



February 14, 2017

VIA ELECTRONIC DELIVERY

Honorable Kathleen H. Burgess
Secretary
New York State Public Service Commission
Three Empire State Plaza, 19th Floor
Albany, New York 12223-1350

RE: Case 14-M-0101 – Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision (REV)

Niagara Mohawk Power Corporation d/b/a National Grid – Proposed Distributed Generation Interconnection REV Demonstration Project Filing

Dear Secretary Burgess:

In accordance with the requirements set forth in the Commission’s May 19, 2016 Order Adopting a Ratemaking and Utility Revenue Model Policy Framework in Case 14-M-0101, Niagara Mohawk Power Corporation d/b/a National Grid (“National Grid” or the “Company”) hereby submits the Company’s Proposed Distributed Generation Interconnection REV Demonstration Project.

Please direct any questions regarding this filing to:

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Thank you for your attention to this matter.

Respectfully submitted,

/s/ Allen Chieco

Allen C. Chieco

Enc.

cc: Tammy Mitchell, DPS Staff, w/enclosure (via electronic mail)
Michael Worden, DPS Staff, w/enclosure (via electronic mail)
Denise Gerbsch, DPS Staff, w/enclosure (via electronic mail)

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As duly authorized by the Participant identified above that I represent, I knowingly waive on behalf of that Participant any right under PSL §23(1) to be served personally or by regular mail with Commission orders that affect that Participant and will receive all orders by electronic means in the above Case. If participating individually, I knowingly waive any PSL §23(1) right to service of orders personally or by regular mail and will receive all orders by electronic means in the above Case. This consent remains in effect until revoked.
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As duly authorized by the Participant identified above that I represent, I knowingly waive on behalf of that Participant any right under PSL §23(1) to be served personally or by regular mail with Commission orders that affect that Participant and will receive all orders by electronic means in all Cases where it participates. If participating individually, I knowingly waive any PSL §23(1) right to service of orders personally or by regular mail, and will receive all orders by electronic means in all Cases where I participate. This consent remains in effect until revoked.
Note: Due to the design of our system, this consent attaches to the individual named here and not to the party that may be represented by that individual. Therefore, individuals who represent multiple parties should be aware that a global consent will affect all matters in which they appear on behalf of any party.

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Submitted by:	Date:
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**Proposed Distributed Generation Interconnection
REV Demonstration Project
Case 14-M-0101
Reforming the Energy Vision**

Niagara Mohawk Power Corporation d/b/a National Grid

February 14, 2017

Executive Summary

New York State’s Clean Energy Standard (“CES”) adopts the State Energy Plan goal “that 50% of New York’s electricity is to be generated by renewable sources by 2030, as part of a strategy to reduce statewide greenhouse gas emissions 40% by 2030.”¹ The CES fits within the State’s larger Reforming the Energy Vision (“REV”) initiative, which seeks to transform electric utility practices by improving system efficiency, empowering customer choice, and encouraging “greater penetration of clean generation and efficiency technologies.”² In furtherance of these efforts, Niagara Mohawk Power Corporation d/b/a National Grid (“National Grid” or the “Company”) proposes this REV demonstration project (“Demonstration Project”) focused on accelerating the pace and scale of interconnecting distributed generation (“DG”) systems above 50 kW. As recognized by the Commission, upfront costs for common system upgrades and cost-recovery uncertainty serve as impediments for applicants seeking to develop DG in New York.³ To address this challenge, the Commission recently adopted a proposal from the Interconnection Policy Working Group (“IPWG”) that facilitates the allocation of common system upgrade costs among DG interconnection applicants who benefit from common system upgrades.⁴ The Commission also challenged stakeholders to develop alternative solutions that may supplant the cost-allocation methodology it approved.⁵ This Demonstration Project aims to test an alternative solution, consisting of upfront investment by the Company to make the system “DG-ready” combined with an alternative cost allocation methodology.

