

## II. Regulatory issues

### A. The Commission cannot compare costs and benefits.

#### 1. Conclusion

I conclude that the DG Board has not met the requirements of the Guidance Document in Docket 4600 and has not enabled the Commission to compare the incremental costs of the solar carport proposal to the incremental benefits. Specifically, the proposal does not identify eligible benefits from the Docket 4600 Benefit Cost Framework; the proposal does not quantify or qualitatively analyze the benefits; the proposal does not identify the beneficiaries; and it is unclear whether and how the proposal will create the benefits. Therefore, the Commission does not have enough information to determine whether the incremental costs of this proposal are prudent, just, or reasonable.<sup>3</sup>

#### 2. The DG Board only considers cost in its assessment of cost-effectiveness.

Section 39-26.6-5(d) states that the DG Board may consider several elements in setting ceiling prices, including, "(6) cost effectiveness." In the instant filing, the DG Board states that it considered "cost-effectiveness for the eligible technologies" in its development of the proposed ceiling prices (DG Board, p.7). In PUC 1-8, the DG Board explains that it defines cost-effectiveness as the "direct cost of the payments to participating project owners borne by Rhode Island ratepayers."<sup>4</sup> This definition of cost effective is solely focused on the costs; even the most basic, dictionary definition of cost-effective is a comparison of the costs and the desired outcomes or benefits.<sup>5</sup>

#### 3. The Commission's approach to cost-effectiveness is defined in the Docket 4600 Guidance Document.

The Commission has made its approach to determining cost-effectiveness clear. The Commission has defined the costs and benefits that should be considered in determining cost-effectiveness in Docket 4600, and the *Guidance Document on the Goals, Principles and Values for Matters Involving the Narragansett Electric Company* states that, "in any case that proposes new programs or capital investment that will affect National Grid's electric distribution rates, the impact of any increased ratepayer recovery should also reference the goals, rate design principles, and Benefit-Cost Framework," (Guidance Document, p.7). The Guidance Document continues, stating, "Where the costs and benefits can be quantified, the proponent should provide such information and the basis for the conclusion

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<sup>3</sup> Attachment PUC 4-2 demonstrates that under different scenarios that the incremental full-term costs of solar carport projects enrolled in program year 2020 range from \$14.2 million (100% of the 6.5 MW developed as commercial solar carports instead of commercial solar) to \$19.6 million (100% of the 6.5 MW developed as large solar carports instead of large solar).

<sup>4</sup> At the January 28, 2019 hearing, the witness for the Distributed Generation Board, Chris Kearns, testified that the Office of Energy Resources' and Distributed Generation Board's perspective on cost-effectiveness leads to efforts to reduce the "soft costs" of solar through changes to state policy.

<sup>5</sup> Merriam-Webster defines cost-effective as "producing good results without costing a lot of money," <https://www.merriam-webster.com/dictionary/cost-effective>. The Cambridge Dictionary defines cost-effective as "providing good value for the amount paid," <https://dictionary.cambridge.org/us/dictionary/english/cost-effective>. Business Dictionary defines cost-effectiveness as "relationship between monetary inputs and the desired outcome..," <http://www.businessdictionary.com/definition/cost-effectiveness.html>.

reached. Where quantification is not possible or not practical, the proponent should so explain. Regardless of whether the quantification can be fully completed, a qualitative analysis should be included," (Guidance Document, p. 7). The Guidance Document is also clear that the standards therein apply to all proponents: "Any proponent of a rate, rate design, or program proposal with associated cost recovery will need to meet the same standards," (Guidance Document, p. 3).

