

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION



Reforming the Energy Vision

Reforming the Energy Vision Demonstration Project Assessment Report

National Grid: Demand Reduction Town of Clifton Park

December 1, 2016

INTRODUCTION

In an order issued February 26, 2015, the Commission directed the six large investor owned electric utilities to develop and file initial demonstration project proposals consistent with the guidelines adopted by the order, on or before July 1, 2015.¹ These projects are intended to demonstrate the potential of various aspects of the regulatory initiative launched by the Commission as part of Governor Cuomo's comprehensive energy strategy for New York, Reforming the Energy Vision (REV).

As the Commission noted, the projects are intended to demonstrate new business models, i.e. new revenue stream opportunities for third parties and the electric utilities. In that regard, the projects will inform decisions related to developing Distributed System Platform (DSP) functionalities, measure customer response to programs and prices associated with REV markets, and determine the most effective implementation of Distributed Energy Resources (DER). Further, as demonstration projects, they are intended to test new technology and approaches to assess value, explore new ways of planning, operating, and maintaining the grid, and innovate before committing to full-scale implementation. Therefore, demonstration projects should also be designed to deliver observable results and actionable information within a reasonable timeframe. During the demonstrations, the projects will be assessed regularly. Lessons learned should be incorporated into the projects or as appropriate into the utilities' operations as expeditiously as reasonable.

¹ Case 14-M-0101, Reforming the Energy Vision, Order Adopting Regulatory Policy Framework and Implementation Plan (issued February 26, 2015) (Track One Order).

DISCUSSION

National Grid's Proposal

In compliance with the Commission's Track One Order, Niagara Mohawk Power Corporation d/b/a National Grid (National Grid or Company) filed its Customer Convenience REV Demonstration in Clifton Park on July 1, 2015. This ambitious project included a number of innovations aimed at increasing customer engagement, reducing energy usage, and increasing system efficiency. The original filing included predetermined and levelized billing, tiered levels of participation coupled with discounts for DER products and services, the availability of near real-time electric and natural gas usage data and feedback, usage notifications, and smart LED street lighting. After careful analysis, Staff concluded that this initial filing did not satisfy the Commission's demonstration project criteria. The initially proposed project would be unlikely to generate actionable data for the REV proceeding and result in a useful experience for the utility. However, Staff also concluded that a more focused project with a greater emphasis involving the advanced metering data was worth exploring. In response to Staff, National Grid made significant changes to the demonstration's project scope and renamed the project to the Demand Reduction Demonstration (the Project). National Grid filed an erratum reflecting the changes made on July 1, 2016. This report reflects Staff's assessment of the updated filing.

The Demand Reduction Project proposes to reduce residents' energy bills and peak demand in the Clifton Park area. It aims to do this through a combination of infrastructure upgrades and customer engagement. National Grid will install advanced metering functionality (AMF) capable meters (capable of monitoring both electricity and gas usage) on residential households and Voltage/VAR Optimization

infrastructure at the distribution level. These infrastructure improvements will allow National Grid to better monitor the electric grid and implement a variety of advanced pricing signals and DER services, such as time-of-use (TOU) rates, peak-time rebates (PTRs), and demand response Direct Load Control (DLC) programs. National Grid also intends to engage customers through a Community Energy Supply Procurement Agreement with one or more ESCOs, in cooperation with the town of Clifton Park (the Town).

Department of Public Service Staff (Staff) Review

Staff reviewed National Grid's Demand Reduction Project filing for consistency with the Track One Order as well as the Commission's REV policy objectives and the Commission's demonstration project principles. The REV policy objectives are: enhanced customer knowledge and tools that will support effective management of the total energy bill; market animation and leverage of customer contributions; system wide efficiency; fuel and resource diversity; system reliability and resiliency; and reduction of carbon emissions.² The Commission's demonstration project principles defined in the Commission's Resolution on Demonstration Projects are: customer/community engagement; identification of economic value; pricing and rate design; transactive grid; scalability; market rules and standards; system benefits; cost effectiveness; and implementation with constructive feedback within a reasonable timeframe.³ Staff has also evaluated the extent to which the demonstration project

² Case 14-M-0101, Reforming the Energy Vision, Order Instituting Proceeding (issued April 25, 2014).

