Susan Vercheak*
Assistant General Counsel

April 24, 2017

Honorable Kathleen H. Burgess
Secretary
New York State
Public Service Commission
Three Empire State Plaza
Albany, NY 12223-1350

Re: Case 15-E-0751 – In the Matter of the Value of Distributed Energy Resources

Dear Secretary Burgess:

Enclosed is the Work Plan to Consider Additional Potential Sources of Value Created By Distributed Energy Resources of Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., New York State Electric & Gas Corporation, Niagara Mohawk Power Corporation d/b/a National Grid, Orange and Rockland Utilities, Inc., and Rochester Gas and Electric Corporation (collectively the "Joint Utilities").

If you have any questions, please contact me. Thank you.

Very truly yours,

Susan Vercheak

Enclosure

*Admitted only in New Jersey

Consolidated Edison Company of New York, Inc.
4 Irving Place New York NY 10003 212 460 4333 212 677 5850 fax vercheaks@coned.com

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

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

WORK PLAN OF THE JOINT UTILITIES TO CONSIDER ADDITIONAL POTENTIAL SOURCES OF VALUE CREATED BY DISTRIBUTED ENERGY RESOURCES

In its recent *Order on Net Energy Metering Transition, Phase One of Value of Distributed Energy Resources, and Related Matters* ("VDER Order"), the New York Public Service Commission (the "Commission") required each investor-owned utility to file a work plan for developing the identified potential values from the addition of Distributed Energy Resources ("DER").[1] Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc. ("Con Edison"), New York State Electric & Gas Corporation, Niagara Mohawk Power Corporation d/b/a National Grid ("National Grid"), Orange and Rockland Utilities, Inc. ("O&R"), and Rochester Gas and Electric Corporation (collectively the "Joint Utilities" or the "Utilities") have considered the various potential sources of DER value contemplated in the VDER Order. While some issues are effectively addressed on a statewide basis (*e.g.*, reactive power, sulfur dioxide ("SO_2") and nitrogen oxides ("NO_x") emissions, and more granular energy and capacity values), other issues should be on a utility-specific basis (*i.e.*, updates to Marginal Cost of Service ("MCOS") studies and Non-Wires Alternatives ("NWA") opportunities). As a result, the Utilities respectfully file this joint work plan to address statewide valuations to

[1] Case 15-E-0751 *et al., In the Matter of the Value of Distributed Energy Resources* ("VDER Proceeding") *et al.*, Order on Net Energy Metering Transition, Phase One of Value of Distributed Energy Resources, and Related Matters (issued March 9, 2017) ("VDER Order"), pp. 117, 121, 149.

complement the individual utility filings, which will address matters related to MCOS updates and NWA opportunities.

I. Introduction

The Joint Utilities remain committed to working with Department of Public Service Staff ("Staff") and stakeholders to investigate opportunities to enhance the value stack methodology to better reflect the locational and temporal benefits that individual DER projects provide. The most obvious and valuable way that DER can provide locational support on the distribution system is providing targeted load relief in areas where system growth is anticipated to lead to near- to medium-term system investment. These DER opportunities are identified through NWA solicitations, which are discussed in today's contemporaneous individual utility filings.[2] Broader system needs will be addressed in VDER Phase One through the Demand Reduction Value ("DRV") and Locational System Relief Value ("LSRV"), which will be discussed in the utilities' individual May 1, 2017 implementation filings. The DRV and LSRV approach will be refined through revisions to utility MCOS studies, which are also discussed in today's contemporaneous utility-specific work plan filings and are proceeding according to individual utility rate case cycles and other timing considerations. Collectively, these mechanisms will provide opportunities for DER to capture locational value on the utilities' respective electric distribution systems.

In addition, parties have raised the potential for DER to provide additional benefits including reactive power, ancillary services, and reduced SO_2 and NO_x emissions. Assessing the potential for these values will require further discussion and analysis that is best considered on a statewide basis, instead of on an individually utility-specific basis. As explained in more detail

[2] The Joint Utilities will further address NWA Suitability Criteria in a filing on May 8, 2017. Cases 16-M-0411 *et al., In the Matter of Distributed System Implementation Plans* ("DSIP Proceeding") *et al.*, Order on Distributed System Implementation Plan Filings ("DSIP Order")(issued March 9, 2017), p. 32.

below, the Joint Utilities propose that these statewide efforts be considered together to identify interdependencies and address any broader market implications, with the goal of completing the higher priority workstreams by the end of 2017 for potential integration into the Value Stack tariff and each utility's Benefit-Cost Analysis ("BCA") Handbook as appropriate, following Commission approval.

