



**STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS**

**Department of Administration**  
DIVISION OF LEGAL SERVICES  
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January 24, 2014

**VIA HAND DELIVERY AND ELECTRONIC MAIL:**

Luly E. Massaro  
Commission Clerk  
Rhode Island Public Utilities Commission  
89 Jefferson Boulevard  
Warwick, Rhode Island 02888

RE: Rhode Island Office of Energy Resources' Report and Recommendation Regarding  
2014 Distributed Generation Classes, Ceiling Prices and Targets (Docket No. 4288)

Dear Ms. Massaro:

Enclosed for filing on behalf of the Rhode Island Distributed Generation Standard Contract Board ("Board") is an original and ten (10) copies of the Board's Responses to the Commission's First Set of Data Requests dated January 7, 2014. Please note that the responses were reviewed by OER and by Kenneth Payne on behalf of the Board.

Electronic copies were sent to all persons named on the attached Service List and the Board will provide a hard copy to anyone who requests it. Thank you for your assistance.

Sincerely,

Daniel W. Majcher, Esq.

DWM/njr

Enclosure

- c. Leo Wold, Esq.
- Thomas R. Teehan, Esq.
- Docket 4288 Service List

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS  
PUBLIC UTILITIES COMMISSION

In re Rhode Island Distributed Generation Standard :  
Contract Board's Report and Recommendations : Docket No. 4288  
Regarding 2014 Distributed Generation Classes, :  
Ceiling Prices and Targets :

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OFFICE OF ENERGY RESOURCES AND THE DISTRIBUTED GENERATION  
STANDARD BOARD'S RESPONSES TO THE COMMISSION'S FIRST SET OF DATA  
REQUESTS DATED JANUARY 7, 2014

- 1. If the Board is proposing annual targets, as opposed to enrollment targets, as stated on page 10, explain the enrollment targets on page 11.**

The Board has recommended annual targets for each technology, but is also requesting that adjustments are allowed to be made over the course of the year after each enrollment, if necessary, to meet the statutory target for the year. This will provide flexibility for National Grid and the Board to secure and contract the most cost effective renewable energy projects.

However, there will need to be a minimum kilowatt capacity allocated to each renewable energy technology during each enrollment to reach the annual target goal for each technology, so renewable energy developers, businesses and municipalities interested in participating in the program know what is initially made available for capacity in the first enrollment. The Board is recommending the same process that was used and approved by the Commission for the 2011 and 2012 programs.

This annual goal recommendation also provides flexibility in the event that additional kilowatt capacity is made available during the program year.

- 2. P.10. Paragraph E(5) refers to projects awarded in 2012 or 2013 that may not become operational. Is the Board aware of any specific facts that would increase the likelihood of projects awarded in 2012 or 2013 not becoming operational? If yes, explain.**

The Board is not aware of any projects awarded from 2012 or 2013 enrollments that have failed to become operational by their contractual deadline. The Board is only aware of one solar project from the December 2011 executed contracts that failed to be operational by its contracted deadline. That solar kilowatt capacity was added to the 2014 program.

Since the law was amended in July 2013, all small and large scale projects that have executed contracts are required to submit quarterly reports on the progress of the project to National Grid and the Office of Energy Resources.

The Board referenced this possible scenario in its report filing, because there are awarded contracts from July 2012 and March 2013 enrollments that will encounter operational deadlines in 2014. If any of those projects fail to become operational, then that kilowatt capacity will be committed back into the 2014 program. The Board wanted to be best prepared if that situation were to occur, which is why it is making the recommendation in the filing.

**3. Explain why large solar is defined on pages 6 and 11 as 501-1250kW, but on p.7 it is defined as 501-3000kW.**

The large scale solar category discussed on pages 6 and 11 is what is available for the kilowatt capacity for the technology class in a given enrollment. There is a limited kilowatt capacity available for the program each year, and in 2014 the technologies expanded from 3 to 4 with the addition of small scale hydropower. On page 7, the 501-3000kW class is the eligible system size for large scale projects under the law.

**4. What specific federal state, local or other grants are not assumed in the CREST model?**

The Renewable Energy Fund (“REF”) was not factored into the CREST model. The REF has not been utilized for the past 3 years of the program in the CREST model. The objective of the REF program is to provide grants and loans for residential, small-scale commercial and innovative renewable energy technology and research efforts. One of the objectives of the REF program was to assist projects that could not utilize the distributed generation standard contract program. The 2014-2016 REF Rules and Regulations, do not allow funding from the REF for construction of renewable energy projects to be combined with the distributed generation standard contract program; the REF is endeavoring serve a market interest that is not within the scope of the distributed generation standard contract program.

**5. Please respond to Seth Handy’s allegation that the Board’s vote to approve the 2014 annual wind allotment on December 2, 2013 violates RIGL §39-26.2-3(11).**

The Board disagrees with Wind Energy Development, LLC’s (“WED”) contention and believes that it is taking this statutory requirement out of its proper context and application. The Board is only required to give 60 days notice if adjustments are made to the “renewable energy classes,” during the program year. The Board did not eliminate or change the 1.5 megawatt wind turbine renewable energy class in its recommendation to the Commission. The Board’s filing continues to support the 1.5 megawatt wind turbine renewable energy class, which was eligible in the prior 3 years of the program.

Moreover, the process to set annual targets and recommend ceiling prices began in July and was conducted with well over sixty (60) days notice. Specifically, in regards to the proposed renewable energy classes, notice was sent on September 25, 2013 (see attached email and "Call for Ceiling Price Data") and again on October 2, 2013 (also attached) to stakeholders that have participated in the programs development process. Seth Handy, the attorney for WED, along with the principal of WED were sent these notices. The Call for Ceiling Price Data includes a table on page 2 which provides the proposed renewable energy classes (i.e. 1.5 MW for wind) for the 2014 program. The DG Board voted on the renewable energy classes and tentative megawatt allocations on December 2, 2013, more than sixty (60) days from the time notice was sent, including directly to WED's attorney and principal.

The different renewable energy technology classes were discussed at length during the Board's process of developing the program, including the presentations provided by Sustainable Energy Advantage during the development of the ceiling prices on behalf of the Board. Further, the recommended allocation within the renewable energy target class was discussed during this public process and was approved at a public meeting, after receiving public comment, including from specifically WED's attorney. Notice of the potential target class allocation scenarios for the eligible renewable energy classes were discussed at two public meetings on November 7<sup>th</sup> and November 27, 2013.

While R.I. Gen. Laws §39-26.2-3(11) does reference "renewable energy class targets," there are no notice provisions related to adjusting, adding, or eliminating these annual targets. In fact, the process to establish annual targets is outlined in R.I. Gen. Laws §39-26.2-3. This provision does not provide any notice requirements for establishing annual targets. Regardless, the process to establish the 2014 program plan was conducted through a comprehensive public process beginning in July.

Defining classes, by technology type and project size, and allocating megawatts of capacity to classes are distinct activities. Defining classes comes first, once that is done, it is possible to propose the megawatts of capacity allocated to each class, to receive public comment, and to make adjustments as appropriate based on comments and unused megawatt capacity from prior enrollment.

The Board is not able to determine the class targets and the associated kilowatt capacity for the eligible renewable energy classes until the enrollments and contracts are executed after the final enrollment in a given year. Last year, this did not occur until December 2013, which is why the Board's filing disclosed that it was a tentative kilowatt allocation amongst the eligible renewable energy technologies.

