STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
PUBLIC UTILITIES COMMISSION

IN RE: REPORT AND RECOMMENDATION
OF R.I. DISTRIBUTED GENERATION BOARD DOCKET NO. 4536-B
ON 2016 RENEWABLE ENERGY GROWTH
CEILING PRICES, CLASSES AND TARGETS

COMMISSION'S THIRD SET OF DATA REQUESTS
DIRECTED TO BOARD
(December 17, 2015)

COMM 3-1. The Board's response to COMM 1-1 refers to the Wind III ceiling price, but the question asked for reasons supporting the addition of the new Wind III *class*. Please provide the specific justification for this new class, including how and why the Board decided to add this new class and the specific analysis and/or factors supporting this decision.

Please see COMM 2-3.

COMM 3-2. Christopher Kearns testified last year that the Board was working to develop a uniform, statewide property tax rate for residential and commercial renewable energy DG projects.

a) Provide a copy of the legislation, if any, dealing with this topic which the Board sponsored last year.

Attached is a copy of the 2015 legislation that was filed (Bill # S-707). The legislation was introduced on behalf of the Office of Energy Resources ("OER"), not the Distributed Generation Board ("Board").

b) Does the Board intend to continue this effort in the upcoming legislative session?[1] If yes, provide a copy of the legislative proposal(s), if any, it intends to submit to the General Assembly.

The OER, not the Board, plans to continue discussions with the sponsors of the 2015 legislation to examine opportunities to address the challenges with renewable energy and local property taxes this upcoming legislative session. There is no legislation to provide at this time. Over the last several months, OER has worked with municipalities to enact ordinances that waive property taxes on residential solar systems. As of December 1, 2015 North Smithfield, Smithfield, Foster and Barrington have passed ordinances.

[1] Transcript at 66 (Dkt. 4536-B).

c) Is the Board aware of other states which have implemented a similar property tax rate? If so, identify the states.

The Board is not aware.

COMM 3-3. On page 1 of Overview: Context (August 17, 2015, the filing states that the 2016 MW allocation is evaluated and proposed by the DG Standard Contract Board through a separate, parallel process. What other process does it parallel?

The Board used a substantively similar process that was used in developing the annual ceiling prices under the DG Standard Contracts program. The Board released and sought comments on the megawatt allocation plan.

COMM 3-4: Identify the specific interconnection tax rate and amount of interconnection taxes (dollars), if any, assumed for each proposed technology class. Include the page number, if any, where this information is located in the filing.

The Board and the OER assumes that the Commission's question refers to property taxes. Interconnection costs are assumed to be not subject to property taxes. Property taxes are calculated using the assumed generation equipment cost, mill rate and percentage taxable cost basis per year. No tax adjustments are made to the input assumptions included in the filing.

COMM 3-5: If not included in your response to COMM 3-4, what specific costs are included in "interconnection" which appears on Slide 12 of "Modeled Parameters" for all 3 wind classes. Also, confirm that the interconnection cost assumption has increased for both Wind I and Wind II from last year, with Wind I more than double [$107 v. $241 (Wind I) and $136 v. $181 (Wind II)], and if so, provide all data used to support these increased assumptions. Provide all data supporting the interconnection assumption for the new Wind III class as well ($160/kW).

The "Interconnection" cost assumptions appearing on Slide 12 of "Modeled Parameters" are the sum of two components. The first component is based on actual historic interconnection cost data for wind projects in Rhode Island and was provided by National Grid. The second component is forward-looking, and takes into account the increasing probability that projects of 500 kW or greater will require additional, safety-related, interconnection equipment not required of projects which have already interconnected to the RI grid. Based on estimates provided by National Grid, the safety and reliability equipment adder is assumed to be $200,000 per system, and – when required – is not sensitive to the quantity of kW installed (within the range covered by the REG Program). As a result, this cost adder is simply divided by the assumed kW size of the modeled project (1.65 MW for Wind I, 3.3 MW for Wind II and 4.95 MW for Wind III).

The Board and the OER confirms that the interconnection cost assumption has increased for Wind I and Wind II from last year. This increase is due almost entirely to the explicit addition

of safety and reliability equipment costs. Interconnection cost data provided by National Grid is attached.

