

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
PUBLIC UTILITIES COMMISSION

IN RE: THE RHODE ISLAND DISTRIBUTED :
GENERATION BOARD’S REPORT AND : DOCKET NO. 4774
RECOMMENDATIONS RELATING TO THE 2018 :
RENEWABLE ENERGY GROWTH CLASSES, :
CEILING PRICES, AND CAPACITY TARGETS :

**REPORT AND RECOMMENDATIONS OF THE RHODE ISLAND DISTRIBUTED
GENERATION BOARD ON 2018 RENEWABLE ENERGY GROWTH CLASSES,
CEILING PRICES, AND CAPACITY TARGETS**

I. INTRODUCTION

The Distributed Generation Board (“Board”) hereby submits its recommendations to the Public Utilities Commission (“Commission”) regarding the 2018 ceiling prices and annual targets in accordance with R.I. Gen. Laws § 39-26.6-4(a)(1) and the applicable provisions of R.I. Gen. Laws § 39-26.2-4 and § 39-26.2-5. These recommendations were approved by the Board at its meeting on October 23, 2017 to approve the ceiling prices and megawatt allocation plan; the recommendations were also endorsed by the Office of Energy Resources (“OER”) and are submitted as a package.

The Renewable Energy Growth (“REG”) Program, R.I. Gen. Laws § 39-26.6-1 et seq., requires the Board to develop and recommend ceiling prices for tariffs under the REG Program to the Commission for review and approval. The Board had Sustainable Energy Advantage (“SEA”) develop the recommended ceiling prices, which SEA has conducted for the Board for prior REG program year submittals to the Commission. The REG Program also requires the Board to develop and recommend to the Commission annual megawatt (“MW”) targets for enrollments by specified renewable energy technology classes for the program year. This is the fourth year in which the Board has made submissions to the Commission under the REG Program.

This filing contains the Board’s Report and Recommendations for the 2018 Renewable Energy Growth Program Classes, Ceiling Prices, and Targets (hereafter “Report”). The Board’s 2018 REG Program recommendations are summarized in **Exhibit B**, attached hereto and explained further in the Report.

II. 2017 REG PROGRAM RESULTS

The Rhode Island renewable energy market continued its growth in 2017, as national, regional, and local renewable energy developers become more familiar with the REG Program. As of October 2017, over 2,000 small solar tariffs from the 2015 to 2017 REG Program years have been awarded to homeowners across the State. The larger-scale solar market was also very strong in 2017, with full subscriptions in the medium, commercial and large solar classes. The large wind class was also fully subscribed with multiple wind turbines scheduled to be installed in Johnston in the summer of 2018. There were no small-scale wind, small-scale hydropower or anaerobic digestion project submittals in 2017, but OER is aware of a few projects that are under development and anticipate a proposal being submitted during the 2018 program year.

Overall, both the Board and OER are pleased with the REG Program’s progress over the past 3 program years and National Grid’s implementation and administration of the program. It is also worth noting that the success of the state’s renewable program has not been lost on Massachusetts, which appears to be utilizing elements of the REG Program in its design of the new Solar Massachusetts Renewable Target Program.

III. ENACTED 2017 LEGISLATION AND IMPACTS WITH THE 2018 REG PROGRAM

The Rhode Island General Assembly enacted legislation that created a Statewide Solar Permit Application that streamlines the building and electrical permits associated with solar projects. The current solar permitting process involved 39 separate building and electric permits

with municipal building and electric officials. The new Statewide Solar Permit Application is being finalized by OER through Rules and Regulations as of this Report's filing and will be required to be used by all municipalities and solar companies for solar projects of all sizes beginning on January 1, 2018. It appears that Rhode Island will be the only state in the northeast that has a mandatory statewide solar permit application with municipalities and is another example of the state's efforts to reduce the "soft costs" of solar project development. This new law is estimated to enable reductions in permitting costs of 10% to 15%, which contributed to a ~1% decrease in ceiling prices for solar PV systems compared to the 2017 program.

IV. FEDERAL ACTIVITY – POTENTIAL TARIFFS/QUOTAS AND TAX REFORM LEGISLATION

As of this Report's filing there is uncertainty regarding two (2) federal policy dynamics that may have a direct impact on the recommended 2018 ceiling prices:

(1) Trade Remedies under Section 201 of the Trade Act of 1974 – On September 22, 2017, the U.S. International Trade Commission ("USITC") ruled that two U.S. solar manufacturers (Suniva and SolarWorld) were being harmed by low-cost imported solar panels from a variety of international producers. On October 31, 2017, members of the USITC proposed three different remedies. The proposed remedies include differing combinations of tariffs, quotas, and/or an import licensing fee, to begin in 2018. The USITC has until November 13, 2017 to provide more detailed recommendations to the Trump Administration. The Trade Act of 1974 requires President Trump to accept or alter the USITC recommendations by January 12, 2018.

