

**STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS  
PUBLIC UTILITIES COMMISSION**

<p>REVIEW OF ELECTRIC DISTRIBUTION ) DESIGN PURSUANT TO R.I. GEN. LAWS ) § 39-26.6-24 )</p>	Docket No. 4568
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**SURREBUTTAL TESTIMONY OF ABIGAIL ANTHONY, PH.D.  
ON BEHALF OF ACADIA CENTER**

**1 I. INTRODUCTION**

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3 National Grid has filed, in Docket No. 4568, a “Review of Electric Distribution Rate  
4 Design” (“Joint Pre-Filed Testimony”). The opening of the Docket and the filing of the rate  
5 design were required in the Renewable Energy Growth Program legislation enacted in 2014. On  
6 October 23rd, 2015, Acadia Center submitted testimony from Abigail Anthony, Ph.D., regarding  
7 the qualifications of the witness, background on the changing energy system, and the tiered  
8 customer charge proposals in this docket. On November 23rd, Acadia Center submitted  
9 additional testimony from Abigail Anthony, Ph.D., that addresses the proposal for an access fee  
10 for stand-alone distributed generation, along with additional necessary background. On  
11 December 16th, 2015, National Grid filed Joint Rebuttal Testimony (“Joint Rebuttal”). This  
12 surrebuttal testimony responds to the Joint Rebuttal with respect to the benefits and costs of  
13 distributed generation, the tiered customer charge proposal, and the access fee proposal. Acadia  
14 Center continues to recommend that National Grid’s rate design proposals not be approved.

1 **II. BENEFITS & COSTS OF DISTRIBUTED GENERATION**

2

3 **Q. National Grid claims to have adequately analyzed and compared the benefits and**  
4 **costs of distributed generation (DG) in developing its proposal (Joint Rebuttal, p.**  
5 **24). Do you agree?**

6 A. No, I do not. National Grid has not provided any evidence that it has done a  
7 quantitative assessment of the benefits that distributed resources provide to the grid in  
8 Rhode Island. They refer to secondary sources, such as the EPRI paper (NG-3, p. 79) and  
9 other reports (NG-2-R, p. 71), and provide a qualitative discussion of some of the  
10 benefits associated with DG resources (Joint Rebuttal, pp. 25-26 and 28). Further,  
11 National Grid has provided an estimate of the purported “cost shift” associated with the  
12 REG program; however, it has not produced estimates of the cost of the services that DG  
13 customers of varying sizes and demand profiles received from the grid. As such, it is  
14 difficult to make an informed decision regarding rate design at this time.

15 **Q. National Grid has stated that the DG industry provides “little to no actual and**  
16 **quantifiable benefits” (Joint Rebuttal, p. 26). What evidence has been submitted to**  
17 **support this claim?**

18 A. As stated above, National Grid has not provided any empirical evidence with  
19 respect to the benefits of DG.

20 Further, there is an asymmetry in the way National Grid discusses costs and  
21 benefits. On the one hand, costs are discussed in the context of high levels of DG  
22 penetration and are presented over a 25-year period (National Grid response to CLF 1-  
23 16). Whereas, in their rebuttal testimony they focus on current, low levels of DG and  
24 claim, without data, minimal benefits. Also, that many of the benefits are not immediate  
25 but will accrue in the future. This is a selective representation of the situation, which  
26 makes it difficult to arrive at an informed and balanced conclusion in terms of what is  
27 best for ratepayers in Rhode Island.

1 **Q. National Grid has stated that the benefits of DG “...typically are not immediate and**  
2 **are difficult to identify and quantify.” (Joint Rebuttal, p. 26) Do you agree with is**  
3 **statement and does this justify excluding the benefits of DG from this proceeding?**

4 A. No. There is a growing body of work on the methodology to establish the value  
5 of DG. For example, the value of solar study commissioned by the Maine Public Utilities  
6 Commission and other resources referenced by National Grid in response to WED 1-13.  
7 This type of study helps identify real benefits and savings, some of which begin to accrue  
8 immediately and others which have long-term benefit for ratepayers. Like most  
9 modeling work that is done to inform decision making, it can be difficult to arrive at a set  
10 of assumptions, methodology, and results that are accepted by all parties. Also, it is true  
11 that it is difficult to identify, for example, added location-specific benefits with currently  
12 available data. However, these issues do not justify not doing a comprehensive and  
13 transparent assessment with stakeholder input to better inform the Commission.

14 Furthermore, it is important to note that the first balancing factor listed in § 39-  
15 26.6-24(b), which the Commission is to take into account in establishing any new rates, is  
16 the benefits of distributed energy resources; and these benefits are not limited to  
17 distribution system benefits.

18 Finally, distribution system costs should not be considered in a vacuum,  
19 especially as the state moves to integrate and streamline processes related to the energy  
20 system and related regulation. Acadia Center maintains that it is appropriate for DG  
21 customers to pay for the services they receive from the grid to ensure a reasonably  
22 equitable allocation of distribution system costs. However, if distribution system costs –  
23 as well as other costs such as energy and capacity costs – are offset because DG systems  
24 are generating power, then these benefits or savings to ratepayers should be accounted  
25 for.