The Commission should be aware that there were two 1.5 megawatt wind turbine applications submitted in the final enrollment in November 2013, but failed to submit

their required deposits and sign the contracts, resulting in additional capacity to be allocated by the Board through the 2014 process.

**6. Page 6. Explain the reason for including a federal incentive in the ceiling price even though the developer does not ultimately receive the incentive.**

The law requires that the Board consider multiple factors in the development of the annual ceiling prices, including any available federal incentives. The Board's objective was to recommend that the program secure the most cost effective renewable energy projects, which is why it included the available federal incentives in the eligible renewable energy class. Including federal incentives allows the program to meet statutorily goals and also secure the most cost effective projects, which benefit ratepayers and the policy objectives of the program. The federal renewable energy incentives have been factored into the last 3 years of the program. The plan submitted by the Board to the Commission shows the effect of Federal incentives on ceiling prices; the greater the federal incentive the lower the ceiling price; the availability of Federal incentives has a positive impact on cost effectiveness from the perspective of Rhode Island rate payers.

**7. Page 10. Please define the MW rollover rule referenced in paragraph 1, p. 10.**

This rule was established with the 2013 program because of the different dynamics (permitting, siting, town/city council approval) for the eligible renewable energy classes participating in the program. This rollover rule allowed additional time for projects to be properly developed and then submit their applications when appropriate.

**8. Page 10. What criteria, if any, will be used for determining how the unused capacity will be applied to other technologies in the final 2014 enrollment (other than cost-effectiveness and competitiveness)? Will that decision be subject to approval of the Board with stakeholder input?**

Yes, the decision on the final enrollment would be subject to Board approval with stakeholder input into the process. During the Board's public meeting on Thursday, January 9<sup>th</sup> it was determined that the Board should meet after the first enrollment contract ceiling price results, and determine whether the additional kilowatt capacity should be allocated to the second enrollment or wait until that enrollment has concluded as well. The Board believes that it will not likely make a decision on how to utilize the additional kilowatt capacity until after the second enrollment.

The Board would notify the Commission immediately if any capacity is added to a subsequent enrollment, prior to National Grid performing the solicitation. The Board would consider the following two factors when deciding the additional capacity:

- 1.) The contracted ceiling prices awarded and whether the prices are at or below the approved ceiling prices.
- 2.) Competitiveness of the renewable energy classes participating during the first and second enrollment.

The Board believes this criteria will incentivize renewable energy developers to develop the most cost effective projects.

**9. Did the Board receive back-up data from SEA supporting the CREST model assumptions? If yes, was this data made available to stakeholders?**

The board received back-up data from SEA in two ways. First, Board members were provided unlimited access to SEA staff for the purpose of understanding the economic drivers of renewable energy projects, CREST models, research process, data responses and range of potential assumptions. One group and several individual calls were held. SEA staff were also made available to stakeholders, and participated in several calls and in-person meetings to answer questions about CREST modeling, assumptions and market data from other states and previous rounds of the DG program. Second, Board members were provided draft PowerPoint presentations for discussion leading up to the first public meeting. These presentations provided feedback from stakeholders, information from previous program years, and new research. This material facilitated discussions regarding installed cost, interconnection, capacity factor, incentive, financing and other assumptions, as well as policy decisions with respect to draft ceiling prices. This information has already been summarized into the presentations provided to stakeholders at the first public meeting, including detailed back-up data for solar installed costs. The final presentations were submitted to the Commission with the filing of the Board's report and recommendation.

**10. Do the proposed ceiling prices for each technology allow a private owner to invest in a given project at a reasonable rate of return, based on recent reported and forecast information on the cost of capital and the cost of generation equipment? If yes, provide a detailed explanation supporting your response.**

Yes, the proposed ceiling prices are intended to enable development of cost effective projects, allowing a private owner in such projects to invest at a reasonable rate of return. Through the stakeholder process, the target rate of return was defined as between 10% (solar) and 12% (wind) based on market participation and competitive forces. Realized returns will be higher or lower depending on the projects' actual installed cost, operating cost and lifetime performance.

Ceiling prices are recommended at a level that would prevent a developer from realizing the targeted rate of return for a project that is poorly sited. To achieve the capacity factors incorporated into the ceiling price calculations, solar projects need to be un-shaded and south facing, for example. All projects were assumed to obtain the maximum amount of debt that could be sustained by project cash flows, and interest rates were assumed based on market data and stakeholder feedback. The cost of

generation equipment was based on market data and stakeholder feedback from both current and previous rounds of the DG Standard Contracts process.

**11. Pages 2 and 9. If the statutory target for 2014 is 40MW, and according to OER 27.648MW (p.2) of capacity have been awarded so far, why is the 2014 target 13.352MW instead of 12.352MW?**

The numbers filed in the Board's report were tentative at the time of the filing. After National Grid signed the final contracts for 2013, there will be 16.352 MW in nameplate capacity for the 2014 program.

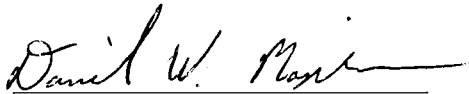
**12. Page 9, Paragraph C. Explain the 10 MW originally allocated for 2014 by statute.**

The law originally allocated 10 MW of capacity for 2014. The allocation amount was scheduled out over 4 years in the law. The 2014 MW allocation has increased due to a solar project that failed to become operational from a 2011 awarded contract, and the MW that carried over from the 2013 program.

Respectfully submitted,

The State of Rhode Island, Office of Energy  
Resources and the Distributed Generation  
Standard Contract Board.

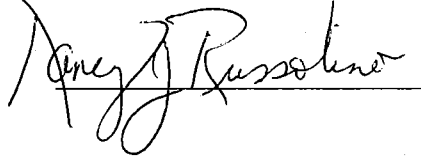
By their attorney,



Daniel W. Majcher, Esq. (#7265)  
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daniel.majcher@doa.ri.gov

CERTIFICATE OF SERVICE

I hereby certify that on January 24, 2014, I sent a true copy of the document by electronic mail to the PUC and to the service list and an original and 10 copies were hand delivered to the PUC.

  
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## Christopher Kearns - Request for 2014 Distributed Generation Contracts Program Call for Ceiling Price Data

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**From:** Christopher Kearns  
**To:** christopher.kearns@energy.ri.gov  
**Date:** 10/2/2013 6:54 PM  
**Subject:** Request for 2014 Distributed Generation Contracts Program Call for Ceiling Price Data  
**Attachments:** RI DG SO Data Request Sept 2013.doc

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Good Evening,

In an effort to enable maximum participation in the process, the DG Contracts Board and OER are extending the window of opportunity to respond to the **Ceiling Price data request** until **COB Monday October 7<sup>th</sup>, 2013**.

As in previous years, your responses will form much of the basis for the selected ceiling price modeling inputs. The data you provide now will be used to develop draft ceiling prices, which will be discussed at a public meeting later this month.