(2) Federal Tax Reform Legislation – The U.S. Congress and Trump Administration are currently pursuing tax reform legislation and could possibly include provisions that change the economics of renewable energy development.

OER is currently tracking both issues in coordination with the RI Congressional Delegation.

If there is federal activity that requires an adjustment to the 2018 Ceiling Prices, SEA will make the necessary adjustments and the Board will file an amended Report with updated ceiling prices in either December or January. OER will keep the Commission fully informed and provide any updates on these matters.

V. THE BASIC REQUIREMENTS OF THE REG PROGRAM

The applicable provisions of the REG law pertaining to the development of ceiling prices are as follows:

R.I. Gen. Laws § 39-26.6-3(2): "Ceiling price" means the bidding price cap applicable to an enrollment for a given distributed-generation class that shall be approved annually for each renewable-energy class pursuant to the procedure established in this chapter. The ceiling price for each technology should be a price that would allow a private owner to invest in a given project at a reasonable rate of return, based on recently reported and forecast information on the cost of capital, and the cost of generation equipment. The calculation of the reasonable rate of return for a project shall include, where applicable, any state or federal incentives, including, but not limited to, tax incentives.

R.I. Gen. Laws § 39-26.6-5(d): The board shall use the same standards for setting ceiling prices as set forth in § 39-1 26.2-5. In setting the ceiling prices, the board may specifically consider:

(1) Transactions for newly developed renewable energy resources, by technology and size, in the ISO-NE control area and the northeast corridor;

(2) Pricing from bids received during the previous program year;

(3) Environmental benefits, including, but not limited to, reducing carbon emissions;

(4) System benefits; and

(5) *Cost effectiveness.*

In addition, the Board is expected by R.I. Gen. Laws § 42-6.2-8 to exercise its powers in manner that addresses purposes of the Resilient Rhode Island Act, R.I. Gen. Laws § 42-6.2-1 et seq.

VI. 2018 REG PROGRAM

a. Technology Classes and System Sizes

The anticipated outcomes for the 2018 REG Program are the following:

(1) A diversified renewable energy program, in accordance with the purposes of R.I. Gen. Laws § 39-26.6-1 et seq., with a portion of the MW capacity to support each sector.

(2) As appropriate, continued decreases in ceiling prices in each technology – signaling increased program cost effectiveness.

(3) Economic development with the State’s renewable energy market.

(4) Maintaining a consistent and predictable REG Program and associated capacity targets from year-to-year for both residential and commercial associated renewable energy companies to operate, maintaining staffs and develop complex projects that have potential multiple year lead times before submitting a tariff proposal to National Grid.

The Board recommends the following classes and eligible system sizes for solar, wind, anaerobic digestion and small-scale hydropower. The 2018 REG Program includes the same technology and classes that were filed and approved by the Commission for the 2018 REG Program:

Table I

Technology Class	Eligible System Sizes
Small Solar I	1 to10 kW DC
Small Solar II	11 to 25 kW DC

Medium Solar	26 to 250 kW DC
Commercial Solar	251 to 999 kW DC
Large Solar	1 to 5 MW DC
Small Wind	10 to 999 kW DC
Large Wind	1.0 to 5.0 MW DC
Anaerobic Digestion	≤ 5 MW DC
Small Scale Hydropower II	≤ 5 MW DC
Community Remote – Commercial Solar	251 to 999 kW DC
Community Remote – Large Solar	1 to 5 MW DC
Community Remote – Large Wind	1.0 to 5.0 MW DC

b. Recommended Ceiling Prices

The Board, with SEA and OER, considered the following data when developing the ceiling prices recommendations:

- (1) State or federal incentives including, but not limited to, tax incentives;
- (2) Transactions for newly developed renewable energy resources, by technology and size, in the ISO-NE region and the northeast corridor;
- (3) Pricing for DG Standard Contracts executed between 2011 and 2014 and first three years (2015, 2016, 2017) of the REG Program;
- (4) 2016 State Law - Residential Renewable Energy Systems/Local Tax Exemption;
- (5) 2016 State Law - Statewide Renewable Tangible Taxes State Law;
- (6) 2017 State Law - Statewide Solar Permit (Building/Electric) Application;
- (7) Rhode Island and Massachusetts Interconnection Costs;
- (8) Cost effectiveness for the eligible technologies; and
- (9) Public Comments and Data received from stakeholders, including estimates of the cost and performance of their projects currently under development.