First, National Grid proposes to upgrade its substation equipment by installing 3V₀ protection in two areas where a number of DG projects have been proposed (the “Pilot Areas”). These upgrades will make the system ready for current, as well as future, DG interconnections in each of the respective Pilot Areas up to the existing transformer bank’s capacity. The initial costs for the common system upgrades would be funded from the Company’s current capital budget.⁶

¹ Case 15-E-0302, *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard*, Order Adopting a Clean Energy Standard (issued August 1, 2016) (“CES Order”).

² See Case 14-M-0101, *Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision* (“REV Proceeding”), Order Instituting Proceeding (issued April 25, 2014), p. 5; see also CES Order, p. 6 (“The 50 by 30 goal is not only part of a larger greenhouse gas goal, it is part of the State’s sweeping initiative to transform the way energy is produced, delivered, and consumed.”).

³ Case 16-E-0560, *Joint Petition for Modifications to the New York State Standardized Interconnection Requirements and Application Process for New Distributed Generators 5 MW or Less Connected in Parallel with Utility Distribution Systems* (“SIR Queue Management and Cost Allocation Proceeding”), Order Adopting Interconnection Management Plan and Cost Allocation Mechanism, and Making Other Findings (issued January 25, 2017) (the “SIR Queue Management and Cost Allocation Order”), p. 29.

⁴ See SIR Queue Management and Cost Allocation Order.

⁵ *Id.*, p. 29.

⁶ National Grid’s fiscal year 2017 and 2018 capital budgets were established in Case 15-M-0744, *et al.*, *Petition of Niagara Mohawk Power Corporation, d/b/a National Grid for Authority to Use Certain Deferred Credits to Offset Costs Associated with Incremental Capital Expenditures and Other Related Relief, et al.*, Order Granting Incremental Cost Relief, in Part, and Authorizing the Issuance of Securities

Second, for this Demonstration Project only, to recover the common system upgrade costs, National Grid proposes to charge a one-time pro-rated fee to each applicant with DG systems above 50 kW that interconnects its DG project in the Pilot Areas. As discussed below, the fee would be based on the estimated common system upgrade costs (subject to true up once actual costs are known) in each of the respective Pilot Areas divided by a factor that represents the substation transformer bank's capacity. For purposes of the Demonstration Project, the factor is assumed to be 80 percent of the substation transformer bank's capacity. The 80 percent factor provides reasonable assurance that the full system upgrade cost will be recovered from project developers.

For the demonstration to be successful, the Company's cost allocation methodology must be utilized in the Pilot Areas. Therefore, the Company will only proceed with making the common system upgrades if agreement is reached beforehand with all DG applicants in the Pilot Areas to utilize the Company's proposed cost allocation methodology.

Business Model Overview

Challenges Being Addressed/Market Opportunity

There are two types of distribution system upgrades that may be required before a DG project can be interconnected: common system upgrades and site-specific upgrades. Site-specific upgrades benefit a single applicant, whether located on private property or in the public way (e.g., new poles, meters, or switches at an applicant's facility). Common system upgrades provide support to an area of the Company's electric power system and can benefit multiple interconnection customers (e.g., high-side transmission ground fault overvoltage protection equipment, known as $3V_0$ protection, transformer load tap changer, and other substation upgrades) because the upgrades, once made, often allow additional customers to interconnect to the distribution system. This Demonstration Project addresses common system upgrade costs.

Currently, the DG applicant whose proposed service would result in the need for the Company to upgrade its system is responsible for 100 percent of the common system upgrade costs.⁷ Subsequent DG applicants who benefit from the common system upgrades reimburse the earlier applicant who paid the upgrade costs.⁸ The Commission and DG applicants have indicated that

(issued May 19, 2016). The Company's fiscal year runs from April 1 through March 31. National Grid is subject to a downward only net utility plant and depreciation expense reconciliation mechanism as established in Case 12-E-0201, *et al.*, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Niagara Mohawk Power Corporation d/b/a National Grid for Electric Service*, Order Approving Electric and Gas Rate Plans in Accord with Joint Proposal (issued March 15, 2013).

