

**TO:** Rhode Island Public Utilities Commission

**FROM:** Carrie Gilbert, Daymark Energy Advisors on Behalf of the Division of Public Utilities and Carriers

**DATE:** January 24, 2020

**SUBJECT:** DOCKET NO. 4983 – The Rhode Island Distributed Generation Board’s Report and Recommendations Relating to the 2020 Renewable Energy Growth Classes, Ceiling Prices, and Capacity Targets: **Revised to reflect January 10, 2020 Revisions from DG Board**

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The Rhode Island General Assembly enacted the REG Program (Section 26.6 of Title 39) in June 2014. The REG Program replaced the Distributed Generation Standard Contracts program and covers the period from 2015 through 2019. The REG Program originally had a target to install 160 MW between 2015 and 2019. In June 2017, Senate Bill 112 extended the program for an additional 10 years. This bill set a target of 40 MW per year during the 2020-2029 timeframe.

On October 23, 2019, the Rhode Island Distributed Generation Board (“Board”) filed its recommendations for the 2020 program year. These included recommendations around renewable energy class definitions, ceiling prices for each class and capacity allocations to each class. On January 10, 2020, Sustainable Energy Advantage filed a revised recommendation for certain classes based on the fact that President Trump had signed HR 1865 - Further Consolidated Appropriations Act, 2020 into law as Public Law (P.L.) 116-94.

Overall, I believe that the 2020 prices as revised on January 10 and class allocations as proposed in the October 23, 2019 memo are reasonable. This memo documents the analyses and review that I performed to arrive at this conclusion.

## **RENEWABLE ENERGY CLASSES & TARIFF LENGTH CHANGES**

For the 2020 program, the Board is proposing two major changes.

1. They are proposing to consolidate the Large and Small Wind classes into a single Wind class<sup>1</sup>. The rationale provided is the lack of applications for small wind projects in recent years.
2. The Board is also proposing to remove the 20-year tariff option for the Small Solar I tranche. Formerly, the program offered both 15-year and 20-year tariff options for this class. The Board is proposing to remove this category because the majority of applications were interested in the 15-year tariff<sup>2</sup>.

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<sup>1</sup> Direct Testimony of C. Kearns, pg. 20, lines 2-4.

<sup>2</sup> Direct Testimony of C. Kearns, pg. 20, lines 8-11

The table below compares the Renewable Energy Classes approved in the 2019 Docket and those proposed for the 2020 Docket.

**Table 1: 2019 and 2020 Renewable Technology and Eligible Classes**

<b>2019 APPROVED RENEWABLE CLASS</b>	<b>SYSTEM SIZE</b>	<b>2020 PROPOSED RENEWABLE CLASS</b>	<b>SYSTEM SIZE</b>
Small Solar I (15 & 20-yr)	1-10 kW DC	Small Solar I (15-yr)	1-10 kW DC
Small Solar II	11-25 kW DC	Small Solar II	11-25 kW DC
Medium Solar	26-250 kW DC	Medium Solar	26-250 kW DC
Commercial Solar	251-999 kW DC	Commercial Solar	251-999 kW DC
Large Solar	1-5 MW DC	Large Solar	1-5 MW DC
Small Wind	10- 999 kW DC	Wind	0-5 MW DC
Large Wind	1-5 MW DC		
Anaerobic Digestion	≤ 5 MW DC	Anaerobic Digestion	≤ 5 MW DC
Hydro	≤ 5 MW DC	Hydro	≤ 5 MW DC
CRDG- Commercial Solar	251-999 kW DC	CRDG- Commercial Solar	251-999 kW DC
CRDG- Large Solar	1-5 MW DC	CRDG- Large Solar	1-5 MW DC
CRDG- Wind	0-5 MW DC	CRDG- Wind	0-5 MW DC

## **PROPOSED MW ALLOCATION & 2019 ENROLLMENT RESULTS**

The Board’s recommended 2020 allocation is included as Attachment II. The Table below compares the 2019 Approved MW allocation with the 2020 Proposed MW allocation. The overall amount of renewable energy that the DG Board is requesting for 2020 is 46.5 MW, which represents a, 8.8 MW reduction over what was approved in 2019. This amount is set based upon 40 MW plus additional capacity from terminated projects that were awarded tariff capacity from the 2016-2018 plan years that were made available since the capacity was set for 2019.<sup>3</sup>

<sup>3</sup> Direct Testimony of C. Kearns, page 20 line 22-page 21 line 1.

