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National Grid Proposed REV Demonstration Project Filing

Case14-M-0101-Reforming the Energy Vision (REV)

July 1, 2016

Niagara Mohawk Power Corporation
d/b/a
National Grid

Submitted to:

New York
Public Service Commission

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Executive Summary

This proposal is being filed as an erratum to the Niagara Mohawk Power Corporation d/b/a National Grid ("National Grid" or the "Company") July 1, 2015, Reforming the Energy Vision ("REV") Demonstration Projects Filing. Specifically, this document is intended to replace the Customer Convenience Demonstration Project Proposal at pages 62 through 86 of the July 1, 2015 filing.

The proposed Demand Reduction Demonstration Project (the "Project") described herein is designed to provide the Town of Clifton Park ("Clifton Park" or the "Town") residents with price signals, tools and information enabled by infrastructure investments, and distributed energy resources ("DER")[1] to reduce demand during peak times.

The Project aligns with the New York Public Service Commission's ("Commission's") Order Adopting a Ratemaking and Utility Revenue Model Policy Framework ("REV Track Two Order") wherein the Commission asserts "[o]ne of the most important objectives of REV is improving overall system efficiency including the efficiency of capital investment to create value for customers. Toward that objective, peak reduction is among the most immediate priorities for REV implementation."[2]

The Project's benefits include:

- reducing Clifton Park residents' total energy bills for electric and gas;
- evaluating the impact of varying pricing signals such as time-of-use ("TOU") rates and demand rates on Clifton Park electric demand;[3]
- evaluating the cost-effectiveness of a peak time reward program to stimulate electric demand reductions;
- assessing the impact of using Community Energy Supply Procurement to procure electric and gas supply and other Energy Services Company ("ESCO") offerings for the community;
- assessing the extent to which advanced metering functionality ("AMF") coupled with customer communications can support the adoption of DER by customers and other market players;

[1] For the Clifton Park REV Demonstration Project, "DER" is defined as including energy efficiency, demand response, and renewable distributed generation offerings, consistent with the Commission's definition in Case 14 - M-0101 - *Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision*, Order Instituting Proceeding (issued April 25, 2014), p. 25.

[2] Case 14-M-0101 – *Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision* ("REV Proceeding"), Order Adopting a Ratemaking and Utility Revenue Model Policy Framework (issued May 19, 2016), p. 72.

[3] This supports the recent Rocky Mountain Institute ("RMI") Report stating: "Existing default rates in the U.S. are simple—typically pairing a flat, volumetric energy rate with a customer charge. These rates have worked well enough but are proving inadequate in the face of recent trends, as they fail to provide price signals that reflect system costs and enable customer response. An expanded rate design toolkit is needed….", James Sherwood, *et al*., *A Review of Alternative Rate Designs: Industry Experience with Time-based and Demand Charge Rates for Mass-market Customers* (Rocky Mountain Institute, May 2016), http://www.rmi.org/alternative_rate_designs, p. 5.

- assessing the extent to which deep energy insights such as high gas usage alerts coupled with energy efficiency recommendations influence customers' usage in advance of receipt of their electric and gas bills;
- enabling third-party providers to offer products and services to customers, including leveraging usage data from the advanced gas and electric meters;
- determining revenue potential from partners within current privacy rules and regulations to defray program costs and to transition to new utility business models;
- quantifying the contribution of procuring clean energy above and beyond the renewable obligations through the Community Energy Supply Procurement; and
- providing demonstration findings and results that will inform scalability for New York State.

The Project tests the impact of offering pricing signals such as a TOU rate and a demand rate,[4] deep energy insights enabled by the installation of interval gas and electric meters, and adoption of DER on reducing demand and increasing customer engagement. The Project scope of work will initially include:

- investments in infrastructure including advanced meters and voltage optimization of the electric distribution system;
- procurement of community energy supply through an ESCO(s);
- use of price signals such as TOU and demand rates and a peak time reward program;
- customer engagement through deep energy insights; and
- DER as an enabling technology.

The Project design provides for intelligent grid devices, including cellular modem-based interval meters capable of providing customers with electric and gas energy use on a near real-time basis in order to educate and inform customers and increase DER adoption. In addition, grid devices will be installed to optimize the distribution voltage for enhanced efficiency.