Beyond evaluating these potential enhancements to the Value Stack, the Joint Utilities propose to explore additional opportunities to support efficient DER development, such as further options for DER providers to share interconnection costs,[3] as well as potential mechanisms to allow projects compensated under the Value Stack tariff to contribute to the upkeep of the electricity grid in accordance with their use of the system.[4] Collectively, these "market enhancement" efforts will be part and parcel of Phase Two of the VDER Proceeding, and, as discussed above, are expected to lead to revisions to the utility BCA Handbooks contemplated in the VDER Order and will also influence work on the utility Distributed System Implementation Plans ("DSIPs"). The ability to manage multiple workstreams with potentially overlapping timelines will be crucial to the successful coordination and completion of these efforts. Cost allocation principles will also be important to the implementation of completed work-streams.

The utilities propose an initial stakeholder process to allow parties to provide input on the potential values to be considered, including a prioritization process that will identify the steps needed to evaluate each potential value stream. The Joint Utilities propose that Staff, the New York Independent System Operator ("NYISO"), and the New York State Energy Research and Development Authority ("NYSERDA") participate in the meeting. The list of potential market

[3] This should be coordinated with and through the existing Interconnection Policy Working Group ("IPWG").
[4] VDER Proceeding, VDER Order, p. 87.

enhancements can be prioritized based on potential net benefit and likely timeframe for resolution/implementation, with priority for those items that can be resolved by the end of 2017 for potential implementation, as appropriate, in 2018.

Initial market enhancements that could be further considered as part of this process are discussed in more detail below.

II. Initial Market Enhancements for Consideration

A. Distribution-level Reactive Power and Voltage Support

One limitation of DER hosting capacity is the potential for net injections during periods of low system load to result in high or fluctuating voltage conditions. Typically, the cost to mitigate these voltage conditions is assessed to the DER in higher overall interconnection costs and can inhibit DER deployment. Certain DER, including solar photovoltaics ("PV"), battery storage, fuel cells, and even some wind energy applications, could be equipped with smart inverters that may have the ability to provide a variety of voltage-related services that could support utility efforts to increase hosting capacity which may, as a result, reduce interconnection costs. This potential should be further explored.

As a prerequisite to capturing distribution-level reactive power benefits, the Joint Utilities recommend that consideration be given to whether the smart inverter requirement proposed under IEEE 1547[5] should be adopted as a requirement in New York. Consideration should also be given to addressing communications and cybersecurity issues, such as including the recommendations from the California Smart Inverter Working Group[6] convened by the California Public Utility Commission and California Energy Commission, and/or the Electric

[5] This is the standard developed by the Institute of Electrical and Electronics Engineers ("IEEE") for interconnecting distributed resources with electric power systems. http://grouper.ieee.org/groups/scc21/1547/1547_index.html.
[6] http://www.energy.ca.gov/electricity_analysis/rule21/

Power Research Institute's ("EPRI") Integrated Grid initiative.[7] Ultimately, the question is how best to capture the net benefits that smart inverters can provide. Such an assessment should consider the incremental cost to install smart inverters and the net benefits that can be realized from a preprogrammed "set it and forget it" operating strategy. Another scenario would consider the incremental costs and potential net benefits from active monitoring and control of individual inverters by the Distributed System Platform ("DSP") either on a saturated basis or at individual smart inverters at strategic and/or grid-edge locations.

The Joint Utilities propose to leverage existing and pending studies, such as Con Edison's engagement with EPRI to examine the value of smart inverter-enabled reactive power support for voltage correction on distribution circuits. This study, which is expected to be completed by July 2017, will document the ways in which smart inverters may be operated to provide reactive power support, the relative benefits of each approach, and the gaps for implementation. Additionally, this effort may provide initial guidance on utilizing smart inverters for these purposes. Preliminary findings should be available for presentation at the stakeholder conference discussed above.

