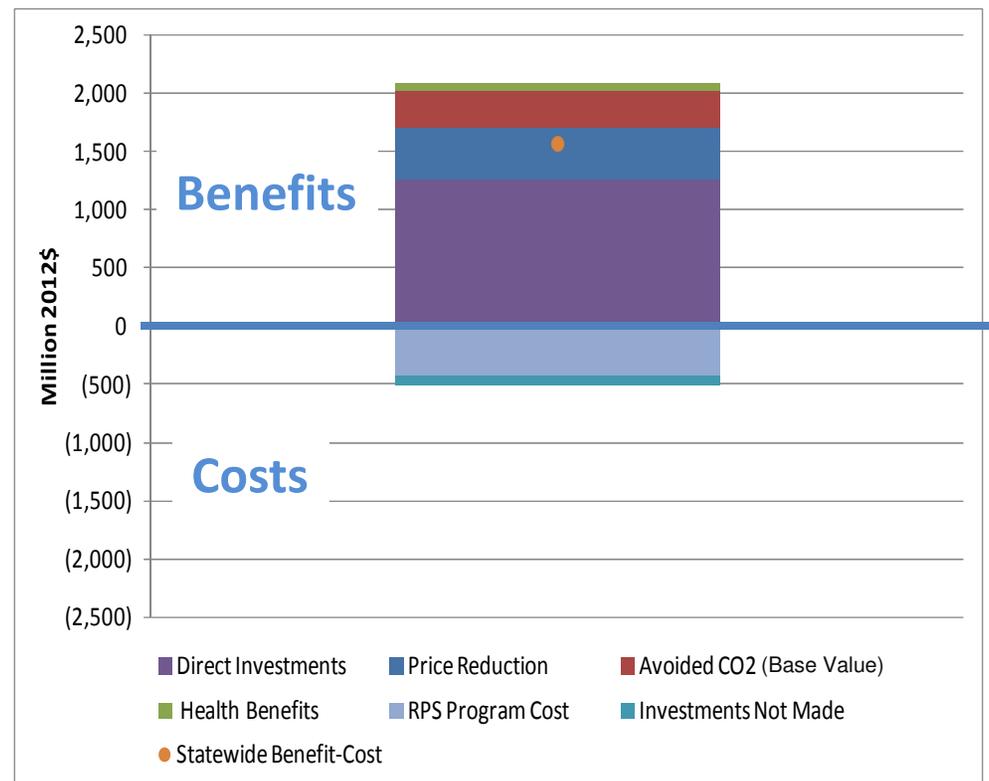
- Program costs comprise less than 0.2% of total retail electricity expenditures
- Taking into account wholesale electricity price reductions, cumulative net rate impact is essentially zero
- Monetized emission reductions total \$312 million under base CO<sub>2</sub> value (\$15/ton) and \$2.2 billion under high CO<sub>2</sub> value (\$85/ton)

# Main Tier 2013 Program Review

## Current Portfolio Analysis

### Benefits and Costs (cont'd)

- Under base CO<sub>2</sub> value assumption shows \$1.6 billion in net benefits
  - **Benefit-to-Cost ratio: 5-to-1**
- Under high CO<sub>2</sub> value assumption shows \$3.5 billion in net benefits
  - **Benefit-to-Cost ratio: 9-to-1**



# Main Tier 2013 Program Review

## Current Portfolio Analysis

### Macroeconomic Impacts

- Net gain of approximately 670 jobs in the New York economy
- \$2 billion cumulative net growth in gross state product, taking into account all stimulative and depressive factors

# Main Tier 2013 Program Review

## Projected Impact from Using Available Uncommitted Funds

### Available Funding for Future Main Tier Procurements:

- \$1.316 billion available after requested re-allocation of \$108 million to support NY-Sun in 2014 and 2015

### Cost Study Methodology:

- Model of renewable generation supply used previously (2004, 2009)
- Key assumptions have been updated for this effort
  - Natural gas prices
  - Only New York supply eligible
  - Federal Production Tax Credits (PTC)
- Wholesale electricity price forecasts as developed for the draft State Energy Plan

# Main Tier 2013 Program Review

## Projected Impact from Using Available Uncommitted Funds

### Cost Study Findings

- Sensitivity Variables:
  - Federal Production Tax Credit (PTC)
    - Magnitude and timing
    - Changes in cost of financing
  - Cost and performance of onshore wind power
- Results for Primary Cases:
  - Weighted average RPS attribute prices: \$35 - \$44 per MWh
  - Incremental yield: 3,000 - 3,700 GWh
  - Main Tier 2015 Program Achievement: 7,500 - 8,200 GWh
  - **% of 2015 Target: 79% - 86%**

