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January 9, 2019
Ms. Debra A. Howland
Executive Director
New Hampshire Public Utilities Commission
21 South Fruit Street, Suite 10
Concord, New Hampshire 03301

Re: Docket No. DE 16-576, Development of Alternative Net Metering Tariffs
Locational Value Study Working Group
Comments in Response to Locational Value Study Scope and Timeline

Dear Ms. Howland:

In its June 2017 Order Adopting a New Alternative Net Metering Tariff, the Commission *inter alia* directed the state's regulated electric distribution utilities to "develop non-wires alternative pilot programs focused on the installation of [distributed generation] in lieu of potential utility distribution system upgrades."¹ One of the four working groups created pursuant to that order was tasked with considering what Non-Wire Alternative (NWA) pilots the utilities were to develop, after which the utilities were expected to submit detailed proposals for Commission approval. At the initial meeting of the NWA working group, it became clear that no consensus existed among stakeholders regarding whether the Commission's Order envisioned pilots solely focused on Distributed Generation (DG), or pilots that maintain an element of technology agnosticism by leaving any solicitation open to all Distributed Energy Resources (DERs), including demand response and energy efficiency.

After the Commission solicited comments on that issue, it eventually ruled in its Order Addressing Non-Wires Alternative Pilot Programs in favor of "defer[ing] consideration of unrestricted NWA implementation, whether on a pilot or full-scale basis, to another context, such as grid modernization or utility integrated resource planning," and "find[ing] that a distribution-level locational DG valuation study would be more useful and cost-effective."² The Commission then directed "the parties in the working group process to evaluate alternative study designs and methodologies to address the potential locational value of DG on the utility

¹ New Hampshire Public Utilities Commission. Order No. 26,029 at 64-65. Available at: http://www.puc.state.nh.us/Regulatory/Docketbk/2016/16-576/ORDERS/16-576_2017-06-23_ORDER_26029.PDF

² Order No. 26,124 at 15. April 30, 2018. Available at: https://www.puc.nh.gov/Regulatory/Docketbk/2016/16-576/ORDERS/16-576_2018-04-30_ORDER_26124.PDF

distribution system.” After subsequent discussions and working group review of two study proposal types, Staff solicited comment on an initial locational value study scope outline on October 3, 2018.³ The Office of the Consumer Advocate (OCA), among other stakeholders, provided comments on the initial study scope outline on October 17, 2018.⁴ Commission Staff filed a proposed study scope and timeline on November 30, 2018.⁵ The Commission then issued a Secretarial Letter on December 7, 2018 scheduling a public comment hearing for January 2, 2019 and soliciting written comments by January 9, 2019.

At a high level, the study design splits the analysis into three steps:

- (1) Identifying locations on the distribution system where system upgrades may be necessary based upon load forecasts and projected criteria violations;
- (2) Determining avoided or deferred distribution investment costs associated with those locations if net metered DGs can be used to reduce load; and
- (3) Mapping the generation profile of various net metered DG against the load profile of the capacity constrained distribution elements in order to assign a value to net metered DG based on the cost of deferring of eliminating the distribution upgrades.

The Office of the Consumer Advocate’s recommendations to the Commission in this docket relative to the locational value study scope and timeline are as follows:

1. The Commission should deny Public Service of New Hampshire (PSNH)’s public comment hearing request to limit discovery on their MCOSS and clarify that the docket participants shall have the opportunity to serve discovery upon each of the regulated electric distribution utilities for a rolling period of one month following the order approving the scope, and then again once the consultant is hired.
2. The Commission should clarify that any inputs provided to the consultant by the utilities should also be circulated to the broader working group.
3. The Commission should clarify that the consultant shall submit a work plan based on the existing scope of work and any initial discovery responses, solicit comment on that work plan from working group members, and respond in the format of a brief memo to the working group explaining why any suggested revisions were either adopted or not adopted by the consultant.

³ New Hampshire Public Utilities Commission Staff. Locational Value of DG Study Scope and Methodology Outline. (October 2018) Available at: <https://tinyurl.com/NH-LSRV-Study>

⁴ New Hampshire Office of the Consumer Advocate. Comments on Locational Value Study Scope and Methodology Outline. (October 2018) Available at: <https://tinyurl.com/OCA-LVDG-Comments-10-17-18>

⁵ New Hampshire Public Utilities Commission Staff. Locational Value of DG Study Scope and Methodology Outline. (November 2018) Available at: http://www.puc.state.nh.us/Regulatory/Docketbk/2016/16-576/LETTERS-MEMOS-TARIFFS/16-576_2018-11-30_STAFF_LVDG_STUDY_SCOPE_TIMELINE.PDF

4. The Commission should clarify that a ten year forward looking forecast should be developed for the purposes of system planning, NWA identification, and locational value compensation and the forward-looking analysis should begin in 2020, not 2019.
5. The Commission should clarify that in order to accurately determine locational value, sub-regional or even substation specific forecasts are preferred over a system-wide forecast.
6. The Commission should clarify that the high growth scenario should also include increased economic growth and/or electrification of other end uses that are projected to accelerate above their historical deployment, such as heat pumps.
7. The Commission should clarify that the locational value study should also include a low growth scenario based on decreased economic growth or increased investments in energy efficiency.
8. The Commission should clarify that any work product relating to Steps 1 and 2 be clearly included within the overall study in a manner which is separate and apart from the \$/kW-yr conclusions relating to locational value, preferably in the form of an interim report deliverable.
9. As the Commission contemplates the relevance and purpose of Step 3, we suggest the Commission monitor trends in California, Rhode Island, and New York regarding solicitation-based and tariff-based compensation for the locational value of DERs on the distribution system.
10. The Commission should review New York's ex-post facto compensation structure as it considers future compensations mechanisms for the mass-market DG customers on circuits which are projected to be capacity-constrained.

Below, we provide the reasoning behind these recommendations.