COMM 3-6: These questions refer to Slide 12 of "Modeled Parameters" for Wind and the Summary of Response to Data Request for wind (no page number provided).

a) Is it true that the Modeled parameters from slide 12 represent the interconnection cost inputs used in the CREST Model?
Yes.

b) Is it true that the Data Response for interconnection costs for Wind I and II came from one, single project?
Setting aside the data provided by National Grid, the Data Response for Wind I and II came from a single wind *developer*. In addition, the text in the "source" column for the interconnection cost row suggests that these data came from a single wind project.

c) Assuming a) and b) are true, is the discrepancy between the data response and the CREST Model inputs due to the fact that other data was considered in the development of the CREST Model inputs, such as data from neighboring states and other sources?
As described in Comm 3-5, interconnection data from National Grid served as the basis for estimating current and future interconnection costs in RI. Limited interconnection cost data for MA projects was also available from the Massachusetts Clean Energy Center.

d) Explain exactly how Sustainable Energy arrived at the CREST Model inputs using data from multiple sources.

1. Did it average values from all different sources?

As described in Comm 3-5, the interconnection cost assumptions are based on National Grid data. The "base" component is an average of the data available for, and aligning with, historic RI costs for the Wind I and Wind II size categories, respectively. The derivation of the safety and reliability cost adder is described in Comm 3-5. These components combine to form the interconnection cost inputs on Slide 12.

The Capacity Factor, Annual Degradation, and Generation Equipment assumptions are unchanged from the 2015 Ceiling Price calculations (except for the Wind III Generation Equipment cost, which did not apply for 2015 CPs). These values were based not on straight averages, but on a combination of available data, discussion among stakeholders, OER and the

DG Board, and SEA's professional experience and judgement to align the inputs with the REG Program policy objectives.

2. **Are certain data deemed more credible than others or weighted differently for certain reasons?**

All data from all sources are considered. Actual data is preferred to estimates, where available. Data from projects which are operating or under construction is preferred to estimate from projects still in the exploratory or development stages. Data from Rhode Island activities are desirable, although regional data are critical to ensuring that Ceiling Price assumptions are competitive and reflect the broader trends in renewable energy markets.

3. **If yes, how are different factors, or data from different sources, weighted to arrive at one CREST Model input? Your answer should specifically relate to the interconnection cost CREST Model input, as well as all CREST Model inputs in general.**

The calculation specific to interconnection costs is provided in Comm 3-5. The Capacity Factor assumption was based on data provided by MA and RI market participants during the 2015 CP development process, and relates to actual production at operating RI wind projects located at inland (as opposed to coastal) sites where permits are more readily obtained. Installed and operating cost estimates are based on the intersection of historic actual costs collected from RI and the Northeast region, actual and estimated costs provided by stakeholders, and industry cost trends. In aggregate, the CREST assumptions are intended to fulfill the objectives of the REG Program at the least cost to RI Ratepayers.

4. **How confident is SEA in the veracity of data provided in stakeholder data responses?**

Unless verifiable as historic and actual, any cost or production estimate carries a degree of uncertainty. While projects are under development, it should be assumed that cost and production estimates will be refined over time. Projects early in the development cycle carry more uncertainty than projects late in the development cycle. It is assumed that stakeholders provide risk-adjusted estimates that reflect their projects' respective stages in the development cycle.

COMM 3-7. This question refers to the data request SEA issued on July 10, 2015.

A) Please confirm that SEA received 4 data responses to the July 10, 2015 request.

SEA received 4 data responses to the July 10, 2015 request.

Technology	# of responses submitted by class
Solar	(1) Medium Solar (2) Commercial Solar (2) Large Solar
Wind	(1) Wind I (1) Wind II (1) Wind III
Anaerobic Digestion	(1) AD II

B) State the number of projects in each technology class that received the July 10, 2015 data request from SEA.

The data request is not sent to individual projects, but rather to market participants who may be active in – or have knowledge of – one or more projects operating or under development in Rhode Island and/or the Northeast. Many market participants are active not only in different size categories, but also in different technologies. The distribution list developed by SEA and OER does not track each individual's market activity by technology and size category. The data request was sent to 241 active email addresses – with 225 possible respondents after accounting for SEA, OER, DG Board and other non-participant individuals.

C) Explain to the best of your knowledge the reason for the discrepancy between the number of projects that received the data request versus the number of projects that actually responded to the data request.

SEA, OER and the DG Board believe that there may be several explanations for the large gap between the number of individuals receiving the data request and the number of responses returned. First, it is possible that some entities are reluctant to share competitively sensitive cost and performance data with a state entity (or its consultant) for fear that such information may be subject to FOIA requests. Second, the RI market has a limited number of participants. Entities that have provided data in the past may not feel the need to provide it again, and entities not currently participating in the RI market have largely not taken the time to respond. Third, in contrast to the relatively high response rate in the program's early years, stakeholders may now be favoring a more reactionary strategy. Lastly, the list referenced above often includes multiple individuals at the same entity. This is intended to increase the probability that the subject entity will respond, but will not increase the number of responses.