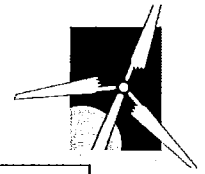
Thanks,

Chris



**Chris Kearns**  
**Chief, Program Development**

Rhode Island Office of Energy Resources  
One Capitol Hill, 4<sup>th</sup> Floor  
Providence, RI 02908  
P: 401.574.9113  
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[www.energy.ri.gov](http://www.energy.ri.gov)



## Rhode Island Distributed Generation Contracts Board

### CALL FOR CEILING PRICE DATA

***DUE DATE FOR SUBMISSION: MONDAY, OCTOBER 7, 2013***

Submit electronically to: [Christopher.Kearns@energy.ri.gov](mailto:Christopher.Kearns@energy.ri.gov)  
[jgifford@seadvantage.com](mailto:jgifford@seadvantage.com)  
[dvonallmen@seadvantage.com](mailto:dvonallmen@seadvantage.com)

Dear Colleagues and Distributed Generation Contract Program Stakeholders:

The Distributed Generation Contracts Board (DG Board) and Office of Energy Resources (OER) have commenced work on reviewing the ceiling prices for the 2014 DG Contracts program and intends for stakeholders to once again play an integral role in this process. As in years past, opportunities will exist for both written comments and participation in public meetings. **The purpose of this memo is to request your specific input on the modeling assumptions which will support the ceiling price analysis.** This is the first in a multi-step process. The DG Board and OER, with technical consultant Sustainable Energy Advantage (SEA) will:

- (1) Collect detailed input data from stakeholders and other sources (**through this survey**),
- (2) Develop proposed ceiling prices and request stakeholder comments, including a Public Meeting,
- (3) Revise proposed ceiling prices and conduct a second Public Meeting, and
- (4) Submit recommended ceiling prices to the PUC.

This process needs to be completed on an aggressive timeline. The DG Board and OER will complete this research phase over the next week, conduct two public meetings (mid-October and early November), finalize recommended ceiling prices, and submit its proposal to the PUC by early December. **Your active participation** in developing the ceiling price modeling inputs is critical to achieving a robust process and result, and submitting ceiling price recommendations on schedule.

As we did for the 2013 Program, we will be using the National Renewable Energy Laboratory's Cost of Renewable Energy Spreadsheet Tool<sup>1</sup> (CREST) in order to model our recommendations for submission to the Public Utilities Commission. To provide expert support for this effort the DG Board has retained Sustainable Energy Advantage (along with their subcontractor Meister Consulting Group), the same firms that assisted in setting 2011, 2012 and 2013 ceiling prices.

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<sup>1</sup> The CREST models and their supporting documentation can be downloaded from the NREL website: <http://financere.nrel.gov/finance/content/CREST-model>.



**Technology- and Capacity-Based Ceiling Prices**

For the 2014 DG Contract Program solicitations, we propose to refine the categories set forth in the 2013 Program. Compared to the 2013 DG Contract Program, which featured 4 categories of solar projects, 3 groups of wind, 1 anaerobic digestion category, and a proposed benchmark for small hydroelectric facilities, the 2014 Program will have 3 groups for solar, 2 for wind, 1 for anaerobic digestion, and will formalize the hydroelectric incentive. While ceiling prices will be available to the full range of project sizes allowed under the Act, one *standard installation* will be modeled for each size range for the purpose of informing the ceiling prices for that technology and sub-class. The proposed 2014 ceiling price categories are presented in the following table:

Technology, sub class	Eligible Size Range	Standard Size for Modeling Ceiling Price
Solar, Large	500 kW – 3 MW	1.5 MW
Solar, Medium	201 – 499 kW	400 kW
Solar, Small	50 – 200 kW	150 kW
Wind, Large	1.0 MW – 3 MW	1.5 MW
Wind, Small	50 kW – 999 kW	750 MW
Anaerobic Digestion	50 – 3 MW	500 kW
Hydroelectric	50 kW – 1.0 MW	500 kW

We invite you to offer recommendations for inputs that we should employ in each model, using the format in the attached data request. **When making recommendations, keep in mind that we are seeking ceiling prices that achieve the law’s goals – namely to “support and encourage development of distributed renewable energy generation systems” in a manner that is “cost effective”, and provides an adequate rate of return to private investors.**

**A list of the inputs sought is included in the tables below. Please read each description carefully and be as detailed and thorough as possible in your response.** There is one table for each technology and standard size class. Please identify the source of your data, and include comments or clarifications in the notes field.

To ensure that we meet our deadlines, we ask that you **submit your recommended inputs no later than next Wednesday October 2, 2012**. Please contact Jason Gifford at (802) 846-7627 or [jgifford@seadvantage.com](mailto:jgifford@seadvantage.com) with any questions or clarifications that would help you fulfill this data request more easily and completely. We appreciate your active participation and look forward to fulfilling the requirements of this aggressive schedule in a cooperative manner.



### Data Request:

CREST is a levelized cost of energy (LCOE) model. It converts input for capital costs, fixed and variable maintenance, system performance characteristics, capital structure, and Federal and State incentives into the revenue stream required to provide a specified return to investors over a defined period of time. For the purpose of establishing ceiling prices, we propose to assume that the subject projects are owned by private sector investors. Ceiling prices will be based on a project interconnected to the utility side of the retail meter. The sensitivity to the availability of federal incentives will be tested, as follows:

Technology	Federal Incentive Cases
<b>Solar</b>	<ol style="list-style-type: none"><li>1. assume ITC available to all projects;</li><li>2. assume ITC &amp; 50% bonus depreciation available</li></ol>
<b>Wind</b>	<ol style="list-style-type: none"><li>1. assume ITC available (chosen in lieu of the PTC)</li><li>2. assume ITC &amp; 50% bonus depreciation available</li><li>3. assume both incentives expire</li></ol>
<b>Anaerobic Digestion</b>	<ol style="list-style-type: none"><li>1. assume ITC available (chosen in lieu of the PTC)</li><li>2. assume ITC &amp; 50% bonus depreciation available</li><li>3. assume both incentives expire</li></ol>
<b>Hydro</b>	<ol style="list-style-type: none"><li>1. assume ITC available (chosen in lieu of the PTC)</li><li>2. assume ITC &amp; 50% bonus depreciation available</li><li>3. assume both incentives expire</li></ol>

The following tables represent the key inputs for which we seek your specific input. Please fill out the tables below as completely, and in as much detail, as your expertise allows. Short definitions of each of the inputs follow the tables. We ask that you read these definitions carefully before completing the tables, as it is important that we are able to consider recommended inputs on an apples-to-apples basis. (For example, parties may aggregate operations and maintenance (O&M) costs differently. Please conform your cost information to our line items in order for the information you provide to be of greatest utility in calculating ceiling prices. Please provide sources for all recommended inputs.

**Remember that these input data and the resulting ceiling prices are intended to apply to projects coming on-line within a specified period of time – namely, within 18 months of being selected via one of the 2014 DG Standard Contract solicitations.**

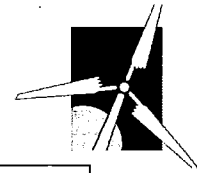
We expect that as a result of this process, certain inputs will change from the 2013 Program analysis based on changes in market conditions. There may be other inputs, however, which do not warrant adjustment, and whose magnitude and rationale was the product of detailed stakeholder discussion in the previous analysis. For these inputs – which are clearly noted below – we propose that the values remain the same unless compelling evidence for change is presented and supported.