Business Model Overview

Clifton Park, a predominantly residential community with a majority of residents of medium-to-high income, is surrounded by advanced technology companies, research centers, and universities.[5] The anticipated population and electric load growth and proximity of the town to the state and private universities also factored into the selection criteria.

Clifton Park presents several opportunities to test the REV demonstration principles outlined in the Commission's "Memorandum and Resolution on Demonstration Projects."[6] These opportunities include:

[4] *Id*., p. 7, states that "[l]imited empirical evidence is available to provide insight on the efficacy or impact of demand charges on any desired outcome beyond cost recovery." The Company expects results from the Project will provide insights and empirical data on both demand and TOU rates.
[5] Demographic information is provided below in the Customer Segmentation and Demographics section.
[6] REV Proceeding, Memorandum and Resolution on Demonstration Projects (issued December 12, 2014).

1. providing residential customers with timely access to electric and gas energy consumption information allowing for greater awareness of the impact of their actions on energy consumption as well as facilitating savings on customers' total bills;
2. providing residential electric customers with price signals including rewards, TOU rates, and demand rates to reduce demand during on peak hours of the day;
3. providing residential gas customers with deep energy insights (*e.g.*, usage alerts by leveraging gas meter enhancements), reducing gas usage (*e.g.*, energy efficiency offers from partners), and additional offers from third-party providers that help residential customers reduce their energy bills while improving comfort in their homes.
4. providing residential customers with fixed pricing for electric and gas supply through a community-wide procurement that can take into consideration the Town's energy needs (*e.g.*, renewable offerings, other services);
5. increasing customers' participation in DER through education on its benefits, providing options to address the upfront cost of DER devices, and facilitating customer access to vendor offerings;
6. assessing the impact of demand reductions on deferring upgrades to the electric distribution system that would otherwise be necessary to meet Clifton Park's growing population and energy consumption; and
7. utilizing new technologies aimed at optimizing distribution system voltage to reduce system losses for all customers.

Challenges Being Addressed

The Project seeks to provide solutions for the following issues:

- electric and gas meters designed to provide only monthly reads for billing purposes;
- lack of timely, detailed, meaningful, and enabling information at the customer level;[7]
- low customer capability to effectively manage overall energy usage;
- low adoption of rates designed to incent energy use during non-peak hours;
- low adoption of DER such as connected thermostats and appliances; and
- inability to readily optimize operating parameters such as voltage in the electric distribution system.

Proposed Solution

National Grid believes that it is possible to create a more responsive relationship with customers, leveraging critical infrastructure, community engagement, and actionable energy insights, as well as price signals and DER services that incentivize customers to reduce overall energy usage and reduce peak load.[8] The following Project elements are being proposed:

[7] The installation of interval meters will allow for near real-time communication back to consumers on their energy usage with opportunities to reduce usage and participate in demand response programs.
[8] The Project intends to address an RMI finding that "…most electricity customers…do not have the information or the incentive to change their electricity consumption in response to the frequent variation in electricity system costs," *supra* note 3, p, 10.

- **Infrastructure**
  - Advanced Metering Functionality
  - Volt/VAR Optimization

- **Community Energy Supply Procurement**

- **Customer Engagement through Deep Energy Insights and Actionable Information**

- **Price Signals**
  - Peak Time Reward Program
  - TOU and Demand Rates

- **DER Services**
  - Demand Response
  - Energy Efficiency

Infrastructure

Advanced Metering Functionality

Through the Project, National Grid, working with its partners, will replace the existing electric meters installed at residential premises in Clifton Park with meters that have the capability of communicating, through cellular technology, near real-time interval data to these customers (*i.e.*, AMF).[9] The Commission recognizes that "for consumers, data regarding their energy usage is a prerequisite to informed decisions regarding energy usage and purchases."[10] Existing gas meters will also be upgraded to communicate gas usage through the electric meters. These enhanced metering capabilities are designed to:

1. provide customers with access to near real-time data about their electrical and gas consumption;
2. provide greater knowledge of residential customers' load shapes;
3. Communicate messages to customers about their energy consumption in a timely manner for decisions on consumption by the individual customer;
4. allow valuation of demand response (*e.g.*, rewards to customers) based on projected and actual demand; and
5. allow for the monetization of the reduction of Installed Capacity ("ICAP") tags for mass market customers.