In addition, the Joint Utilities expect to leverage appropriate lessons learned from the study of the deployment of certain advanced inverter controls, throughout an engagement with EPRI that is currently underway, in conjunction with National Grid affiliate's Solar – Phase II Project in Massachusetts. Level 1 of the EPRI study, which is expected to be completed int he first half of 2018, will analyze smart inverter performance through smart meter settings and advanced monitoring across a variety of feeder types, solar PV system sizes, locations, loads, load tap changers ("LTCs"), and capacitor bank configurations and will identify initial

[7] http://eprijournal.com/the-architecture-for-an-integrated-grd/

recommended settings for smart inverters. Level 2 of the study will consist of detailed performance analysis and economic analysis.

B. Expanded Locational Energy, Capacity, and Ancillary Values

The Joint Utilities propose to continue to work with the NYISO through the DSP/NYISO Task Force to facilitate DER access to bulk power wholesale markets.[8] The Joint Utilities will also work with the Task Force to investigate whether sub-zonal wholesale energy prices could provide more granular price differentiation within the utilities' individual service territories based on wholesale system constraints. Additionally, the Joint Utilities will work with the NYISO and other parties to assess whether and how DER can adequately provide the following wholesale market ancillary service products: (1) ten-minute spinning reserve, (2) thirty-minute reserve, (3) regulation, (4) voltage support, and (5) black start capability. The assessment will evaluate the potential for different DER to provide those services, quantify the expected revenues from providing those services, and provide potential recommendations to address any barriers to DER participation.

Additionally, the Joint Utilities propose working with the NYISO to identify alternatives for DER relative to the current approach to Installed Capacity Rules ("ICAP") under the Open Access Transmission Tariff ("OATT"). Such an evaluation would examine capacity models in other Regional Transmission Organizations ("RTOs") and whether to recommend potential changes to the NYISO's market rules for consideration by the NYISO's ICAP Working Group.

C. Emissions of SO_2 and NO_x

Some parties asked whether avoided environmental costs associated with reduced SO_2 and NO_x emissions are fully captured in the Value Stack tariff calculations. The Joint Utilities note that locational based marginal prices ("LBMP") include the cost of these pollutants as an

[8] DSIP Proceeding, DSIP Order, pp. 7-8.

"internalized" cost from the abatement programs instituted through the U.S. Environmental Protection Agency.[9] Moreover, while emitting generation of less than 25 MW is not required to comply with certain air emissions regulations in the same way as larger generation, the BCA Framework and the utility BCA Handbooks provide a method for capturing these SO_2 and NO_x emissions as well. While the Joint Utilities believe that the utility BCA Handbooks fully capture avoided costs associated with reduced SO_2 and NO_x emissions, other parties have expressed the concern that there may be gaps. The Joint Utilities could work with Staff and DER providers to further explore this matter.

D. Environmental Justice

Several parties suggested that compensation for solar PV resources should be provided in a manner that encourages deployment in environmental justice communities. These historically underserved areas may benefit from local clean energy installations. This issue may be linked to Staff's effort to support low- and moderate-income customers' access to clean energy. The Joint Utilities are interested in working with Staff, DER providers and other parties to further explore these matters.

E. Enhanced Interconnection Cost Sharing

In addition to the potential deployment of smart inverters which, as discussed above, can increase hosting capacity and thereby reduce interconnection costs, the Joint Utilities propose to continue working within the Interconnection Policy Working Group to identify possible alternative structures where developers could collectively pay for common interconnection costs, either through a "batching" approach to share common costs or by establishing a tariff

[9] Case 14-M-0101, *Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision*, Order Establishing the Benefit Cost Analysis Framework (issued January 21, 2016), Appendix C, p.16.

mechanism where all interconnecting customers would be charged for a share of common investments that increase aggregate hosting capacity.

Additionally, the Joint Utilities continue to look for ways to reduce interconnection costs. O&R's soon to be issued Optimal Export Demonstration project will focus on both offering new technologies and the development of a value proposition to increase hosting capacity on the system. National Grid's proposed Distributed Generation Interconnection REV Demonstration project[10] will also provide important insights, by seeking to test whether National Grid's upfront investment in pilot areas to make the system "DG-ready" combined with an alternative cost allocation test will enhance the number of interconnections. Both O&R and National Grid anticipate that this work will reduce system upgrade costs that would otherwise be charged to interconnecting DER. Similarly, the utilization of advanced inverter functionality to meet local reactive and voltage requirements, more DER could potentially interconnect and operate.