While the OCA agrees with the overall design and approach set forth in at least the first two steps of the study outline, it below presents comment on several aspects of the outline, including the:

- (1) Capital Planning and Marginal Cost of Service
- (2) Locational Value Study Working Group Input and Study Transparency
- (3) Locational Value Study Planning Horizon
- (4) Load Growth Forecast Granularity and Scenarios
- (5) Applicability of Data Collected in Steps 1 and 2
- (6) Relevance and Purpose of Step 3

1. Capital planning and Marginal Cost of Service

In the OCA's October 17, 2018 comments on the draft study scope outline, the OCA suggested the Commission allow for two rounds of discovery and technical conferences between late October and early December, then re-open the opportunity for comments. This request was based upon a concern regarding certain aspects of the Public Service Company of New Hampshire d/b/a Eversource Energy ("PSNH") marginal cost of service study (MCOSS) methodology, mostly relating to load forecasting strategies, which were proposed to be adopted by the study consultant. The concerns the OCA had originally expressed regarding forecasting methodologies have largely been satisfied by the draft scope language filed with the Commission, which would allow the consultants a greater degree of flexibility regarding adoption or revision of utility forecast methodologies, criteria violation thresholds, and a number of other study inputs.

As a result, the OCA now agrees with the sentiment expressed in Staff's November 30, 2018 Locational Value Study cover letter, which suggests that "an opportunity for discovery into the relevant aspects of the Eversource MCOS Study be provided concurrently with [rather than prior to] the timeframe for engaging the study consultant... in order to facilitate completion of the study within the anticipated timeline."⁶

At the public comment hearing held on January 2, 2019, counsel for PSNH noted that the Company is in the process of preparing *another* MCOS *less than six months* after the filing of the MCOS the Commission required in the instant docket. The Company then referenced Staff's cover letter and suggested discovery should wait until the filing of the *new* MCOS study and should instead take place within the Company's rate case, which will be filed during 2019. If that were not an option, PSNH expressed a willingness to allow discovery in the instant docket so long as the window for discovery were to close *before* the locational value consultant were engaged.

The OCA disagrees with this for several reasons.

First, the cost of completing a marginal cost of service study is not a trivial sum, and the fact that PSNH has chosen to complete another MCOS less than six months after having completed one requires justification. In any order approving locational value study scope and timeline, the Commission should clarify PSNH's MCOS rate case testimony should provide a narrative describing how any inputs to the study have changed between the completion of the July 2018 study and the to-be-filed study including, but not limited to, any planned/no longer planned capital investments, any planning criteria and thermal tolerance ratings that may have changed, and any load forecasting methodologies that may have changed.

⁶ New Hampshire Public Utilities Commission Staff. Locational Value of DG Study Scope and Methodology Cover Letter. (November 2018) Available at: http://www.puc.state.nh.us/Regulatory/Docketbk/2016/16-576/LETTERS-MEMOS-TARIFFS/16-576_2018-11-30_STAFF_CVR_LTR_LVDG_STUDY_SCOPE_TIMELINE.PDF

Second, PSNH's suggestion that discovery should wait until the filing of the new MCOS Study and occur in the to-be-filed rate case would not be in compliance with the Commission's Order directing PSNH to complete the MCOS Study, which required that PSNH to "make available to stakeholders in this proceeding the results of, and inputs to, that study as well as the methodology used in completing the study."⁷ The OCA has requested that PSNH make these inputs available for review *in this proceeding* on several different occasions, and it has generally resisted doing so. The opportunity for *formal* discovery on the MCOS in this docket is the only remaining opportunity for the company to comply with Order No. 26,029. Further, the study scope timeline is "anticipated to commence during the second quarter of 2019, following engagement of the study consultant."⁸ Waiting until the filing of the Eversource rate case and second MCOS study, an event to which PSNH hasn't yet assigned a date other than "in 2019,"⁹ would unnecessarily delay the study beyond its prescribed timeline.

Third, PSNH's conditional offer to allow for discovery on the MCOS Study in this proceeding only so long as that discovery is completed prior to the hiring of the Commission's study consultant *would not* be in keeping with either the spirit or the letter of Order No. 26,029, which required PSNH to complete the MCOS Study for the express purposes of informing the value of DER. Further, the OCA sees no justifiable reason why PSNH would make such a request. When pressed after the public comment hearing on its justification for limiting the consultant's ability to examine the July 2018 MCOS Study, the Company responded that it wanted to avoid duplication of efforts and additional administrative burdens. This justification fails to acknowledge that *more* data points relative to planned capital investments and load growth over time, rather than *less*, would provide greater clarity for the study consultant.¹⁰

Finally, PSNH has a rather puzzling predisposition against providing the type of analyses and inputs that went into the MCOS Study, including those relating to load forecasting and planned capital investments.¹¹ PSNH's puzzling predisposition and its choice to complete an entirely

⁷ *Supra.* at note 1. Page 61.

⁸ *Supra.* at note 3. Page 6.

⁹ Technical Statement of Robert Allen, Joseph Purington, and Christopher Goulding. Docket No. DE 17-196. (November 2018) Page 1. Available at: http://www.puc.state.nh.us/Regulatory/Docketbk/2018/18-177/INITIAL%20FILING%20-%20PETITION/18-177_2018-11-16_EVERSOURCE_TECH_STATEMENT_ALLEN_PURINGTON_GOULDING.PDF

¹⁰ Another motivation for limiting the consultant's opportunity to review the July 2018 Marginal Cost of Service Study might be that it contains inputs that would result in a "value of DER" outcome which PSNH is not in favor of and intends to revise in the new study. For example, the July 2018 MCOS Study utilizes a planning criteria threshold of 75%, which is less than what the Commission had previously approved. This would tend to make more circuits appear subject to near-term capacity constraints than the previous criteria, result in a higher locational value of DER in more locations, and result in more upgrades being eligible for NWA deferral rather than a "poles and wires" investment the Company can earn a return on. Another example would be if the consultant characterized circuits nearing their capacity and requiring an upgrade as capacity-constrained and therefore eligible for a non-wire solicitation/high locational value, but PSNH distribution system planners would have instead chosen to characterize the need as based on asset condition.

¹¹ For example, in spite of the Commission's explicit direction that in order to facilitate planning for non-wire alternatives (NWA) pilots "the utilities should identify all distribution circuits or substations that are planned for upgrades within the next 5 years," Eversource provided the NWA working group with a [list of 17 planned upgrades](#) with 13 having a start construction date of less than a year away and only one with a projected start date at least

new study just six months later are precisely why the Commission should allow the OCA, docket participants, and the locational value consultant the opportunity to issue discovery on that document.