[9] The meter vendor is assessing whether future changes to the cellular communication network used for the AMF rollout (*e.g.*, "4G" to "5G") would require upgrades to meter hardware and/or software. For the three years of the Project, the vendor anticipates no changes to the cellular network requiring hardware or software upgrades. The Company, in collaboration with the vendor, will continue to assess the impacts of cellular communications network changes when assessing scalability of this REV demonstration project.

[10] REV Track Two Order, p. 137.

AMF will also enable implementation of price signal services such as peak time rewards and TOU and demand rates, and is expected to help animate the market for third-party providers of services such as energy efficiency. Whenever possible, the Company anticipates placing the existing removed meters back in inventory for installation elsewhere in the service territory.

Customers who do not wish to have interval meters installed at their premises can choose to opt out of the program. Additionally, during the Project term, customers will have the option to have their AMF meter removed at no cost to the customer. The number of customers requesting removal of the AMF meter and subsequent costs to remove the meters will be tracked and reported.

Voltage/VAR Optimization ("VVO")

National Grid will enhance the efficiency of the electric distribution system through the installation of software and devices that will better regulate the voltage of the distribution system. Initial installation will rely on distribution system devices monitoring voltage along the feeder with the meters also being able to provide voltage information at customer endpoints. The Project will evaluate the extent to which better regulation of the voltage of the distribution system benefits customers, ultimately being reflected in reduced electric energy usage.

Community Energy Supply Procurement

National Grid will collaborate with the Town and an energy manager that will seek, through competitive solicitation, an ESCO partner(s) to provide residents with electric and gas supply. The energy manager would provide experience with managing ESCO solicitations, providing community education, negotiating ESCO contract terms, and assisting throughout the procurement process (*e.g.*, managing the customer opt-out process and communications).

Participants will be provided more stable supply prices (*e.g.*, fixed price for one year) and increased community input in the supply options (*e.g.*, renewable choices reflecting the community's energy goals).[11]

If additional renewable choices are elected by the community then these elections will be above and beyond the renewable obligations that ESCOs may provide as part of the NYS Clean Energy Standard proceeding.

In addition to providing supply to participants, the ESCO partner(s) will be asked to:

- fund a program that rewards participants for reductions in demand during peak times (See Peak Time Rewards below); and

[11] *See* Case 14-M-0224 – *Proceeding on Motion of the Commission to Enable Community Choice Aggregation Programs*, Order Instituting Proceeding and Soliciting Comments (issued December 15, 2014), p. 4, "CCA programs also allow municipalities to set their own energy goals based on local input. A municipality might focus on price stability, increased clean energy generation, support of local generation, or inclusion of distributed energy resources. Through this sort of local energy planning, municipalities and residents can seek the benefits important to them and participate in the opportunities that REV will offer, while also providing the public policy benefits sought in the REV proceeding."

- propose other DER services such as financing for equipment or solar PV installations that will assist customers with managing their entire bill, including the supply portion.

The Company will provide aggregated data for the solicitation to the energy manager and/or ESCOs. Existing ESCO customers and those who elect to opt out will not be eligible for participation in the Community Energy Supply Procurement. Once the opt-out period has expired (see below) the ESCO will be provided customer-specific data for enrollment purposes. Enrollments with the ESCO will be handled like ordinary enrollments in the retail access program.

The Community Energy Supply Procurement will also seek to share ICAP savings realized through the price signal services offered to participants. Such savings can only be realized on a delayed basis, after the ICAP tags are established for the following capability year and ICAP tags for the customer base can be compared to previous year ICAP tags.

In order to proceed with the Community Energy Supply Procurement, the Company is committed to providing a comprehensive customer engagement strategy in the Project Implementation Plan that documents how residents will be notified of the Community Energy Supply Procurement and their ability to opt out. Customers can expect to receive information through a variety of channels including those identified in the Customer Engagement Section herein.

The Company intends to manage the notification process including sending the letter to residents notifying them of the opportunity to be served by the selected ESCO(s) through the Community Energy Supply Procurement as well as the opportunity to opt out by completing and returning the letter within a specified time frame (*e.g.*, two months' time).

