

# **2016 Renewable Energy Growth Program (REG) Recommendations**

These recommendations have been prepared and reviewed by Chairman Ken Payne, Vice-Chair Sue Anderbois, Shauna Beland/Chris Kearns, OER and Jason Gifford, SEA

# 2016 REG Program Development Timeframe and Process

- ▶ Design of the 2016 REG Program Plan (“2016 Plan”) began in June when the DG Board contracted with Sustainable Energy Advantage (SEA).
- ▶ The DG Board established a Low-Income and Multi-Family Working Group in May to work on additional ceiling prices for the 2016 Plan.
- ▶ DG Board and stakeholders were informed at the Board’s June meeting that the development of the 2016 Plan would be working back from a vote on the 2016 Plan on Monday, October 19<sup>th</sup>.
- ▶ SEA released a Straw Man Proposal to the Board and stakeholders for cost inputs into the design of the ceiling prices in July. SEA provided a 3 week comment period.
- ▶ SEA released 2 drafts of the 2016 ceiling prices for public comment. The DG Board hosted 2 Public Workshops (August and September) where SEA presented the 1<sup>st</sup> and 2<sup>nd</sup> draft of the 2016 ceiling prices. SEA provided 2 week comments periods on the drafted ceiling prices.

## 2016 REG Program Development Timeframe and Process

- ▶ SEA was made available to the Board members and stakeholders to reach out to and discuss various aspects of the ceiling price design process.
- ▶ The DG Board provided a drafted 2016 Megawatt Allocation Plan for public comment in July and provided a 3 week comment period that ended in August.
- ▶ Overall, the DG Board provided ample opportunity for the Board members and stakeholders to comment on the development of the 2016 REG Program between May and late September.

# **2016 Megawatt Allocation Plan**

Eligible Technology	System Size for Ceiling Price Development	Eligible System Size Range	Tariff Length	2015 - 25 MW DG Board Approved Allocation Plan	2016 - 40 MW Recommended Allocation Plan
Small Solar I	5 kW	1 to 10 kW	15 and 20 Year Options	3 MW	5.5 MW
Small Solar II	25 kW	11 to 25 kW			
Small Solar*	5 kW	1 to 10 kW		N/A	1 MW
Medium Solar**	140 kW	26 to 250 kW	20 Years	N/A	1 MW
Medium Solar	140 kW	26 to 250 kW	20 Years	4 MW	5 MW
Commercial Solar	500 kW	251 to 999 kW	20 Years	5.5 MW	8 MW
Large Solar	1.5 MW	1 to 5 MW	20 Years	6 MW	9 MW
Wind I	1.65 MW	1.5 to 2.99 MW	20 Years	4.95 MW	9 MW
Wind II	3.3 MW	3.3 to 5 MW	20 Years		
Wind III	4.95 MW	3.3 to 5 MW	20 Years		
Anaerobic Digestion I	325 kW	150 to 500 kW	20 Years	1.5 MW	1.5 MW
Anaerobic Digestion II	750 kW	501 kW to 1 MW	20 Years		
Small Scale Hydropower I	150 kW	10 to 250 kW	20 Years		
Small Scale Hydropower II	500 kW	251 to 1 MW	20 Years		
*Non-profit, affordable housing, income eligible ceiling price for small solar program ** Non-profit, affordable housing, income eligible ceiling price for medium scale solar				25 MW	40 MW