The Board developed ceiling price recommendations for each technology and size class listed in Tables I above. The Board recommends that all of the solar ceiling prices include the benefit of the thirty percent (30%) federal investment tax credit (“ITC”), as the full value of this credit is available for projects achieving commercial operation by December 31, 2019. A prescribed phasedown of the ITC commences thereafter. While the Production Tax Credit (“PTC”) was also extended, the wind PTC (or ITC in lieu thereof) is subject to an earlier phasedown than the solar ITC. As a result, the Board recommends that the wind ceiling prices include a benefit equal to 60% of the (30%) full value of the ITC. The Board recommends ceiling prices for the anaerobic digestion and small-scale hydropower classes without the federal production tax credit (or ITC in lieu thereof) because this incentive is not currently available. Federal accelerated depreciation benefits – including a 30% bonus depreciation – are also assumed to be captured by eligible projects placed in service during calendar year 2019.

The Board is also recommending that the medium scale solar class and associated ceiling price be shifted from a set-fixed price submittal to a competitive bidding process for the capacity allocated to that program category in 2018.

2018 Ceiling Price Development - SEA has previously advised the development of the 2011, 2012, 2013 and 2014 DGSC and the 2015, 2016 and 2017 REG ceiling prices. SEA used the Cost of Renewable Energy Spreadsheet Tool (“CREST”) Model to evaluate potential 2018 ceiling prices. The CREST Model was published as a report of the National Renewable Energy Laboratory, a national laboratory of the U.S. Department of Energy, Office of Renewable Energy and Energy Efficiency.

To generate ceiling prices with the CREST Model, SEA collected data from renewable energy programs in Rhode Island, Massachusetts, Connecticut, Vermont, and New York. SEA also

requested from National Grid the bid and cost data (including interconnection data) from the DGSC and REG applications submitted from 2011 to 2016, as well as the first two enrollment periods of 2017. SEA, on behalf of the Board, also issued a survey to stakeholders at the beginning of the 2018 ceiling price development process (June 2017). SEA further requested data and comments from stakeholders to inform the development of a first, second, and final draft of the ceiling prices. SEA staff was made available to OER, Board members, and stakeholders during the development of the ceiling prices. SEA attended and participated in three (3) public meetings to discuss the research conducted and data submitted, the analysis completed, and the ceiling prices recommended – the last of which occurred at the October 23rd DG Board meeting, where the 2018 REG Program Report was unanimously approved.

Tables II and III provide the Board’s recommended 2018 ceiling prices:

Table II

Technology	Ceiling Prices (¢/kWh)
Small Solar I (15 Year Tariff)	31.25
Small Solar I (20 Year Tariff)	27.75
Small Solar II (11-25)	26.55
Medium Solar (26-250)	22.45
Commercial Solar	17.65
Large Solar	14.65
Small Wind	20.85
Large Wind	16.35
Anaerobic Digestion	19.75
Small Scale Hydropower	23.35

Table III – Community Remote Distributed Generation Classes

Technology	Ceiling Prices (¢/kWh)
Community Remote – Commercial Solar	20.30
Community Remote – Large Solar	16.85
Community Remote – Large Wind	18.05

Solar (Modeling Inputs Sources) - The CREST modeling relied upon information provided by stakeholders, as well as data from the Rhode Island Renewable Energy Fund, past DGSC and REG enrollments, National Grid, the Massachusetts Solar Renewable Energy Certificates (“SREC”) Database, the Massachusetts Commonwealth Solar Program, New York State Energy Research and Development Authority (“NYSERDA”, the New York Power Clerks Database), Lawrence Berkeley National Laboratories, and the Department of Energy to determine inputs used in modeling. Interconnection cost data were provided by National Grid and stakeholders. SEA also reviewed data from the Department of Energy’s *Tracking the Sun* Program.