26 **Q. Do you agree with National Grid that allocated cost of service studies, as**  
27 **traditionally done, are sufficient to determine rate design with distributed energy in**  
28 **mind?**

29 A. No, I do not. This principle is argued on p. 19 of the Joint Rebuttal and p. 56. As  
30 stated in the Joint Rebuttal, allocated cost of service studies assign common  
31 responsibility for costs to groups of customers with similar characteristics. In the first

1 place, customers with distributed generation do not have identical cost profiles as  
2 customers without distributed generation. Second, customers with distributed generation  
3 provide benefits to the grid. Both of these statements are especially true for stand-alone  
4 distributed generation. The value and benefits of distributed energy resources are key  
5 factors in other states that are actively debating reforms to the electric system and rate  
6 design. In particular, the New York Department of Public Service has recently launched a  
7 stand-alone proceeding to address important questions about the valuation of distributed  
8 energy resources. A notice of this proceeding is attached as Exhibit No. AC-6.

9 **Q. Does this mean that customers with distributed generation should be treated as a**  
10 **separate rate class?**

11 A. No, it does not. As discussed in my previous testimony, the sensible next step to  
12 take with existing metering is to adjust net metering credit values for certain categories of  
13 projects.

14 **Q. What are the avoided distribution costs benefits identified in Acadia Center's value**  
15 **of solar study?**

16 A. Acadia Center estimated that the avoided distribution costs in 2014 range from  
17 \$0.020 to \$0.028 per kWh depending on the orientation of the solar array. We corrected  
18 a spreadsheet error, and the corrected distribution value for the south-facing array with a  
19 35 degree tilt is \$0.021, not \$0.0047.

20 **Q. What are the overall benefits identified in Acadia Center's value of solar study?**

21 A. Acadia Center estimated that the 25-year levelized grid value of solar in Rhode  
22 Island in 2014 was \$0.20 to \$0.25 per kWh depending on the orientation of the solar  
23 array. The grid value of solar in this study is the sum of: 1) avoided energy costs; 2)  
24 avoided capacity costs; 3) avoided transmission costs; 4) avoided distribution costs; 5)  
25 energy market price suppression effects; 6) capacity market price suppression effects; and  
26 7) avoided environmental compliance costs (CO<sub>2</sub> and NO<sub>x</sub>). Avoided line losses and  
27 fuel price hedge are included where appropriate. Some of these benefits accrue  
28 immediately (e.g. avoiding the need to purchase electricity at wholesale market rates in a  
29 given hour) while others accrue over time (e.g. avoiding investments in the transmission  
30 and distribution systems). The societal value of solar is estimated to be \$0.07 per kWh.

1 **Q. Based on the results of Acadia Center’s study, is it appropriate to conclude that net-**  
2 **metered customers are being overcompensated for the value they provide?**

3 A. No. Acadia Center produced its value of solar study because, in many forums, the  
4 benefits of solar PV were not being discussed – only the costs. The purpose was to show  
5 the various components and an estimate of their contribution to the overall value of solar,  
6 as well as how the values change depending on the orientation of a solar array. A more  
7 comprehensive and up-to-date assessment that includes input from the utility and various  
8 stakeholders would be required for ratemaking purposes.

9 To note, the overall value of the net metering credit in Rhode Island appears to be  
10 appropriate based on the estimates in our study. Any discrepancies between, for example  
11 the value to the distribution grid and the distribution rate credit received, is exactly why  
12 Acadia Center has proposed the accounting mechanism laid out in our Next Generation  
13 Solar Framework (Exhibit No. AC-4). Bi-directional rates would also allow for the  
14 individual components of the total to be assessed. However, these changes would require  
15 a proceeding with a broader scope or legislation that allows adjustments to net metering  
16 credit structures.

17 **Q. National Grid has stated that: “In all cases, peak loads on distribution feeders do**  
18 **not occur at the same or near the times as the peak output of intermittent DG.**  
19 **Feeder peaks for the summer months, which are the highest peaks experienced**  
20 **during the year, are typically between 3 p.m. and 9 p.m.” (Joint Rebuttal, p. 29)**  
21 **How do you respond to this statement?**

22 A. Maximum output from solar arrays may not exactly match the one or a few peak  
23 summer hours that drive overall distribution system costs, but a significant amount of  
24 solar generation may still be coincident with feeder peaks. A study commissioned by  
25 National Grid and the Office of Energy Resources – *Solar PV for Distribution Grid*  
26 *Support: The Rhode Island System Reliability Procurement Solar Distributed Generation*  
27 *Pilot Project (2014)* – found that the Distribution Contribution Percentages of solar on a  
28 feeder in the Tiverton and Little Compton area – primarily residential load – ranged from

1           26 to 61 percent depending on the orientation of the arrays.<sup>1</sup> The Distribution  
2           Contribution Percentage is the ability of solar PV to “provide reliable load relief, which  
3           depends on its output in the hours with the highest loads.” The study also examined the  
4           Distribution Contribution Percentages over the top 288 hours for each summer, and those  
5           values ranged from 38 to 48% depending on the orientation of the solar PV arrays.