- Customers can choose to opt out of this initial program offering at any time and at no cost, even if they do not opt out during the initial opt out period.

- The Company will use the standard retail access letter and bill message to notify participants (*i.e.*, those not opting out) of the switch to the selected ESCO(s). In addition, the Company plans to use other channels identified in the Customer Engagement Section to notify customers of the ESCO selected through the Community Energy Supply Procurement. The specific channels and communications will be documented in the Project Implementation Plan.

Customer Engagement

National Grid will work with partners to increase customer engagement and energy and demand literacy by providing interactive energy insights and actionable information. Customers will be presented with actionable energy information such as interval meter data, weather data, and appliance energy usage data and will be provided messaging about the benefits of energy efficiency and 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, a vendor that attends community events such as farmers' markets and festivals or by displaying program information in high traffic areas. The Company will track and assess these efforts to help optimize and increase engagement.

Customers who do not wish to receive specific communications can choose to opt out by notifying National Grid.

Price Signal Services

Peak Time Rewards

Peak time rewards will incent participants with interval electric meters to reduce peak demand during demand events that may result from commodity price spikes (*e.g.*, ESCO-driven events), utility system constraints (*e.g.*, Direct Load Control Program events), or electric distribution feeder constraints (*e.g.*, National Grid feeder specific events).[12] National Grid's vendor will be responsible for communications to participants:

- prior to the demand response event, notifying participants of the upcoming event
- Soon after the demand event with rewards corresponding to participants' savings performance during the event.

Participants will be offered rewards if they reduce usage during peak demand timeframes. This is a positive incentive only - failure to participate in the demand response event will not result in a penalty for the customer.

The following are the customer methods that may be used to reduce peak demand:

- remote management of controlled devices that may include such as thermostats, water heaters, pool pumps, and dehumidifiers; and
- customer action to reduce typical energy usage during a peak event, which could include changing thermostat settings, turning off lights, or unplugging appliances.

The Company will define in the Project Implementation Plan the specific rewards, but currently envisions participants will receive points that can be redeemed for gift cards.

[12] Initially, the Company does not anticipate offering peak time rewards to customers served by the gas ESCO. However, the Company may explore this option with the ESCOs and consider offering at a later time.

As described above in the Community Energy Supply Procurement section, the ESCO will be asked to fund rewards earned by participants served by the ESCO. The Company expects to fund rewards:

- for customers that opt out of the Community Energy Supply Procurement or customers already served commodity by another ESCO; and
- where the contribution from the ESCO selected through the Community Energy Supply Procurement does not fully fund the rewards earned by participants during the Project's timeframe.

Event communications will be achieved through multiple potential channels, which may include email (opt out), interactive voice response ("IVR") (opt in), and text message (opt in). Customers can choose not to participate in any individual event by over-riding their controlled device (opt out).

Rate Options

TOU rates are designed to reduce customers' total energy bills by encouraging customers to shift load to lower-priced times during the day. The REV Track Two Order states that "rates must 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."[13] Aligned with the Commission's objectives, the Company will proactively promote an electric TOU rate to Clifton Park residents using channels described in the Customer Engagement section above. The Company will assess the new electric voluntary time-of-use ("VTOU") rate to determine whether this rate best serves the goals of the Project related to demand reduction or alternatively develop a TOU rate for the Project. In addition, the Company intends to evaluate the development of an electric demand rate for Clifton Park residents. Both rates – TOU and demand – will be promoted using customer engagement channels with the Company intending to evaluate the effectiveness of each rate in reducing demand.[14]

Residents must opt in to the Clifton Park TOU or demand rate. To encourage enrollment, the Company is proposing a one-year "make whole" provision so a participant will pay the same or less than if the participant had stayed on the current residential SC-1 rate. The "make whole" provision will be calculated at the end of a participant's first year on the TOU or demand rate with a credit being applied to the account. Participants enrolled in a Clifton Park TOU or demand rate will have the option to either remain on the Clifton Park TOU rate after the Project term ends or revert back to the standard SC-1 rate.