**Table 2. Comparison of the 2019 Approved MW Allocation and the 2020 Proposed MW Allocation**

<b>CLASS</b>	<b>2019 APPROVED ALLOCATION</b>	<b>2020 PROPOSED ALLOCATION</b>	<b>DELTA</b>	<b>INCREASE OR REDUCTION?</b>
Small Solar I & II	12.2	7.0*	(5.3)	Reduction
Medium Solar	6.8	3.0	(3.8)	Reduction
Commercial Solar	7.3	8.2	0.9	Increase
Large Solar	11.3	18.3	7.0	Increase
Wind (Sm & Lg)	0.4	3.0*	(3.4)	Reduction
CRDG- Wind	6.0			
Anaerobic Digestion	1.0	1.0*	0.0	No Change
Hydro				
CRDG- Commercial Solar	5.0	3.0	(2.0)	Reduction
CRDG- Large Solar	5.3	3.0	(2.3)	Reduction
<b>Total</b>	<b>55.3</b>	<b>46.5</b>	<b>8.8</b>	<b>Reduction</b>

*\*For the purposes of MW allocations, the DG Board lumps together the following classes: Small Solar I & II, Wind (large & small) & CRDG- Wind, and AD & Hydro.*

Of the 9 Proposed MW allocation groups in the table above, the DG Board is requesting reductions in the MW Allocations of 5 classes: (1) Small Solar I & II, (2) Medium Solar, (3) Wind & CRDG- Wind, (4) CRDG- Commercial Solar, and (5) CRDG- Large Solar.

Table 3, below, compares the 2019 Approved MW Allocations and the 2019 Enrollment results. The table shows that the overall program was undersubscribed by about 8 MW. Of the 5 classes with proposed reductions for 2020, the medium solar class was the only one oversubscribed in 2019. At first glance it appears that the Wind class was also oversubscribed, but if you combine the Wind and CDRG-Wind, the total amount of wind selected was less than the total wind allocation for 2019. In the solar classes, the changes represent a move from the smaller categories (small and medium solar) to the larger categories. Given the larger categories have lower ceiling prices, this will result in a more cost-effective purchase of solar energy. The other reductions are reasonable given the undersubscription of those tranches.

**Table 3. Comparison of the 2019 Approved MW Allocation and the 2019 Enrollment Results**

<b>CLASS</b>	<b>2019 APPROVED ALLOCATION</b>	<b>2019 ENROLLMENT RESULTS</b>	<b>DELTA</b>	<b>OVER OR UNDER SUBSCRIBED?</b>
Small Solar I & II	12.23	4.87 <sup>4</sup>	(7.36)	Undersubscribed
Medium Solar	6.8	7.3	0.50	Oversubscribed
Commercial Solar	7.3	8.3	1.00	Oversubscribed
Large Solar	11.3	15.2	3.90	Oversubscribed
Wind	0.4	4.5	4.10	Oversubscribed
CRDG- Wind	6.0	0.0	(6.00)	Undersubscribed
Anaerobic Digestion	1.0	0.5	(0.50)	Undersubscribed
Hydro				
CRDG- Commercial Solar	5.0	3.9	(1.10)	Undersubscribed
CRDG- Large Solar	5.3	3.3	(2.00)	Undersubscribed
<b>Total</b>	<b>55.3</b>	<b>47.7</b>	<b>(7.6)</b>	<b>Undersubscribed</b>

## PROPOSED CEILING PRICE CHANGES

The ceiling prices presented in the Board’s October report as well as their January 10 revised 2020 ceiling prices are included as Attachment I to this memo. The DG Board filed a memo with amended ceiling prices on January 10, 2020 outlining the effect of P.L. 116-94 on the previously proposed ceiling prices. P.L. 116-94 extends “the Production Tax Credit (PTC) and provisions permitting taxpayers to claim such projects as “energy property” eligible for the federal Investment Tax Credit (ITC) to projects starting construction no later than December 31, 2020.<sup>5</sup>”

Table 4, below, compares the 2019 Approved Ceiling Prices and the 2020 Proposed-Amended Ceiling Prices.