6           Solar PV can provide reliable load relief during peak hours. It is misleading to  
7           focus on peak DG output instead of output that is coincident with system and feeder  
8           peaks, which does have the real ability to reduce load and distribution system costs.

9           **Q. Do you agree that there is urgency in addressing the “cost shift” argument?**

10          A.           No, National Grid has not provided any new evidence to support the need for  
11          immediate action. In fact, National Grid acknowledges that there are currently low levels  
12          of penetration of DG on the distribution system (Joint Rebuttal, p. 29). Based on the  
13          design of the REG program we can also expect modest and controlled growth of DG in  
14          the near term.

15                 I believe it is prudent to pause now and not make an incremental adjustment to  
16          rates that may have a negative impact on balance. In the meantime, stakeholders can  
17          engage in a deliberative process that contemplates a rate design and utility business  
18          model that empowers the utility and ratepayers to work toward a modern, clean energy  
19          system instead of settling for a quick fix that has not been supported by evidence and may  
20          in fact be regressive.

21  
22           **III. TIERED CUSTOMER CHARGE PROPOSAL**

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24           **Q. National Grid describes the type of information the Company will communicate to**  
25           **customers about the proposed rate structure. (Joint Rebuttal, pp. 39-40). Is this**

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<sup>1</sup> Cummings, F., C. Salamone, and R. Cross (2014). Solar PV for Distribution Grid Support: The Rhode Island System Reliability Procurement Solar Distributed Generation Pilot Project. Prepared by Peregrine Energy Group for National Grid and the Rhode Island Office of Energy Resources. Available online at: [http://www.energy.ri.gov/documents/SRP/RI-SRP-PV\\_Report\\_Peregrine-team\\_07-16-2014.pdf](http://www.energy.ri.gov/documents/SRP/RI-SRP-PV_Report_Peregrine-team_07-16-2014.pdf)

1           **information sufficient to help customers manage their bills under the proposed rate**  
2           **design?**

3    A.           No, it is not. National Grid states that it will provide three types of information to  
4           customers: 1) how the customer charges will be determined under the tiered structure; 2)  
5           why the new structure is appropriate; and, 3) customer electric usage history for the past  
6           13 months and an explanation of the potential bill impacts resulting from the new rate  
7           design. National Grid declines to provide any real time information or advance notice  
8           when a customer may be approaching the threshold of the next tier (Joint Rebuttal, p. 42).

9           This information is insufficient to allow customers to manage their electricity  
10          bills. With only this information, customers will not have an accurate understanding of  
11          whether they are at risk of crossing into the next tier. Also, customers will not have an  
12          accurate understanding of whether modifying their consumption through efficiency or  
13          conservation will drop them into a lower tier. A customer will not know until after the  
14          fact which month determined his tier. At this point, it will be difficult for customers to  
15          “diagnose” the cause, and will make future consumption decisions based on guesses. It  
16          seems unlikely that the typical customer will be able to ascertain with much accuracy  
17          whether he used the dryer more often than average last month, or whether an air  
18          conditioner or basement dehumidifier had been working overtime to meet a programmed  
19          setting.

20    **Q.    National Grid states that time-varying rates and smart demand charges are**  
21          **“significantly more complicated and therefore more difficult for the average**  
22          **customer to understand.” (Joint Rebuttal, p. 40). Are there examples of widely**  
23          **understood time-varying and demand-based price structures?**

24    A.           Yes. There are numerous examples of time-varying price structures that are  
25          widely understood. Among the most obvious are rates for long-distance phone service  
26          and free “nights and weekends” for cell phone customers. Many products also use an  
27          analogous model of “smart demand charges,” charging higher rates during periods when  
28          overall demand for the product or service is high, providing economic incentives for  
29          customers with flexibility to consume the product during off-peak periods. Transportation  
30          is a good example of smart demand pricing that is widely understood. Amtrak train

1 tickets are more expensive during commuting hours and during holiday travel periods.  
2 Air fare is more expensive during school vacation weeks.

3 Moreover, communications technology and enabled home appliances allow  
4 customers to automatically control their energy use and costs, and benefit from more  
5 complex rate designs like time-varying rates and coincident peak demand charges that  
6 provide incentives to manage energy use more efficiently, enable consumers to save  
7 money, and optimize the grid.

8 **Q. National Grid states that time-varying rates and smart demand charges require**  
9 **significant investment in advanced metering infrastructure and systems (Joint**  
10 **Rebuttal, p. 40). In your opinion, does this justify adopting the proposed rate design**  
11 **now?**

12 A. No, it does not. National Grid has not demonstrated that the tiered customer  
13 charge is superior to volumetric charges nor to other rate designs that are also possible  
14 with the current metering and billing systems. Inclining block rates or higher rates in  
15 months when local and system peaks are generally set and lower rates in other months are  
16 worth the Commission’s consideration. These rate designs may provide more transparent  
17 and easier-to-understand price signals to customers to reduce consumption during periods  
18 of peak demand. Adjustments to net metering credit values are also possible with the  
19 current metering and billing systems, but would require legislative action. It is also worth  
20 considering time-of-use prices that may be enabled with metering that is less expensive  
21 than full advanced metering or strategies to phase-in advanced metering.

