DAYMARK ENERGY ADVISORS

MEMORANDUM

TO: RHODE ISLAND PUBLIC UTILITIES COMMISSION

FROM: CARRIE GILBERT—DAYMARK ENERGY ADVISORS ON BEHALF OF THE DIVISION OF PUBLIC UTILITIES AND CARRIERS

DATE: JANUARY 17, 2017

SUBJECT: DOCKET NO. 4774 – THE RHODE ISLAND DISTRIBUTED GENERATION BOARD'S REPORT AND RECOMMENDATIONS RELATING TO THE 2017 RENEWABLE ENERGY GROWTH CLASSES, CEILING PRICES, AND CAPACITY TARGETS

In this memo, I summarize the results of our review of the ceiling prices filed by the Rhode Island Distributed Generation Board ("Board") on November 15, 2017. This filing is the fifth report filed by the Board, as prior reports (2011, 2012, and 2013) were filed by the Rhode Island Office of Energy Resources ("OER"). This filing is the fourth report in support of the Renewable Energy Growth ("REG") Program, which replaced the Distributed Generation Standard Contracts Program ("DGSC") Program that expired on December 31, 2014. Attachments I and II to this memorandum contains a copy of Table III and Table IV from the Board report. Attachment III shows the class allocation recommended for 2018. Overall, I believe that the 2018 prices and class allocations are reasonable. I discuss below the analyses and review that I performed to arrive at this conclusion.

The Rhode Island General Assembly enacted the REG Program (Section 26.6 of Title 39) in June 2014. The REG Program replaced the DGSC program and covers the period from 2015 through 2019. The REG Program has a target to install 160 MW of renewable energy according to a five-year schedule:

- 25 MW in 2015;
- 40 MW in 2016;
- 40 MW in 2017;
- 40 MW in 2018; and
- Remainder to reach 160 MW target in 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 time frame.

The Board's November filing only included information on bid data from the first enrollment of 2017, however, bid data including the second enrollment period was provided by Sustainable Energy Advantage to Daymark in September. These data indicated that following the 2nd enrollment period, the large and commercial solar tranches were oversubscribed. The Medium Solar tranche is almost fully subscribed for 2017, while the Small Solar I & II allocation is entirely subscribed. There were several applications for wind projects and the Wind tranche was fully subscribed. There were no applications for the anaerobic digester or small-scale hydropower in 2017. In total 34.36 MW of the available 40 MW were procured in the 2017 program.

RENEWABLE ENERGY CLASSES

The renewable energy classes and system size eligibility has changed from 2017 to 2018 with the condensing of some categories. Wind classes I, II, and III have been lumped together into one Large Wind category, as has both Anaerobic Digestion ("AD") classes and Hydropower classes ("Hydro"). Hydro and AD eligible system sizes were changed to encompass all sizes of system less than or equal to 5000 kW DC. Table 1 below shows a side-by-side comparison of the 2017 and 2018 classes.

Table 1: 2017 and 2018 Renewable Technology and Eligible Classes

2017 Technology	2017 Eligible System Size	2018 Technology	2018 Eligible System Sizes
Small Solar I (Host Owned)	1-10 kW DC	Small Solar I (Host Owned)	1-10 kW DC
Small Solar I (3rd party owned/financed)	1-10 kW DC	Small Solar I (3rd party owned/financed)	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
Community Remote-Commercial Solar	251-999 kW DC	Community Remote-Commercial Solar	251-999 kW DC
Large Solar	1000-5000 kW DC	Large Solar	1000-5000 kW DC
Community Remote-Large Solar	1000-5000 kW DC	Community Remote-Large Solar	1000-5000 kW DC
Small Wind	10-999 kW DC	Small Wind	10-999 kW DC
Wind I	1500-2999 kW DC	Large Wind	1000-5000 kW DC
Wind II	3000-5000 kW DC		
Wind III	3000-5000 kW DC		
Community Remote-Wind I, Wind II, and Wind III	1500-5000 kW DC	Community Remote-Large Wind	1000-5000 kW DC
Anaerobic Digester I	150-500 kW DC	Anaerobic Digester	≤ 5000 kW DC
Anaerobic Digester II	501 -1000 kW DC		
Small Scale Hydropower I	10-250 kW DC	Small Scale Hydropower	≤ 5000 kW DC
Small Scale Hydropower II	251-1000 kW DC		

CEILING PRICES

The ceiling prices presented in the Board's November report are included as Attachment 1 to this memo.

Ceiling prices for 2018 were generally determined in the same manner— the National Renewable Energy Laboratories Cost of Renewable Energy Spreadsheet Tool ("CREST" model was used, and inputs were developed using stakeholder input and other research—as were the prices for the 2011 through 2017, but with updated assumptions for certain technologies.

The 2018 ceiling prices include the federal Investment Tax Credit ("ITC"):

- All of the solar category ceiling prices include the thirty percent ITC as the full value of this credit is available for projects achieving commercial operation by December 31, 2019;
- The wind ceiling prices include a benefit equal to sixty percent of the full 30 percent ITC, consistent with federal law; and
- The hydropower and anaerobic digester ceiling prices do not include any tax credit benefits as those programs are not available to facilities for those technologies beginning construction after 12/31/2016.