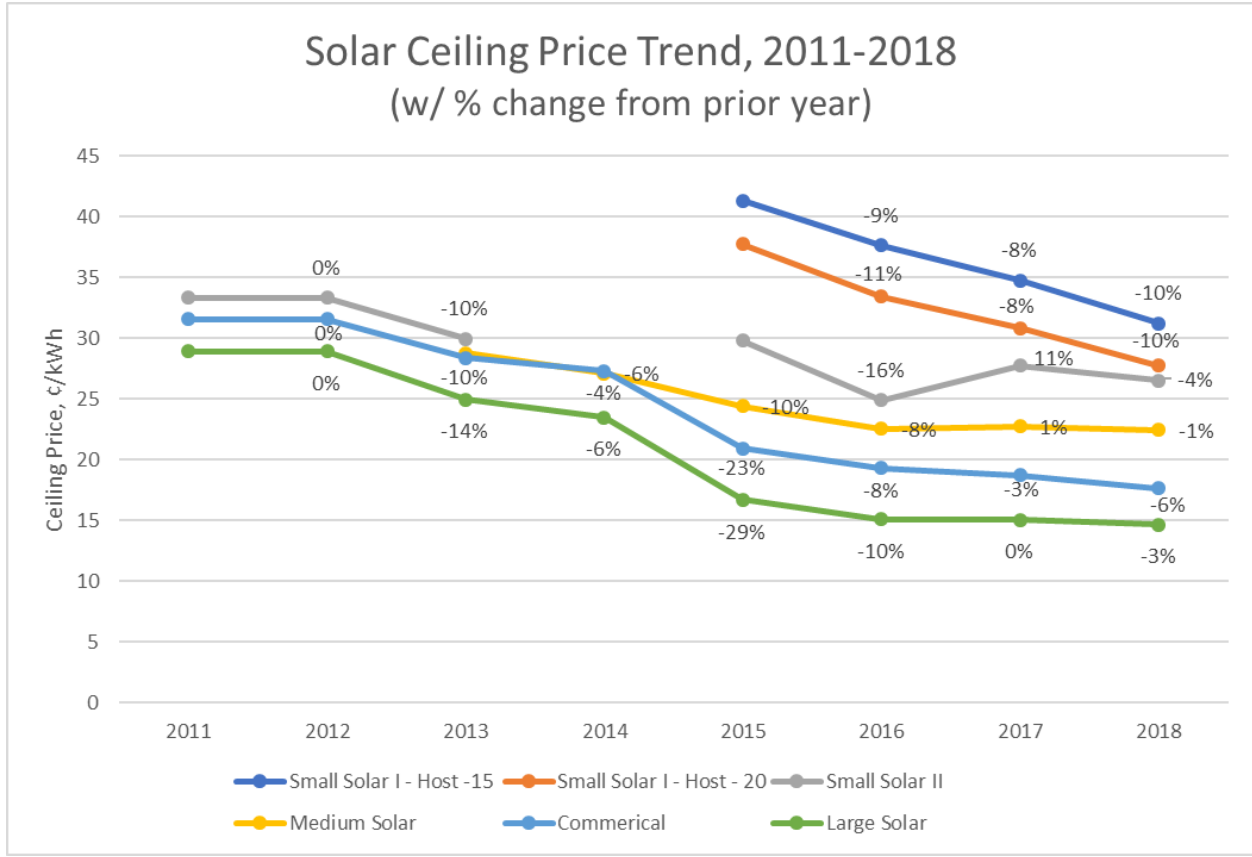
Solar (Comparison to 2017 REG Ceiling Prices):

Table IV

Solar Ceiling Price Category	% Change between 2017 Actual and 2018 Proposed Ceiling Prices
Small Solar I (20-year tariff)	-10%
Small Solar II	-4%
Medium Solar	-1%
Commercial Solar	-6%
Large Solar	-3%

The following Chart I summarizes the Ceiling Price trend for the Large Solar category from 2011 to 2018 (proposed), and includes the percentage change from year to year:

Chart I

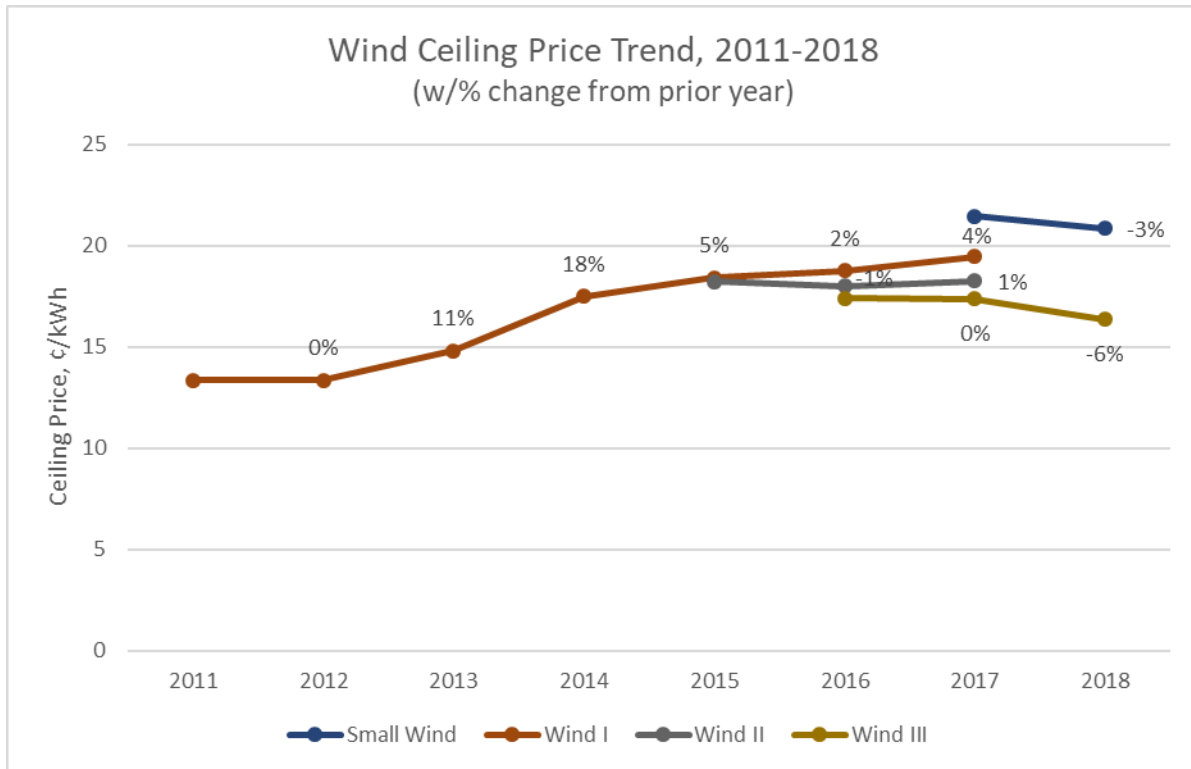


Changes in solar ceiling prices are based on updates to equipment (including interconnection), installation, and operating expenses, as well as tax and financing assumptions, where applicable.

Wind (Modeling Inputs Sources, and Comparison to Past DGSC Ceiling Prices) – The CREST modeling relied upon information provided by stakeholders, as well as data from the Massachusetts Clean Energy Center and the Lawrence Berkeley National Laboratory to determine inputs used in modeling. Historic interconnection cost data were provided by National Grid. The larger wind technology classes were consolidated from three size categories (Wind I, II, & III) to one (Large Wind) for 2018. The 2018 proposed ceiling prices would provide a 3 percent decrease for the Small Wind technology class compared to the 2017 ceiling price, and a 6 percent decrease for Large Wind compared to the 2017 Wind III ceiling price. The decrease in ceiling prices for the

Small and Large Wind technology classes is due to assumptions for decreased total project costs (for Large Wind) and a lower target after-tax IRR.