# Main Tier 2013 Program Review

## Projected Impact from Using Available Uncommitted Funds

### Outlook Appears Challenging

- Most recent solicitation shows that all available funds will not be committed on the basis of project interest and cost
- Factors challenging program's ability to achieve target:
  - Continued low natural gas prices
  - Continuing uncertainties regarding federal energy tax credits
  - Challenges persist in siting and permitting projects
- Cost Study assumes developers allocate resources to New York projects; therefore, estimated yield may not be realized as modeled
- Total authorized funding does not appear sufficient to achieve the 2015 program targets under current market conditions

# Main Tier 2013 Program Review

## **Projected Impact from Using Available Uncommitted Funds Considerations for Future Implementation**

- Current market signals show that projects are not developing at the needed pace
- A revised program design with more certainty and more risk sharing may be needed to reinvigorate the market, support steadier project development activities, and enable more informed bid prices

# Main Tier 2013 Program Review

## **Projected Impact from Using Available Uncommitted Funds Considerations for Future Implementation (cont'd)**

Carefully consider design features to:

- capture cost-reducing innovations in the renewable industry over time
- minimize developer speculation
- benefit from remaining federal subsidies
- benefit from new financing options that may emerge

# RPS Technical Conference Overview

- Main Tier 2013 Program Review
- **Customer-Sited Tier Program Review**
- NY-Sun Petition: 2014-2015 Funding Considerations and Other Program Modifications

# Customer-Sited Tier Program Review

## Status as of December 31, 2012

- At the portfolio level, progress has nearly matched expectations
  - Progress in some of the individual technology programs has exceeded expectations, while in others it has fallen short
  - 39% of the lifetime budget through 2015 has been committed and 33% of the 2015 target achieved
  - On target to meet 2015 MWh goal with available budget
- PV costs have seen dramatic price declines and time is right for program transition
- Other technologies have not seen significant changes in customer value proposition and still require support to overcome barriers

# Customer-Sited Tier Program Review

## Actual and Expected Energy Production (MWh), December 31, 2012

<b>Program</b>	<b>Actual Energy Production from Installed Capacity</b>	<b>Additional Expected Production</b>	<b>Total</b>
Standard Offer PV	71,380	22,228	<b>93,608</b>
Competitive PV	3,345	63,372	<b>66,717</b>
Fuel Cells	1,514	6,829	<b>8,343</b>
Anaerobic Digesters	77,507	60,836	<b>138,343</b>
Small Wind	2,399	2,544	<b>4,943</b>
Solar Thermal	849	591	<b>1,440</b>

# Customer-Sited Tier Program Review

## Market Evaluation

- Projection of achievable market potential, by technology, measured in terms of installed capacity and energy production for the period through 2015
  - Based on current approved budget levels through 2015
  - Includes 2013 Rollover Petition funding and assumes that the 2014/2015 NY-Sun Funding is made available

# Customer-Sited Tier Program Review

## Expected Results through December 31, 2015

Resource Category	Target Annual Generation Encumbered by 12/31/15 (MWh)	Projected Annual Generation Encumbered by 12/31/15 (MWh)
Standard Offer PV	184,279	224,297
Competitive PV	300,381	372,621
Fuel Cells	66,075	40,448
Anaerobic Digesters	225,490	201,305
Small Wind	61,910	32,073
Solar Thermal	39,954	3,765
<b>Total</b>	<b>878,089</b>	<b>874,509</b>