In addition, during the Project term, those opting into the Clifton Park TOU or demand rate may choose to withdraw from the Clifton Park TOU or demand rate and return back to the SC-1 rate at no penalty or cost to the participant.

[13] REV Track Two Order, p. 118.
[14] Initially, the Company does not anticipate offering gas rate options; however, the Company may explore this price signal at a later time.

Rate option effectiveness in reducing or shifting load for the differing price signals will be closely monitored during the Project.

DER Services

Demand Response Programs

Clifton Park participants will be able to participate in existing demand response programs such as the National Grid Direct Load Control ("DLC") Program, which is an opt in program that provides customers' the ability to opt out of specific demand response events with no penalty. In addition, customers will be able to participate in the peak time reward program either with DLC Program-eligible devices or manually through thermostats not eligible through the DLC Program. The Company will investigate whether eligible DLC Program participants will also be able to earn rewards through peak time rewards without requiring a waiver from existing DLC terms and conditions.

Customers wanting to participate in the DLC Program must opt in but have the ability to opt out of specific demand response events.

The Company will investigate integrating New York State Energy Research and Development Authority's (NYSERDA") control hardware program into the Project.

Energy Efficiency

Clifton Park residents will have the option to benefit from energy efficient home improvements. Third-party partners (*e.g.*, ESCOs, new entrants, and existing partners) will offer qualified customers a home energy assessment, during which they will receive a proposal for recommended home improvements (*e.g.*, air sealing, insulation, HVAC, lighting, appliance replacements). Customers may be offered a variety of payment options from DER providers including, but not limited to, "pay as you save" financing and customer funding of energy efficiency projects.

Clifton Park residents will need to opt in to energy efficiency services and offerings.

Additional DER Services

The Company will seek partners to provide Clifton Park residents with additional DER services based on customer research as well as seeking proposals from market players in the future (*e.g.*, electric vehicle ("EV") providers and EV charging equipment providers, solar providers, and other DER providers).

Clifton Park residents will need to opt in to DER services.

Opt In/Opt Out

A summary of the Project services and offerings are provided below identifying whether Clifton Park residents are required to opt in or opt out. Customers are able to opt out at any time from the below services and offerings with no penalty or cost.

	Opt In	Opt Out	System Wide
Infrastructure			
AMF		X	
VVO			X
Community Energy Supply Procurement			
Community Procurement		X	
Price Signals			
Peak Time Rewards		X	
TOU Rate	X		
Demand Rate	X		
DER Services			
Direct Load Control Program	X		
Energy Efficiency Upgrades	X		
Participate in DLC Demand Response Events*		X	
Additional DER Services	X		

* Applies only to customers that have elected to participate (opt in) in to DLC.

Hypothesis Tested

The Company and its partners will test the validity of the hypotheses shown in the table below. The results of hypothesis testing will be tracked and documented and then used to inform and modify subsequent offerings to Clifton Park residents.

Statement…	If…	Then…
INFRASTRUCTURE: Infrastructure investments will enable market players to offer enhanced DER services to Clifton Park residents.	Grid technologies such as AMF are installed in Clifton Park	Clifton Park residents will benefit, including from services being offered by market players

Statement…	If…	Then…
PRICE SIGNALS: Clifton Park residents will act to reduce local and system peak loads	Clifton Park residents are presented with energy price signals, convenient DER offerings, and timely and effective communications	Clifton Park residents will adopt these measures and/or react to these signals resulting in reduced loads
COMMUNITY PROCUREMENT: The community procurement process will educate and engage Clifton Park residents on energy issues	Clifton Park leaders and residents define their priorities for community procurement of energy supply	Clifton Park residents will experience community benefits that may include price stability, increased clean energy generation, support of local generation or inclusion of DER.
CUSTOMER ENGAGEMENT: Timely, customized communications and information will enable Clifton Park residents to make energy choices that align with REV principles	National Grid and its partners deliver customized and actionable information to Clifton Park residents using channels preferred by customers	Clifton Park residents will make informed and engaged energy choices resulting in greater satisfaction with their energy providers
BUSINESS MODELS and REVENUE STREAMS: Companies will be willing to provide revenue to National Grid from incremental revenue acquired by offering value-added services to Clifton Park residents	Clifton Park residents are presented with value-added DER services from select partners	These partners will both share a portion of their incremental revenue with National Grid as well as develop and offer new services to Clifton Park residents that help with reducing energy bills and increasing comfort in, and value of, their homes.