F. Consolidated billing

Consolidated billing would allow DER provider charges to be displayed along with Value Stack credits on subscribers' utility bills. Developers have identified potential benefits of having both charges and credits on the utility bill. Some preliminary analysis suggests that the cost and timeline that may be involved in developing and implementing this solution may differ from DER providers' expectations. In addition, consideration should be given to important policy issues, such as establishing DER oversight,[11] addressing how collections for non-payment would be handled, and how Home Energy Fair Practices Act ("HEFPA") requirements would be met.

[10] National Grid filed the proposed Distributed Generation Interconnection Demonstration project on February 14, 2017 and the project was accepted by Staff with changes on April 24, 2017.
[11] *See* Case 15-M-0180, *In the Matter of Regulation and Oversight of Distributed Energy Resource Providers and Products*, Supplemental Staff Whitepaper on DER Oversight (filed April 11, 2017).

With a full assessment of issues, a more complete consideration of this approach can be made. The Joint Utilities will work with Staff and DER providers to explore this issue further.

III. Timeline

The Joint Utilities expect that the outcome of the proposed summer 2017 stakeholder meeting will determine the specific course of action for prioritizing, discussing, and studying future market enhancements. Certain enhancements may be simple, offering the foundation for a proposal to the Commission within weeks or a few months. Others may require more in-depth analysis, possibly including evaluations of actual DER performance or other pilot approaches, and/or an in-depth NYISO stakeholder process. These may take longer to fully resolve. The Joint Utilities appreciate stakeholders' and Staff's interest in establishing a more specific timeline, however, and offer the following preliminary schedule below as a starting point.

Date	Item
April 24, 2017	• Utilities file individual and joint work plans for refining locational values of DER to the distribution system, including plans for enhancing MCOS studies and NWA opportunities
May 1, 2017	• Utilities file initial implementation proposals, which include methodologies for calculating and establishing compensation for VDER Phase One DRV and LSRV
May 8, 2017	• Utilities file NWA opportunities in compliance with the March 9, 2017 DSIP Order[12]
Mid-May	• VDER Phase Two organizational conference
June	• Utilities consider stakeholder comments on implementation proposals
Summer 2017	• Completion of Con Edison – EPRI smart inverter study • Stakeholder meeting to define and prioritize additional values and market enhancements to be considered • With input from stakeholders, Utilities work with Staff, NYISO, and NYSERDA to scope out near-term study, discussion, and action on identified market enhancements
Fall 2017	• Studies and discussions of initial additional market enhancements begin
Winter 2017 into 2018	• Utilities share study and discussion results as they become available with the goal of completing certain high priority workstreams by end of 2017 for implementation in 2018 as appropriate and approved by the Commission • Proposals for various market enhancements can be filed with the Commission for comment and incorporation into the VDER framework

[12] DSIP Proceeding, DSIP Order.

IV. Conclusion

The Joint Utilities respectfully submit these comments in support of Ordering Clause No. 13 of the VDER Order to complement the individual utility compliance filings, and look forward to further discussions with Staff and stakeholders on these matters.

Dated: April 24, 2017

Respectfully submitted,

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. and ORANGE AND ROCKLAND UTILITIES, INC.

By: */s/ Susan Vercheak*

Susan Vercheak*
Assistant General Counsel
Consolidated Edison Company of New York, Inc.
4 Irving Place
New York, New York 10003
Tel.: 212-460-4333
Email: vercheaks@coned.com
* Admitted only in New Jersey

CENTRAL HUDSON GAS AND ELECTRIC CORPORATION

By: */s/ Paul A. Colbert*

Paul A. Colbert
Associate General Counsel –
Regulatory Affairs
Central Hudson Gas and Electric Corporation
284 South Avenue
Poughkeepsie, NY 12601
Tel: (845) 486-5831
Email: pcolbert@cenhud.com

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID

By: */s/ Janet M. Audunson*

Janet M. Audunson
Senior Counsel II
National Grid
300 Erie Boulevard West
Syracuse, New York 13202
Tel: (315) 428-3411
Email: janet.audunson@nationalgrid.com

NEW YORK STATE ELECTRIC & GAS CORPORATION and ROCHESTER GAS AND ELECTRIC CORPORATION

By: */s/ Mark Marini*

Mark Marini
Director - Regulatory
89 East Avenue
Rochester, NY 14649
Tel.: (585)750-1666
Email: Mark_Marini@rge.com