Additionally, because each of New Hampshire's electric utilities' load growth projections, capital investments plans, and other distribution system planning methodologies will contribute to the locational value study, we ask that the Commission clarify that the docket participants shall have the opportunity to serve discovery upon each of the regulated electric distribution utilities for a rolling period of one month following the order approving the scope, and then again once the consultant is hired. For an example of the key issues the OCA plans to explore via discovery, please see attachment 1 of these comments, which includes key issues identified by intervening parties in New York DSIP proceeding ([16-M-0411](#)) relative to the New York Electric Utilities' enhanced marginal cost of service studies. In many cases, the enhanced marginal cost of service studies include the same analysis New Hampshire's locational value study contemplates to reach a \$/kW-yr locational value for various capacity constrained circuits.¹²

2. Locational Value Study Working Group Input and Study Transparency

The study scope suggests that that the study consultant and Staff will hold periodic working group meetings "not less frequently than bi-monthly, to provide status updates and answer questions during the LVDG study process."¹³ At the public comment hearing, Conservation Law Foundation asked the Commission to provide a transparent process for the consultant to accept input and be accountable to working group stakeholders. The OCA agrees with this suggestion, and asks that the Commission clarify: 1) any inputs provided to the consultant by the utilities should also be provided to the broader working group; and 2) that the consultant shall submit a work plan based on the existing scope of work and any initial discovery responses, solicit comment on that work plan from working group members, and respond in the format of a brief memo to the working group explaining why any suggested revisions were either adopted or not adopted by the consultant.

three years in the future. At the September 18, 2018 meeting of the locational value working group, the OCA raised the point that the July 2018 MCOS Study consultant appeared to have already done much of the PSNH-specific analysis envisioned for the locational value study, identifying areas where DERs could alleviate capacity constraints. PSNH's response was that only two such areas existed, and one was already entering the construction phase. This response was later clarified as inaccurate after further inquiry from the OCA, which cited a conflicting statement in the MCOS Study. After suggesting at the September meeting that discovery on the study would be valuable, the OCA followed up with PSNH's counsel via email, requesting the various inputs identified in the study. Staff also followed up, requesting the same information. PSNH refused to provide the information.

¹² New York Public Service Commission. Docket No. 16-M-0411. Updated CEP Comments Regarding the Utilities Enhanced Marginal Cost of Service Studies. (November 27, 2018) Available at:

<http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={28CBDC87-D145-4E42-BF0C-FC5B1F244C1}> (Must be placed in browser, not clicked on)

¹³ *Supra.* at note 3. Page 6

3. Locational Value Study Planning Horizon

The locational value study outline proposes to use five years of historical data and five years of forward looking projections for the 2019-2023 timeframe. We agree that a ten year time horizon with five years of projected and five years of historical data would likely be a helpful indicator of potential locational value. However, we ask the Commission to clarify that that a ten year forward looking forecast should be developed for the purpose of system planning, NWA identification, and locational value compensation.¹⁴ We also suggest using 2020 rather than 2019 as a starting date for planned forward-looking capital investment analysis because the consultant will not have been hired until Q2 2019, and the planned completion date for the report is the end of 2019; as such, 2019 will no longer be part of a forward looking analysis.

We share the concern expressed by some stakeholders regarding uncertainties associated with a ten year forecast, but suggest that the ten year horizon would provide the requisite information for use in planning and deployment of DERs or portfolios of DERs intended to defer or eliminate an otherwise necessary grid investment. This is primarily because it may take several years of planning and DER deployment ramp-up to achieve the desired outcome. This justification for a ten year horizon is further amplified if the analysis of grid needs is not conducted on an annual basis.¹⁵ Such a forecast horizon would also align with the ten year horizon used by the majority of the New York electric distribution utilities for derivation of their locational values and planned non-wire alternative solicitations.¹⁶

We also note that PSNH's current least cost integrated resource plan utilizes a ten year forward looking load forecast, with the first five years of the ten year forecast "developed using inputs from historical growth, business climate, and local area knowledge," and "years six through ten utilizing[ing] the calculated compounded growth rate of the previous ten years adjusted for years with unusually mild weather."¹⁷ Such an analysis is one approach that the Commission's locational value consultant could utilize.

4. Load Growth Forecast Granularity and Scenarios

The locational value study scope suggests the study will utilize utility forecasts of load growth as the *preferred* approach when available. While we are pleased that the study scope includes a greater degree of flexibility for the consultant than previous drafts, below we highlight several forecasting and planning assumptions that appear to have been used within Eversource's MCOS

¹⁴ Alternatively, a less preferable approach would be for the consultant to utilize a ten year horizon for the analyses performed in Step 1 and Step 2, but limit tariff-based locational value compensation structures to a five year time horizon.

¹⁵ This process should be undertaken biennially, and should be part of the least-cost integrated resource planning process. In New York, the Distributed System Implementation Plans serve exactly this role (et al.), and are filed biennially.

¹⁶ See attachment 1.

¹⁷ PSNH. 2015 Least Cost Integrated Resource Plan. (June 2015) Page 2. Available at: <http://www.puc.state.nh.us/Regulatory/Docketbk/2015/15-248/INITIAL%20FILING%20-%20PETITION/DE%2015-248%202015-06019%20PSNH%20DBA%20EVERSOURCE%202015%20LCIRP.PDF>

Study which may represent the utility approach, but likely do not represent the most accurate approach.

For example, PSNH’s recently filed MCOS Study seems to indicate that their consultant utilized only regional forecasts of annual peak load, plus known industrial step load additions, to estimate system load growth and determine locational value.¹⁸ This strategy is problematic because it is not nearly as granular as even the forecasts which were included in PSNH’s 2015 Least Cost Integrated Resource Plan, which were disaggregated into 13 different service areas with varying compound annual growth rates (CAGRs), and as is demonstrated by the table below.¹⁹ We note that the projected growth rates by planning area ranged rather significantly from .5 percent to 3.2 percent. On a historical basis, those growth rates varied even more, ranging from (-)2.5 percent to 2.4 percent. Based on this evidence, the Commission should clarify that in order to accurately determine locational value, sub-regional or even substation specific forecasts are preferred over a system-wide forecast.