³ Case 14-M-0101, Reforming the Energy Vision, Memorandum and Resolution on Demonstration Projects (Issued December 12, 2014).

maintains a reasonable relationship between costs and estimated benefits, including demonstration value.

Staff concludes that the Project will enable National Grid to gain significant experience in engaging customers for the purpose of demand reduction, energy efficiency, bill reduction, as well as testing system efficiency benefits through voltage/VAR optimization (VVO) and AMF. There are several hypotheses that will be assessed within this Project: whether National Grid and its partners can successfully engage residents to reduce local and system peak loads through price signals, convenient DER offerings, and timely communications; whether the infrastructure investments will enable market players to offer enhanced DER services to Clifton Park residents; if National Grid, in cooperation with local leaders, can help residents identify energy priorities as a community; whether National Grid will be able to change Clifton Park residents' energy choices to align with REV principles through timely and customized communications; and whether National Grid will be able to leverage their additional infrastructure and engagement investments to generate revenues from DER providers who offer value-added services to Clifton Park residents. Staff finds these questions to be relevant and valuable to the REV proceeding, and as documented in the July 11, 2016 letter from Staff, National Grid's Demand Reduction Project now complies with the requirements of the Commission's Track One Order and the utility will file the implementation plan with the Secretary of the Commission within thirty days of issuance of this report.

REV OBJECTIVES ADDRESSED

Enhancing Customer Knowledge and Tools That Support Residents' Effective Management of Their Total Energy Bill

One of the primary objectives of REV is to increase consumer awareness of energy usage, and promote the mindful management of energy use. National Grid's Demand Reduction Project will enhance residents' knowledge through the installation of AMF meters which will enable near real-time information on current household energy consumption, as well as timely and relevant messaging from National Grid and its partners. National Grid will work with OPower to provide energy insights to residents with the aim of reducing energy usage, and will administer the peak time rewards program. National Grid will also be partnering with SmartPower, a marketing vendor that attends community events such as farmers' markets and festivals or by displaying program information in high traffic areas, to engage in community outreach so that residents have information about the Project and its benefits to the community.

National Grid also intends to increase resident engagement through the Community Energy Supply Procurement process described in the filing. This process essentially tests the role of National Grid as the facilitator / administrator of a Community Choice Aggregation (CCA) program for the town of Clifton Park in combination with the product offerings to reduce peak demand.⁴ Residents will be able to collectively negotiate with one or more ESCOs for the procurement of electricity and gas in Clifton Park. The residents of Clifton Park, as a group, will retain all the rights and responsibilities to decide what

⁴ Case 14-M-0224, Community Choice Aggregation, Order Authorizing Framework for Community Choice Aggregation Opt-Out Programs (issued April 21, 2016) (CCA Order).

attributes of energy supply are important to them as a community.

Market Animation and Leveraging of Customer Contributions

This Project aims to animate the market for DER products and services while leveraging customer contributions to the grid in two ways: First, the Community Energy Supply Procurement will involve the town of Clifton Park and its residents in the process of selecting an ESCO, where they will have the opportunity to weigh a number of important considerations, such as the proportion of the town's energy generated by renewable resources, price volatility, and price levels. Second, the Project will leverage customer contributions by encouraging DER adoption through an increase in customer knowledge. AMF will enable advanced analytics by National Grid, its partners, and DER providers. This data will allow customers to recognize the benefits of DER and allow DER providers to more effectively market their products and services to those customers who will benefit from them the most.

System-Wide Efficiency

Staff believes the Project will promote system-wide efficiency through a combination of price signals and improved infrastructure. Improved pricing signals will encourage customers to decrease their overall usage, and shift their usage from system peak time periods.