COMM 3-8. Provide an update on the status of the solar quality assurance study approved by the PUC earlier this year.

The Board selected Cadmus to conduct the solar quality assurance study for renewable energy growth tariff installations. The Board anticipates that Cadmus will start their work in January 2016 and that the Board will provide bi-monthly updates to the Commission.

COMM 3-9. This question concerns zonal incentives.

a) While the decision to implement zonal incentives is within the discretion of National Grid, what is the Board's opinion on zonal incentives? Does it support implementation of zonal incentives, and if so, when?

The Board is supportive of the idea of locational incentives, as well as providing more transparent data to developers on optimal siting locations for renewables in the state. The Board plans to follow a similar process with zonal incentives that it did with the pilot program (SolarWise) linking energy efficiency programs with REG. As the Board did with the 2016 REG program development and with the state's energy efficiency programs (which was an option under the law), the Board will be examining the opportunity with National Grid to develop a zonal incentive program with the development of the 2017 REG program. The Board will be requesting that National Grid provide a presentation at the Board's February meeting to begin discussing the opportunities for zonal incentives and what data/analysis will need to be done in 2016 to establish a zonal incentive option for the 2017 REG program.

The Board also anticipates that the System Reliability Procurement (SRP) Solar DG Pilot Project (250 kilowatt ground mount system) in Little Compton will provide important data on the benefits that solar systems provide to an identified load-constrained area within the state. The SRP solar pilot project was awarded a REG tariff in the second enrollment of the 2015 REG program, and OER expects the solar system to be operational by June 1, 2016.

b) Are there any reasons of which the Board is aware, or based on the Board's own knowledge and understanding, as to why zonal incentives have not yet been implemented? The question is <u>not</u> asking why National Grid has chosen not to implement zonal incentives but whether there are reasons known by the Board, independent of National Grid's determination not to implement zonal incentives, as to why they have not been implemented.

During the first two years of the REG program, the Board was focused on implementing the new law. In the summer/fall of 2014 the Board was focused on preparing for the 2015 REG program, and this year the focus of the Board was to successfully integrate the 2016 REG program with the state's annual energy efficiency programs. The Board has been interested in pursuing zonal incentives and will begin examining the opportunities for the 2017 REG program. Finally, the Board recognized that the System Reliability Procurement

Solar DG Pilot Project would likely provide data that could inform such an effort. The pilot is anticipated to produce data in 2016.

c) Describe the extent of any discussions and analyses the Board has engaged in with either the Company or any party concerning the feasibility and appropriateness of implementing zonal incentives.

See response to COMM 3-9 (a) and (b).

COMM 3-10. Under the heading "Additional Comments" for Anaerobic Digestion, page 35, please clarify whether the feedback, "need to reduce burden to get projects approved," refers only to anaerobic digestion or to all projects.

The "Additional Comments" slide is intended to follow the Anaerobic Digestion section rather than be a part of it. This slide has three subsections, one applying to AD, one applying to hydro and one applying to the entire program. The stakeholder cited feedback falls into the last category.

COMM 3-11: a) Explain in plain English, in one sentence, what a P90 capacity factor of 19.6% means. B) Explain in plain English, in one sentence, what a P50 capacity factor of 23.8% means. Do not repeat the definitions of P90 and P50 capacity factors listed on page 35 in your answer.

a) A P90 capacity factor means that there is a 90% chance that the system will have an annual capacity factor greater than or equal to 19.6%.

b) A P50 capacity factor means that there is a 50% chance that the system will have an annual capacity factor greater than or equal to 23.8%.

COMM 3-12: Why is the wind production data on page 29 based on 2011 values and not a more recent year?

Only the Portsmouth High School project (noted with an asterisk) uses 2011 data. All other project compare 2013 and 2014 production data. The Portsmouth High School project relies on 2011 values because the turbines have been idle since 2012, and 2011 represents the last full year of production values available.

COMM 3-13: Why are projects assumed to require safety equipment such as islanding excluded from solar and wind interconnection assumptions?

To avoid double-counting. Please refer to Comm 3-5. The historic cost average is calculated without these projects. Then, an estimated cost adder it applied to the Ceiling Price

interconnection cost assumptions. In this way, the Ceiling Prices can take the additional cost of safety and reliability into account without concern that projects which have already been subject to these costs are affecting the baseline average.