<sup>4</sup> The 2019 Plan Year allows continued enrollment for the Small Solar classes through March 31, 2020. The Small Solar I&II 2019 enrollment results in this table include results through January 21, 2020.

<sup>5</sup> DG Board Memorandum. Impact of Public Law 116-94 (Further Consolidated Appropriations Act, 2020) on Recommended 2020 REG Program Ceiling Prices (R.I. PUC Docket 4983).

**Table 4. Comparison of the 2019 Approved Ceiling Prices and the 2020 Proposed Ceiling Prices.**

<b>CLASS</b>	<b>2019 APPROVED CEILING PRICE</b>	<b>2020 PROPOSED CEILING PRICE</b>	<b>PERCENT CHANGE</b>
Small Solar I (15 y)	28.45	29.65*	4%
Small Solar I (20 y)	24.95		
Small Solar II	27.65	23.45	-18%
Medium Solar	23.55	21.15	-11%
Commercial Solar	17.85	18.25	2%
Large Solar	15.15	13.65	-11%
Wind	24.05	18.85**	-28%
	19.35		
Anaerobic Digestion	20.85	15.35	-36%
Hydro	27.15	21.45	-27%
CRDG- Commercial Solar	20.53	20.99	2%
CRDG- Large Solar	17.42	15.7	-11%
CRDG- Wind	21.65	21.05	-3%

\*The 2020 Proposed Small Solar Ceiling Price reflects the proposed elimination of the 20-year tariff option

\*\*The 2020 Proposed Wind Ceiling Price reflects the proposed consolidation of the Small and Large Wind categories

Ceiling prices for 2020 were generally determined in the same manner as in previous years. The NREL’s Cost of Renewable Energy Spreadsheet Tool (CREST) model was used and inputs were developed using stakeholder input and other research. CREST input assumptions were updated for each technology and class.

Small Solar I and Commercial Solar experienced cost increases, while all other solar classes will have lower ceiling prices in 2020. The federal Investment Tax Credit (ITC) has decreased from 30% to 26% for projects beginning construction in 2020 putting upward pressure on ceiling prices. The table in Attachment III isolates the effect of the loss of the ITC on the Solar classes as provided by Witness Kennerly. Changes to the RI electrical code requiring rapid shutdown at the module level, and a higher assumed return on equity were other factors pushing solar ceiling prices higher. Counteracting that upward pressure were lower installed costs for all categories except for small solar, reductions in interest rate assumptions and increase in share of debt financing.<sup>6</sup> Small Solar I’s increase can be attributed to higher installed costs and a move toward home equity lines of credit for financing those projects. Commercial Solar’s increase is due to a lower installed cost decline and increased site leasing costs for that category.<sup>7</sup>

<sup>6</sup> Pre-Filed Direct Testimony of Jim Kennerly. Page 50-53.

<sup>7</sup> Pre-Filed Direct Testimony of Jim Kennerly. Page 54, lines 1-8.

The January 10<sup>th</sup> memo revises down the ceiling prices for the Wind, CRDG- Wind, Anaerobic Digestion, and Hydro classes as these classes seemed to benefit the most from passage of P.L. 116-94 . The Board and SEA further justify the revisions, assuming that projects in these four classes will likely choose the ITC in lieu of PTC benefits due to the following factors:

1. “The interaction of the PTC and the ITC in lieu of PTC with the time value of money (specifically, the fact that the ITC in lieu of PTC is assumed to provide 100% of its benefits at the time of commercial operation, while the PTC is over 10 years);
2. The scale of the effective ITC in lieu of PTC percentage (18%-30%) relative to the much smaller scale of the PTC benefits on a ¢/kWh basis; and
3. (For Hydro and AD) The larger (24%-30%) effective ITC in lieu of PTC relative to the 60% effective value for Wind (18%).<sup>8</sup>”

The figure below compares the initially proposed ceiling prices for the four affected classes and the adjustments based on PTC benefits and ITC in lieu of PTC benefits

**Figure 1. Table 3 from the DG Board’s Amended Ceiling Price Memo<sup>9</sup>**

*Table 3: Comparison of Potential 2020 Ceiling Prices with Pre- and Post-P.L. 116-94 Assumptions (¢/kWh and % Change)*