Revenue Streams to Offset Program Costs

The following is a list of revenue streams the Company may be able to leverage to offset the Project costs:

- lead generation fees for the promotion of partners' services; and
- sale of aggregated big data analytics to partners.

The Company will only share data with partners or vendors if the act of sharing the data complies with NYS rules and regulations governing the sharing of confidential personal information or the customer provides express consent to share this information. The Company will explore opportunities to garner participants' express consent so information can be shared with partners or vendors while also providing participants the opportunity to revoke their consent at a later date.

REV Demonstration Principles Addressed

The Company anticipates that this Project will meet the following REV demonstration criteria with particular emphasis on:

- Third Party Partners: DER offerings to Clifton Park residents, revenue potential;
- Customer and Community Engagement: Community Energy Supply Procurement;
- Pricing and Rate Design: TOU and demand rates, Peak Time Rewards Program; and
- Scalability: Project will inform scalability on a number of issues including infrastructure investments, system-wide demand reduction potential, VVO cost effectiveness.

In addition, the Project supports the above REV goals, providing value by:

- **Enhancing customer knowledge and tools that support residents' management of their total energy bill**: the actionable energy information provided to customers via multiple channels will assist customers to understand their energy usage and take actions that are in alignment with REV, such as adoption of DER technologies and responding to price signals.

- **Animating markets and engaging NYS residents in energy choices:** the Project animates the market for ESCOs via the Community Energy Supply Procurement, and for DER service providers who have the opportunity to promote their offerings to customers. Residents will be more engaged in energy choices; outreach and community leadership engagement tactics will inform energy decisions such as the selection of the ESCO supply provider.

- **System-wide efficiency**: the Project promotes system-wide efficiency through installation of VVO technology, the development and promotion of price signal services including peak time rewards, DLC and rate options that are aimed at reducing peak load usage, and the promotion of DER services such as energy efficiency that result in overall load reduction.

- **Fuel and resource diversity**: the Community Energy Supply Procurement will provide the Town the opportunity to influence the extent clean energy sources comprise the overall energy supply to the Town.

- **System reliability**: Demand reduction during times of peak load will enhance system reliability.

- **Reduction of carbon emissions:** Energy savings resulting from infrastructure deployment such as VVO, customer participation in price signal services, and adoption of DER products and services such as smart thermostats, and home insulation and efficiency measures all contribute to reduced carbon emissions.

Market Attractiveness

Unique Value Proposition

The Project offers a unique value proposition to customers, community, partners, and National Grid:

- **Customers**: Customers value an engaging energy experience driven by actionable information that rewards them for reducing energy use, during on peak and off peak times. Customers will have the opportunity to earn rewards through both:
    - DLC Program offerings: requires no action by the customer beyond the original purchase and installation of the equipment; and
    - behavioral savings: customer chooses to earn rewards by taking actions (*e.g.*, manually adjusting a thermostat, shutting off a pool pump, or delaying doing laundry).
- **Community**: The community can set their own energy goals based on local input and can seek the benefits important to them and participate in the opportunities that REV will offer while also leading to greater constituent education and engagement on energy issues.
- **Partners**: Partners, including ESCOs and DER providers, gain customer acquisition channels and increased sales and revenues.
- **National Grid**: The Company has the ability to better manage the electric distribution system and future upgrades through infrastructure investments and implementation of price signals.

Customer Segmentation and Demographics

The Project will target the approximately 10,000 National Grid residential electric customers in the Town of Clifton Park. Approximately 91% of these accounts are also National Grid residential natural gas customers. According to the 2010 US Census, the Clifton Park community has a population of 36,705 and is upper-to-middle class (median income: $80,908).[15]

Channels

The Company understands that customer engagement and outreach is critical to this Project and its success, such as encouraging adoption of TOU and demand rates beyond the current 4% adoption rates seen around the country.[16]

[15] http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF
[16] RMI Report, *supra* note 3, p. 18.