**4. The carport solar proposal does not fulfill the requirements of the Docket 4600 Guidance Document.**

As a proponent of a new program proposal with associated cost recovery that will affect National Grid's electric distribution rates, the DG Board should meet the requirements identified in the Guidance Document. The DG Board did not demonstrate that it considered the costs and benefits defined in the Docket 4600 Benefit Cost Framework. In PUC 1-17, the DG Board stated that the objective of the solar carport proposal was to "take into account the local solar siting dynamics that have been encountered with commercial and large ground mount solar systems." This response does not provide a quantification of a benefit category identified in the Benefit Cost Framework, nor does it provide a qualitative analysis of an eligible benefit category.

**5. The Commission cannot compare the incremental costs of carport solar to the incremental benefits.**

Furthermore, the record does not provide any information that allows the Commission to compare the incremental costs of the solar carport proposal to its incremental benefits. In response to a direct question about incremental benefits, the DG Board does not identify any incremental benefits (PUC 1-17). The DG Board describes the potential benefits in the record as, "siting value that traditional solar projects may lack," (Joint Brief, p.2); and, "solar carports possess a space-utilization element," (Direct Testimony, Kearns, p. 31). The record provides no quantification of siting value or space-utilization benefits, nor does the record provide a qualitative analysis of what these benefits are; how and by whom they will be realized; or the magnitude of the expected benefits. Without this information, the Commission cannot compare the costs of the proposal to the benefits, nor can the Commission find that the DG Board adequately considered cost-effectiveness in its determination of ceiling prices, as the Board states that it did.

**6. The Commission cannot find the carport solar proposal prudent, just, or reasonable without comparing costs and benefits.**

The DG Board testifies that it is prudent to incentivize the installations of solar carports because of their space-utilization element and because stakeholders would be supportive (Direct Testimony, Kearns, p.31). As described by Scott Hempling, Commissions define "prudent" as "what a reasonable person would do."<sup>6</sup> Mr. Hempling explains that when we are betting on new things, a prudence review depends on comparing the costs and benefits. Often this is difficult because the costs and benefits of truly new technologies are unknown. However, that is not the case with solar carports. National Grid is able to estimate the costs of the proposed class. The benefits of siting value and space-utilization, particularly the value of farmland and open space preservation, have been widely researched.<sup>7</sup> While the DG Board may

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<sup>6</sup> Hempling, Scott. January 2011, " 'Prudence: Who's Minding the Store.'"  
<https://www.scotthemplinglaw.com/essays/prudence>

<sup>7</sup> See, for example: John C. Bergstrom and Richard C. Ready. 2009. What Have We Learned from over 20 Years of Farmland Amenity Valuation Research in North America? *Applied Economic Perspectives and Policy* 31(1; March):21-49. <https://doi.org/10.1111/j.1467-9353.2008.01424.x> [doi.org]; also, Robert J. Johnston and John C. Bergstrom. 2011. Valuing Farmland Protection: Do Empirical Results and Policy Guidance Depend on the Econometric Fine Print? *Applied Economic Perspectives and Policy* 33(4; December):639-660.

not have been able to develop a precise quantification and monetization, the Board could have provided an approximate quantification, or at least a qualitative analysis based on existing research.

Mr. Hempling also uses a definition from the Maryland Commission to describe just and reasonable decision-making: "just aligns benefits with cost bearers; 'reasonable' requires cost-effectiveness."<sup>8</sup> To find the DG Board's solar carport proposal just, the Commission needs to understand who the beneficiaries are. The benefits claimed by the DG Board are vague and have not been well enough defined to understand what the benefit is; how it will be realized; or who benefits. To find the proposal reasonable, the Commission must be able to compare costs and benefits.

Finally, the DG Board has not demonstrated that it has examined other options to achieve the desired benefits. Are there other strategies that would advance the desired benefits more cost effectively? At the January 28<sup>th</sup> hearing, Mr. Kearns testified that roof-top solar and carport solar provide the same space utilization benefits, yet Mr. Payne testified that the DG Board did not consider any discussion about achieving space utilization benefits via roof-top solar (HR'G TR. 121-122). Mr. Kearns also testified that the DG Board did not consider whether the desired space utilization benefits could be achieved via roof-top solar in the medium size class (rather than ground-mounted solar) (HR'G TR. 130).