Category	Pre-P.L. 116-94 Recommended 2020 Ceiling Prices	2020 Ceiling Price Assumptions + PTC	2020 Ceiling Price Assumptions + ITC in Lieu of PTC (ILoPTC)
Wind	21.40	20.35 (-5%)	18.85 (-14%)
Wind - CRDG	23.85	22.85 (-4%)	21.05 (-12%)
Anaerobic Digestion	21.15	19.55 (-8%)	15.35 (-27%)
Hydro	27.05	26.05 (-4%)	21.45 (-23%)

The decrease in wind costs as well as costs for anaerobic digesters and small-scale hydro can be attributed P.L. 116-94 as discussed above. Additionally target after tax return on equity assumptions were increased for hydro and anaerobic digesters to match wind projects and then adjusted down slightly with the passage of P.L. 116-94.<sup>10</sup>

The ceiling prices are reasonable and were appropriately adjusted with the passage of P.L. 116-94.

## CARPORT ADDER

The Board has proposed the addition of a carport adder of \$0.06/kWh. This adder would apply to “the portion of the direct current (DC) nameplate capacity of a Solar DG project that is installed above a

<sup>8</sup> DG Board Memorandum. Impact of Public Law 116-94 (Further Consolidated Appropriations Act, 2020) on Recommended 2020 REG Program Ceiling Prices (R.I. PUC Docket 4983).

<sup>9</sup> DG Board Memorandum. Impact of Public Law 116-94 (Further Consolidated Appropriations Act, 2020) on Recommended 2020 REG Program Ceiling Prices (R.I. PUC Docket 4983).

<sup>10</sup> Pre-Filed Direct Testimony of Jim Kennerly. Page 56, line 23 – page 57, line 2.

permeable and/or non-permeable existing or new parking area and associated access and walkway areas (as recognized by the local municipal building and/or zoning department), which is installed in a manner that maintains the function of the area beneath the carport.”<sup>11</sup> The Board is proposing that the carport adder be implemented on a pilot basis for the 2020 program year.

The amount of the carport adder is based on the carport adder in Massachusetts’s Solar Massachusetts’s Renewable Target (SMART) program. This adder was derived by Sustainable Energy Advantage for the Massachusetts Department of Energy Resources (DOER). A bidder proposing a carport project would bid a price without the adder and the carport adder would be added to the output from all capacity mounted on a carport.

The Board has provided testimony and several exhibits in support of the carport adder including:

- CK Schedule 1-2020 REG Program – Carport Adder Scenarios. This document details scenarios for various solar projects with carports. It quantifies the costs of the carport adder for several solar project types.
- JK Schedule 6- Memorandum Offering Qualitative Analysis of Docket 4600 Benefits and Costs of Proposed Carport Adder. This memo provides a qualitative analysis of the benefits of carport projects. Potential benefits include: power system level benefits (reduced interconnection costs due to assumed proximity to load); customer-level benefit (lower bid price due to reduced interconnection costs, opportunities to install vehicle charging); and societal-level impacts (preservation of carbon sink value, value of preserving open space, reduced use of gasoline is EV charging is employed at site, meeting state renewable energy goals). The cost would be the carport adder, which would be paid by National Grid customers.
- JK Schedule 7 – SEA Analysis of Carport Analysis of Carport Adder Given Docket 4600 Broad Goals. This document presents the 8 broad goals of Docket 4600 and rates the carport adder’s impact on those goals. SEA rates the carport adder as having a positive impact on 6 goals, a neutral impact on 1 goal, and finds one to be non-applicable.
- JK Schedule 8 – MA DOER Derivation of Original AM SMART Program Solar Adder (Based on 2016 SEA Cost Analysis). This document presents the analysis behind the solar project adder in Massachusetts’s SMART program. It shows that the premium for solar canopies over greenfield projects was \$59/MWh for host owned and \$53/MWh for Third-Party owned systems.

In addition to the information provided by the DG Board outlined above, Mr. Springsteel of National Grid provides an endorsement of the carport adder in his testimony. He notes that the carport adder would support 3 out of the 8 policy goals detailed by the PUC’s Guidance on Goals, Principles and Values for Matters Involving the Narragansett Electric Company d/b/a National Grid (Docket 4600 Guidance) including the following:

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<sup>11</sup> Distributed-Generation Board’s Recommendations, page 14-15.