National Grid intends to implement these improved price signals through a combination of: Peak time rewards, a residential demand charge, and / or a voluntary time of use (VTOU) rate. Peak time rewards will give consumers a positive incentive to shift load from system peak time periods by offering rewards for changing behavior. Participants will be

notified prior to the demand response event and rewards corresponding to participants' savings performance during the event will be calculated and provided soon after the demand response event. National Grid will also allow customers to join their existing DLC programs. The residential demand charge could be used to signal customers to reduce their maximum rate of consumption. The Project's VTOU rate will also encourage residents to shift usage towards off-peak periods by varying the cost of electricity in response to system conditions, discouraging usage when overall system demand is high, and encouraging usage when overall system demand is low, thus increasing average system utilization and system efficiency.

Finally, the installation of VVO technology (discussed below) will directly increase system-wide efficiency, allowing National Grid to optimize the electric grid in near real-time. This will not only allow National Grid to better determine where future capital investments are needed, but will allow National Grid to optimize the grid in such a way that overall system losses are minimized.

COMMISSION DEMONSTRATION RESOLUTION PRINCIPLES

Third Party Participation, Partnerships, and Cost Effectiveness

Demonstration projects should be collaborative efforts that provide benefits to ratepayers, third parties, and the utility. They should also maintain a reasonable relationship between the costs of the project and estimated benefits. For this Project, National Grid is partnering with a number of companies and entities, including Itron for the AMF meters, OPower for their cloud-based platform and big data analysis, WeatherBug Home for weather optimization services for the demand response program, Sealed to offer home efficiency improvements, and Utilidata, whose software will aid in the capture and

analysis of real-time electric grid data. Several of these partners will be providing in-kind services primarily involving cost-sharing or preferred rates. In addition, one of the partners will be providing lead generation fees to the Company. National Grid will also be working with the town of Clifton Park for the implementation of the Community Energy Supply Procurement, described below.

Staff finds that these partnerships will lead to a demonstration that allows each organization to specialize in its strengths while working towards the common goal of customer engagement and more efficient energy usage. In addition, they will provide the basis to explore more substantive partnerships and new business models in the future.

Pricing and Rate Design

One important component of REV that will benefit from comprehensive real-world testing are alternative rate designs that better align customer incentives to be reactive to system conditions. The REV Track Two Order states that "rates must also be designed to encourage price-responsive behavior to advance policy objectives" and "improvements in rate design are essential to a modern electric system and the efficient operation of customer-oriented markets."⁵ Aligned with the Commission's objectives, the Company, via this project, will proactively promote a number of pricing and rate design elements that will encourage customers to actively manage their energy use and react to system conditions.

As noted above, National Grid intends to test three types of price signals in this Project: a voluntary time-of-use

⁵ Case 14-M-0101, Reforming the Energy Vision, Order Adopting a Ratemaking and Utility Revenue Model Policy Framework (issued May 19, 2016) p. 118-19 (Track Two Order).

rate; peak time rewards; and a residential demand rate. The voluntary time-of-use and demand rates are currently being evaluated and developed, and Staff expects that the details of these rates or the timeline for their development will be included in the Company's implementation plan. Staff finds that in order to maximize the benefits of the demonstration project, the Company should focus on testing either the time-of-use rate or the demand rate but not both. This will allow for a more precise measure of the impact of the rate design on peak reduction and minimize any potential confusion by participants. Such selection should be reflected in the implementation plan. Customers will be able to participate in the peak time reward program with DLC Program-eligible devices or by reducing energy usage during peak times in other ways such as manually turning down thermostats. The Company anticipates that eligible DLC Program participants will also be able to earn rewards through the peak time rewards programs without a waiver from existing DLC terms and conditions. Peak time rewards will be managed and funded (wholly or in part) by the Project's ESCO partner.

New Utility Business Models

Through the market partnerships described earlier, National Grid intends to test two new sources of revenue: lead generation fees for the promotion of partners' services and fees from the sale of aggregated big data analytics. National Grid states that all data sharing with partners or vendors will comply with NYS rules and regulations governing the sharing of confidential personal information or with express customer consent. A more detailed description of what and how data will be used to generate leads and big data analytical sales will be included in the Project's implementation plan.

Customer and Community Engagement

Customer engagement is the cornerstone of this Project, which intends to promote and encourage energy efficiency on an individual customer level, as well as increase education, individual ownership of energy usage, and customer control of energy bills. Customer engagement is crucial to implementing energy efficiency on a residential level and achieving REV goals.