Furthermore, if the primary purpose of the carport solar proposal is to advance space-utilization benefits and address local siting dynamics, it is unclear why other applications that may advance the same benefits (possibly more cost-effectively) are not eligible for this class. For example, solar canopy over a pedestrian walkway or event space would presumably provide the same benefits but, as Ian Springsteel, the witness for National Grid testified, not be eligible for the carport class (HR'G TR. 84). In this light, the carport solar class begins to seem arbitrary.

### **III. Additional considerations**

#### **A. The Commission should establish a standard of review for new classes prior to approving the carport solar proposal.**

The Commission should consider the future implications of creating a new same size, same technology class based on construction technique. The SmartFlower is solar generation technology and can be the same size as existing solar classes, but clearly has a different construction technology from traditional roof-top or ground-mount solar.<sup>9</sup> The SmartFlower may also have siting value benefits and space-utilization benefits, as well as provide an equity benefit by extending the benefits of solar to those with inappropriate roof-tops. Based on the DG Board's justification for the carport solar class, the SmartFlower should also have its own class.

Mr. Kearns testified that the SmartFlower would be treated the same as ground-mount solar, but he did not adequately explain why the SmartFlower is different than carport solar (HR'G TR. 62). Mr. Kearns' argument that the SmartFlower is the same as ground mount solar is clearly not the case since the Smartflower is "as easy to pack up as it is to set up, so you can take it anywhere."<sup>10</sup> If the Commission approves a new class for carport solar based on the record before the Commission today, it will be difficult to reject a new class for SmartFlowers.

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<https://doi.org/10.1093/aep/020> [doi.org]; also, McConnell, V., & Walls, M. A. (2005). *The value of open space: Evidence from studies of nonmarket benefits* (pp. 1-78). Washington, DC: Resources for the Future.

<sup>8</sup> Hempling, Scott. *Preside or Lead? The Attributes and Actions of Effective Regulators*, p. 72

<sup>9</sup> <http://smartflowersolar.com/products/smartflower/>

<sup>10</sup> Id.

At the very least, the Commission should establish a standard of review and reasonableness for new classes prior to approving a new class.<sup>11</sup>

**B. It is unclear whether the carport solar proposal will deliver the expected benefits.**

First, Mr. Kearns testified that a solar carport project can be part of new development. While a solar carport project over a new parking lot still uses space differently than ground mounted solar systems, it does not seem entirely consistent with the stakeholders' desire to "avoid the alternative of clear cutting," (HR'G Tr. 120). Second, as referenced above in II.A.6, it seems arbitrary to exclude other solar applications that would seemingly deliver the same benefits.

In PUC 1-17, the DG Board states that "the objective of developing a class and associated megawatt capacity to promote solar carports was part of the state's renewable energy policy objectives to take into account the local solar siting dynamics that have been encountered with commercial and large ground mount solar systems." But, it is unclear whether solar carports will address the "local solar siting dynamics" that the DG Board references. First, witnesses testified that the solar carport proposal will not drive investment away from ground-mount solar. As Jim Kennerly, witness for the DG Board, testified, the ceiling prices are designed so that a developer has a reasonable opportunity of earning the same rate of return from same size, same technology classes (HR'G TR. 70).<sup>12</sup> Thus, Mr. Kennerly agreed, an investor or developer should be indifferent to which class he participates in, all else being equal (HR'G TR. 129). Mr. Kearns echoed this conclusion in his testimony that solar carports will not defer activity in any other solar category, all else being equal (HR'G TR 129).