Exhibit II-1: Eversource Summer Peak Load Forecast by Area

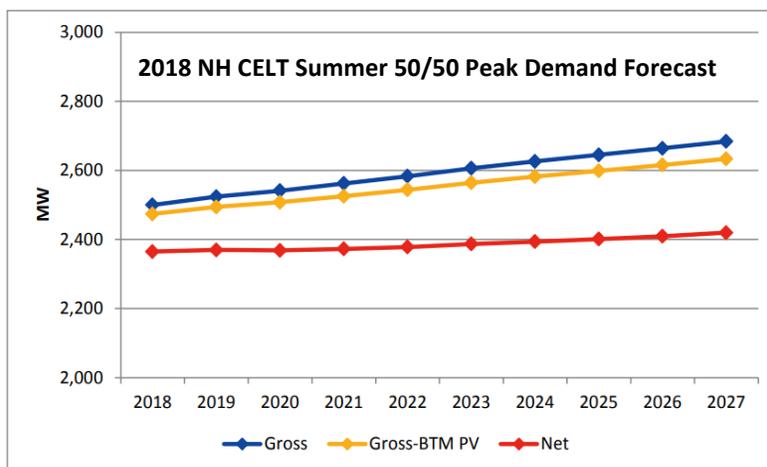
Area	2010-2014* Summer Peak (MW)	2014 Summer Peak (MW)	Compound Annual Growth Rate (%)		
			Historical	Forecast	
			2004-2014	2015-2019	2020-2024
Lakes Region	187.3 (2011)	182.0	1.2	1.5	1.25
Derry	122.7 (2011)	111.4	1.6	2.0	1.75
Dover/Rochester	175.2 (2011)	162.3	1.6	1.8	1.75
Manchester	380.6 (2011)	356.0	1.3	1.8	1.50
Sunapee	41.5 (2013)	39.7	1.0	1.2	1.00
Berlin/Lancaster	56.4 (2011)	50.4	-2.6	0.5	0.50
Portsmouth	262.2 (2013)	249.3	2.1	3.2	2.25
Nashua	397.9 (2013)	375.5	0.1	0.5	0.50
Western	173.2 (2010)	152.9	1.5	2.0	1.75
Conway/Ossipee	87.7 (2013)	80.8	2.4****	1.8	1.80
Seacoast	167.4 (2011)	151.9	1.3	2.3**	1.7**
Concord	131.5 (2013)	126.0	1.0	1.2**	1.0**
CVEC	32.1 (2011)	31.1	1.0	1.2	1.00
Eversource System ***	1920.6 (2011)	1768.3	0.9	1.3	1.00

Furthermore, the PSNH MCOS is unclear regarding whether forecasted energy efficiency investments that accrue to the system as a result of the statewide energy efficiency programs were included in its analysis. If such investments are likely to occur during the timeframe studied, and are not likely to be eligible for any locational value incentive, they should be included in the forecast.

¹⁸ *id.* at 6.

¹⁹ *id.* at 3.

Relatedly, if the purpose of the study is solely to focus on the value of net metered distributed generation, the forecast should not include any future projections of historically observed growth in net metered distributed generation investment because the incremental value of those investments is precisely what the study is trying to capture. For example, the Avoided Energy Supply Cost Study commissioned by the New England states generally utilizes a hypothetical future in which no new energy efficiency measures are installed to determine the value of incremental future investments in energy efficiency.²⁰ Assuming PSNH's MCOSS utilized the regional forecasts provided by ISO-NE 2018 CELT Summer 50/50 Peak Demand Forecast, the BTM PV estimates, which are shown in the graph below as the growth in the difference between the blue and gold lines during the forecast period, would need to be removed.²¹



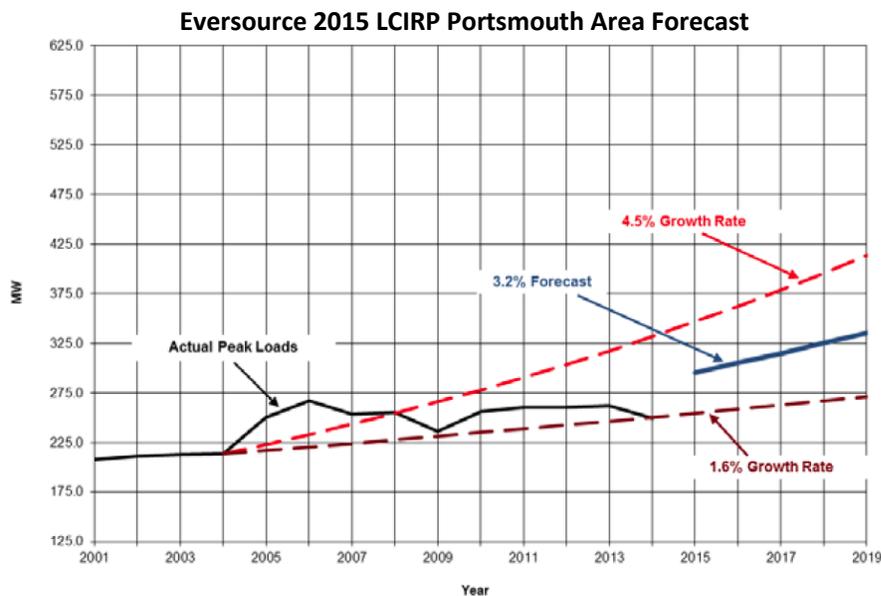
Without the opportunity comprehensively examine the inputs and methodologies included in the PSNH MCOSS, these observations are just our educated guess about what is included in that study based on the language of the final product. However, they serve as an example for why an opportunity for input should be provided on the consultant's work plan *after* PSNH has provided the supporting details the Commission directed them to provide in Order No. 26,029.

We agree with Staff that the locational value study outline should also include scenarios outside of the base case help determine the locational value of DG. The draft outline suggests the inclusion of a high growth scenario that includes increased deployment of electric vehicles. We agree with that, subject to two further suggestions. First, it may also be appropriate that the high growth scenario also include increased economic growth and/or electrification of other end uses that are projected to accelerate above their historical deployment, such as heat pumps. Second, we recommend the locational value study should also include a low growth scenario based on decreased economic growth or increased investments in energy efficiency.