Technology Category: Solar 500 kW – 3 MW			
Standard Project Size for calculating ceiling price: 1500 kW DC			
Input category	Recommended Input	Notes on Assumptions	Source
Expected Annual Average Net capacity factor, (%)	NCF is proposed at: <b>14.65% DC.</b> <sup>2</sup>		
Annual Production Degradation (%)	Proposed at: <b>0.5%</b>		
Total installed cost (\$/kW <sub>DC</sub> ), <b>excluding</b> Interconnection Cost			
Typical Interconnection cost (\$)			
O&M expenses (\$/kW <sub>DC</sub> -yr), Yr 1 (excluding those listed below)			
Insurance, Yr 1, (provide as % of total project cost, or in \$/yr)			
Project Management, Yr 1 (\$/yr)			
Land Lease, Yr 1 (\$/yr)			
Annual average escalation rate for O&M expenses (%)			
Royalties (% of revenue, or \$/yr)			
Property Taxes (\$ in Yr 1 and annual adjustment factor, or as annual estimates with methodology clearly described <sup>3</sup> )			
Permanent debt/equity (D/E) ratio			
Permanent debt term (years)			
Interest rate on debt (%)			
Lender's fee (% of loan amt)			
Avg. Debt Service Coverage Ratio			
After-tax target equity IRR (%)			
Decommissioning Reserve? If yes, how much?			
Other Comments:			

<sup>2</sup> Stakeholders wishing to comment on the continued use of this assumption may do so in the Other Comments box. All suggestions provided in this field should be specific and must include associated justification.

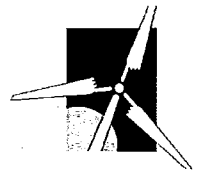
<sup>3</sup> The methodology, assumptions and calculation of annual property tax estimates can be provided separately.



<b>Technology Category: Solar 201 – 499 kW</b>			
<b>Standard Project Size for calculating ceiling price: 400 kW DC</b>			
<b>Input category</b>	<b>Recommended Input</b>	<b>Notes on Assumptions</b>	<b>Source</b>
Expected Annual Average Net capacity factor, (%)	NCF is proposed at: <b>14.56% DC.</b> <sup>4</sup>		
Annual Production Degradation (%)	Proposed at: <b>0.5%</b>		
Total installed cost (\$/kW <sub>DC</sub> ), <b>excluding</b> Interconnection Cost			
Typical Interconnection cost (\$)			
O&M expenses (\$/kW <sub>DC</sub> -yr), Yr 1 (excluding those listed below)			
Insurance, Yr 1, (provide as % of total project cost, or in \$/yr)			
Project Management, Yr 1 (\$/yr)			
Land Lease, Yr 1 (\$/yr)			
Annual average escalation rate for O&M expenses (%)			
Royalties (% of revenue, or \$/yr)			
Property Taxes (\$ in Yr 1 and annual adjustment factor, or as annual estimates with methodology clearly described <sup>5</sup> )			
Permanent debt/equity (D/E) ratio			
Permanent debt term (years)			
Interest rate on debt (%)			
Lender's fee (% of loan amt)			
Avg. Debt Service Coverage Ratio			
After-tax target equity IRR (%)			
Decommissioning Reserve? If yes, how much?			
Other Comments:			

<sup>4</sup> Stakeholders wishing to comment on the continued use of this assumption may do so in the Other Comments box at the bottom of the table. All suggestions provided in this field should be specific and must include associated justification.

<sup>5</sup> The methodology, assumptions and calculation of annual property tax estimates can be provided separately.



<b>Technology Category: Solar 50 – 200 kW</b>			
<b>Standard Project Size for calculating ceiling price: 150 kW DC</b>			
Input category	Recommended Input	Notes on Assumptions	Source
Expected Annual Average Net capacity factor, (%)	NCF is proposed at: <b>14.39% DC.</b>		
Annual Production Degradation (%)	Proposed at: <b>0.5%</b>		
Total installed cost (\$/kW <sub>DC</sub> ), <b>excluding</b> Interconnection Cost			
Typical Interconnection cost (\$)			
O&M expenses (\$/kW <sub>DC</sub> -yr), Yr 1 (excluding those listed below)			
Insurance, Yr 1, (provide as % of total project cost, or in \$/yr)			
Project Management, Yr 1 (\$/yr)			
Land Lease, Yr 1 (\$/yr)			
Annual average escalation rate for O&M expenses (%)			
Royalties (% of revenue, or \$/yr)			
Property Taxes (\$ in Yr 1 and annual adjustment factor, or as annual estimates with methodology clearly described <sup>6</sup> )			
Permanent debt/equity (D/E) ratio			
Permanent debt term (years)			
Interest rate on debt (%)			
Lender's fee (% of loan amt)			
Avg. Debt Service Coverage Ratio			
After-tax target equity IRR (%)			
Decommissioning Reserve? If yes, how much?			
Other Comments:			

<sup>6</sup> The methodology, assumptions and calculation of annual property tax estimates can be provided separately.



<b>Technology Category: Wind 1 MW – 3 MW</b> <b>Standard Project Size for calculating ceiling price: 1.5 MW</b>			
Input category	Recommended Input	Notes on Assumptions	Source
Expected Annual Average Net capacity factor, (%)	NCF is proposed at: <b>27.5%</b> .		
Annual Production Degradation (%)	Proposed at: <b>0.5%</b>		
Total installed cost (\$/kW), excl. Interconnection Cost			
Typical Interconnection cost (\$)			
O&M expenses (\$/kW-yr), Yr 1 (excluding those listed below)			
Insurance, Yr 1, (provide as % of total project cost, or in \$/yr)			
Project Management, Yr 1 (\$/yr)			
Land Lease, Yr 1 (\$/yr)			
Annual average escalation rate for O&M expenses (%)			
Royalties (% of revenue, or \$/yr)			
Property Taxes (\$ in Yr 1 and annual adjustment factor, or as annual estimates with methodology clearly described <sup>7</sup> )			
<b><i>See request on next page for wind financing assumptions with and without PTC/ITC.</i></b>			
Decommissioning Reserve? If yes, how much?			
Other Comments:			

<sup>7</sup> The methodology, assumptions and calculation of annual property tax estimates can be provided separately.





<b>Technology Category: Wind 1 MW – 3 MW</b>			
<b>Standard Project Size for calculating ceiling price: 1.5 MW</b>			
<b>Financing Assumptions <u>With</u> PTC</b>			
Permanent debt/equity (D/E) ratio			
Permanent debt term (years)			
Interest rate on debt (%)			
Lender's fee (% of loan amt)			
Avg. Debt Service Coverage Ratio			
After-tax target equity IRR (%)			
<b>Financing Assumptions <u>Without</u> PTC</b>			
Permanent debt/equity (D/E) ratio			
Permanent debt term (years)			
Interest rate on debt (%)			
Lender's fee (% of loan amt)			
Avg. Debt Service Coverage Ratio			
After-tax target equity IRR (%)			



<b>Technology Category: Wind 50 kW – 999 MW</b> <b>Standard Project Size for calculating ceiling price: 750 kW</b>			
Input category	Recommended Input	Notes on Assumptions	Source
Expected Annual Average Net capacity factor, (%)			
Annual Production Degradation (%)	Proposed at: <b>0.5%</b>		
Total installed cost (\$/kW), excl. Interconnection Cost			
Typical Interconnection cost (\$)			
O&M expenses (\$/kW-yr), Yr 1 (excluding those listed below)			
Insurance, Yr 1, (provide as % of total project cost, or in \$/yr)			
Project Management, Yr 1 (\$/yr)			
Land Lease, Yr 1 (\$/yr)			
Annual average escalation rate for O&M expenses (%)			
Royalties (% of revenue, or \$/yr)			
Property Taxes (\$ in Yr 1 and annual adjustment factor, or as annual estimates with methodology clearly described <sup>8</sup> )			
<b><i>See request on next page for wind financing assumptions with and without PTC/ITC.</i></b>			
Decommissioning Reserve? If yes, how much?			
Other Comments:			

<sup>8</sup> The methodology, assumptions and calculation of annual property tax estimates can be provided separately.