Prices for Small Solar I and Commercial Solar represent declines since 2017 due to lower estimated installed costs for both classes and an exemption from local property taxes for the residential projects included in Small Solar I. Small Solar II prices have increased due to increases in financing costs. The Large Solar and Medium Solar categories ceiling prices are close to flat from last year. After much consideration, the Board has elected to open the Medium Solar category to competitive bidding for the 2018 enrollment year.

I reviewed the data sources referenced in the Board's filing and believe that the inputs used to determine the 2018 solar ceiling prices are reasonable. I agree with the Board's decision to open the Medium Solar tranche to competitive bidding. Competitive bidding in the larger solar categories, now including the Medium Solar category, should catch cost reductions not captured by the ceiling prices.

The 2018 ceiling prices for wind projects are 3 percent and 6 percent lower for Small Wind and Large Wind respectively. Ceiling prices are 3 percent lower for the Community Remote Large Wind category.

The ceiling prices for Small Scale Hydropower has increased by 4 percent. While most of the available hydro resources in Rhode Island have been developed, there are still few available. The recommended Hydro ceiling price is meant to be representative of 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 ceiling price for Anaerobic Digestion increased from 2016 to 2017 however the recommended 2018 ceiling price represents a 2 percent decrease from 2017. This decrease is attributed to assumptions for a lower target after-tax IRR.

Development of hydropower, wind and anaerobic digester resource types has been quite limited in the past. There may be several reasons for this lack of development, including ceiling prices that are too low

for development. I conclude that use of higher prices for hydropower is reasonable given our analysis of input changes and the results of past solicitations. I also acknowledge that these resources are required to submit bids (up to the ceiling price), thus there will be pressure to submit market-competitive bids.

The Board report also includes ceiling prices for the Community Remote Program. These ceiling prices are about 15 percent higher than the corresponding prices for the same technology and size. The increase in costs is largely due to customer acquisition costs.

Recent Changes Not Reflected in Ceiling Prices

There are two major policy changes not reflected in the ceiling prices filed by the Board in November:

1. **Suniva and Solar World Trade Case**. Suniva and Solar World brought a Section 201 trade case brought to the International Trade Commission. The companies claim damages due the import of cheaper solar modules from overseas. The International Trade Commission preliminarily ruled in favor of Suniva/Solar World, suggesting a tariff of solar panel imports as a remedy. The final remedy is expected January 26, 2018. If the final remedy is a tariff on imports, this could significantly increase the installation costs for solar and the ceiling prices would need to be adjusted proportionally to reflect the increase.
2. **Tax Cuts and Jobs Act of 2017**. The Tax Cuts and Jobs Act of 2017 was enacted in December of 2017 and brings a major overhaul to the tax code with many changes that could directly or indirectly impact the cost of renewable energy development.

My understanding is that the Board plans to refile ceiling prices, which reflect both of these changes once a final remedy is released.

ALLOCATION PLAN

The Board's recommended allocation is included as Attachment II. This allocation plan is exactly the same as the one in 2017 in order to promote consistency and predictability. The Board recommends again that the anaerobic digester, small hydropower and wind allocations be reallocated to the classes where demand is greatest overall in the third enrollment if there is not enough interest in these technologies. Additionally, the Board recommends continuous open enrollment for the Small Solar program. I support this flexibility.

In previous years, the Board gave National Grid the discretion to redirect a portion of the Small Solar and Medium solar allocations during any of the enrollment periods. This was not mentioned in the 2016 filing, nor in the November 15, 2017 memo. I would support this flexibility again this year as is could allow allocation of greater capacity to larger projects where prices are lower and competitively determined.

I find the MW allocation among the resource classes to be generally reasonable. Solar allocations form a large (about 82%) portion of the 40 MW—with 3 MW of that portion determined by statute—but that is the resource type that has featured the most interest (and is able to take advantage of federal tax credits). The remaining allocation of 18% to the other resources is reasonable as a means to promote resource diversity. I also agree with the allocation between fixed-price projects (9.55 MW) and competitively bid projects (30.45 MW).

Attachment I

Summary of 2018 Proposed Ceiling Prices

Technology	Ceiling Prices (¢/kWh)
Small Solar I (Host Owned)	31.25
Small Solar I (3rd party owned/financed)	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 Digester	19.75
Small Scale Hydropower II	23.35

Attachment II

Summary of 2018 Allocations

Technology & Eligible Class	kW Allocations
Small Solar I – Host Owned	6,550 kW* DC
Small Solar I – Third Party Owned/Financed	
Small Solar II	
Medium Solar	3,000 kW DC
Commercial Solar	5,000 kW DC
Commercial Solar - Community Remote	3,000 kW DC
Large Solar	12,050 kW DC
Large Solar – Community Remote	3,000 kW DC
Small Wind	0.400 kW DC
Community Remote and Non-Community Remote Wind I, II and III	6,000 MW DC
Anaerobic Digestion	1,000 kW DC
Small Scale Hydropower	
Total	40,000 kW

***The REG Program statutorily requires that a minimum 3 MW of the annual capacity from the 2015, 2016, 2017 and 2018 REG programs be allocated for the small solar class.