²⁰ Synapse Energy Economics. Avoided Energy Supply Costs in New England 2018. Page 1. Available at: <http://www.synapse-energy.com/sites/default/files/AESC-2018-17-080.pdf>

²¹ Ninotti, F. ISO-New England. Draft Final 2018 CELT ISO-NE and States Annual Energy and Seasonal Peak Forecasts: NEPOOL Load Forecast Committee Teleconference. (March 2018) Slides 43. Available at: https://www.iso-ne.com/static-assets/documents/2018/04/2018-03-28_final_forecasts_mtg90.pdf

As the chart below demonstrates, such a strategy would be consistent with the strategy chosen in PSNH's 2015 Least Cost Integrated Resource Plan.²²



5. Applicability of Data Collected in Steps 1 and 2

While the OCA recognizes that the Commission has indicated that the locational value study should focus on the locational value of net metered distributed generation, we agree with Staff's indication at the technical session on September 18, 2018 that at least part of the analysis performed to determine the locational value of distributed generation will be of value to strategic deployment of *other* DERs. Specifically, the Scope's proposed Steps 1 and 2 will provide information which will be applicable to all DERs and we recommend the Commission clarify that any work product relating to Steps 1 and 2 be clearly included within the overall study in a manner which is separate and apart from the \$/kW-yr conclusions relating to locational value, preferably in the form of an interim report deliverable.²³

Compiling and publishing substation-specific analyses completed by the consultants in Steps 1 and 2 in a manner that might facilitate NWA-based compensation of DERs—rather than limiting its use to only determining tariff-based compensation of net metered DERs—would likely avoid duplicative analysis having to be completed in the context of near-term least cost integrated resource planning, grid modernization, or other related proceedings.

²² *Supra*, at note 10. Page 8.

²³ The Maryland Public Service Commission recently sponsored a [value-of-DER study](#) which contains several pages discussing a hypothetical distribution system deferral and identifying the associated locational value as greater than all of the other benefits of PV combined, but only a summary table of historical distribution system projects that were the result of capacity constraints. This lack of transparency and analytical diligence is exactly the type of misstep the Commission can avoid by clarifying that any work product relating to Steps 1 and 2 should be clearly included as an interim deliverable of the report.

6. Relevance and Purpose of Step 3

The third step in the analysis suggested by the study scope is to match the load profile of various net-metered DERs to the demand reduction needs of various capacity constrained areas of the distribution system. In August 2018, Staff directed locational value study working group stakeholders to attend a webinar where questions were posed to the expert presenters regarding the locational value distributed energy resources, and in turn those presenters provided insightful answers that might help inform the relevance of step 3 of the study.²⁴ During that webinar, the presenters observed a trend away from tariff-based compensation (via net metering) for locational value and towards compensation for locational value on the basis of non-wire alternative solicitations. A transcribed excerpt from that webinar is available as attachment 2 of these comments. As the Commission contemplates the relevance and purpose of Step 3, we suggest the Commission monitor trends in California, Rhode Island, and New York regarding solicitation-based and tariff-based compensation for the locational value of DERs on the distribution system. The OCA has excerpted examples and citations of these trends below.²⁵

California

As far back as 2015, the Public Utilities Commission directed the development and refinement of a locational net benefits analysis (LNBA) tool that was envisioned as being able to provide 8,760 locational values up to 30 years into the future for all distributed energy resources. However, a final report of that working group in January 2018 suggests that the LNBA has yet to be actually incorporated into a tariff in a meaningful manner, noting the “LNBA is not currently used for the purpose of evaluating cost-effectiveness of DER programs and tariffs. Rather it is an indicator of locational value for DER benefits that could be calculated using Least-Cost/Best-Fit methodology in an IOU’s [NWA] procurement solicitation.”²⁶

An even more candid assessment of the situation can be found in the Utility Dive Article entitled *Locational Value of DER is Essential to Grid Planning. So Why Hasn’t Anyone Found*

²⁴ National Renewable Energy Laboratory. Webinar. Methods for Determining Locational Value of PV: Overview of Research and Considerations. August 23, 2018. Available at: <https://register.gotowebinar.com/recording/viewRecording/2764891705496246017/1510568840839592200/nate@cleangroup.org?registrantKey=6348085751228828941&type=ATTENDEEMAILRECORDINGLINK>

²⁵ An excellent comparison of the compensation methodologies in New York and California as of April 2018 was compiled by Synapse for ACEEE’s Summer Study. A summary table excerpted from Synapse’s analysis is available as Appendix C of these comments. See Generally, Hall, J. (et al.) Locational and Temporal Values of Energy Efficiency and other DERs to Transmission and Distribution Systems. Available at: <http://www.synapse-energy.com/sites/default/files/ACEEE-Paper-Values-EE-DER.pdf>

²⁶ California Public Utilities Commission. Locational Net Benefit Analysis Working Group Final report. (January 2018) Page 47. Available at: <https://drpwg.org/wp-content/uploads/2018/01/R-14-08-013-LNBA-WG-Final-Report.pdf>

*It?*²⁷ That article quotes Brad Haevner of the California Solar Plus Storage Association, observing “There has been no progress on a tariff with a locational value in California and I don't expect one soon because there are no clear answers for a system that changes so quickly... The only progress has been on compensation through competitive bidding when a MW for MW deferral is provided by an NWA.” As the Commission contemplates the relevance and purpose of Step 3, we suggest the Commission monitor trends in California regarding solicitation-based and tariff-based compensation for the locational value of DERs on the distribution system.

Rhode Island

In Rhode Island, National Grid began conducting locational incentive research and analysis under the state’s Renewable Energy Growth program as far back as 2015. The Company completed a pilot during 2016 and 2017 that attempted to identify whether, as part of a broader EE and DR focused NWA on the Tiverton and Little Compton feeders, the company could offer higher incentives for DG systems as a means of reducing kW needs during peak system loading.