22 Furthermore, in my opinion it does not make sense to implement a rate structure  
23 that is inconsistent with other Rhode Island laws. The Least Cost Procurement provisions  
24 of R.I.G.L. § 39-1-27.7 require the Commission to approve utility plans to procure all  
25 energy efficiency that is lower cost than additional supply. Yet the Company’s current  
26 proposal will make it harder to incentivize customers to invest in energy efficiency  
27 measures. R.I.G.L. § 39-1-27.7.1 states that one of the purposes of any decoupling  
28 proposal made by the utility is to consider “the reduction of fixed, recurring customer  
29 charges and transition to increased unit charges that more accurately reflect the long-term  
30 costs of energy production and delivery.” Yet National Grid’s current proposal increases  
31 the reliance on fixed customer charges and reduces unit charges.

1 **Q. Does Acadia Center maintain that time-varying rates or demand charges are**  
2 **superior to National Grid’s tiered customer charge proposal?**

3 A. Yes, Acadia Center maintains that time-varying rates and demand charges are  
4 better options to align distribution rates with underlying system costs while creating  
5 opportunities for consumers to lower their energy bills through energy efficiency and  
6 other customer-side resources. Acadia Center is not offering a definitive opinion on how  
7 demand charges, time-varying rates, or other strategies mentioned above rank against  
8 each other or whether one of these options is the ideal rate design for Rhode Island.  
9 These alternatives merit strong consideration and comparison to the Company’s proposal.  
10 The Commission should consider evidence of the impact of different rate designs and  
11 consistency with state policies.

12 **Q. Is National Grid’s proposed tiered customer charge the best rate design to reflect**  
13 **customer size that can be implemented with existing metering?**

14 A. National Grid does not provide empirical evidence that the tiered customer charge  
15 structure reflects the size or impact that a customer has on the overall cost of the  
16 distribution grid. The proposal does not capture the customer’s contribution to demand at  
17 the time of local or system peaks- which drive the overall cost of the system- better than  
18 monthly consumption, particularly for full requirement, non-net metered customers.

19 **Q. Does National Grid introduce good reasons to evaluate the costs and benefits of new**  
20 **metering that could enable more options?**

21 A. Yes. National Grid repeatedly states that alternative rate design options are not  
22 possible with the existing metering in Rhode Island. The numerous references to this  
23 limitation indicates that metering may be a significant barrier to adopting a more optimal  
24 rate design for Rhode Islanders, including limiting consideration of any time-dependent  
25 rate. Additionally, in the company’s initial testimony, National Grid states that its ideal  
26 rate design is not possible with the existing metering (Joint Pre-filed Testimony, p.20).  
27 Given that National Grid and the intervenors have identified metering as a significant  
28 barrier, the Commission should consider a full evaluation of the potential costs and  
29 benefits of new metering that can enable rate design options that are better aligned with  
30 Rhode Island’s consumer and energy goals.

1 **Q. National Grid proposes to use the tiered customer charge as a “tool to garner more**  
2 **participation in the Company’s energy efficiency programs.” (Joint Rebuttal, p. 41).**  
3 **Will the proposed rate design make energy efficiency easier?**

4 A. No, it will not. The combination of a higher customer charge and lower  
5 volumetric charge gives customers less opportunity and incentive to invest in energy  
6 efficiency measures that lower bills and reduce the value of energy savings. It will be  
7 difficult for customers to accurately assess whether one’s energy efficiency actions will  
8 affect his tier.

9 **Q. National Grid proposes several options to address intervenor concerns (Joint**  
10 **Rebuttal, p. 49). Do these proposals address Acadia Center’s concerns with the**  
11 **tiered customer charge concept?**

12 A. National Grid offers three options to address intervenor concerns: 1) adopting a 6  
13 month ratchet; 2) assessing the tiered charge on a month-to-month basis; and 3) delaying  
14 implementation to provide time to educate customers. These options do not address  
15 Acadia Center’s most fundamental concerns with National Grid’s proposal. Specifically,  
16 the tiered customer charge proposal does not send price signals to target system peak and  
17 does nothing to support investments that help consumers and the utility manage load and  
18 reduce the cost of the electricity system going forward. Increasing reliance on fixed  
19 customer charges undermines Rhode Island’s efforts to reduce the cost of its energy  
20 system through energy efficiency.

21 **Q. Please comment on National Grid’s illustrative examples of the impact of the tiered**  
22 **customer charge on electric heating (NG-4-R) and electric vehicle (NG-5-R)**  
23 **customers.**

24 A. The illustrative examples show that lower volumetric charges can offset the  
25 customer charge for customers with high maximum monthly consumption (customers  
26 near the top of their tier). These scenarios do not indicate the likelihood that a customer  
27 will bump to a higher tier.