The Company envisions multiple channels for customer communications including:

- **Program Benefits and Timelines**: The Company, through its Marketing Group, will engage with Clifton Park residents on overall Project benefits, attributes, and timelines. This includes initial outreach when the Project is "green lighted" as well as other key Project milestones (*e.g.*, installation of meters, introduction of Peak Times Reward Program).

- **Opt Out**: The Company will also direct the customer engagement with Clifton Park residents for opt-out notifications including interval meter installation and Community Energy Supply Procurement enrollment.

- **Community**: The Company, in collaboration with SmartPower, will engage with residents at community events regarding the Project benefits and setting expectations as to when the different offerings will be available.

- **Energy Insights**: The Company will rely on its vendor to manage the vast majority of customer engagement and education regarding total energy use, opportunities to reduce total energy bills through energy efficiency recommendations, adoption of price signals such as demand and TOU rates, and earned rewards for participants' demand reductions.

The above summary represents the major channels of engagement with Clifton Park residents and greater details and examples will be provided in the Project's Implementation Plan.

Scalability

The Company will take into consideration program design and evaluation to better understand if lessons learned from the Project could be scalable and standardized to apply to other regions of National Grid's service territory and other utility service territories in New York State. At the conclusion of the Project, National Grid will utilize the experience gained to evaluate whether to expand the infrastructure, community energy supply procurement, price signals, and deep energy insights and communications to other cities and towns throughout its service territory.

Demonstration Plan

Metrics for Success

The following metrics will be used to assess the value derived from the Project:

INFRASTRUCTURE

- AMF adoption rate (measured by percent of customers accepting (*i.e.*, not opting out) from the installation of interval meters);
- energy savings resulting from VVO;

COMMUNITY ENERGY SUPPLY PROCUREMENT

- number of ESCO responses to RFP;
- additional services, including funding peak time rewards, proposed by the ESCOs;

PRICE SIGNALS

- customer participation rates in peak time rewards, DLC Program, and rate options;
- calculated peak load reductions during demand response events;

DER SERVICES

- increased number of third party services enabled by AMF;
- increased program participation from marketing;
- increased customer satisfaction (measured by customer surveys);
- decreased customer inquiries;
- increased digital engagement (web visits, email opens, social media, etc.); and
- increased customer adoption rates of DER services and resulting energy use reductions.

Timelines, Milestones, and Data Collection

The Project timeline and milestones are listed below as well as in a Gantt chart consistent with the Proposed Solution section above. A more detailed timeline with specific tasks and start/end dates will be provided in the Project's Implementation Plan. All dates below assume Project approval of July 15, 2016.

Infrastructure

- AMF
  - Commission approval of meters: currently expected August 2016;
  - meter configuration/ordering/shipping/set up/installer training: completed Q4, 2016;
  - meter installation completed: May 31, 2017 (assumes accelerated meter installation schedule);
- VVO
  - system installation completed Q4, 2017;

Community Energy Supply Engagement

- Community Engagement and RFP Development: Q3, 2016;
- ESCO Selection: Q4, 2016;
- Opt-Out Period and Community Enrollment: Q1, 2017;

Customer Engagement

- program overview and expected rollout: Q3, 2016;
- engagement through community events: Q4, 2016;
- deep energy insights including high bill alerts: Q2, 2017 (as meters are installed);
- Peak Time Rewards communications: Q2, 2017;