Cadmus completed an extensive analysis of this attempted deferral, which included orientation prioritized incentives (west-facing, sing-axis tracking, etc.). However, the actual performance of the systems during peak hours often provided far less of their nameplate capacity than had been predicted. Cadmus concluded that the study illustrated “the inherent issues of PV as the sole generating resource when used as a demand management tool, particularly for high loading hours occurring after sunset. By facing system westward, PV’s generation profile can be shifted to later in the day, but is ultimately still limited by available solar resource. Additionally, the inherent variability of solar generation makes its demand reduction impact inconsistent and will not reliably provide power during the max loading hour.”²⁸

On a system wide basis, the Company’s analysis followed a three step approach that is very similar to the approach planned in the locational value study, seeking to identify areas where DG might be able to defer otherwise necessary grid investments and compare the output profile of the DG to the load profile on those circuits.²⁹ When asked via discovery during November 2018 about any proposed the locational incentives it planned to offer as part of its 2019 System Reliability Procurement Plan, the Company referenced only pending NWA RFPs, stating that “The Company, in discussion, with external stakeholders, has recognized that the use of a locational incentive is a viable way to pay a winning vendor for a specific non-wires alternative (NWA) Request for Proposals (RFP) and, and the Company has been pursuing this

²⁷ Trabish, H. Utility Dive. Locational Value of DER is Essential to Grid Planning. So Why Hasn’t Anyone Found It? (November 2018) Available at: <https://www.utilitydive.com/news/locational-value-of-der-is-essential-to-grid-planning-so-why-hasnt-anyone/541946/>

²⁸ Rhode Island Office of Energy Resource, prepared by Cadmus. System Reliability Procurement Distributed Generation Pilot Evaluation Report. (May 2018) Page 17-30. Available at: <http://www.energy.ri.gov/documents/SRP/2018-srp-dg-pilot-emv-final-report.pdf>

²⁹ National Grid. 2019 System Reliability Procurement Report. (November 2018) Page 51-59. Available at: <http://rieermc.ri.gov/wp-content/uploads/2018/10/2019-srp-report-third-draft.pdf>

option for some time. The NWA RFPs to be issued by the end of 2018 as part of the approved 2018 SRP plan will use a locational incentive in this way.”³⁰ As the Commission contemplates the relevance and purpose of Step 3, we suggest the Commission monitor trends in Rhode Island regarding solicitation-based and tariff-based compensation for the locational value of DERs on the distribution system.

New York

In New York, the Commission’s March 2017 VDER Order established a DER compensation methodology based on various value stack components, two of which relate directly to the instant comment solicitation: the Demand Reduction Value (DRV) and the Locational System Relief Value (LSRV).³¹ To determine these values, the utilities prepared marginal cost of service studies, whose results and accompanying input and methodologies were utilized to determine a system wide \$/kW-yr DRV, and a locationally specific \$/kW-yr LSRV for areas with near term constraints that could be alleviated through the use of localized tariff-based incentives for mass-market net metered resources. Both of these value stack components were only awarded based on a DERs actual output capacity performance during the top ten system peak hours during the previous year.

However, in December 2018 the Department of Public Service Staff filed a whitepaper which represented a major revision of previous policy, adjusting the “top ten hours” methodology by instead applying it to the top 240 hours, and proposing to sunset the LSRV entirely.³²

As justification for sunsetting the LSRV, the Department notes that “the current DRV and LSRV rules may represent an attempt to achieve greater granularity and precision than is reasonable... and possible in an open, administratively-determined tariff mechanism,” and observe that “it has been difficult to design a simple, stable tariff that also ties compensation to location-specific functional and performance needs. The DSIP process, related NWAs, and the DR programs are proving to be the more effective tools to address this more complex set of problems and value.”³³

While sunsetting the LSRV in favor of a shift toward NWA procurements, the Staff has however suggested that the systemwide DRV be preserved, stating “there is value to continuing a tariff-based process for smaller, intermittent [mass-market] facilities that cannot economically

³⁰ Narragansett Electric Company. Docket No. 4889. Response to PUC 2-11. (November 2018) Available at: [http://www.ripuc.org/eventsactions/docket/4889-NGrid-DR-PUC2%20\(11-29-18\).pdf](http://www.ripuc.org/eventsactions/docket/4889-NGrid-DR-PUC2%20(11-29-18).pdf)

³¹ New York Public Service Commission. Order on Net Energy Metering Transition, Phase One of Value of Distributed Energy Resources, and Related Matters. (March 2017) Page 108-119. Available at: <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7b5B69628E-2928-44A9-B83E-65CEA7326428%7d>

³² New York Public Service Commission. Whitepaper Regarding Future Value Stack Compensation, Including for Avoided Distribution Costs. (December 2018) Page 6-11. Available at: [http://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/8a5f3592472a270c8525808800517bdd/\\$FILE/Staff%20whitepaper%20on%20VDER%20Compensation.pdf](http://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/8a5f3592472a270c8525808800517bdd/$FILE/Staff%20whitepaper%20on%20VDER%20Compensation.pdf)

³³ *id.* at pages 6 and 10.

participate in utility NWAs given their unique characteristics and market segments.”³⁴ As the Commission contemplates the relevance and purpose of Step 3, we suggest the Commission monitor trends in New York relating to the shift away from the LSRV and toward NWAs, and the related pay-for-performance (ex-post facto) compensation model, which helps account for temporal and reliability limitations of some mass-market DERs.

While some may interpret the above-described trends in California, Rhode Island, and New York as drawing into question the need for the analysis contemplated in Step 3, the OCA does still see a value in this type of analysis, for three reasons.

First, mass-market type DG customers such as a residential rooftop PV owners may not have the resources or sophistication to participate in a non-wire solicitation, or even be aware that such a solicitation is ongoing, but if: 1) they are located in a capacity constrained area of the grid and; 2) their actual output coincides with the peak hours on that circuit in a manner that is consistent and verifiable on an ex-post facto basis, then they deserve to be compensated for providing value to the system. Step three will help us understand the value of that locationally-based compensation.

Second, if there are areas where there are projected capacity constraints but the load profile of a mass market net-metered customer is not likely to match the needs of a certain circuit, then their locational value should be 0 and Step three will also tell us that.

Third, knowing just how many circuits on which the locational value is likely to be zero and how many circuits the locational value is likely to be more than zero—and by how much—may help the Commission understand whether the tariff-based or solicitation-based approach should be the focus of its attention moving forward.

In summary, the OCA envisions Step 3 as helping to pave the way toward near-term future where NWA procurements may be common but net metering also provides a compensation opportunity for mass market projects on an ex-post facto basis for how they *actually* perform during peak hours of the previous year in areas of the distribution system likely to experience a capacity constraint, similar to the compensation afforded as part of the LSRV portion of New York's value stack.