⁷ SIR Queue Management and Cost Allocation Order, Attachment C, *New York State Standardized Interconnection Requirements and Application Process for New Distributed Generators 5 MW or Less Connected in Parallel with Utility Distribution Systems* (January 2017) (the "SIR"), Appendix E ("[T]he first project triggering an eligible upgrade will initially bear 100% of the cost, while subsequent projects benefitting from those upgrade [sic] will reimburse the first project developer.").

⁸ SIR, Appendix E.

common system upgrade costs create economic barriers to siting more DG projects.⁹ Even with the new cost-allocation mechanism, the timing and uncertainty of reimbursement likely remains a difficult hurdle for developers to overcome, as does the fact that the initial applicant still has to pay the total upfront costs for its project to move forward. Recognizing that other cost allocation methodologies may exist, the SIR Queue Management and Cost Allocation Order indicated that IPWG stakeholders may propose alternatives to the current cost allocation mechanism.¹⁰ This Demonstration Project seeks to test an alternative method to attract more DG projects in the Company's service territory.

Proposed Solution

National Grid proposes to upgrade the distribution system in the Pilot Areas, making the substations ready for future DG applicants to interconnect.¹¹ The investment will include the installation of $3V_0$ protection¹² at three transformer banks: two at Peterboro and one at East Golah. These $3V_0$ installations are considered to be common system upgrades, enabling DG applicants to interconnect to the upgraded substations, essentially making the substation transformer banks "DG-ready." To recover its costs, National Grid will charge a pro-rated fee to all applicants (not just the first applicant) with DG systems above 50 kW¹³ who connect to the upgraded substation transformer banks in the Pilot Areas. The pro-rated fee will be based on the Company's construction estimate of the common system upgrade costs at each of the Peterboro and East Golah substations¹⁴ divided by a factor that represents the substation transformer bank's capacity in each of these areas. The factor is assumed to be 80 percent of the respective substation transformer bank's capacity. An illustrative example of how the fee will be calculated is attached as Appendix 1.¹⁵ Costs will be tried up once actual costs are known.

A simple explanation for the calculation of the pro-rated fee is as follows. Assume the estimated costs of the Peterboro common system upgrades are \$500,000. As mentioned, 80 percent of the rating of the Peterboro substation transformer would be used as the base kW value (allowing 20

⁹ See SIR Queue Management and Cost Allocation Order, p. 29; see also Comments of SolarCity Corporation on the Petition of the Interconnection Policy Working Group (filed December 5, 2016), p. 3.

¹⁰ See SIR Queue Management and Cost Allocation Order, p. 29.

¹¹ The costs of the upgrades would be reflected in the Company's net utility plant and depreciation expense reconciliation mechanism.

¹² $3V_0$ protection is required where delta primary-wye grounded secondary power transformers can experience backfeed under light load conditions from sources on the electric distribution system (e.g., DG projects).

¹³ The 50 kW threshold would apply to an aggregate amount of DG service. For example, an applicant with three collocated services would not be allowed to break up their projects to avoid paying the common upgrade costs.

¹⁴ For example, an applicant interconnecting to an upgraded bank at the Peterboro substation will pay a fee based on the estimate of the common system upgrade costs for the Peterboro substation bank. Likewise, an applicant interconnecting to an upgraded bank at the East Golah substation will pay a fee based on the estimate of the common system upgrade costs for that substation.

¹⁵ The Company is working to develop an estimate of the common system upgrade costs in the Pilot Areas. The estimates shown in Appendix 1 are illustrative only.

percent to be used by residential and small commercial projects). Assume that the rating of the Peterboro substation transformer is 27.5 MVA (assume further that 1 MVA equals 1 MW). Based on these assumptions, the pro-rated fee that would be charged to each applicant would be $\$500,000 / (27,500 \text{ kW} \times 80\%)$, or \$37.40 per kW (including tax).