Chart II

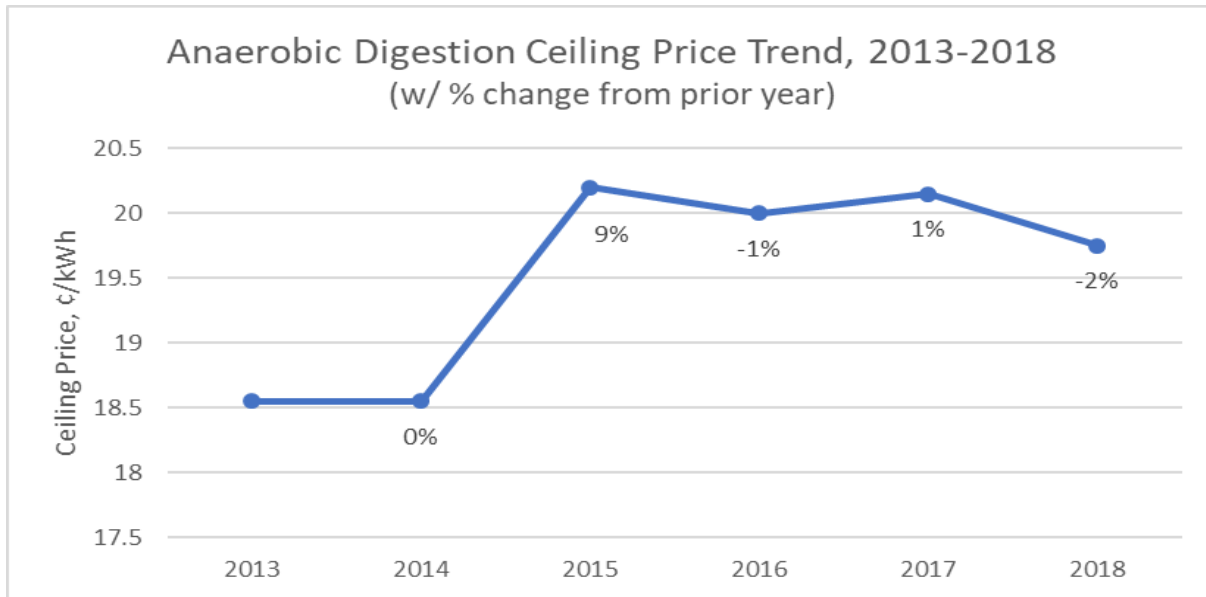


The Board and SEA recommend these proposed ceiling prices as necessary to support wind development in Rhode Island, taking into account the difficulty of wind project siting and permitting, and the significant cost of developing, financing, constructing and operating wind projects that cannot benefit from the economies of scale that support the cost reduction trend demonstrated in other parts of the country. These high cost conditions are further exacerbated by the fact that on-shore wind development in Rhode Island will likely take place inland, as opposed to in coastal areas, where wind regimes are weaker. This leads to a lower production per MW of capacity, and a higher cost per MWh than would be expected for most well-sited wind turbines in other areas.

Anaerobic Digestion (Comparison to Past DGSC Ceiling Prices) – In 2014, there was only

one Anaerobic Digestion technology class (50kW - 1.0MW), and in 2015-2017 there were two technology classes (I – 150-500 kW and II – >500kW – 1.0MW). For the 2018 REG Program, the technology classes have been combined into one (≤ 5 MW). The proposed ceiling price would provide a 2 percent decrease compared to 2017 (either AD technology class), due to assumptions for a lower target after-tax IRR.

Chart III



Small Scale Hydropower (Comparison to Past DGSC Ceiling Prices) - In 2014, there was only one Small Scale Hydropower technology class (50kW - 1.0MW), and in 2015-2017 there were two technology classes (I – 10-250 kW and II – >250kW – 1.0MW). For the 2018 REG Program, the technology classes have again been combined into one (≤ 5 MW). Hydroelectric development generally requires longer lead-times and is subject to more site-specific cost variation than other renewable energy technologies. As a mature technology, where available resources have largely been developed over the last 100+ years, there are limited opportunities for incremental hydro development. The recommended ceiling prices represent the acquisition of additional data about the costs to develop and operate those Rhode Island sites that may provide

opportunity to install additional hydro capacity. The recommended 2018 Ceiling Price would result in a 4 percent increase from the 2017 Ceiling Prices for Hydro (Hydro I and II had the same ceiling price).