# Megawatt Allocation Flexibility

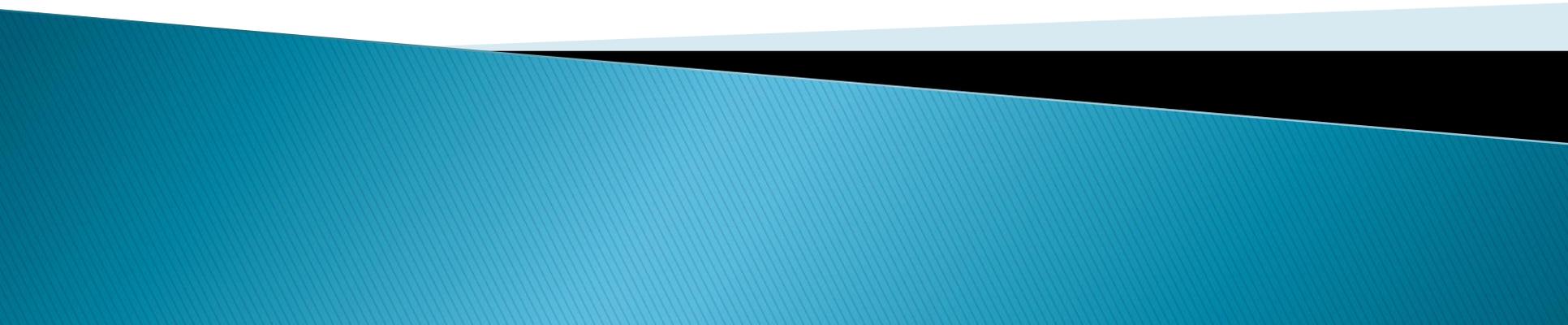
- ▶ National Grid shall have the flexibility to redirect MW capacity from the following classes to the large solar class, in the event that there is under subscription in the regular small/medium\* solar classes:
  - 2.5 MW from the small solar classes
  - 3 MW from the medium solar class
- ▶ National Grid shall have the ability to redirect the MW capacity during any of the 3 enrollments.
- ▶ The Board shall reserve the right to make any necessary modifications to the Megawatt Allocation Plan during the course of the year due to under/over subscription of any of the renewable energy categories and associated MW allocations. The Board would notify the Commission of any modifications made.

**\* The “Non-profit, Affordable Housing, Income Eligible Pilot Program” and associated MW capacity shall be exempt from this rule until the 3<sup>rd</sup> and final REG enrollment.**

# Final 2016 REG Enrollment - Unused Megawatt Capacity

- ▶ In the event that there is any unused MW (wind, solar, anaerobic digestion, small scale hydropower, etc.) capacity during the 3<sup>rd</sup> enrollment in the fall of 2016, National Grid shall have the ability to redirect unused MW capacity where there is the greatest demand to conclude the 2016 program year.
- ▶ Any MW capacity that remains after the 3<sup>rd</sup> enrollment in 2016 will be added to the MW capacity available for the 2019 REG Program Year.

**Non-profit, Affordable  
Housing, Income Eligible  
2016 Pilot**



# General Updates

- ▶ Low Income Multi-Family Working Group to be renamed Moderate Income Multi-Family Working Group – with informal board agreement.
- ▶ Prior to the establishment of the Working Group, these sectors have not been able to participate in the 2011-2014 DG Program and the associated 40 MW or the 25 MW made available in year 1 of the REG Program.
- ▶ The Board is providing an opportunity in this Pilot Program for these different sectors and contributing ratepayers to the DG and REG programs, an opportunity to participate in this upcoming year's REG Program.
- ▶ Meetings each month since the board voted to form the working group in May.
- ▶ Worked to create three ceiling price categories that were given to SEA to incorporate in the 2016 ceiling prices

# Working Group Members

<b>Name</b>	<b>Organization</b>
Shauna Beland	OER
Chris Kearns	OER
Tony Avant	RI Housing
Russell Johnson	RI Housing
Stan Greschner	GRID Alternatives
Laura Rodormer	National Grid
Fred Unger	Heartwood Group
Sharon Conard-Wells	West Elmwood Housing Development Corp
Christian Belden	Church Community Housing
Mike Guerard	Optimal Energy
Marty Davey	New Ecology, Inc.
Julian Dash	Clean Economy Development
Charlie Harak	National Consumer Law Center
Sam Bradner	Peregrine Energy Group

# Pilot Program Eligibility

<b>Renewable Energy Class (Nameplate kW)</b>	<b>2016 Enrollment Target (Nameplate MW)</b>
<b>1. Small Scale Solar – Residential, Small Commercial, or non-profit master metered multi-unit building (2-4 tenant units) (11-25 kW DC)</b>	<b>1</b>
<b>2. Small-Scale Solar – Residential or non-profit master metered single unit building (1-10kW DC)</b>	
<b>3. Medium Solar - Non-profit or multi-unit (5 or more tenant units) master metered building (26kw-250kW DC)</b>	<b>1</b>

# Program Design and Administration

- ▶ OER will assume the responsibility for verification for all three ceiling prices.
- ▶ OER will issue a RFP for an income verification vendor for ceiling price 2 as well as non-profit status verification for all 3 prices.
- ▶ The Working Group provided assistance with the development of the income levels that will be eligible.
- ▶ OER will also work with the vendor and National Grid on further refining the administrative process.
- ▶ OER, National Grid and the Board will evaluate results from the 3 ceiling prices in 2016 and make adjustments, if needed, with the development of the 2017 REG Program.