Because the success of the Demonstration Project is contingent upon use of the Company's proposed cost allocation methodology, the Company will only proceed with making the common system upgrades if agreement is reached beforehand with all DG applicants in the Pilot Areas to utilize the Company's cost allocation methodology. If not, the Demonstration Project will not proceed absent a waiver from the Commission of the cost allocation methodology set forth in the SIR Queue Management and Cost Allocation Order. The Company believes that a reasonable time period in which to test the feasibility of this Demonstration Project (assuming agreement is reached to use the Company's cost allocation methodology) is 18 months, beginning from the date common system upgrades are completed in each of the respective Pilot Areas.

DG applicants in the Pilot Areas would still bear full responsibility for their respective site-specific and any other distribution line upgrade costs that are outside of the common system upgrade charge under this Demonstration Project. The pro-rated common system upgrade fee would be due at the same time as payment of site-specific and any other distribution line upgrade costs.

The Company believes that its proposed Demonstration Project has several benefits that should entice applicants to site DG projects in the Pilot Areas. These benefits include:

- 1) Lower upfront cost to the first in-line DG applicant because they will not be responsible for the total upgrade cost.
- 2) Cost certainty to DGs applicant – the current uncertainty regarding future refunds is eliminated.
- 3) Lower upfront costs and cost certainty helps with financing DG projects.
- 4) Potential for quicker interconnection, allowing projects to come on-line sooner and providing greater certainty of project feasibility.

The Company will also explore options for storage technologies as part of the Demonstration Project.

Hypothesis Tested/Questions Answered

This Demonstration Project seeks to draw upon the SIR Queue Management and Cost Allocation Order to test whether the Company's proactive investment in common system upgrades coupled with the proposed cost-recovery mechanism can reduce barriers to the successful interconnection of DG projects, serving to further animate the market, and advance the State's clean energy goals. The Company believes that the Demonstration Project will provide valuable feedback that can be used by the IPWG stakeholders to develop a more permanent cost allocation methodology.

REV Demonstration Project Principles Addressed

This Demonstration Project supports the Commission’s REV core objectives, as set forth in the Track One Order; particularly those objectives tied to market animation, fuel diversity, resiliency, and carbon reductions, all of which are strongly supported by increased DG deployment.¹⁶ The Company also anticipates this Demonstration Project will meet the following REV demonstration project criteria:

3 rd party partners	New Utility Business Model	Customer-Community Engagement	Identify Economic Value	Pricing and Rate Design	Transactive Grid	Scalability	Market Rules and Standards	Cost Effective	Timeframe
	✓		✓	✓	✓	✓	✓	✓	✓

Specifically, this Demonstration Project touches upon the following principles identified in the Commission’s December 12, 2014 Order:¹⁷

<p>Identify questions to answer or problems on the grid and the market should respond with solutions.</p> <p>New York has seen a significant influx in DG interconnection applications since October 2015 with relatively few of those projects making it through to completion. The upfront costs associated with interconnecting complex projects, as well as the uncertainty of recovery those costs, poses a barrier to DG development. This Demonstration Project seeks to identify an answer to that problem by undertaking a new, innovative approach. Potential benefits include lower initial interconnection costs, more certainty regarding cost recovery for DG applicants, and quicker installation of DG projects.</p>
<p>The market for grid services should be competitive.</p> <p>The current DG market is constrained. By removing economic barriers, as proposed in this Demonstration Project, the DG market will likely become more competitive with multiple applicants offering services in areas where National Grid installs common upgrades.</p>
<p>Propose rules to create subsequently competitive markets and establish regulatory proposals to ensure safety, reliability, and consumer protection.</p> <p>The lessons learned here will inform subsequent efforts to reduce interconnection costs and develop a permanent cost allocation methodology.</p>

¹⁶ REV Proceeding, Order Adopting Regulatory Policy Framework and Implementation Plan (issued February 26, 2015) (“Track One Order”), p. 4.

¹⁷ See *id.*, p. 115 – 117, Appendix D.