28 A comprehensive evaluation of the costs and benefits of advanced metering could  
29 highlight ways that other rate designs could incentivize electric vehicle customers to  
30 charge during off-peak hours or provide battery-stored power back to the grid and help to  
31 flatten the load curve and improve asset utilization. In National Grid’s response to

1 Division 1-9, the Company states that ISO-New England forecasts faster growth in peak  
2 load. In that response, National Grid highlights the potential of electric vehicles to charge  
3 during off-peak periods and “generate greater efficiency in use of the distribution system  
4 [.]” Thus, it would seem to be a missed opportunity to implement a rate design that does  
5 not encourage strategic load shifting.  
6

7 **IV. ACCESS FEE PROPOSAL**  
8

9 **Q. Do you agree that National Grid has substantiated the costs that the Access Fee is**  
10 **intended to collect?**

11 A. No. The Joint Rebuttal continues to conflate the costs to serve load with costs due  
12 to stand-alone distributed generation. The principle behind the structure of the Access  
13 Fee proposal has nothing to do with cost causation principles.

14 **Q. Do you agree that stand-alone DG customers do not have to be separately**  
15 **evaluated? (Joint Rebuttal p. 56).**

16 A. No. As discussed previously in this testimony, rate design for a distributed energy  
17 future requires a serious consideration of the value of different types of distributed energy  
18 resources. Many types of stand-alone distributed generation have sufficiently different  
19 costs and benefits from traditional customers, with or without on-site generation, to merit  
20 independent analysis.

21 **Q. Do you agree that National Grid has provided enough information to justify the**  
22 **magnitude of the Access Fee?**

23 A. No. Stand-alone distributed generation systems pay interconnection fees that  
24 cover the cost of ensuring that the distribution system can handle their output. The Joint  
25 Rebuttal explicitly identifies metering costs and ongoing operation and maintenance costs  
26 that are not currently covered by fees or rates. However, these costs are very explicitly  
27 not the basis of the size of the proposed Access Fee.

1 **VI. CONCLUSION**

2

3 **Q. Has National Grid adequately and convincingly addressed Acadia Center’s**  
4 **concerns about the company’s proposal?**

5 **A.** No. National Grid’s rebuttal does not adequately address the benefits of DG nor  
6 propose how these benefits may be measured and quantified. It seems patently  
7 unbalanced to propose a rate structure premised on addressing customer adoption of DG  
8 without consideration of the benefits of those resources.

9 National Grid’s rebuttal testimony does not convince me that customers will have  
10 the information or tools necessary to manage their electricity consumption and bills under  
11 the proposed tiered customer charge structure. Rate design should empower customers to  
12 effectively and optionally take advantage of more complex rate designs. Empowerment  
13 may come in different forms, but should include rates that maintain incentives to use  
14 energy wisely and appropriate feedback technology that allows consumers to respond  
15 effectively to even more complex rate designs.

16 National Grid’s rebuttal also does not provide convincing evidence that the tiered  
17 customer charge proposal will align prices with the underlying cost drivers of the  
18 distribution system better than the current rate design. It continues to be hard to see how  
19 the proposed rate design will contribute to lowering system costs and delivering  
20 consumer benefits.

21 Finally, National Grid’s rebuttal only further demonstrates that the Access Fee  
22 proposal is not based on sound rate design principles. It conflates the costs of serving  
23 load with the cost of providing generation and the size of the Access Fee is wholly  
24 unrelated to any costs caused by stand-alone distributed generation that are not covered  
25 by current rates and interconnection fees.

26 **Q. How do you propose moving forward?**

27 **A.** Acadia Center respectfully recommends that the Commission reject National Grid’s  
28 proposal and take steps to enable and determine long-term rate design that supports  
29 Rhode Island’s energy vision. Specifically, Acadia Center recommends that Commission  
30 undertake a comprehensive assessment of the costs and benefits of DG that includes input  
31 from the utility and various stakeholders. Acadia Center also recommends that the

1 Commission consider a full evaluation of the potential costs and benefits of new metering  
2 that can enable rate design options that are better aligned with Rhode Island's consumer  
3 and energy goals.

4 **Q. Does this conclude your testimony?**

5 A. Yes, it does.

STATE OF NEW YORK  
PUBLIC SERVICE COMMISSION

CASE 15-E-0751 - In the Matter of the Value of Distributed  
Energy Resources.

NOTICE SOLICITING COMMENTS AND PROPOSALS ON  
AN INTERIM SUCCESSOR TO NET ENERGY METERING  
AND OF A PRELIMINARY CONFERENCE

(Issued December 23, 2015)

TAKE NOTICE that interested parties are invited to file comments, in the form of answers to some or all of the questions set forth in **Attachment A** to this Notice, and in the form of detailed proposals for an interim successor to NEM tariffs in New York State. **Responses should be filed with the Secretary on or before Monday, April 18, 2016.**

TAKE FURTHER NOTICE that a preliminary conference, before an Administrative Law Judge assigned by the Public Service Commission in the above-captioned proceeding, will be held on Thursday, January 7, 2016, commencing at 9:00 a.m. and concluding by 12:00 p.m. in the Boardroom, 19th floor, Three Empire State Plaza, Albany, New York. The conference will be webcast at <http://bcove.me/riw4a8le>.

The purpose of the preliminary conference is to provide interested parties additional guidance and an opportunity to ask questions and seek clarification about the process and scope of a matter being undertaken by the Department of Public Service to develop an interim successor to net energy metering tariffs in New York State.

Moreover, to provide the parties additional guidance, it is likely that similar sessions will be held prior to the April 18, 2016 deadline for filing responses to the questions attached to this notice.