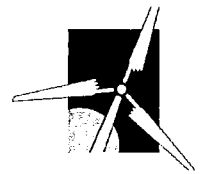


<b>Technology Category: Wind 50 kW – 999 kW</b>			
<b>Standard Project Size for calculating ceiling price: 750 kW</b>			
<b>Financing Assumptions <u>With</u> PTC</b>			
Permanent debt/equity (D/E) ratio			
Permanent debt term (years)			
Interest rate on debt (%)			
Lender's fee (% of loan amt)			
Avg. Debt Service Coverage Ratio			
After-tax target equity IRR (%)			
<b>Financing Assumptions <u>Without</u> PTC</b>			
Permanent debt/equity (D/E) ratio			
Permanent debt term (years)			
Interest rate on debt (%)			
Lender's fee (% of loan amt)			
Avg. Debt Service Coverage Ratio			
After-tax target equity IRR (%)			



<b>Technology Category: Anaerobic Digestion 50 kW – 3 MW</b>			
<b>Standard Project Size for calculating ceiling price: 500 kW</b>			
<b>Input category</b>	<b>Recommended Input</b>	<b>Notes on Assumptions</b>	<b>Source</b>
Biogas consumption/day (cubic ft/day)	150,000		
Energy content/cubic foot (BTU/cubic ft)	650		
Heat Rate (BTU/kWh)	9,000		
Availability Factor	92%		
Station Service/Parasitic Load	10%		
Annual Production Degradation (%)	0%		
Total installed cost (\$/kW), excl. Interconnection Cost			
Typical Interconnection cost (\$)			
O&M expenses (\$/kW-yr), Yr 1 (excluding those listed below)			
Variable O&M (¢/kWh), Yr 1 (excluding those listed below)			
Insurance, Yr 1, (provide as % of total project cost, or in \$/yr)			
Project Management, Yr 1 (\$/yr)			
Land Lease, Yr 1 (\$/yr)			
Annual average escalation rate for O&M expenses (%)			
Royalties (% of revenue, or \$/yr)			
Property Taxes (\$ in Yr 1 and annual adjustment factor, or as annual estimates with methodology clearly described <sup>9</sup> )			
Permanent debt/equity (D/E) ratio			
Permanent debt term (years)			
Interest rate on debt (%)			
Lender's fee (% of loan amt)			
Avg. Debt Service Coverage Ratio			
After-tax target equity IRR (%)			
Decommissioning Reserve? How much?			
Tipping Fees/Digestate Rev, if applicable: \$/ton, and tons per year			
Other Comments:			

<sup>9</sup> The methodology, assumptions and calculation of annual property tax estimates can be provided separately.



Technology Category: Hydroelectric <sup>10</sup> 50 kW – 1 MW			
Standard Project Size for calculating ceiling price: 500 kW			
Input category	Recommended Input	Notes on Assumptions	Source
Expected Annual Average Net capacity factor, (%)			
Annual Production Degradation (%)			
Total installed cost (\$/kW), excl. Interconnection Cost			
Typical Interconnection cost (\$)			
O&M expenses (\$/kW-yr), Yr 1 (excluding those listed below)			
Variable O&M (¢/kWh), Yr 1 (excluding those listed below)			
Insurance, Yr 1, (provide as % of total project cost, or in \$/yr)			
Project Management, Yr 1 (\$/yr)			
Land Lease, Yr 1 (\$/yr)			
Annual average escalation rate for O&M expenses (%)			
Royalties (% of revenue, or \$/yr)			
Property Taxes (\$ in Yr 1 and annual adjustment factor, or as annual estimates with methodology clearly described <sup>11</sup> )			
Length of construction period (mos)			
Source (D/E) and cost (e.g. interest rate) of construction financing			
Permanent debt/equity (D/E) ratio			
Permanent debt term (years)			
Interest rate on debt (%)			
Lender's fee (% of loan amt)			
Avg. Debt Service Coverage Ratio			
After-tax target equity IRR (%)			
Decommissioning Reserve? If yes, how much?			
Other Comments:			

<sup>10</sup> To be eligible for the DG contracts program, hydro facilities must meet the RI RES eligibility criteria established in CRIR 90-060-015 Rules and Regulations Governing the Implementation of a Renewable Energy Standard.

<sup>11</sup> The methodology, assumptions and calculation of annual property tax estimates can be provided separately.



Net capacity factor (NCF), Year 1 (%) - Capacity Factor is the % representation of the actual annual production vs. the theoretical maximum annual production of an energy project. This model requires the input of a Net Capacity Factor, meaning that the estimate of actual energy production should take into account all electricity losses (including those incurred between the generating facility and the contract delivery point), scheduled and unscheduled maintenance, shading, forced outages, and any other factors that could reduce production. For a solar facility, both capacity and capacity factor should be reported as DC. For a wind plant, this number should reflect the average annual P50 estimate.

Total installed cost: This includes the total expected all-in installed project cost, which should include all hardware, balance of plant, design, construction, permitting, development (including developer fee), interest during construction and financing costs. This figure should not account for any tax incentives, grants, or other cash incentives, which will be accounted for separately. It should also exclude the assumed interconnection cost, which is specified separately.

Interconnection cost: Please include your assumptions about the “typical” interconnection cost for a system in Rhode Island. Interconnection costs include costs relating to connecting to the grid, such as the construction of transmission lines, permitting costs with the utility, and start-up costs. This category will also include the cost of a new substation, if necessary.

O&M expenses: Operations and maintenance includes all fixed and variable expenses associated with project operations. Annual expenses for insurance, property taxes, land leases, royalties, and project management should be itemized separately.

Length of construction period: The # of months from construction start to commercial operation.

Source and cost of construction financing: This indicated whether construction is funded with debt, equity or a combination thereof, and at what interest rate or target IRR.

Permanent Debt-to-equity ratio. This specifies the ratio of the portion of funds borrowed (as a percentage of the total hard costs) to the portion of project funds supplied as equity. This is typically expressed as Debt / Equity – i.e. 70/30 or 50/50, etc.

Interest rate: The all-in interest rate is the financing rate provided by the bank or other debt investor.

Lender’s Fee: This is the fee taken by the bank for originating the loan. It is expressed as a percentage of the total amount borrowed.

Debt Service Coverage Ratio: Denotes the requirement for cash flow available for debt service to be larger than the annual debt obligation itself. It is typically expressed as a ration of EBITDA (operating income) to annual debt service obligation. This survey requests the average DSCR required by the lender during the term of the loan.

Return on equity: This is the minimum after-tax internal rate of return required to attract equity investment to a project of the indicated scale, with the indicated D/E ratio.

Decommissioning Reserve: Represents the potential need to encumber cash flows from operations in order to demonstrate the availability of funds sufficient to pay for the removal of equipment from the project site at the conclusion of the facility’s useful life.

## Christopher Kearns - Request for 2014 Distributed Generation Contracts Program Call for Ceiling Price Data

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**From:** Christopher Kearns  
**To:** christopher.kearns@energy.ri.gov  
**Date:** 9/25/2013 9:29 AM  
**Subject:** Request for 2014 Distributed Generation Contracts Program Call for Ceiling Price Data  
**Attachments:** RI DG SO Data Request Sept 2013.doc

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Good Morning,

The Rhode Island Distributed Generation Contracts Board and the Office of Energy Resources have commenced work on reviewing the ceiling prices for the 2014 DG Contracts program.

Attached please find the ***Call for Ceiling Price Data***. Your timely and detailed response to this data request is critical to achieving a robust process and result, and submitting ceiling price recommendations to the PUC on schedule.