# **National Grid – Solar Wise Program**

# Solar Wise Program

- ▶ National Grid, OER and members of the DG Board (Ken and Sue) have had face-to-face meetings and conference calls on the development of the Solar Wise Program since July.
- ▶ National Grid shall be providing to the DG Board a summary of the proposed Solar Wise Program the week of October 12<sup>th</sup>.

# **2016 Recommended Ceiling Prices & Explanations of Final Adjustments**

# Small Solar Modeling Adjustments

- ▶ Inverter Replacements
  - Standard warranty term is assumed insufficient to insulate system owner from inverter replacement expenses
  - Due to small system size (5 kW), the fixed O&M cost estimate of \$15/kW-year is assumed inadequate to fund a reserve large enough to cover inverter replacement after the standard warranty expires
  - Therefore, the total project cost assumption has been increased from \$3,839 to \$4,000 to serve as a proxy for adding a 25-year inverter warranty or inverter replacement reserve
- ▶ For host-owned residential systems, personal income tax liability is applied to the difference between the long-term tariff rate and a levelized estimate of bill credits
  - It is estimated that 45% of the tariff amount will be taxed
- ▶ The Small Solar Ceiling Price variant assuming no property tax assessment is not longer recommended for consideration.

# Proposed 2016 Ceiling Prices: Small Solar

Technology, Application	CP Size Range (Modeled) kW	Ceiling Price Analysis Run	Ceiling Price Variant			
			w/ ITC 15 year Tariff	w/o ITC 15 year Tariff	w/ ITC 20 year Tariff	w/o ITC 20 year Tariff
			<i>All Ceiling Prices in ¢/kWh</i>			
Small Solar I, Host Owned	1 to 10 (5)	<b>2015 Final</b> <b>2016 Proposed</b>	<b>41.35</b> <b>37.65 (-9%)</b>	<b>49.85</b> <b>45.25 (-9%)</b>	<b>37.75</b> <b>33.45 (-11%)</b>	<b>45.05</b> <b>39.85 (-12%)</b>
Small Solar I, Third Party Owned	1 to 10 (5)	<b>2015 Final</b> <b>2016 Proposed</b>	<b>37.60</b> <b>29.90 (-20%)</b>	<b>43.40</b> <b>34.95 (-19%)</b>	<b>32.95</b> <b>26.10 (-21%)</b>	<b>37.65</b> <b>30.25 (-20%)</b>

# Other Solar Modeling Adjustments (1)

- ▶ Small Solar II, no changes
- ▶ Medium Solar
  - Based on regional installed cost trends, the potential exists to recommend a reduction of the Medium Solar Ceiling Prices by 4% (to 23.50 ¢/kWh with a 30% ITC and to 28.30 ¢/kWh with a 10% ITC).
  - Based on modest market penetration (both in Rhode Island and in neighboring states) for this specific segment, however, **it is recommended that the 2015 Ceiling Prices remain in effect for the 2016 enrollments.**
  - This segment's long sales cycle exacerbates slow adoption rates, underscoring the need for Ceiling Price stability at this stage.
  - As with all Ceiling Price categories, cost trends and development progress within the Medium Solar category should be evaluated each year.

# Other Solar Modeling Adjustments (2)

## ▶ Commercial Solar

- Upon confirmation that the potential need for additional safety and reliability related interconnection equipment extends to the Commercial Solar size category, the interconnection cost adder used in the Large Solar and Wind categories has also been applied to Commercial Solar.
- This adder (\$200K) is a proxy for a portion of the cost of one or more pieces of equipment that may be required for interconnection, and which do not scale with the project's nameplate rating.

## ▶ Large Solar

- No changes to Ceiling Price inputs or results since September 21, 2015 Public Meeting presentation.