Inform pricing and rate design modifications.

This Demonstration Project will help National Grid better understand how to motivate DG applicants to move through the interconnection process, and it will enable a comparison with the Commission's recently approved cost allocation proposal.

Consider deploying advanced distribution systems and other system technologies that support awareness, flexibility, efficiency, and cost-effectiveness.

The 3V₀ technology will facilitate the interconnection of additional DG to the distribution system, which will provide greater flexibility, efficiency, and resiliency on the system.

Market Attractiveness

Unique Value Proposition

As stated earlier, the value proposition for DG interconnection applicants is the decreased cost to interconnect and the elimination of uncertainty regarding how common upgrade costs would be recovered from subsequent DG applicants. In addition, because the Company is making the upfront investment to make the system "DG-ready" in the Pilot Areas (assuming agreement is reached to use the cost allocation methodology proposed here), applicants will also benefit from reduced study time and costs, as well as easier installation. For National Grid and its customers, the value is tied most directly to increased access to DG. This, in turn, will create a more transactive grid, improve system resilience, and increase system efficiency.

Customer Segmentation

For purposes of this Demonstration Project, National Grid proposes targeting two substations, Peterboro and East Golah, where the Company anticipates significant DG interconnection interest and need. Both substations are located in areas where applicants have proposed a number of DG projects and where the Company can quickly deploy and test the efficacy of its proposal. The Peterboro substation is located in the Utica/Rome region near the Town of Lenox. It serves approximately 8,000 customers using one transmission supply line and eight distribution feeders. There are nine DG applications in the queue for projects in the area served by the Peterboro substation, six of which are for projects sized at approximately 2 MW each. The East Golah substation is located south of the City of Rochester, near the Town of Rush. It serves approximately 7,500 customers using two transmission supply lines and six distribution feeders. There are eight DG applications in the queue for projects that are sized at approximately 2 MW each in the area served by the East Golah substation.

Scalability

This Demonstration Project is highly scalable. In its upcoming rate filing the Company may include a similar proposal.

Demonstration Plan

Metrics for Success

The Company will measure the success of this Demonstration Project by considering the extent to which the pace and scale of interconnections are increased in the Pilot Areas.

When the Pilot Areas become fully subscribed, National Grid plans to seek feedback from the DG applicants who participated in this Demonstration Project to identify lessons learned and incorporate that feedback, where appropriate, into future offerings. National Grid will also provide feedback to the IPWG stakeholders to utilize in proposing refinements and improvements to the current cost allocation mechanism.

Timelines, Milestones, and Data Collection

National Grid estimates that it could complete construction of the first substation upgrade within six to nine months of receiving New York State Department of Public Service Staff (“Staff”) approval to proceed and reaching agreement with DG applicants to utilize the Company’s proposed cost allocation methodology in the Pilot Areas. Overall, the Company believes that a reasonable time period in which to test the feasibility of this Demonstration Project is 18 months, beginning from the date common system upgrades are completed in each of the respective Pilot Areas.

Participation

National Grid proposes a targeted site selection process as part of this Demonstration Project, focusing on the two substations mentioned above: Peterboro and East Golah. DG applicants will be able to participate in this Demonstration Project (assuming all DG applicants in the Pilot Areas agree to the proposed cost allocation methodology) if the applicant:

- Has a DG project above 50 kW in the Pilot Areas only (as noted, applicants are not allowed to break up their projects to avoid paying the common upgrade costs).
- Executes an interconnection agreement and pays its share of the common system upgrade costs as determined by the proposed methodology.
- Complies with all other existing interconnection requirements, such as payment of site-specific and any other distribution line upgrade costs that are outside of the common system upgrade charge under this Demonstration Project.

Outreach

National Grid will discuss the specifics of the Demonstration Project at the next IPWG meeting. At the meeting and continuing thereafter, National Grid will work to obtain the agreement of

developers with DG projects in the Pilot Areas to use the Company’s proposed cost allocation methodology. The Company will provide updates to Staff on the results of its efforts.