Please respond to this data request and **submit your recommended inputs no later than COB next Wednesday October 2, 2013.**

Please contact Jason Gifford at (802) 846-7627 or [jgifford@seadvantage.com](mailto:jgifford@seadvantage.com) with any questions or clarifications that would help you fulfill this data request more easily and completely.

Thanks,

Chris



**Chris Kearns**  
**Chief, Program Development**

Rhode Island Office of Energy Resources  
One Capitol Hill, 4<sup>th</sup> Floor  
Providence, RI 02908  
P: 401.574.9113  
F: 401.574.9125  
[christopher.kearns@energy.ri.gov](mailto:christopher.kearns@energy.ri.gov)  
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## Rhode Island Distributed Generation Contracts Board

### CALL FOR CEILING PRICE DATA

***DUE DATE FOR SUBMISSION: WEDNESDAY, OCTOBER 2, 2013***

Submit electronically to: [Christopher.Kearns@energy.ri.gov](mailto:Christopher.Kearns@energy.ri.gov)  
[jqifford@seadvantage.com](mailto:jqifford@seadvantage.com)  
[dvonallmen@seadvantage.com](mailto:dvonallmen@seadvantage.com)

Dear Colleagues and Distributed Generation Contract Program Stakeholders:

The Distributed Generation Contracts Board (DG Board) and Office of Energy Resources (OER) have commenced work on reviewing the ceiling prices for the 2014 DG Contracts program and intends for stakeholders to once again play an integral role in this process. As in years past, opportunities will exist for both written comments and participation in public meetings. **The purpose of this memo is to request your specific input on the modeling assumptions which will support the ceiling price analysis.** This is the first in a multi-step process. The DG Board and OER, with technical consultant Sustainable Energy Advantage (SEA) will:

- (1) Collect **detailed input data from stakeholders** and other sources (**through this survey**),
- (2) Develop proposed ceiling prices and **request stakeholder comments**, including a Public Meeting,
- (3) Revise proposed ceiling prices and conduct a **second Public Meeting**, and
- (4) Submit recommended ceiling prices to the PUC.

This process needs to be completed on an aggressive timeline. The DG Board and OER will complete this research phase over the next week, conduct two public meetings (mid-October and early November), finalize recommended ceiling prices, and submit its proposal to the PUC by early December. **Your active participation** in developing the ceiling price modeling inputs is critical to achieving a robust process and result, and submitting ceiling price recommendations on schedule.

As we did for the 2013 Program, we will be using the National Renewable Energy Laboratory's Cost of Renewable Energy Spreadsheet Tool<sup>1</sup> (CREST) in order to model our recommendations for submission to the Public Utilities Commission. To provide expert support for this effort the DG Board has retained Sustainable Energy Advantage (along with their subcontractor Meister Consulting Group), the same firms that assisted in setting 2011, 2012 and 2013 ceiling prices.

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<sup>1</sup> The CREST models and their supporting documentation can be downloaded from the NREL website: <http://financere.nrel.gov/finance/content/CREST-model>.





### Technology- and Capacity-Based Ceiling Prices

For the 2014 DG Contract Program solicitations, we propose to refine the categories set forth in the 2013 Program. Compared to the 2013 DG Contract Program, which featured 4 categories of solar projects, 3 groups of wind, 1 anaerobic digestion category, and a proposed benchmark for small hydroelectric facilities, the 2014 Program will have 3 groups for solar, 2 for wind, 1 for anaerobic digestion, and will formalize the hydroelectric incentive. While ceiling prices will be available to the full range of project sizes allowed under the Act, one *standard installation* will be modeled for each size range for the purpose of informing the ceiling prices for that technology and sub-class. The proposed 2014 ceiling price categories are presented in the following table:

Technology, sub class	Eligible Size Range	Standard Size for Modeling Ceiling Price
Solar, Large	500 kW – 3 MW	1.5 MW
Solar, Medium	201 – 499 kW	400 kW
Solar, Small	50 – 200 kW	150 kW
Wind, Large	1.0 MW – 3 MW	1.5 MW
Wind, Small	50 kW – 999 kW	750 MW
Anaerobic Digestion	50 – 3 MW	500 kW
Hydroelectric	50 kW – 1.0 MW	500 kW

We invite you to offer recommendations for inputs that we should employ in each model, using the format in the attached data request. **When making recommendations, keep in mind that we are seeking ceiling prices that achieve the law's goals – namely to “support and encourage development of distributed renewable energy generation systems” in a manner that is “cost effective”, and provides an adequate rate of return to private investors.**

**A list of the inputs sought is included in the tables below. Please read each description carefully and be as detailed and thorough as possible in your response. There is one table for each technology and standard size class. Please identify the source of your data, and include comments or clarifications in the notes field.**

To ensure that we meet our deadlines, we ask that you **submit your recommended inputs no later than next Wednesday October 2, 2012**. Please contact Jason Gifford at (802) 846-7627 or [jgifford@seadvantage.com](mailto:jgifford@seadvantage.com) with any questions or clarifications that would help you fulfill this data request more easily and completely. We appreciate your active participation and look forward to fulfilling the requirements of this aggressive schedule in a cooperative manner.



### Data Request:

CREST is a levelized cost of energy (LCOE) model. It converts input for capital costs, fixed and variable maintenance, system performance characteristics, capital structure, and Federal and State incentives into the revenue stream required to provide a specified return to investors over a defined period of time. For the purpose of establishing ceiling prices, we propose to assume that the subject projects are owned by private sector investors. Ceiling prices will be based on a project interconnected to the utility side of the retail meter. The sensitivity to the availability of federal incentives will be tested, as follows:

Technology	Policy Assumptions and Incentives
<b>Solar</b>	<ol style="list-style-type: none"><li>1. assume ITC available to all projects;</li><li>2. assume ITC &amp; 50% bonus depreciation available</li></ol>
<b>Wind</b>	<ol style="list-style-type: none"><li>1. assume ITC available (chosen in lieu of the PTC)</li><li>2. assume ITC &amp; 50% bonus depreciation available</li><li>3. assume both incentives expire</li></ol>
<b>Anaerobic Digestion</b>	<ol style="list-style-type: none"><li>1. assume ITC available (chosen in lieu of the PTC)</li><li>2. assume ITC &amp; 50% bonus depreciation available</li><li>3. assume both incentives expire</li></ol>
<b>Hydro</b>	<ol style="list-style-type: none"><li>1. assume ITC available (chosen in lieu of the PTC)</li><li>2. assume ITC &amp; 50% bonus depreciation available</li><li>3. assume both incentives expire</li></ol>

The following tables represent the key inputs for which we seek your specific input. Please fill out the tables below as completely, and in as much detail, as your expertise allows. Short definitions of each of the inputs follow the tables. We ask that you read these definitions carefully before completing the tables, as it is important that we are able to consider recommended inputs on an apples-to-apples basis. (For example, parties may aggregate operations and maintenance (O&M) costs differently. Please conform your cost information to our line items in order for the information you provide to be of greatest utility in calculating ceiling prices. Please provide sources for all recommended inputs.

**Remember that these input data and the resulting ceiling prices are intended to apply to projects coming on-line within a specified period of time – namely, within 18 months of being selected via one of the 2014 DG Standard Contract solicitations.**

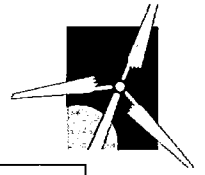
We expect that as a result of this process, certain inputs will change from the 2013 Program analysis based on changes in market conditions. There may be other inputs, however, which do not warrant adjustment, and whose magnitude and rationale was the product of detailed stakeholder discussion in the previous analysis. For these inputs – which are clearly noted below – we propose that the values remain the same unless compelling evidence for change is presented and supported.