(SIGNED)

KATHLEEN H. BURGESS  
Secretary

## **ATTACHMENT A**

### **Case 15-E-0751 - In the Matter of the Value of Distributed Energy Resources**

#### **Questions on the Value of Distributed Energy Resources and Options Related to Establishing an Interim Methodology**

##### I. Introduction

##### 1. Background

The Commission has stated that achieving a more precise articulation of the full value of distributed energy resources (“DER”) is “a cornerstone REV issue.”<sup>1</sup> In its order authorizing the commencement of Community DG programs, the Commission directed Staff to initiate a matter to establish valuation methods for DER.<sup>2</sup>

The Commission subsequently ordered, in the context of establishing floating capacity limits for Net Energy Metering (NEM) through 2016, that a matter be initiated to establish a methodology for valuing DER and designing rates for DER providers. While no express deadline was established for completing the development of a methodology for valuing DER, the Commission noted that “the development of the tools and methodologies required to fully implement an approach [for valuation of DER] on the ‘Value of D’ is likely a long term effort.” The Commission also concluded that “there is sufficient time to develop and adopt more precise interim methods of valuing DER benefits and costs, as well as the design of

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<sup>1</sup> Case 15-E-0082, Proceeding on a Community Net Metering Program, Order Establishing a Community Distributed Generation Program and Making Other Findings, (July 17, 2015) p. 24 (CDG Order).

<sup>2</sup> CDG Order, p. 36. The CDG Order directed Staff to file a report on the outcome of this process by January 15, 2016. That deadline has been subsumed by the matter undertaken here.

appropriate rates and valuation mechanisms before December 31, 2016.”<sup>3</sup> Such measures can serve as a bridge while the complete ‘value of D’ tools and methodologies are developed.<sup>4</sup>

This document commences the Commission-ordered matter to address two closely related tasks: (1) identify for the Commission an interim approach to valuing DER including a transition plan for moving from net metering to DER valuation that can be adopted prior to December 31, 2016; and (2) establish a methodology and process for determining the full value of DER for the larger purposes of developing DER compensation mechanisms built upon an LMP+D approach.

## 2. Related Proceedings

In the Staff White Paper on Ratemaking and Utility Business Models (“Track Two White Paper”), Staff discussed the approach to more accurately identify and quantify the value of DER resources by the formula LMP + D, where “LMP” represents the location-based marginal price of energy, and “D” represents the full range of additional values provided by the distribution-level resource.<sup>5</sup> The Commission approved this approach as the starting point for further analysis by stakeholders, stating that LMP+D represents “the full value of a distribution-level resource on a time and location specific basis.” In the NEM Interim Ceilings Order, the Commission further elaborated that “[the] ‘value of D’ can include load reduction, frequency regulation, reactive power, line loss avoidance, resilience and locational values as well as values not directly related to delivery service such as installed capacity and emission avoidance.”<sup>6</sup>

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<sup>3</sup> Case 15-E-0407, Orange and Rockland Utilities, Inc. – Petition For Relief Regarding Its Obligation to Purchase Net Metered Generation Under Public Service Law §66-j, Order Establishing Interim Ceilings on the Interconnection of Net Metered Generation (issued October 16, 2015) p. 14 (NEM Interim Ceilings Order).

<sup>4</sup> NEM Interim Ceilings Order, at pp. 9, 11, & 15.

<sup>5</sup> Case 14-M-0101, Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision, Staff White Paper on Ratemaking and Utility Business Models (issued July 28, 2015) p.75 (Track Two White Paper).

<sup>6</sup> NEM Interim Ceilings Order, p. 9.

In the Track Two White Paper, Staff also recommended that the bill crediting mechanism used in NEM should continue to be considered as part of a successor to NEM, and that changes to NEM should be focused on larger projects with substantial net export of electricity.<sup>7</sup>

The “value of D” takes different forms and values depending on the application. For example, the first major application for the “value of D” is valuing alternatives to long term investments such as traditional utility investment, investment in DSP infrastructure and non-wire alternatives. A second application is compensation mechanisms, which includes rate design, LMP+D payments, as the basis for the transition from NEM. Staff’s Benefit Cost Analysis Framework White Paper (“BCA White Paper”) identified and discussed benefit and cost components to be applied in four areas: (1) utility investments in distributed system platform capabilities; (2) procurements of DER through selective processes; (3) procurements of DER via tariffs; and (4) energy efficiency programs.<sup>8</sup>

The Commission’s eventual adoption of a BCA Framework will partially or entirely define the categories of benefits and costs for these applications, which will provide an important foundation for DER valuation. However, the BCA Framework, in and of itself, may be insufficient to represent the full value of DER in certain applications. Further, there remains a need to design compensation mechanisms based on those categories of benefits and costs.

### 3. The Value of DER and Transition from NEM

This matter emanates from the Commission’s conclusion “that a single comprehensive process should be embarked upon to adequately address the range and complexity of the questions raised [in this matter]. The answers to these questions will lead to the adoption of the more precise valuation of DER contemplated in REV, upon the development of the appropriate accompanying rate design and the determination of the strategies alternative to the current approach of identifying specific, and

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<sup>7</sup> Track Two White Paper, p. 108

<sup>8</sup> Case 14-M-0101 Staff White Papers on Benefit-Cost Analysis in the Reforming the Energy Vision Proceeding (July 1, 2015), p. 1 (BCA White Paper).