The Company intends to continue participating in the IPWG, the Interconnection Technical Working Group, the DG Ombudsman Group, and the Company’s own internally driven stakeholder outreach to answer questions and identify additional potential criteria that may be suitable for selecting sites as part of an expanded offering.

Conditions/Barriers

Agreement by DG applicants to use the Company’s cost allocation methodology is critical for project success and a condition precedent for the Company proceeding with the capital investment to make the system “DG-ready” in the Pilot Areas. To that end, a waiver of the Commission’s cost-allocation methodology may be required for the Demonstration Project to go forward as planned if an agreement cannot be reached with DG applicants. Additionally, National Grid will have to include a payment provision in the interconnection agreement with applicants consistent with the fee provided for in this proposal.

Consumer Protections

This Demonstration Project does not have any consumer protection implications.

Financial Elements/Revenue Model

Investment

National Grid proposes to use its existing capital budget to pay for the common system upgrades that are part of this Demonstration Project. Costs will be included in the current net plant and depreciation expense reconciliation.

Returns & Cost Effectiveness

The Company would recoup its costs by charging each DG applicant with systems above 50 kW that interconnect to the distribution system in the Pilot Areas a one-time pro-rated fee (as discussed above).

Reporting

The Company will provide Staff with quarterly progress reports. At a minimum, the reports will include an overview of project progress against timeline/plan and results as they become available. The reports may also contain other updates or deviations from the initial details, to allow flexibility and maximize potential for innovation and learning.

Conclusion

Post-Demonstration Qualitative and Quantitative Benefits

The Company anticipates that participants in this Demonstration Project will see immediate benefits from lower upfront interconnection costs and reduced uncertainty. By making the system in the Pilot Areas “DG-ready” for new interconnections, applicants will face a simpler study and installation process. In addition, the Company and its customers will likely benefit from increased access to DG, reduced greenhouse gas emissions, and increased system resiliency, all of which will help to achieve the Commission’s REV goals, as well as the State’s CES. Adding the substation common upgrades is also likely to establish new market opportunities for community DG.

Plans to Scale

The Company may include a similar proposal, identifying additional areas on its system where common system upgrades can be made, in the Company’s upcoming rate filing this year.

Cost Recovery/Incentives

As part of this Demonstration Project, the Company is seeking to recoup investment costs from developers who interconnect DG systems above 50 kW in the Pilot Areas. Because the costs of the common system upgrades would be funded through the Company’s current capital budget and recovered through a fee charged to DG applicants, the Company is not seeking deferral of any incremental costs. Therefore, this Demonstration Project does not impact the cap on the recovery of demonstration project costs established in the REV Proceeding.¹⁸

¹⁸ See Track One Order, p. 116.

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID
Case 14-M-0101 Reforming the Energy Vision
REV Demonstration Project Proposal - Distributed Generation Interconnection
Calculation of DG Interconnection Rate

COSTS SHOWN HERE ARE ILLUSTRATIVE ONLY.

	<u>Peterboro Substation</u>	<u>East Golah Substation</u>
1 Estimated Common Costs		
2 3V0 Upgrades	500,000	500,000
3 Other Costs	-	100,000
4 Total Estimated Common Costs	500,000	600,000
5		
6 Billable Units		
7 Transformer Rating	27,500	29,180
8 % of Projects Greater than 50 kW	80%	80%
9 Billable kW	22,000	23,344
10		
11 Tax Gross Up	39.225%	39.225%
12		
13 Rate per installed kW	\$ 37.40	\$ 42.29

- 2 Engineering Estimate
- 3 Engineering Estimate
- 4 Line 2+ Line 3
- 7 Engineering Estimate
- 8 Engineering Estimate
- 9 Line 7 * Line 8
- 11 State and Federal Income Tax
- 13 (Line 4 / Line 9) / (1-Line 11)

*The fee will be based on estimated costs (which are currently being developed). Estimates will be trued up to actual costs.