Furthermore, as Mr. Springsteel explained during the January 29<sup>th</sup> hearing, 1 MW of solar requires about 3 acres of land area (HR'G TR. 58). This means that "you'd need a very big parking lot to get 1 MW" on a solar carport. Mr. Springsteel mulled that possibly sports arena parking lots (like Gillette Stadium), large commuter parking lots, or maybe the entirety of a beach parking lot would be large enough for a 1 MW solar carport (HR'G TR. 60). To me, this means that there are few opportunities for a solar carport as large as 1 MW to be developed in Rhode Island, let alone larger than that. This reinforces my question and concern that solar carports will not deliver the purported benefits of addressing local solar siting dynamics.

**C. The cost-savings gained by creating a new class for solar carports are not clear.**

The DG Board explains that including the additional cost associated with carports into the existing solar classes would increase the ceiling price for those classes and ratepayers would be harmed (Joint Brief, p. 2; Direct Testimony, Kearns, p. 31). However, in both the Brief and in the Direct Testimony the DG Board explains that it is unlikely solar carports would be built in this scenario: since the commercial and large solar classes are competitive auctions, traditional roof-top and ground-mount solar, with its lower construction costs, would out-compete carports. All projects would be incentivized to submit the lowest bid. Therefore, it is not clear that ratepayers would, in fact, be harmed (acknowledging that in this case the solar carports may not be built). However, the opportunity to combine a solar carport with roof-top or ground-mount solar and bid the combination project into the appropriate solar carport class (under the

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<sup>11</sup> During the January 28<sup>th</sup> hearing, Ken Payne, the witness for the DG Board, testified that utilizing Section 39-26.6-22 to advance the objectives of the solar carport proposal "may be opening up a can of worms," and that he has resisted doing so "because I didn't want to go into uncertain territory without there having been a prior definition of it so that the Board would know how to apply..." (HR'G TR. 43). I think the same concern applies to the instant proposal, and the Commission should define the standard of review before approving new classes.

<sup>12</sup> For example, the Summary: Solar Financing Assumptions table on pages 95 and 107 of the DG Board's October 19<sup>th</sup> filing shows that the commercial solar, large solar, and carport ceiling prices are designed to deliver a target after-tax equity internal rate of return of 9.4%.

higher carport ceiling price) may mean that ratepayers pay more than they otherwise would for regular commercial or large solar.<sup>13</sup> Thus, I give this justification relatively little weight.

**D. Limited information was used to determine the ceiling prices for the carport categories.**

The record gives the Commission reason to be less confident that the proposed ceiling prices for the solar carport categories are accurate. The first reason the ceiling prices may not be accurate<sup>14</sup> is that the DG Board's consultant included relatively little data on carports in his analysis. Mr. Kennerly testified that he used non-carport projects from Massachusetts in his analysis (HR'G TR. 33-35). Another data point referenced by Mr. Kennerly was an estimate of the cost of a carport system from Sol System's engineering team (HR'G TR. 36). The second reason the ceiling prices may not be accurate is the lack of a clear and consistent definition of solar carports. Mr. Kennerly testified that when he reviewed the costs of the solar carport at 89 Jefferson Boulevard it appeared that there were associated costs included in the total cost, and it seemed "as if it wasn't cleanly a carport project, as we understand it," (HR'G TR. 37). However, Mr. Kennerly testified that he was not aware if any of the carports included in his dataset also had additional associated facilities (HR'G TR. 38). Mr. Kennerly continued to explain that the solicitation for solar carport costs did not specify that respondents should not include electric vehicle supply equipment costs (HR'G TR. 39). There is no evidence in the record to show that the data from actual solar carports comes from carports that meet the definition of carport provided by the DG Board in PUC 1-11. The record indicates that the solar carport ceiling prices were not developed using apples-to-apples pricing data. Therefore, it is reasonable to conclude that the ceiling prices may not be accurate.