Conclusion

The OCA appreciates the opportunity to offer comments on the initial locational value study scope and timeline. We look forward to working with the Staff, Consultant, Utilities, and locational value working group stakeholders to ensure the resultant study provides all data and supporting information necessary to inform the accuracy of future tariff or compensation structures, thereby maximizing its value for New Hampshire ratepayers.

³⁴ *id.*

Brian D. Buckley

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New Hampshire Office of the Consumer Advocate LVDG Study Comments- Attachment 1

Table 1. MCOS Study Summary

Key Issues	CHG&E	National Grid	Consolidated Edison	NYSEG and RG&E	O&R
Deterministic/Probabilistic	Probabilistic using 5000 Monte Carlo simulations for each substation and transmission area	Deterministic	Deterministic	Load forecast not conducted as part of MCOS	Load forecast not provided
Treatment of DER in Load Forecast	Forecasted DER have not been included. However, it is unclear if historical trends in DER adoption have been removed.	Only rooftop PV has been removed from the baseline forecast. Unclear if historical trends in DER adoption have been removed.	Historical trends in DER adoption have not been removed.	Load forecast not conducted as part of MCOS study. Historical trends in DER adoption have not been removed.	Unclear. Load forecast methodology was not provided with MCOS study.
DER Caps and Capacity Buffers	20% cap on demand resources that can defer an investment.	12% reserve added to capacity needs. LSRV zones subject to applicable MW caps	Unclear	LSRV zones subject to applicable MW caps	Unclear
EVs, Heat Pump Adoption, and Other Loads from Electrification	Included	Included in system level forecast only. Not included in feeder level forecast.	Included	Unclear	Unclear
Study Horizon	15 years but used 10 years as the threshold for evaluating whether there is currently deferral value.	10 years	10 years	5 years	Unclear
Amortization Period	Book life of equipment is used to calculate annual deferral values. However, projects can only be deferred for up to 10 years.	Annual deferral value	Annual deferral value	Annual deferral value	Unclear, but appears to be using book life of equipment to calculate annual deferral values.
Weather Assumptions	50/50 (1-in-2) with Monte Carlo analysis of probability of any outcome under the normal distribution curve (as defined using the standard deviation of historical load).	95/5 weather scenario which corresponds to a 1-in-20 year event.	Based on 1-in-3 weather year based on 30 years of weather data.	Unclear	Based on 1-in-3 weather year based on 35 years of weather data.
Load Forecast Granularity	Substation and transmission level	Substation and feeder level load data	Load area and feeder level	Unclear	Unclear
Inclusion of Transmission costs	Appears to include local transmission costs but does not encompass all NYISO procured transmission investments.	Does not include transmission.	Includes "High Voltage System Cost Center" and subtransmission which appears to include local transmission but does not encompass all NYISO procured transmission investments.	Appears to include local transmission costs but does not encompass all NYISO procured transmission investments.	Appears to include local transmission but does not encompass all NYISO procured transmission investments.
Inclusion of Feeder Level Costs	Does not include feeder level costs	Does not include feeder level costs	Includes feeder level costs (primary, distribution transformer, and secondary cables)	Does not include feeder level costs	Does not include marginal costs for the distribution transformer and secondary cable cost segments.
Inclusion of O&M Avoided costs	Includes O&M avoided costs	Includes O&M avoided costs.	Includes O&M avoided costs	Includes O&M avoided costs	Appears to include O&M avoided costs
Inclusion of non-capacity related grid services (e.g., non-capacity reliability, situational awareness, and reliability back tie benefits).	Not included. includes load driven investments only	Not included. Projects were identified based on load flow analysis and includes only projects that solve thermal and voltage constraints.	Not included. Includes load driven investments only	Not included. Includes load driven investments only	Unclear
Consistency with Capital Investments Plans	Appears consistent with capital investment plan	Appears consistent capital investment plan	Appears consistent capital investment plan	Projects identified are taken from the five-year capital investment plan	Study is out of sync with capital investment plan

New Hampshire Office of the Consumer Advocate LVDG Study Comments- Attachment 2

On August 17 and August 23 Commission Staff directed locational value study working group stakeholders to attend a webinar where questions were posed to the expert presenters regarding the locational value distributed energy resources, and in turn they provided insightful answers that might help inform the overall desired outcome and deliverables of the study.³⁵ Several of the questions and answers are excerpted below because the OCA recommends that discussion inform the desired outcome and deliverables of the study. In summary, the comments of the various experts highlight a trend away from tariff-based compensation of DERs for their locational value, and instead towards a market based solicitation-type structure.

<<Presentation Begins, Debra Lew Goes through her slides, and Lori Bird begins discussion>>

Lori Bird, National Renewable Energy Laboratory (Moderator):

There's an interesting question here about—you didn't really touch on this Debbie in your talk, and I have some comments on this if you don't want to comment on it—but the question is 'I understand the New York Public Service Commission Staff recently published a Whitepaper suggesting a move away from locational system relief values (LSRV) that were supposed to be incorporated into the value stack suggesting that non-wires alternatives are the preferred approach for deferring upgrades. [The Whitepaper Lori is referring to is available here.³⁶] California hasn't quite gotten to the point where they're trying to compensate for locational value inside a tariff either. From your perspective, is this the beginning of a trend towards broader embrace of non-wire alternatives that include PV and other DERs in distribution system planning, rather than circuit specific locational values that are compensated perhaps in a tariff?' Do you have any comments on that Debbie, because I have a couple?

Debra Lew, GE Energy Consulting

Why don't you give your comments first and I'll give my comments after—go ahead.

Lori Bird, National Renewable Energy Laboratory (Moderator):

I think this is an interesting development. My understanding is that in New York's case there was some concern that there was some uncertainty created by the tariff structure and the uncertainty for the PV developers about what value they would actually obtain if they could hit the peak load hours. I think another concern about what is starting to unfold in New York is that, if the utilities are undertaking non-wires alternative projects, could that erase the value that was calculated for the tariff? So it's interesting to watch what's going on in New York and how that is resolved, and California I think has spent a lot of time thinking through the

³⁵ National Renewable Energy Laboratory. Methods for Determining Locational Value of PV: Overview of Research and Considerations. August 23, 2018. Available at:

<https://register.gotowebinar.com/recording/viewRecording/2764891705496246017/1510568840839592200/nate@cleanegroup.org?registrantKey=6348085751228828941&type=ATTENDEEEMAILRECORDINGLINK>

³⁶ New York Department of Public Service. Draft Staff Whitepaper Regarding VDER Compensation for Avoided Distribution Costs. (July 26, 2018) Available at: https://drive.google.com/file/d/17JftcQ74LshdHVDqJVcqX_aZ--s3KToP/view?usp=sharing

approaches here but hasn't been able to incorporate locational value in a tariff because of some of the complexities. So, those are some of the things that I think are influencing the discussion so watch to see how it plays out. Debbie, did you have anything that you wanted to add?