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therefore restricted market and customer segments eligible for net metering.”<sup>9</sup> The objective of this matter is to identify, examine and clarify specific proposals and mechanisms for valuing DER and, most immediately, to define a near-term transition from NEM. Because the Commission has established a deadline for the first task, the initial focus of this inquiry will be on developing an interim methodology of valuing DER. However, since much of the information, data, and analysis involved in establishing an interim transition, including but not limited to the transition from NEM, will be directly applicable to achieving the long term goal of developing full valuation for compensation in DER markets, the two tasks initiated by the Commission necessitate parallel, as opposed to sequential consideration. The Governor’s recently announced mandate to require that 50% of the energy consumed in New York State be provided by renewable resources by 2030 may have an influence on the issues considered as part of this matter. Any implications can and will be considered as details of this initiative become known.

The matter will be led and facilitated by an Administrative Law Judge (ALJ) and will involve the opportunity for parties to directly question other parties’ as they relate to matters of fact. As an initial step in the process, this document introduces two sets of questions to seek substantive answers from interested parties. To the extent applicable, respondents should provide support for their responses in technical appendices. The opportunity to engage in limited discovery will be established by the ALJ. Accordingly, parties submitting responses and/or proposals should be prepared to respond to requests for supporting materials.

Because the Commission is expected to act on the list of BCA benefit and cost categories, on which parties have commented, it would be unproductive for parties to reargue these issues within the inquiry described here. For that reason, the benefit and cost categories identified in Staff’s BCA White Paper should be used by parties until the Commission has acted. Parties may express and identify any reservations regarding the White Paper benefit and cost categories, but should use the White Paper categories as the basis of their analysis.

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<sup>9</sup> NEM Interim Ceilings Order, p. 14.

Following the filing of responses to questions posed in this document and subsequent discovery, the ALJ will establish a further process for parties to examine and comment on each other's proposals and assertions, to enhance the record for the Commission's ultimate decision. The precise form of this process will be at the discretion of the ALJ, taking into consideration the number of active parties, the extent and nature of disagreements to be resolved, the timeline established by the Commission, and other relevant factors.

Parties that do not wish to make specific proposals, engage in discovery, or offer responses that are subject to discovery, may submit statements of general policy that should be clearly labeled "Policy Statement". Such policy statements will be taken into account, but the weight of any specifics contained in a policy statement will reflect that it has not been subject to examination by other parties.

Interested parties are invited to contribute their own analyses and research. As mentioned in the O&R Order, staff will also make available ongoing research addressing the development of competitive market tools, pricing structures, and full value tariffs that is being conducted with the assistance of consultants. That work will soon be concluded and made available to interested parties for reference in the preparation of comments. We emphasize that those reports, as well as the recently filed study of the benefits and costs of NEM in New York, are not intended as Staff proposals. Rather, they are expressly intended to serve as resources to parties and Staff. Parties will not be required to specifically comment upon or refer to these documents but may, in their sole discretion, refer to them in the filings made in response to the questions presented below, and in any accompanying proposals.

## II. Questions for Party Response

With this effort, we are seeking to identify, examine and clarify possible proposals, to the extent they exist. Additional work will be required, based on the foundation of proposals submitted, to develop and finalize the interim method of valuing DER benefits and costs including adequate rate designs. Two sets of questions are presented. The first set of questions focuses on NEM successor options, while the second set

focuses value methodology approaches. To avoid undue burden on parties, they may respond to the questions in part.

**Responses to the questions should be filed with the Secretary on or before Monday, April 18, 2016.**

To provide additional guidance to the parties, pursuant to the notice issued in conjunction with this document, a preliminary conference will be convened in Albany on Thursday, January 7, 2016. The purpose of that conference will be to provide an opportunity for interested parties to ask questions about the process and scope of this matter. An ALJ will preside over that conference. Moreover, to provide the parties additional guidance, it is likely that similar sessions will be held prior to the deadline for filing responses to the questions posed herein.

A. Proposals for Interim Methodologies

While questions of the benefits and costs of NEM as it is currently configured are closely related to the development of an approach to valuing DER, it will be more productive to address the issues in constructive forward-looking context.<sup>10</sup>

1. Identify and describe, in as much detail as possible, a mechanism or mechanisms to more precisely value DER as bridge, as currently effectuated in tariff today, while the complete value of D tool and methodologies are developed.<sup>11</sup>
2. For each mechanism proposed, or for any mechanism ultimately adopted, identify the input assumptions and the types of benefits and costs relevant to the mechanism, including analysis of their relative significance in magnitude.

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<sup>10</sup> In light of the task the Commission has established for this matter, a proposal to maintain NEM in its current form for all customers, or a proposal to eliminate NEM without establishing a successor that satisfies the Commission's policy goals, will not be entertained in this forum.

<sup>11</sup> Alternatively, as described above, describe how the values discussed in the questions ought to be reflected in any mechanism that is ultimately adopted.