<b>Technology Category: Solar 500 kW – 3 MW</b>			
<b>Standard Project Size for calculating ceiling price: 1500 kW DC</b>			
Input category	Recommended Input	Notes on Assumptions	Source
Expected Annual Average Net capacity factor, (%)	NCF is proposed at: <b>14.65%</b> DC. <sup>2</sup>		
Annual Production Degradation (%)	Proposed at: <b>0.5%</b>		
Total installed cost (\$/kW <sub>DC</sub> ), <b>excluding</b> Interconnection Cost			
Typical Interconnection cost (\$)			
O&M expenses (\$/kW <sub>DC</sub> -yr), Yr 1 (excluding those listed below)			
Insurance, Yr 1, (provide as % of total project cost, or in \$/yr)			
Project Management, Yr 1 (\$/yr)			
Land Lease, Yr 1 (\$/yr)			
Annual average escalation rate for O&M expenses (%)			
Royalties (% of revenue, or \$/yr)			
Property Taxes (\$ in Yr 1 and annual adjustment factor, or as annual estimates with <u>methodology clearly described</u> <sup>3</sup> )			
Permanent debt/equity (D/E) ratio			
Permanent debt term (years)			
Interest rate on debt (%)			
Lender's fee (% of loan amt)			
Avg. Debt Service Coverage Ratio			
After-tax target equity IRR (%)			
Decommissioning Reserve? If yes, how much?			
Other Comments:			

<sup>2</sup> Stakeholders wishing to comment on the continued use of this assumption may do so in the Other Comments box. All suggestions provided in this field should be specific and must include associated justification.

<sup>3</sup> The methodology, assumptions and calculation of annual property tax estimates can be provided separately.



<b>Technology Category: Solar 201 – 499 kW</b>			
<b>Standard Project Size for calculating ceiling price: 400 kW DC</b>			
<b>Input category</b>	<b>Recommended Input</b>	<b>Notes on Assumptions</b>	<b>Source</b>
Expected Annual Average Net capacity factor, (%)	NCF is proposed at: <b>14.56% DC.</b> <sup>4</sup>		
Annual Production Degradation (%)	Proposed at: <b>0.5%</b>		
Total installed cost (\$/kW <sub>DC</sub> ), <b>excluding</b> Interconnection Cost			
Typical Interconnection cost (\$)			
O&M expenses (\$/kW <sub>DC</sub> -yr), Yr 1 (excluding those listed below)			
Insurance, Yr 1, (provide as % of total project cost, or in \$/yr)			
Project Management, Yr 1 (\$/yr)			
Land Lease, Yr 1 (\$/yr)			
Annual average escalation rate for O&M expenses (%)			
Royalties (% of revenue, or \$/yr)			
Property Taxes (\$ in Yr 1 and annual adjustment factor, or as annual estimates with methodology clearly described <sup>5</sup> )			
Permanent debt/equity (D/E) ratio			
Permanent debt term (years)			
Interest rate on debt (%)			
Lender's fee (% of loan amt)			
Avg. Debt Service Coverage Ratio			
After-tax target equity IRR (%)			
Decommissioning Reserve? If yes, how much?			
Other Comments:			

<sup>4</sup> Stakeholders wishing to comment on the continued use of this assumption may do so in the Other Comments box at the bottom of the table. All suggestions provided in this field should be specific and must include associated justification.

<sup>5</sup> The methodology, assumptions and calculation of annual property tax estimates can be provided separately.



<b>Technology Category: Solar 50 – 200 kW</b>			
<b>Standard Project Size for calculating ceiling price: 150 kW DC</b>			
<b>Input category</b>	<b>Recommended Input</b>	<b>Notes on Assumptions</b>	<b>Source</b>
Expected Annual Average Net capacity factor, (%)	NCF is proposed at: <b>14.39% DC.</b>		
Annual Production Degradation (%)	Proposed at: <b>0.5%</b>		
Total installed cost (\$/kW <sub>DC</sub> ), <b>excluding</b> Interconnection Cost			
Typical Interconnection cost (\$)			
O&M expenses (\$/kW <sub>DC</sub> -yr), Yr 1 (excluding those listed below)			
Insurance, Yr 1, (provide as % of total project cost, or in \$/yr)			
Project Management, Yr 1 (\$/yr)			
Land Lease, Yr 1 (\$/yr)			
Annual average escalation rate for O&M expenses (%)			
Royalties (% of revenue, or \$/yr)			
Property Taxes (\$ in Yr 1 and annual adjustment factor, or as annual estimates with methodology clearly described <sup>6</sup> )			
Permanent debt/equity (D/E) ratio			
Permanent debt term (years)			
Interest rate on debt (%)			
Lender's fee (% of loan amt)			
Avg. Debt Service Coverage Ratio			
After-tax target equity IRR (%)			
Decommissioning Reserve? If yes, how much?			
Other Comments:			

<sup>6</sup> The methodology, assumptions and calculation of annual property tax estimates can be provided separately.



<b>Technology Category: Wind 1 MW – 3 MW</b> <b>Standard Project Size for calculating ceiling price: 1.5 MW</b>			
Input category	Recommended Input	Notes on Assumptions	Source
Expected Annual Average Net capacity factor, (%)	NCF is proposed at: <b>27.5%</b> .		
Annual Production Degradation (%)	Proposed at: <b>0.5%</b>		
Total installed cost (\$/kW), excl. Interconnection Cost			
Typical Interconnection cost (\$)			
O&M expenses (\$/kW-yr), Yr 1 (excluding those listed below)			
Insurance, Yr 1, (provide as % of total project cost, or in \$/yr)			
Project Management, Yr 1 (\$/yr)			
Land Lease, Yr 1 (\$/yr)			
Annual average escalation rate for O&M expenses (%)			
Royalties (% of revenue, or \$/yr)			
Property Taxes (\$ in Yr 1 and annual adjustment factor, or as annual estimates with methodology clearly described <sup>7</sup> )			
<b><i>See request on next page for wind financing assumptions with and without PTC/ITC.</i></b>			
Decommissioning Reserve? If yes, how much?			
Other Comments:			

<sup>7</sup> The methodology, assumptions and calculation of annual property tax estimates can be provided separately.



<b>Technology Category: Wind 1 MW – 3 MW</b>			
<b>Standard Project Size for calculating ceiling price: 1.5 MW</b>			
<b>Financing Assumptions <u>With</u> PTC</b>			
Permanent debt/equity (D/E) ratio			
Permanent debt term (years)			
Interest rate on debt (%)			
Lender's fee (% of loan amt)			
Avg. Debt Service Coverage Ratio			
After-tax target equity IRR (%)			
<b>Financing Assumptions <u>Without</u> PTC</b>			
Permanent debt/equity (D/E) ratio			
Permanent debt term (years)			
Interest rate on debt (%)			
Lender's fee (% of loan amt)			
Avg. Debt Service Coverage Ratio			
After-tax target equity IRR (%)			



<b>Technology Category: Wind 50 kW – 999 MW</b> <b>Standard Project Size for calculating ceiling price: 750 kW</b>			
Input category	Recommended Input	Notes on Assumptions	Source
Expected Annual Average Net capacity factor, (%)			
Annual Production Degradation (%)	Proposed at: <b>0.5%</b>		
Total installed cost (\$/kW), excl. Interconnection Cost			
Typical Interconnection cost (\$)			
O&M expenses (\$/kW-yr), Yr 1 (excluding those listed below)			
Insurance, Yr 1, (provide as % of total project cost, or in \$/yr)			
Project Management, Yr 1 (\$/yr)			
Land Lease, Yr 1 (\$/yr)			
Annual average escalation rate for O&M expenses (%)			
Royalties (% of revenue, or \$/yr)			
Property Taxes (\$ in Yr 1 and annual adjustment factor, or as annual estimates with methodology clearly described <sup>8</sup> )			
<b><i>See request on next page for wind financing assumptions with and without PTC/ITC.</i></b>			
Decommissioning Reserve? If yes, how much?			
Other Comments:			

<sup>8</sup> The methodology, assumptions and calculation of annual property tax estimates can be provided separately.