# Proposed 2016 Ceiling Prices: All Other Solar Categories

Technology, Application	CP Size Range (Modeled) kW	Ceiling Price Analysis Run	Ceiling Price Variant	
			w/ 30% ITC 20 year Tariff	w/ 10% ITC 20 year Tariff
			<i>All Ceiling Prices in ¢/kWh</i>	
Small Solar II	11 to 25 (25)	2015 Final 2016 Proposed	29.80 26.15 (-12%)	34.40 30.15 (-12%)
Medium Solar	26 to 250 (140)	2015 Final 2016 Proposed	24.40 No Change Proposed	29.55 No Change Proposed
Commercial Solar	251 to 999 (500)	2015 Final 2016 Proposed	20.95 20.25 (-3%)	24.65 23.15 (-6%)
Large Solar	1 to 5 (2,000)	2015 Final 2016 Proposed	16.70 15.75 (-6%)	19.40 18.35 (-5%)

# **Non-Profit, Affordable Housing and Income-Based Pilot Program**

- ▶ This pilot program would create an additional incentive for non-profit and eligible residential and small commercial systems during the 2016 enrollment year by making the Ceiling Prices with reduced tax credit value available one year early.
- ▶ This incentive is intended to address these program participants' inability, or reduced ability, to make use of Federal tax incentives.

# Proposed 2016 Ceiling Prices: Three Proposed New Categories

Technology, Application	CP Size Range (Modeled) kW	Ceiling Price Analysis Run	Ceiling Price Variant	
			15-yr Tariff	20-yr Tariff
Small-Scale Solar – Residential or Non-profit master metered single unit building	1 to 10 (5)	2015 Final 2016 Proposed	N/A 45.25 ¢/kWh*	N/A 39.85 ¢/kWh*

\* In order to fulfill this policy objective while minimizing administrative complexity, the recommended Ceiling Price for this category is set equal to the Small Solar I, Host Owned Ceiling Price *without* ITC.

Technology, Application	CP Size Range (Modeled) kW	Ceiling Price Analysis Run	Ceiling Price
			20-yr Tariff
Small Scale Solar – Residential, Small Commercial, or Non-profit master metered multi-unit building (2-4 tenant units)	11 to 25 (25)	2015 Final 2016 Proposed	N/A 30.15 ¢/kWh**
Medium Solar - Non-profit or multi-unit (5 or more tenant units) master metered building	26 to 250 (140)	2015 Final 2016 Proposed	N/A 29.55 ¢/kWh**

\* In order to fulfill this policy objective while minimizing administrative complexity, the recommended Ceiling Prices for these categories are set equal to the Small Solar II and Commercial Solar Ceiling Prices *with* 10% ITC, respectively.

# Non-Solar Modeling Adjustments

- ▶ No changes to Ceiling Price inputs or results since September 21, 2015 Public Meeting presentation.

# Proposed 2016 Ceiling Prices: Wind

Technology, Application	CP Size Range (Modeled) MW	Ceiling Price Analysis Run	Ceiling Price Variant		
			w/ ITC ILO PTC 20 year Tariff	w/ PTC 20 year Tariff	w/o PTC or ITC 20 year Tariff
			<i>All Ceiling Prices in ¢/kWh</i>		
Wind I	1.5 to 2.99 (1.65)	2015 Final	18.40	19.85	22.75
		2016 Proposed	19.95 (+8%)	21.45 (+8%)	24.45 (+8%)
Wind II	3 to 5 (3.3)	2015 Final	18.20	19.45	\$22.35
		2016 Proposed	19.10 (+5%)	20.45 (+5%)	23.45 (+5%)
Wind III	3 to 5 (4.95)	2015 Final	N/A	N/A	N/A
		2016 Proposed	18.50	19.70	22.65

# Proposed 2016 Ceiling Prices: Anaerobic Digesters

Technology, Application	CP Size Range (Modeled) kW	Ceiling Price Analysis Run	Ceiling Price Variant	
			w/ PTC 20 year Tariff	w /o PTC 20 year Tariff
			<i>All Ceiling Prices in ¢/kWh</i>	
Anaerobic Digestion I	150 to 500	<b>2015 Final</b> <b>2016 Proposed</b>	<b>20.20</b> <b>20.80 (+3%)</b>	<b>20.60</b> <b>21.20 (+3%)</b>
Anaerobic Digestion II	501 to 1,000	<b>2015 Final</b> <b>2016 Proposed</b>	<b>20.20</b> <b>20.80 (+3%)</b>	<b>20.60</b> <b>21.20 (+3%)</b>