Chart IV

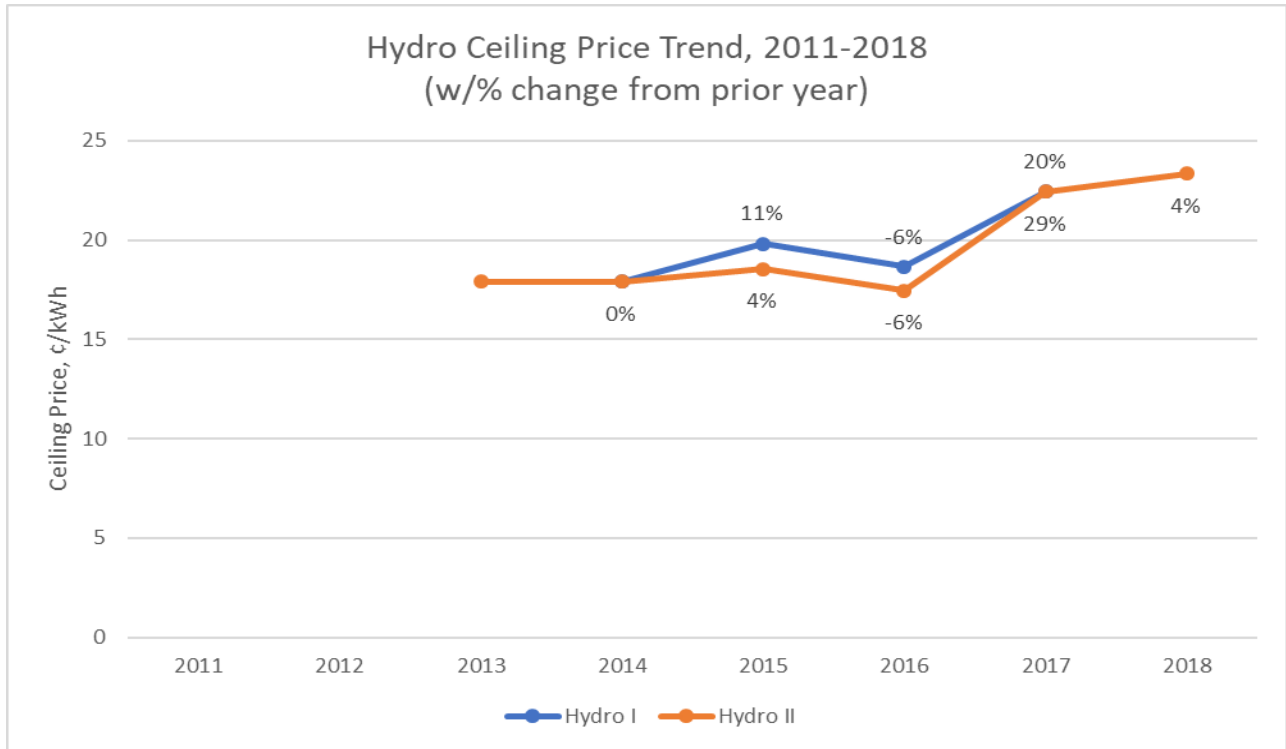


Table V provides a comparison of the proposed 2018 ceiling prices to those approved by the PUC for the 2017 REG Program:

[Table starts on next page]

Table V

2018 Renewable Energy Growth Program Recommended Ceiling Prices v. 2017 REG Approved Ceiling Prices (¢/kWh)				
2015 Technology Class	2017		2018	
	Size	Price (¢/kWh)	Size	Price (¢/kWh)
Small Solar I - 15 year tariff	1 - 10 kW	34.75	1 - 10 kW	31.25
Small Solar I - 20 year tariff	1 - 10 kW	30.85	1 - 10 kW	27.75
Small Solar II	10 - 25 kW	27.75	10-25 kW	26.55
Medium Solar	26 - 250 kW	22.75	26-250 kW	22.45
Commercial Solar	251 - 999 kW	18.75	251-999 kW	17.65
Large Solar	1 - 5 MW	15.05	1 – 5 MW	14.65
Small Wind	< 1 MW	21.45	< 1 MW	20.85
Large Wind	N/A	17.35	1- 5 MW	16.35
AD	501 - 1000 kW	20.15	≤ 5 MW	19.75
Hydro	250 - 1000 MW	22.45	≤ 5 MW	23.35

c. Recommended Allocation Plan

The 2018 REG Program will provide 40 MW of total nameplate capacity for fixed price and competitively bid projects. There will be 6.55 MW of capacity available for fixed priced projects with the small solar program and 33.45 MW available through a competitive bidding process. Overall, approximately 84% of the 2018 REG Program would be competitively bid. In 2017, it was approximately 76%. The increase in the percentage of capacity being competitively bid this upcoming year is due to the Board and OER recommending that the Medium Scale Solar Class be competitively bid during the commercial enrollment periods in 2018.

The Board recommends the following allocation plan for 2018, which is the same exact allocation plan that the Commission approved in 2017 and will continue one of the Board’s primary objectives in having a consistent and predictable program for the renewable market and

interested homeowners, businesses, municipalities, farmers and others to plan projects and participate in:

Table VI

Technology/Classes	Megawatt/Kilowatt Allocation
Small Solar I & II	6.55 MW DC
Medium Solar	3.0 MW DC
Commercial Solar	5.0 MW DC
Community Remote - Commercial Solar	3.0 MW DC
Large Solar	12.05 MW DC
Community Remote - Large Solar	3.0 MW DC
Small Wind	0.400 kW DC
Community Remote and Non-Community Remote Wind I, II and III	6.0 MW DC
Anaerobic Digestion I	1.0 MW DC
Anaerobic Digestion II	
Small Scale Hydropower I	
Small Scale Hydropower II	
Total	40 MW DC

d. 2018 REG Enrollment Plan Recommendations

The Board recommends the following for the 2018 REG Small Solar and Commercial Renewable Programs:

(1) Allow the MW rollover rule for anaerobic digestion, small scale hydropower and wind technologies to occur during the first and second enrollments in 2018. If there are no projects submitted in the third enrollment to National Grid for these technologies or other eligible technologies, then the MW capacity can be redirected to where there is the greatest demand for the overall program. This process has been implemented by National Grid during past program years.

(2) Continuous open enrollment for the Small Solar Program that will open on April 1st.

This is how the 2015-2017 REG Program have operated and will allow homeowners, businesses, and solar companies the ability to submit their tariff applications on a rolling basis to National Grid and would allow small solar project customers to participate when they are ready.