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S T A T E O F R H O D E I S L A N D

IN GENERAL ASSEMBLY

JANUARY SESSION, A.D. 2015

A N A C T

RELATING TO TAXATION

Introduced By: Senators Sosnowski, Archambault, and Conley

Date Introduced: March 18, 2015

Referred To: Senate Finance

(Administration)

It is enacted by the General Assembly as follows:

SECTION 1. Title 44 of the General Laws entitled "TAXATION" is hereby amended by adding thereto the following chapter:

CHAPTER 3.1

RENEWABLE ENERGY SYSTEMS PROPERTY TAXATION

44-3.1-1. Purpose. -- The purpose of this chapter is to facilitate and provide a predictable process for how commercial and residential renewable energy systems are assessed and taxed. The goal of this chapter is to provide predictability to homeowners, businesses, municipalities and renewable energy developers on property valuation tax rates and revenues for renewable energy systems. This process shall enhance and improve the state's renewable energy economy and reduce the costs of renewable energy.

44-3.1-2. Definitions. -- When used in this chapter, the following terms shall have the following meanings:

(1) "Division" means the Rhode Island division of municipal finance;

(2) "Office" means the Rhode Island office of energy resources; and

(3) "Renewable energy system" means renewable energy systems using eligible renewable energy resources as defined § 39-26-5.

44-3.1-3. Renewable energy systems - Exemption. -- The city or town councils of the various cities and towns may, by ordinance, exempt from taxation any renewable energy system located in the city or town.

44-3.1-4. Renewable energy systems property taxation. -- Effective July 1, 2015, the office shall annually establish in consultation with the division an appropriate methodology as to both the valuation and taxation of commercial and residential renewable energy systems. In establishing the tax rates for the renewable energy systems, the office shall convene a stakeholder group comprised of members with expertise in municipal property taxes and renewable energy technologies and system installations. The office, in consultation with the division, shall release the residential and commercial renewable energy system property tax rates for public comment, which shall be subject to the rulemaking provisions of chapter 35 of title 42, including, but not limited to, § 42-35-3(a)(1) which provides for at least thirty (30) days public notice prior to the intended action. The rulemaking process shall be completed prior to the residential and commercial renewable energy property tax rates being adopted by the division on or before January 1, 2016 and annually thereafter. Further, any stakeholder meetings shall be posted in accordance with the provisions of § 42-46-6.

SECTION 2. Section 44-3-21 of the General Laws in Chapter 44-3 entitled "Property Subject to Taxation" is hereby repealed.

~~**44-3-21. Renewable energy systems -- Exemption. --** The city or town councils of the various cities and towns may, by ordinance, exempt from taxation any renewable energy system located in the city or town.~~

SECTION 3. This act shall take effect upon passage.

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EXPLANATION

BY THE LEGISLATIVE COUNCIL

OF

A N A C T

RELATING TO TAXATION

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This act would establish methodologies to assess and tax commercial and residential renewable energy systems.

This act would take effect upon passage.

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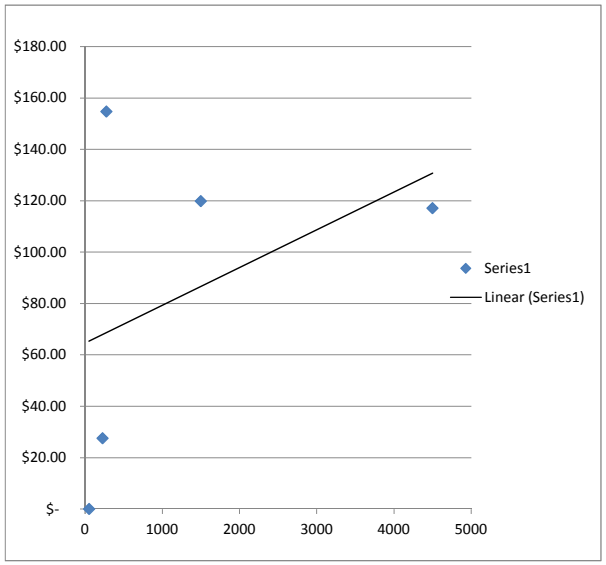
DG WR Number	Total	Construction	Study	DG WR Number	WR Description	City/Town	State	Time from App to Final Approval	Month Int'd	Year Int'd	Name Plate Rating kW (DG_Tab)	Total Cost per kW DC (85% derate)	Fuel_Type (DG_Tab)	3Vo Installed?	DTT Installed?
13115934	$527,255.00	$482,255.00	$45,000.00	13115934	RI-225 / 4500kw / new service wr 13113350	PROVIDENCE	RI	488.00	10	2012	4500	$ 117.17	Wind	No	Yes
12995866	$179,767.00	$169,767.00	$10,000.00	12995866	RI-196 / 1500kw / new service wr 10070375	NORTH KINGSTOWN	RI	750.00	11	2012	1500	$ 119.84	wind	No	No
13511760	$42,539.41	$38,289.41	$4,250.00	13511760	RI-169 / 275kw Transitioned to STORMS from database	TIVERTON	RI	804.00	6	2012	275	$ 154.69	Wind	No	No
13339553	$6,200.00	$1,200.00	$5,000.00	13339553	RI-168 / 225kw Transitioned to STORMS from database. Needs to be reviewed.	PORTSMOUTH	RI	752.00	3	2012	225	$ 27.56	Wind	No	No
13433977	$0.00	$0.00	$0.00	13433977	RI-195 / 50kw Transitioned to STORMS from the database.	BRISTOL	RI	569.00	5	2012	50	$ -	Wind	No	No