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3. How can the contractual and financial expectations of existing projects be respected?
4. Bill impacts are a critical metric for assessing any proposal. How should bill impacts be identified and analyzed? What criteria should be employed to assess the bill impacts of a given proposal?
5. For each mechanism, describe with as much specificity as possible:
  - A) The benefits and costs to:
    - i) participants;
    - ii) non-participants; and
    - iii) society
  - B) How the benefits and costs vary when the customer is demand billed versus non-demand billed.
  - C) How the benefits and costs vary when the project is targeted to a system need versus randomly distributed.
  - D) How the mechanism applies to energy injections into the grid, versus load reduction.
6. Describe how the mechanism would affect and reflect:
  - A) More accurate and precise value signaling
  - B) Simplicity in the customer experience and ability to encourage customer adoption.

C) The Commission's REV policy objectives<sup>12</sup>

7. Describe how the mechanism would be consistent with current or foreseeable enabling technology.
8. Describe the extent to which the mechanism relies on changes in rate design, including whether rate design changes to implement the mechanism would apply only to participating customers or apply to all customers.
9. Describe the implications of the mechanism for fair, efficient, and sustainable recovery of distribution system costs.
10. Describe the implications of the mechanism for fair, efficient, and sustainable customer investment.
11. Describe the extent to which the cost of providing distribution service to individual customers utilizing DER is or could be avoided by the DER.
12. Describe how a mechanism would focus on, or apply to:
  - A) Residential or small commercial (*i.e.*, non-demand-billed) on-site projects.
  - B) Demand-billed projects whose output is not substantially greater than the load at the meter.

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<sup>12</sup> These would include the policy objectives identified by the Commission in its order instituting the REV proceeding (as well as any other policy objectives subsequently identified the Commission): (1) enhanced customer knowledge and tools that will support effective management of the total energy bill; (2) market animation and leverage of customer contributions; (3) system wide efficiency; (4) fuel and resource diversity; (5) system reliability and resiliency; and (6) reduction of carbon emissions. Case 14-M-0101, Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision, Order Adopting Regulatory Policy Framework and Implementation Plan (issued February 26, 2015), p. 4.

C) Large projects whose output is substantially greater than the load at the meter (e.g., Remote Net Metering, Community DG).

13. Provide illustrations of how the proposed compensation mechanism would be applied. Issues for attention should include (but do not need to be limited to):

A) Is accounting accomplished via bill credits or via some other mechanism?

B) Is generation netted against consumption or are energy flows accounted for separately?

C) Is measurement and/or accounting of generation conducted on a volumetric or a monetary basis?

14. Describe anticipated impacts on participating and non-participating low income customers.

15. Describe how the mechanism would distinguish, if at all, between solar PV and other technologies currently eligible for NEM.

16. Describe how the mechanism would, if at all, account for the value of emissions reductions.

B. Developing a Full Valuation Methodology

The following additional questions provide line-of-sight to the continuation of the process beyond the development of interim “bridge” methodologies.

17. Describe how a full valuation mechanism should account for the following:

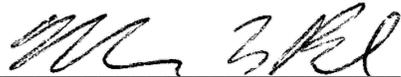
A) Variations in benefits and costs between generation that is dispatchable and generation that is variable or intermittent.

B) Which types of benefits and costs should be valued on a fixed basis or on a dynamic basis?

- C) For those components where a fixed value is proposed, how often would the value be updated, and by what process?
  - D) For those components where a dynamic value is proposed, identify the dimension(s) which should be variable (e.g., temporal, locational, service class, gross usage, and the like).
18. Describe whether a valuation mechanism should be adjusted for time-varying rates. If a customer is billed on a time-varying rate:
- A) How would measurement and/or accounting for time-varying rates be handled? (e.g., How will generation be metered and credited against time periods with differing rates charged to customers?)
  - B) Would compensation be adjusted to reflect other time-varying elements of system value irrespective of whether a customer's consumption is billed with time varying rates?
  - C) How would compensation be applied to other aspects of a customers' bill (e.g., fixed charges, demand charges, etc.)?
  - D) How would these mechanisms be applied to on-site DER compared to offsite or remote DER?
19. Describe how the mechanism would balance price stability and risk mitigation (to facilitate market development) against the objective of accurate and dynamic price signals.
20. Describe the extent to which the system value of a single DER project may be a function of the degree of networked DER penetration (e.g., the total amount of DER on a particular circuit serving a similar set of system values).

CERTIFICATE OF SERVICE

I hereby certify that the original and nine photocopies of the Pre-filed Surrebuttal Testimony of Abigail Anthony, Ph.D. on behalf of Acadia Center were mailed first class to the Clerk of the Public Utilities Commission, 99 Jefferson Blvd., Warwick, RI 02888. In addition, electronic copies of this Testimony were served via e-mail on the service list for this Docket, as that list was transmitted by the PUC clerk on November 23, 2015. I certify that all of the foregoing was done on January 6, 2016.

  
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Mark LeBel

**Docket No. 4568 National Grid's Rate Design Pursuant to R.I. Gen. Laws Sec 39-26.6-24  
Service List updated 11/23/15**

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