First Enrollment – The Board recommends the following for the first commercial enrollment in April 2018:

Table VII

Technology/Classes	Kilowatt Allocation
Small Solar I & II	6.55 MW DC*
Medium Solar	3.0 MW DC
Commercial Solar	5.0 MW DC
Community Remote - Commercial Solar	3.0 MW DC
Large Solar	12.05 MW DC
Community Remote - Large Solar	3.0 MW DC
Small Wind	0.400 kW DC
Community Remote and Non-Community Remote Large Wind	6.0 MW DC
Anaerobic Digestion & Small Scale Hydropower	1.0 MW DC
Total	40 MW DC

*The continuous Small Solar Program is from April 2018 to March 31, 2019.

Second and Third Enrollments – The second (August) and third (October) enrollment quantities will be dependent on the results of the first enrollment.

VII. CONCLUSION

After an extensive and transparent development process, the Board voted at its October 23, 2017 to approve the recommendations made in this Report. The Board and OER respectfully request the Commission to approve the recommendations contained in this Report.

LIST OF EXHIBITS

Exhibit A - Distributed Generation Board Members

Exhibit B – Summary of 2018 REG Recommendations:

- Rhode Island Distributed Generation Board Recommended Target Classes, Ceiling Prices, and Targets for the 2018 Renewable Energy Growth Program;
- Rhode Island Distributed Generation Board Recommended 2018 Technology Classes and Allocation Targets; and
- Rhode Island Distributed Generation Board Recommended 2018 Ceiling Prices (¢/kWh), by Technology Class

Exhibit C - Sustainable Energy Advantage Documents:

- Rhode Island Renewable Energy Growth Program: Research, Analysis, & Discussion in Support of 2018 Ceiling Price Recommendations, August 24, 2017, Sustainable Energy Advantage, LLC; Mondre Energy, Inc.;
- Rhode Island Renewable Energy Growth Program: Analysis, & Discussion in Support of 2nd Draft 2018 Ceiling Price Recommendations, September 27, 2017, Sustainable Energy Advantage, LLC; Mondre Energy, Inc.;
- Rhode Island Renewable Energy Growth Program: 2018 Ceiling Price Recommendations to DG Board, October 23, 2017, Sustainable Energy Advantage, LLC; Mondre Energy, Inc.

EXHIBIT A

Distributed Generation Board Members

Name	Representing	Voting or Non-Voting Member
Carol Grant	Office of Energy Resources	Non-Voting
Ian Springsteel	National Grid	Non-Voting
Kenneth Payne (Chair)	Energy Regulation and Law	Voting
Vacant	Construction of Renewable Generation	Voting
William Ferguson	Large Commercial/Industrial Users	Voting
Sam Bradner	Small Commercial/Industrial Users	Voting
Kari Lang	Residential Users	Voting
Vacant	Low Income Users	Voting
Sheila Dormody	Environmental Issues Pertaining to Energy	Voting

EXHIBIT B

Rhode Island Distributed Generation Board
Recommended Target Classes, Ceiling Prices, and Targets for the
2018 Renewable Energy Growth Program

The Board recommends that National Grid conduct three open enrollments and the continuous small solar program in 2018, with the goal of 40 MW of projects being awarded tariffs.

Rhode Island Distributed Generation Board
Recommended 2018 Technology Classes and Allocation Targets

Technology/Classes	Megawatt/Kilowatt Allocation
Small Solar I & II	6.55 MW DC
Medium Solar	3.0 MW DC
Commercial Solar	5.0 MW DC
Community Remote - Commercial Solar	3.0 MW DC
Large Solar	12.05 MW DC
Community Remote - Large Solar	3.0 MW DC
Small Wind	0.400 kW DC
Community Remote and Non-Community Remote Large Wind	6.0 MW DC
Anaerobic Digestion & Small-Scale Hydropower	1.0 MW DC
Total	40 MW DC

Rhode Island Distributed Generation Board
Recommended 2018 Ceiling Prices (¢/kWh), by Technology Class

Technology and Eligible Class	Ceiling Price
Small Solar I (15 Year Tariff)	31.25
Small Solar I (20 Year Tariff)	27.75
Small Solar II	26.55
Medium Solar	22.45
Commercial Solar	17.65
Community Remote – Commercial Solar	20.30
Large Solar	14.65
Community Remote – Large Solar	16.85
Small Wind	20.85
Large Wind	16.35
Community Remote – Large Wind	18.05
Anaerobic Digestion	19.75
Small-Scale Hydropower	23.35

EXHIBIT C

Sustainable Energy Advantage Documents