National Grid will work with partners to increase customer engagement and both energy and demand literacy by providing interactive energy insights and actionable information. Customers will be presented with energy information such as interval meter data and appliance energy usage data, and will receive clear messaging about the benefits of energy efficiency, demand reduction, and shifting their energy usage to lower price, off-peak times of the day.

Presenting customers with simple, direct information when most useful (e.g., tips for reducing demand and energy usage when on track for a high bill) enables them to take actions resulting in savings while presenting opportunities to enhance their comfort. Customers will be engaged via a variety of channels and strategies including digital communications, traditional mail, a customer web portal, a mobile app, alerts and notifications, home energy reports, customer education reports, and weekly reports.

In addition, the Company intends to engage with residents through SmartPower, through community events such as farmers' markets and festivals, and by displaying program information in high traffic areas. The Company will continually track and assess these efforts in order to optimize engagement and drive/increase engagement.

Staff finds that National Grid's Demand Reduction Project will result in an increased amount of customer and community engagement related to energy usage and energy management. National Grid continues to work with the town of Clifton Park on the implementation of the Project, and the town's cooperation is crucial for the Community Energy Supply Procurement portion of the Project to be a success. Staff expects that National Grid will continue to build on its successful project outreach and engagement with a comprehensive community engagement and outreach plan in its implementation plan.

Identification of Economic Value

As the Commission noted in the Track One Order, demonstration projects should allocate economic value between the utility, customers, and third parties. Staff finds that National Grid adequately identifies the streams of economic value to each of these groups. As detailed above, this project will enable National Grid to enjoy a number of new revenue streams that it would not have otherwise been available to it. For DER providers (third parties), greater customer education and engagement will encourage the market for DER products and services, and increase the ability of consumers to evaluate their purchases after the fact, which should lead to a self-reinforcing cycle of DER adoption, as customers learn about the advantages and value of DER. The Project's ESCO partner will also benefit through larger scale energy sales than is commonly available on the residential retail market, allowing it to tailor an offering that is more valuable to it and residents. Finally, the residents of Clifton Park will enjoy a more efficient system at the distribution level, and greater levels

of education about the DER options available to them, leading to valuable home improvements and additions.

Scalability

National Grid believes that the Project will help inform scalability on a number of issues, including: infrastructure investments, system-wide demand reduction potential, and VVO cost effectiveness. Staff finds that this avenue of inquiry is useful, and expects that a plan to collect data and analyze performance related to these topics be included in the Project's implementation plan.

Reasonable Timeframe

Staff has determined that this Project will be implemented within a reasonable timeframe. The Project will be implemented with several categories of tasks running in parallel, relating to infrastructure installation, community energy supply engagement, (general) customer engagement, price signal rollouts, and DER services. National Grid projects that it will complete the AMF meter installation within ten months of project approval, and the completion of the VVO system six months from project approval. All other tasks are expected to be completed or ready for rollout within twelve months. National Grid will file a detailed timeline with more granular tasks and accurate start/end dates in the Project's Implementation Plan.

AREAS FOR FURTHER DEVELOPMENT

Milestones and Check Points

It is crucial to the success of REV demonstration projects to closely follow project progress to evaluate effectiveness and identify potential improvements. Staff finds

that while National Grid has identified a general timeline of project rollout and has acknowledged that it will be making quarterly reports identifying current and future milestones, tasks/timeline progress, risks, finance, and additional notes, greater granularity and metrics are required. Staff will work with National Grid to create a comprehensive set of metrics to better quantify the results of the Project, and the result of this collaborative process will be included in the Project's Implementation Plan.

POTENTIAL LEGAL BARRIERS AND/OR
AREAS REQUIRING COMMISSION ACTION

Protection of Customer Information

The Commission's existing customer data policy is that electric utilities and third parties must protect customer privacy when proposing projects that involve the collection and use of individual customer data. Staff believes that the Demand Reduction Project appropriately balances existing policy and the exploration of a new business model.