Debra Lew, GE Energy Consulting

I would just add that I'm a big fan of non-wire alternatives and having a solicitation for specific projects that can alleviate specific concerns because all of this is so specific to a particular feeder and all of the details about it, I think it's really hard to do something more higher level and try to point people in the right direction. So I personally think that if I were a utility what I would want to do is to identify where I have got problems or where I think I am going to anticipate problems, and I would want to hold specific solicitations for those exact problems and ask people for their best price on a solution. So, I would agree that I think that's a good way to go.

Lori Bird, National Renewable Energy Laboratory (Moderator):

Yeah, I think another issue with that is you can sort of control performance a bit more than through a tariff-based approach, right? There's an RFP, you know you're getting a specific project with specific characteristics you're looking for, and so those are some other considerations.

<<Samir Succar, ICF goes through his slides>>

Lori Bird, National Renewable Energy Laboratory (Moderator):

I have a question for Sammir. So my question is, you've been working with various clients on these issues and there are some state folks on the line here in states that are thinking through various approaches to trying to address locational value for PV: do you have any advice about approaches in terms of going non-wires alternatives, or tariff-based approaches, or you were just talking about the eco model — what are your thoughts about what might be effective strategies going forward?

Samir Succar, ICF

Sure. I think you stated is nicely earlier in terms of some of the issues around LSRV not providing the kind of certainty that makes projects financeable and I think there were concerns around that, but at the same time it's interesting to see the Staff Whitepaper on Energy Efficiency a couple of months ago that really does highlight, in the context of tripling energy efficiency targets in New York, the role for non-wires alternatives and really thinking about how to build these locational approaches into programs — and that's something that we've seen a lot. [The Whitepaper Samir is referring to is available here.³⁷] So I think the tariff design piece, we've seen some momentum away from that, both in New York and—not locationally necessarily, but some NEM successor approaches in other locations as well—where I think what is picking up speed is certainly, what we've seen, is more than 80 active non-wire alternative projects around the country right now that we're tracking. In addition to that, [there is] a lot of emphasis on

³⁷ New York Department of Public Service. New Efficiency New York. (April 2018) Pages 32 and 39. Available at: <https://drive.google.com/file/d/1EWDHjxd4riCplqc7YhTcwG7bOWVyyL1b/view?usp=sharing>

how to use programs and how to use mechanisms of programs to really drive scale and I think that was sort of one of the unsung success stories of the Brooklyn Queens Demand Management auction that is certainly something that PG&E is looking at in the context of their pilot; it's something that's being reflected now in terms of the New York Commission issued that White Paper on Energy Efficiency, but at the end of the day I don't think it's going to be one solution or another. I think a different mix is going to make sense in different jurisdictions, but I think what was missing in that tariff-based approach was that link to the planning process and the planning criteria and that's why I think there is a re-examination of non-wires alternatives approaches and how to leverage those in the context of programs.

Lori Bird, National Renewable Energy Laboratory (Moderator):

Could you comment on the ability—in your work with non-wires alternatives projects—for the PV to be playing in those projects, assuming in many cases probably coupled with storage, but the effectiveness of PV to be able to address the issues; can you just comment on that, in terms of your experience?

Samir Succar, ICF

Yeah, absolutely. It depends not just on location and penetration as I mentioned, and also reflected in Debbie's remarks, but also the question of how planners are thinking about their planning criteria and how they are looking at load modifiers. So, whether utilities are thinking about active competitive procurement of some of these DR portfolios, or they're looking at load modifiers to reflect the amount of energy efficiency and DG that's on their system even if it's at marginal level, and that difference in approach from utility to utility and how they do that has a big impact on the ability of PV to be an effective component of a portfolio because if a utility essentially did a distribution equivalent of that effective load carrying capability that Debbie mentioned — if the load modifying factor for PV is basically zero, if the utility says that the way they manage risk they're not counting PV toward reducing system load, then that's going to be reflected in the way they evaluate DER aggregations. So I think those issues — the output profile, the load profile, and the utility planning criteria—all three of those are important factors, but absolutely, yes, we've seen PV be an important part of a non-wires alternatives.

<<End Presentation>>

New Hampshire Office of the Consumer Advocate LVDG Study Comments- Attachment 3

Table 1. Summary of New York and California methodologies

Consideration	New York	California	Discussion
Temporal Valuation	Locational values are applied to the 10 peak hours of the system in the previous year	Locational values are developed on an hourly basis, i.e. 8,760 hourly locational values for non-leap years; a compensation methodology has not yet been developed	Developing granular temporal values may help attract DER developers and will produce more refined valuations, but it could overcomplicate methodologies
Value Components	Energy, generation capacity, environmental, demand reduction, and locational system relief	Energy, losses, generation capacity, ancillary services, T&D capacity, environment, avoided RPS, distribution capacity, steady-state voltage, power quality, reliability, and resilience	Including more value components will further refine the L-T valuation process, but it could overcomplicate the development and refinement of methodologies
Valuation Period	Selected projects will receive Locational System Relief Value (LSRV) compensation (discussed in detail below) for a period of 10 years before needing to update to the most recently derived LSRV value	The utilized model produces 30-year time horizons with hourly values; the methodology does not yet produce compensation amounts	Having a longer compensation period may better attract DER developers if there is sufficient price certainty, but it could result in overcompensation if the prices are not set correctly
Eligible Resources	Includes resources that were previously net energy metering (NEM) eligible (e.g., solar and wind); non-generation resources (e.g., energy efficiency and demand response) are not eligible in the Phase One tariff	Includes distributed renewable generation resources, energy efficiency, energy storage, electric vehicles, and demand response technologies	Including all resources allows for consideration of all options, and creates a level playing field across resources