- (4) Prioritize and facilitate increasing customer investment in their facilities 4 (efficiency, distributed generation, storage, responsive demand, and the 5 electrification of vehicles and heating) where that investment provides recognizable net benefits;
- (5) Appropriately compensate distributed energy resources for the value they provide 9 to the electricity system, customers, and society; and
- (8) Align distribution utility, customer, and policy objectives and interests through the regulatory framework, including rate design, cost recovery, and incentives.

In response to a proposal made in Docket 4892 for a separate carport class for the 2019 REG Plan Year, Commissioner Anthony submitted a memo to Chairperson Curran and Commissioner Gold on the topic of Carport Adders. In this memo, Commissioner Anthony suggests that a carport adder such as that proposed in this docket might be preferable to the separate class proposed in Docket 4892. She states, "Section 39-26.6-22 allows National Grid to "propose other incentive payments to achieve other technical or public policy objectives that provide identifiable benefits to customers. Any incentive payment adders must be approved by the Commission, and shall not be counted as part of the bid price when the bids are selected at an enrollment event."<sup>12</sup>

Further, Commissioner Anthony states, "National Grid and the Commission would have to address several important questions, including: what public policy objective is the proposal designed to achieve? What does identifiable mean? Must the identifiable benefits be quantifiable and/or verifiable? How do those benefits accrue to customers?"<sup>13</sup>

The information submitted in this case has provided a compelling case for the argument that the carport adder is fulfilling the PUC's policy objectives and has provided a qualitative discussion of the benefits and a quantitative analysis of the costs. Given the proposed pilot nature of the adder, I support the Board's recommendation, with the understanding that the 2020 program year will allow the Board to get a better understanding of the quantitative benefits of the adder.

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<sup>12</sup> Commissioner Abigail Anthony. Memo to Chairperson Curran and Commissioner Gold. Docket 4892. February 15, 2019. Page 9.

<sup>13</sup> Ibid, page 9

## Attachment I

### Summary of 2020 Proposed Ceiling Prices

Class	2020 Proposed Ceiling Price (¢/kWh)	2020 Proposed-Amended Ceiling Price (¢/kWh)
Small Solar I	\$29.65	\$29.65
Small Solar II	\$23.45	\$23.45
Medium Solar	\$21.15	\$21.15
Commercial Solar	\$18.25	\$18.25
Large Solar	\$13.65	\$13.65
Wind	\$21.40	\$18.85
Anaerobic Digestion	\$21.15	\$15.35
Hydro	\$27.05	\$21.45
CRDG- Commercial Solar	\$20.99	\$20.99
CRDG- Large Solar	\$15.70	\$15.70
CRDG- Wind	\$23.85	\$21.05

**Attachment II**

## Summary of 2020 Proposed Allocations

<b>Class</b>	<b>2020 Proposed Allocation (MW)</b>
Small Solar I & II	7.0
Medium Solar	3.0
Commercial Solar	8.2
Large Solar	18.3
Wind	
CRDG- Wind	3.0
Anaerobic Digestion	
Hydro	1.0
CRDG- Commercial Solar	3.0
CRDG- Large Solar	3.0
<b>Total</b>	<b>46.5</b>

### Attachment III

Effect of Stepdown of ITC Benefits on Solar Class Ceiling Prices<sup>14</sup>

<b>Comparison of Proposed Prices to 2019 Prices With Reduction in ITC Percentage</b>				
<b>Category</b>	<b>Tariff Term (Years)</b>	<b>% Change in 2019 Prices (Assuming ITC Step-Down)</b>	<b>Proposed 2019-2020 % Change</b>	<b>% Change Net of ITC Step-Down</b>
Small Solar I	15	4%	4%	0%
Small Solar II	20	5%	-15%	-20%
Medium Solar	20	5%	-10%	-15%
Commercial Solar	20	4%	2%	-2%
Large Solar	20	4%	-10%	-14%

<b>Comparison of Proposed Prices to 2019 Prices With Reduction in ITC Percentage</b>				
<b>Category</b>	<b>Tariff Term (Years)</b>	<b>% Change in 2019 Prices (Assuming ITC Step-Down)</b>	<b>Proposed 2019-2020 % Change</b>	<b>% Change Net of ITC Step-Down</b>
Community Remote – Commercial Solar	20	4%	2%	-2%
Community Remote – Large Solar	20	4%	-10%	-14%

<sup>14</sup> Direct Testimony of Jim Kennerly, JK Schedule 5, pg. 70.