With respect to the sharing of customer data with core third parties providing analytics functions for National Grid, the proposed project must comply with the December 3, 2010 Order, where the Commission considered earlier Opower projects with Central Hudson and Niagara Mohawk and stated:

Opower is prohibited from using the information for any purpose other than to perform the utility function of administering this program and may not contact customers in any fashion beyond what it was specifically contracted to do; provide usage analysis reports.⁶

⁶ Case 07-M-0548, Energy Efficiency Portfolio Standards, Order on Rehearing Granting Petition for Rehearing, p. 19 (Issued December 3, 2010).

National Grid will not be required to obtain affirmative customer consent before sharing customer information with a third party partner who is performing the analytics function (i.e., inducing customers to manage their energy usage by providing them with specific information about their usage as well as providing actions that can be taken to curb usage during peak hours) and where sharing such information is necessary to perform that function. The agreements between National Grid and their third party partners will detail the protections afforded to customer information and the restrictions placed on those partners regarding the use of that information. National Grid will be required to file with the Secretary any contract between National Grid and a third party partner in order for Staff to ensure that sufficient consumer protections are offered in conformance with the December 3, 2010 Order.

Third party providers offering DER products and services through the Project will not gain open access to customer data. Instead, only the third party partners addressed above will have access to such data as they will be the one or two entities providing the analytics service to National Grid as well as facilitating the Peak Time rewards aspect of the Project. Along with usage information and suggestions for more efficient energy use, the customer will also receive information regarding additional products and services that best suit the individual customer and may help to further the customer's energy goals. If the customer chooses to obtain one or more of these products or services from a third party provider, the customer will first need to affirmatively consent to the release of their data to that provider.

Regulatory Approvals

The Company recognized in its Project filing that certain regulatory approvals may be necessary in order to implement the Project. As proposed by the Company, the Community Energy Supply Procurement will be done on an "opt-out" basis, meaning that customers will automatically be enrolled in the Community Energy Supply Procurement unless the customer affirmatively opts-out of participation. As stated earlier, this demonstration project tests the role of National Grid as the facilitator / administrator of a CCA program for the town of Clifton Park. Under the CCA model, the Commission approved a framework for opt-out programs that required local governments to first approve the development of a CCA program after significant consumer outreach. In the CCA Order, the Commission determined that "the requirement that elected officials approve a CCA program before one is implemented represents a reasonable proxy for customer consent, when coupled with consumer education efforts and individual customer opt-out processes."⁷ The approval by elected officials, a robust consumer engagement strategy, and the opportunity to opt-out are three essential elements in the Commission's determination to allow participation in retail markets without affirmative customer consent. Therefore, National Grid is required to work with Clifton Park to pursue enactment of a local law by Clifton Park, pursuant to its authority under its Municipal Home Rule Law, in order to implement the Community Energy Supply Procurement aspect of the demonstration project. If approval is not obtained by the elected officials, the Company will not be able to implement the Community Energy Supply Procurement program on an opt-out basis.

⁷ CCA Order at 20.

A partnership between Clifton Park and the Company will facilitate the development of the necessary filings to the Commission for approval of the CCA program. Pursuant to the CCA Order, those filings include a CCA implementation plan that, among other things, includes a consumer engagement plan, program goals, and sample consumer communications (opt-out- letters), as well as a Data Protection Plan that details the level of protection to be provided to customer data. The Company can bring value to this partnership because the CCA implementation plan would closely resemble certain sections of the Company's demonstration project implementation plan. Additionally, and with respect to the Data Protection Plan, the Company is currently in possession of Clifton Park customers' data and is protecting that data pursuant to Commission and Company policy. In this instance, Staff believes that Commission approval of the CCA Implementation Plan and Data Protection Plan would be the most effective way to implement the Community Energy Supply Procurement program on an out-out basis.

CONCLUSION

Staff has determined that the proposed demonstration project complies with the objectives set forth in Ordering Clause 4 of the Track One Order. Staff will continue working with National Grid to develop a detailed implementation plan, which will include a detailed schedule, budget, projected milestones and checkpoints, and reporting requirements. Staff will also continue to discuss the areas of further development with National Grid. The implementation plan will incorporate the results of these discussions, and will be updated quarterly, incorporating lessons learned and new developments within the scope of the Project. The implementation plan will be filed with the Secretary within thirty days.