# Customer-Sited Tier Program Review

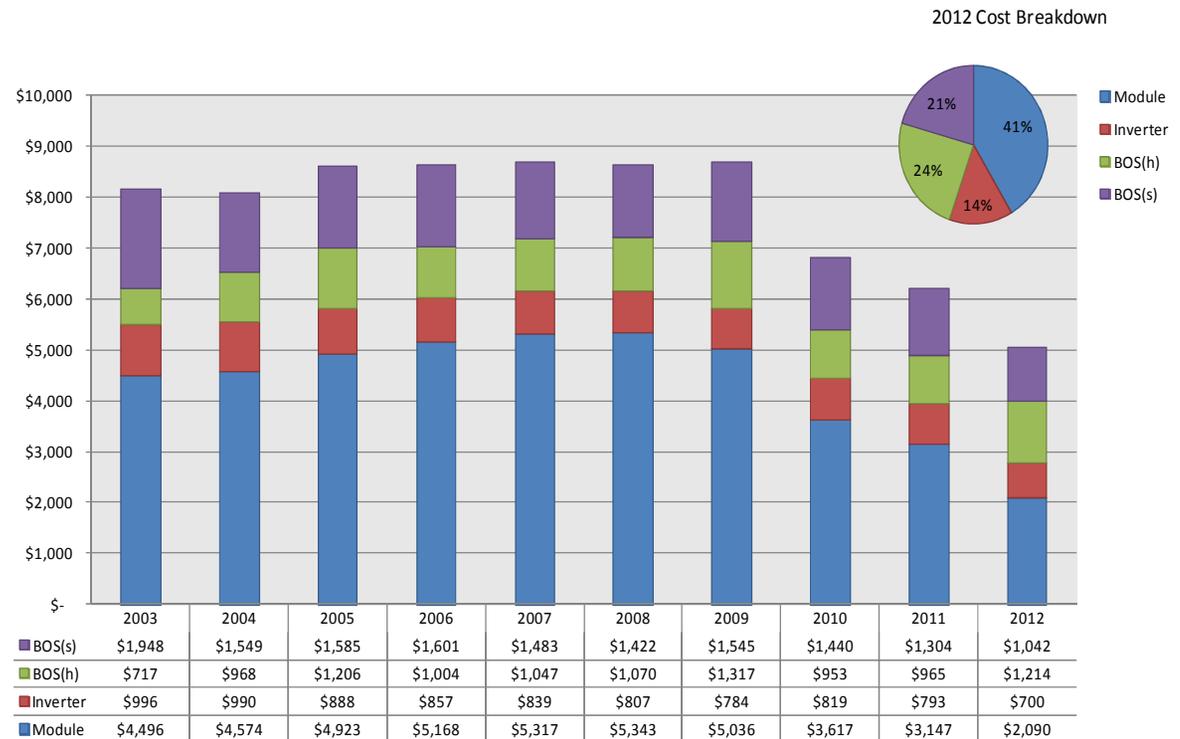
## Technology Specific Assessment

- **PV**
  - Standard Offer
  - Competitive
- **Fuel Cells**
- **Anaerobic Digesters**
- **Small Wind**
- **Solar Thermal**

# Customer-Sited Tier Program Review

## Residential PV System Historical Cost

- **Cost has declined by 40% since 2009**
- **Most of the decline has been in module cost**
  - **Modules now account for only 40% of the installed cost**



# Customer-Sited Tier Program Review

## Standard Offer PV

- Significant growth in the number of participating installers and the number of applications
- Substantial increase in percentage of Lease or Power Purchase Agreement systems in 2012
- Incentive levels have fallen from \$2.50/Watt in 2010 to \$1.30/Watt for systems under 50 kW (Base Tier)
- Program added a new tier for systems from 50 to 200 kW. The Second Tier incentive has initially been set at 70% of the Base Tier incentive
- Incentive reductions modeled through 2015 based on cost projections, existing tax credits, and assumed return on investment
- Likely that retail grid parity will be reached before 2020 in certain markets

# Customer-Sited Tier Program Review

## Competitive PV

- Widespread participation from the Upstate region, but only limited interest Downstate
- Substantial attrition from the program, possibly due to projects not being adequately prepared to move forward at the time of the proposal
- Lengthy timelines for permitting and approvals
- The portfolio average bid price in 2011 and 2012 was \$0.99/Watt.
- Incentive reductions modeled through 2015 based on cost projections, existing tax credits, and assumed return on investment
- Likely that retail grid parity will be reached before 2020 in certain markets

# Customer-Sited Tier Program Review

## Fuel Cells

- Historical market demand was sluggish, but heightened interest in use for resiliency (Superstorm Sandy)
  - Most activity in NYC
  - Seven recent projects exhausted allocated 2013 budget as well as reprogrammed funds
- Anticipated queue of projects in late 2013 will consume allocated 2014 budget on opening day
- Some customers have expressed interest in large fuel cell installations, but the cap of \$1 million per project is insufficient support for them
  - Large fuel cells have proposed in the Main Tier program
  - Cap will be reexamined based on Main Tier results