# Proposed 2016 Ceiling Prices: Hydro

Technology, Application	CP Size Range (Modeled) kW	Ceiling Price Analysis Run	Ceiling Price Variant	
			w/ PTC 20 year Tariff	w /o PTC 20 year Tariff
			<i>All Ceiling Prices in ¢/kWh</i>	
Hydro I	10 to 250	<b>2015 Final</b> <b>2016 Proposed</b>	<b>19.80</b> <b>19.45 (-2%)</b>	<b>21.35</b> <b>21.00 (-2%)</b>
Hydro II	251 to 1,000	<b>2015 Final</b> <b>2016 Proposed</b>	<b>18.55</b> <b>18.25 (-2%)</b>	<b>20.10</b> <b>19.75 (-2%)</b>

# Summary of 2016 Ceiling Prices Recommended for PUC Approval (1)

Ceiling Price Category (kW)	CP Description	Recommended CP (all prices in ¢/kWh)
Small Solar I, Host Owned (1-10)	15-year Tariff, With 30% ITC	<b>37.65</b>
	20-year Tariff, With 30% ITC	<b>33.45</b>
Small Solar I, Third-Party Owned (1-10)	15-year Tariff, With 30% ITC	<b>29.90</b>
	20-year Tariff, With 30% ITC	<b>26.10</b>
Small Solar II (11-25)	20-year Tariff, With 30% ITC	<b>26.15</b>
Medium Solar (26-250)	20-year Tariff, With 30% ITC	<b>24.40</b>
Commercial Solar (251-999)	20-year Tariff, With 10% ITC	<b>23.15</b>
Large Solar (1,000-5,000)		<b>18.35</b>
Wind I (1,500-2,999)	20-year Tariff, Without PTC	<b>24.45</b>
Wind II (3,000-5,000; 2-turbine)		<b>23.45</b>
Wind III (3,000-5,000; 3-turbine)		<b>22.65</b>
Anaerobic Digestion I (150-500)		<b>21.20</b>
Anaerobic Digestion II (501-1,000)		<b>21.20</b>
Hydro I (10-250)		<b>21.00</b>
Hydro II (251-1,000)		<b>19.75</b>

# Summary of 2016 Ceiling Prices Recommended for PUC Approval (2)

Ceiling Price Category (kW)	CP Description	Recommended CP <i>(all prices in ¢/kWh)</i>
Small-Scale Solar – Residential or Non-profit master metered single unit building (1-10 kW)	15-year	<b>45.25</b>
	20-year	<b>39.85</b>
Small Scale Solar – Residential, Small Commercial, or Non-profit master metered multi-unit building (2-4 tenant units) (11-25 kW)	20-year	<b>30.15</b>
Medium Solar - Non-profit or multi-unit (5 or more tenant units) master metered building (26-250 kW)	20-year	<b>29.55</b>

# 2016 Ceiling Price Recommendations

- ▶ Approval of the Small Solar ceiling prices with the 30% Investment Tax Credit (ITC).
- ▶ Approval of the Medium Solar ceiling prices with the 30% ITC at the 2015 approved ceiling prices.
- ▶ Approval of the Commercial and Large Solar ceiling prices with the 10% ITC.
- ▶ Approval of the 3 Wind ceiling prices with no Production Tax Credit (PTC).
- ▶ Approval of the Anaerobic Digestion and Small-Scale Hydropower ceiling prices with no PTC.
- ▶ Approval of the 3 Solar Ceiling Prices for the “Pilot Year” for the Non-profit, Affordable Housing, Income Eligible categories

# **DB Board Recommended Motions for Monday, October 19<sup>th</sup> at 4pm**

- ▶ Approval of the Board's transparent and public development process of the 2016 ERG Program
- ▶ Approval of the recommended MW Allocation Plan
- ▶ Approval of the 2016 Ceiling Prices
- ▶ Approval of the Solar Wise Program
- ▶ Approval of the Non-profit, Affordable Housing, Income Eligible 2016 Pilot