**E. Section 39.26.6-22 may be a more effective and appropriate mechanism for advancing the DG Board's objectives.**

Section 39-26.6-22 allows National Grid to "propose other incentive payments to achieve other technical or public policy objectives that provide identifiable benefits to customers. Any incentive payment adder must be approved by the commission, and shall not be counted as part of the bid price when the bids are selected at an enrollment event." In theory, providing an adder to achieve a public policy goal seems to address some of the challenges with the solar carport proposal. First, where the current proposal leaves developers indifferent between traditional solar and carports, an adder would increase the potential rate of return for an eligible project relative to an ineligible project. Second, where the current proposal differentiates between projects that seemingly deliver the same benefits in an arbitrary way, an adder could offer a bonus (ideally, a consistent bonus based on the level of benefits) to any project that delivers the desired benefits. Third, Mr. Springsteel testified on January 29<sup>th</sup> that such a mechanism would be fully competitive and that "fewer categories generates more competition and lower prices," and that carve-outs reduce "head-to-head competition," (HR'G TR. 69). Furthermore, Mr. Springsteel testified that an adder mechanism would be easier to administer than new classes (which should translate into lower administrative costs and billing system upgrades) (HR'G TR. 70).

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

**IV. Summary of Key Points and Conclusion**

- a. Sections (a) and (b) of 39-26.6-7 link class and size. Thus, it is reasonable to conclude that class and size are linked in section (c) of the same statute.
- b. Additional sections of the Renewable Energy Growth statute show that class is defined by the electric generation source, and that technology refers to electric generation

<sup>13</sup> This combination concept also raises anti-segmentation concerns.

<sup>14</sup> Section 39-26.6-3 defines ceiling prices as the "price that would allow a private owner to invest in a given project at a reasonable rate of return, based on recently reported and forecast information on the cost of capital, and the cost of generation equipment."

*25% calculation  
was not included  
in testimony  
TST*

resource. Even the title of § 39-26.6-8 shows that technology refers to electric generation resource.

- c. When faced with "same technology of the same size" issues in the past, the legislature has amended the statute.
- d. The amendments that created the community remote distributed generation category limited the ceiling price to no more than 15% greater than the ceiling price for the same technology of the same size. It is reasonable to assume that this limitation is intended to align costs and benefits and ensure that ratepayers do not overpay for the incremental benefits of CRDG. The proposed ceiling prices for the commercial and large solar carport categories are 67.8% and 54.5% higher, respectively, than the commercial and large solar ceiling prices.
- e. The DG Board states that it considers cost-effectiveness in determining the ceiling prices, but only considers costs.
- f. The Commission's approach to cost-effectiveness and requirements are clearly stated in the Docket 4600 Guidance Document. The Guidance Document requirements apply to the solar carport proposal. The proposal does not meet the requirements of the Guidance Document because it does not provide a quantification of a benefit category identified in the Benefit Cost Framework, nor does it provide a qualitative analysis of an eligible benefit category.
- g. The DG Board did not consider other options to achieve the desired benefits. The DG Board did not explain why solar carports are the most cost-effective strategy to achieve the desired benefits.
- h. The solar carport proposal is arbitrary. Applications and projects that would seemingly deliver the same benefits are not eligible for the same ceiling price. The Commission should not pay differently for the same benefits.
- i. If the Commission approves the solar carport proposal based on this record, it will be very difficult for the Commission to reject any request to create a new class for a "same size of the same technology" application.
- j. It is unclear that the solar carport proposal will deliver the expected benefits. Solar carports over new parking lots are eligible, while similar projects on developed property are not eligible. The solar carport proposal will not drive investment away from any other solar category. It seems unlikely that any solar carports will be greater than 1 MW, and thus seem unlikely to be a substitute for a large solar project on farmland or forest land.
- k. Ratepayers will pay more than they otherwise would for roof-top and ground-mount solar that is combined with a solar carport.
- l. The record indicates that the solar carport ceiling prices were not developed using apples-to-apples pricing data.
- m. Section 39.26.6-22 offers an approach to incentivizing public policy benefits in a manner that addresses several of the challenges of the current solar carport proposal.
- n. **Conclusion:** The Commission should reject the solar carport class, ceiling prices, and allocation.