<b>Technology Category: Wind 50 kW – 999 kW</b>			
<b>Standard Project Size for calculating ceiling price: 750 kW</b>			
<b>Financing Assumptions <u>With</u> PTC</b>			
Permanent debt/equity (D/E) ratio			
Permanent debt term (years)			
Interest rate on debt (%)			
Lender's fee (% of loan amt)			
Avg. Debt Service Coverage Ratio			
After-tax target equity IRR (%)			
<b>Financing Assumptions <u>Without</u> PTC</b>			
Permanent debt/equity (D/E) ratio			
Permanent debt term (years)			
Interest rate on debt (%)			
Lender's fee (% of loan amt)			
Avg. Debt Service Coverage Ratio			
After-tax target equity IRR (%)			



Technology Category: Anaerobic Digestion 50 kW – 3 MW			
Standard Project Size for calculating ceiling price: 500 kW			
Input category	Recommended Input	Notes on Assumptions	Source
Biogas consumption/day (cubic ft/day)	150,000		
Energy content/cubic foot (BTU/cubic ft)	650		
Heat Rate (BTU/kWh)	9,000		
Availability Factor	92%		
Station Service/Parasitic Load	10%		
Annual Production Degradation (%)	0%		
Total installed cost (\$/kW), excl. Interconnection Cost			
Typical Interconnection cost (\$)			
O&M expenses (\$/kW-yr), Yr 1 (excluding those listed below)			
Variable O&M (¢/kWh), Yr 1 (excluding those listed below)			
Insurance, Yr 1, (provide as % of total project cost, or in \$/yr)			
Project Management, Yr 1 (\$/yr)			
Land Lease, Yr 1 (\$/yr)			
Annual average escalation rate for O&M expenses (%)			
Royalties (% of revenue, or \$/yr)			
Property Taxes (\$ in Yr 1 and annual adjustment factor, or as annual estimates with methodology clearly described <sup>9</sup> )			
Permanent debt/equity (D/E) ratio			
Permanent debt term (years)			
Interest rate on debt (%)			
Lender's fee (% of loan amt)			
Avg. Debt Service Coverage Ratio			
After-tax target equity IRR (%)			
Decommissioning Reserve? How much?			
Tipping Fees/Digestate Rev, if applicable: \$/ton, and tons per year			
Other Comments:			

<sup>9</sup> The methodology, assumptions and calculation of annual property tax estimates can be provided separately.



Technology Category: Hydroelectric <sup>10</sup> 50 kW – 1 MW			
Standard Project Size for calculating ceiling price: 500 kW			
Input category	Recommended Input	Notes on Assumptions	Source
Expected Annual Average Net capacity factor, (%)			
Annual Production Degradation (%)			
Total installed cost (\$/kW), excl. Interconnection Cost			
Typical Interconnection cost (\$)			
O&M expenses (\$/kW-yr), Yr 1 (excluding those listed below)			
Variable O&M (¢/kWh), Yr 1 (excluding those listed below)			
Insurance, Yr 1, (provide as % of total project cost, or in \$/yr)			
Project Management, Yr 1 (\$/yr)			
Land Lease, Yr 1 (\$/yr)			
Annual average escalation rate for O&M expenses (%)			
Royalties (% of revenue, or \$/yr)			
Property Taxes (\$ in Yr 1 and annual adjustment factor, or as annual estimates with methodology clearly described <sup>11</sup> )			
Length of construction period (mos)			
Source (D/E) and cost (e.g. interest rate) of construction financing			
Permanent debt/equity (D/E) ratio			
Permanent debt term (years)			
Interest rate on debt (%)			
Lender's fee (% of loan amt)			
Avg. Debt Service Coverage Ratio			
After-tax target equity IRR (%)			
Decommissioning Reserve? If yes, how much?			
Other Comments:			

<sup>10</sup> To be eligible for the DG contracts program, hydro facilities must meet the RI RES eligibility criteria established in CRIR 90-060-015 Rules and Regulations Governing the Implementation of a Renewable Energy Standard.

<sup>11</sup> The methodology, assumptions and calculation of annual property tax estimates can be provided separately.



Net capacity factor (NCF), Year 1 (%) - Capacity Factor is the % representation of the actual annual production vs. the theoretical maximum annual production of an energy project. This model requires the input of a Net Capacity Factor, meaning that the estimate of actual energy production should take into account all electricity losses (including those incurred between the generating facility and the contract delivery point), scheduled and unscheduled maintenance, shading, forced outages, and any other factors that could reduce production. For a solar facility, both capacity and capacity factor should be reported as DC. For a wind plant, this number should reflect the average annual P50 estimate.

Total installed cost: This includes the total expected all-in installed project cost, which should include all hardware, balance of plant, design, construction, permitting, development (including developer fee), interest during construction and financing costs. This figure should not account for any tax incentives, grants, or other cash incentives, which will be accounted for separately. It should also exclude the assumed interconnection cost, which is specified separately.

Interconnection cost: Please include your assumptions about the "typical" interconnection cost for a system in Rhode Island. Interconnection costs include costs relating to connecting to the grid, such as the construction of transmission lines, permitting costs with the utility, and start-up costs. This category will also include the cost of a new substation, if necessary.

O&M expenses: Operations and maintenance includes all fixed and variable expenses associated with project operations. Annual expenses for insurance, property taxes, land leases, royalties, and project management should be itemized separately.

Length of construction period: The # of months from construction start to commercial operation.

Source and cost of construction financing: This indicated whether construction is funded with debt, equity or a combination thereof, and at what interest rate or target IRR.

Permanent Debt-to-equity ratio. This specifies the ratio of the portion of funds borrowed (as a percentage of the total hard costs) to the portion of project funds supplied as equity. This is typically expressed as Debt / Equity – i.e. 70/30 or 50/50, etc.

Interest rate: The all-in interest rate is the financing rate provided by the bank or other debt investor.

Lender's Fee: This is the fee taken by the bank for originating the loan. It is expressed as a percentage of the total amount borrowed.

Debt Service Coverage Ratio: Denotes the requirement for cash flow available for debt service to be larger than the annual debt obligation itself. It is typically expressed as a ration of EBITDA (operating income) to annual debt service obligation. This survey requests the average DSCR required by the lender during the term of the loan.

Return on equity: This is the minimum after-tax internal rate of return required to attract equity investment to a project of the indicated scale, with the indicated D/E ratio.

Decommissioning Reserve: Represents the potential need to encumber cash flows from operations in order to demonstrate the availability of funds sufficient to pay for the removal of equipment from the project site at the conclusion of the facility's useful life.