$3,442,378.41

$38,092,476.62

Average $/kW AC	$127.73
Averge $/kW DC	$108.57
Average RI AC	$132.93
Average RI DC	$112.99



RI AC Only	25896.6
RI DC Only	30466.58824
AC	298223.66
DC	350851.3647

Date Issued Final A	(All)
Month Int'd	(All)

			Values	
Year Int'd	**Fuel_Type (DG_Tab)**	**category**	**Max of Total**	**Count of DG WR Number**
2012	**Solar**	201 - 499 kW	1080	29
		50 - 200 kW	35815.34	52
		500 - 3MW	482977.2	35
	Wind	201 - 499 kW	42539.41	2
		50 - 200 kW	17611.03	2
		500 - 3MW	192417.3	5
		Over 3 MW	527255	2
	Hydro	201 - 499 kW	5083	1
2013	**Solar**	201 - 499 kW	51633	22
		50 - 200 kW	10312	48
		500 - 3MW	1085340	65
		Over 3 MW	460110	1
	Wind	Over 3 MW	759600	1
	AD	500 - 3MW	39962	1
2014	**Solar**	201 - 499 kW	63920	21
		50 - 200 kW	90828.28	45
		500 - 3MW	1428940	39
		Over 3 MW	1523390	5
	Wind	500 - 3MW	14595	1
2015	**Solar**	201 - 499 kW	58500	17
		50 - 200 kW	22365	31
		500 - 3MW	367000	6
		Over 3 MW	829590	1
Grand Total			**1523390**	**432**

Year Interconnected	Fuel Type	Size Category	Average Cost	Max Cost	Min Cost
2012	Solar	201 - 499 kW	$47.59	$1,080.00	$0.00
	Solar	50 - 200 kW	$1,299.10	$35,815.34	$0.00
	Solar	500 - 3MW	$123,269.06	$482,977.20	$0.00
	Wind	201 - 499 kW	$24,369.71	$42,539.41	$6,200.00
	Wind	50 - 200 kW	$8,805.52	$17,611.03	$0.00
	Wind	500 - 3MW	$170,562.97	$192,417.30	$133,750.00
	Wind	Over 3 MW	$384,877.50	$527,255.00	$242,500.00
	Hydro	201 - 499 kW	$5,083.00	$5,083.00	$5,083.00
2013	Solar	201 - 499 kW	$4,298.86	$51,633.00	$0.00
	Solar	50 - 200 kW	$214.83	$10,312.00	$0.00
	Solar	500 - 3MW	$205,610.55	$1,085,340.00	$0.00
	Solar	Over 3 MW	$460,110.00	$460,110.00	$460,110.00
	Wind	Over 3 MW	$759,600.00	$759,600.00	$759,600.00
	AD	500 - 3MW	$39,962.00	$39,962.00	$39,962.00
2014	Solar	201 - 499 kW	$10,785.76	$63,920.00	$0.00
	Solar	50 - 200 kW	$4,071.03	$90,828.28	$0.00
	Solar	500 - 3MW	$236,828.65	$1,428,940.00	$0.00
	Solar	Over 3 MW	$1,080,799.47	$1,523,390.00	$479,057.33
	Wind	500 - 3MW	$14,595.00	$14,595.00	$14,595.00
2015	Solar	201 - 499 kW	$5,866.35	$58,500.00	$0.00
	Solar	50 - 200 kW	$995.79	$22,365.00	$0.00
	Solar	500 - 3MW	$210,180.67	$367,000.00	$2,500.00
	Solar	Over 3 MW	$829,590.00	$829,590.00	$829,590.00