# Customer-Sited Tier Program Review

## Anaerobic Digesters

- Project complexities cause hesitancy/delay
- Interconnection continues to be a challenge
- Changes to the program in 2012 raised the per-project cap to \$2 million and extended the performance payments for a 10-year term
- Long-term engagement with stakeholders in the dairy farm, food processing, and wastewater treatment sectors
- Ombudsman services are helping move the market
- Significant new generation expected to be encumbered between 2013 and 2015

# Customer-Sited Tier Program Review

## Small Wind

- Customer interest has slowed
- Potential customers may be migrating to PV
- Wind developers capable of migrating to PV
- Funding cap raised to \$1 million per project in early 2013
- Currently most cost-effective CST investment for ratepayers

# Customer-Sited Tier Program Review

## Solar Thermal

- Market growth continues to be sluggish, both in New York and nationally
- Program has seen greater success using limited nonelectric incentive funding
- Recently launched outreach effort to educate consumers in the State about Solar Thermal technology and its benefits
- Expect to spend only a fraction of budget

# Customer-Sited Tier Program Review

## Items for Consideration

- **Proposed Program Changes: NY-Sun Petition**
- **Outstanding Items Requiring Near-Term Action**
- **Items for Future Consideration**

# Customer-Sited Tier Program Review

## Outstanding Items

- Redesign Solar Thermal Program
  - Expand Solar Thermal program eligibility to cover combination systems
  - Allow the Solar Thermal program to become fuel neutral
- Increase flexibility (decisions to be made in consultation with DPS staff)
  - Adjust all program incentive caps
  - Reallocate funds between technologies and program offerings
  - Pursue financing options through the Green Bank
- Authorize the use of program funds for Quality Assurance/Quality Control

# Customer-Sited Tier Program Review

## Items for Further Consideration

- Community solar opportunities
- Integrated solar energy and energy efficiency
- Energy storage for resiliency

# NY-Sun Petition 2014-2015 Funding Considerations And Other Program Modifications

Karen Hamilton  
Director, Residential Energy Services

# NY-Sun Petition

## Proposed NY-Sun Extension

- Governor Cuomo proposed to extend NY-Sun through 2023
  - Provide longer program certainty
  - Attract significant private investment
  - Enable sustainable development of a robust industry
  - Create well-paying skilled jobs
  - Improve the reliability of the electric grid
  - Reduce air pollution
- Petition:
  - Improvements for 2014-2015
  - Lay the groundwork for 2016-2023

# NY-Sun Petition

## Objectives of Proposed Changes

- Provide more transparency and certainty to marketplace
- Combined with efforts to lower balance-of-systems costs, enable lower installed costs
- Enable higher penetration, high growth markets to transform
- Encourage growth in markets that are lagging
- Ramp down and eliminate program cash incentives as quickly as market will bear

# NY-Sun Petition

## Petition Requests

- Source of funding for 2014-2015
- Flexibility in allocation of funds between the Standard Offer and Competitive PV Programs
- MW Block Program design for Standard Offer
- Eliminate the “40% of installed cost” rule for Standard Offer
- Transition Competitive Bid program to a MW Block performance-based incentive program
- Better-coordination statewide

# NY-Sun Petition

## Funding Source & Allocation

- April 24, 2012 Order authorized \$108 million for 2014-2015 but did not identify source
- Funding certainty needed prior to Jan 1, 2014
- Request reallocation from Main Tier
- Recent and proposed program changes for Standard Offer and Competitive Bid Program prevent allocating with certainty
- Flexibility in determining and updating allocation, preserve funding for downstate region

# NY-Sun Petition

## Standard Offer Program Changes

- MW Block Program design
  - Improve transparency and predictability of incentive drops
  - Provide certainty regarding value of incentive to be received
  - Allow different incentives and block sizes in different markets if needed
  - Continue monthly budgets in 2014-2015
- Eliminate the “40% of installed cost” rule for Standard Offer

# NY-Sun Petition

## Competitive Bid Program Changes

- Continue competitive bid program through 2014
- Assess as-built market maturity, costs and incentive levels to inform MW block framework
- Retain performance aspect of program
- Allow lead time to inform market of MW block framework
  - Enable greater certainty and solicitation timing to align with market development of contracts with customers
  - Enable integrating PV into energy efficiency projects and encourage zero net energy

# NY-Sun Petition

## Statewide Coordination

- Consider aligning program policies and administration
  - Installers work across territories
  - Stronger signal of commitment to marketplace
  - Potentially reduce administrative costs
  - Improve data collection and analysis

# New York State Renewable Portfolio Standard

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