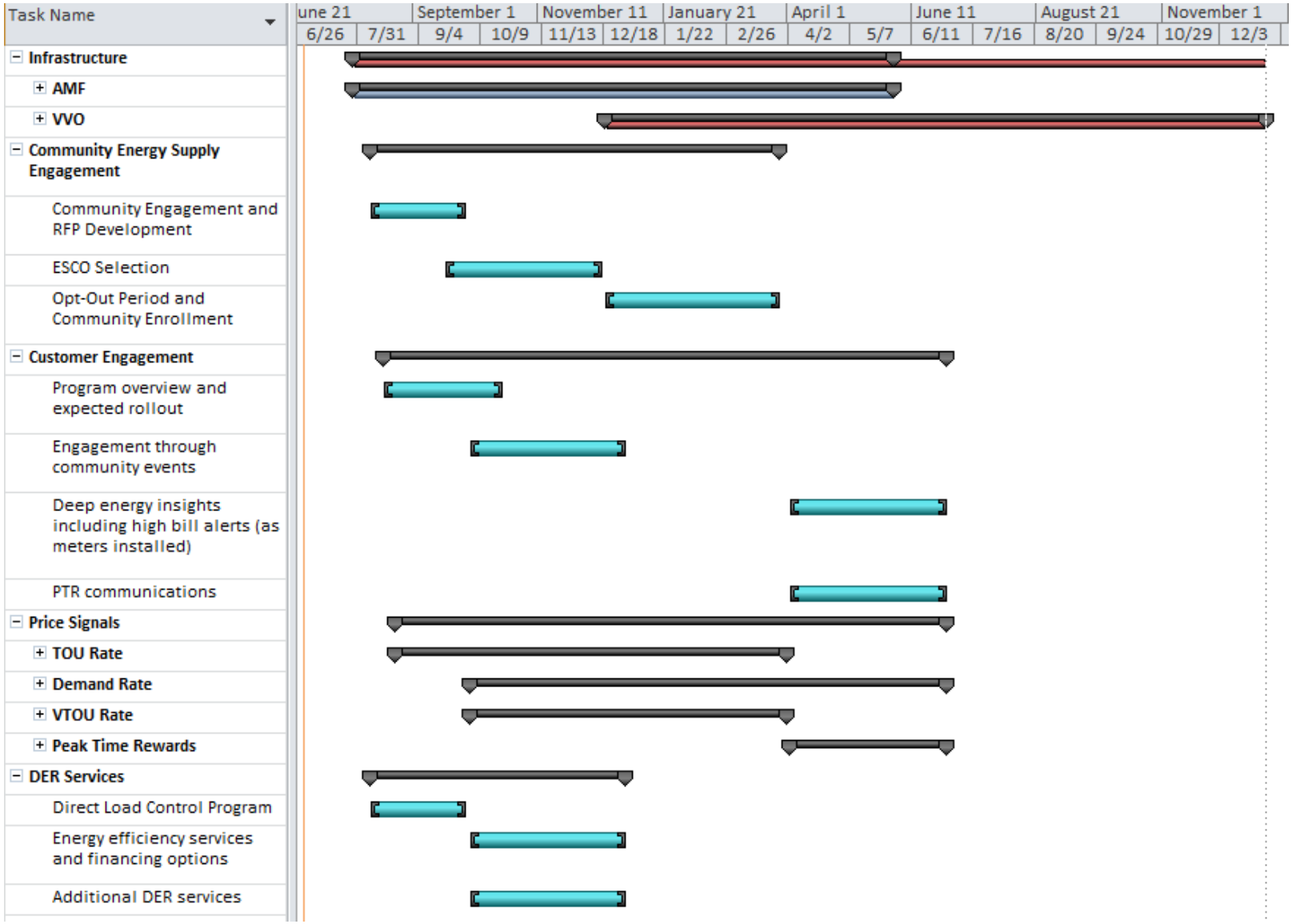
Price Signals

- TOU Rate
  - develop TOU Rate: Q3, 2016;
  - filed and Approved: Q4, 2016;
  - customer outreach and education: Q1, 2017;
- Demand Rate
  - develop Demand Rate: Q4, 2016;
  - filed and Approved: Q1, 2017;
  - customer outreach and education: Q2, 2017;
- VTOU Rate
  - expected Q4, 2016 PSC approval;
  - EV driver outreach and education: Q1, 2017;
- Peak Time Rewards
  - program Implementation: Q2, 2017 coinciding with DLC season;

DER Services

- Direct Load Control ("DLC") program: implemented;
- energy efficiency services and financing options: Q4, 2016; and
- additional DER services: Q4, 2016.

JUNE 2016 – JANUARY 2018 PROJECT TIMELINE and MILESTONES (Note: Assumes July 15, 2016 approval)



Third-Party Partners

As the needs of customers and stakeholders evolve and new technologies are introduced, National Grid's business model must adapt to meet changing needs, as well as environmental and financial challenges. The breadth of services customers expect from their energy providers is expanding, requiring better customer insights and greater ability to educate customers about their energy usage. Enhancing customer satisfaction associated with the Project requires National Grid to be seen as a trusted advisor in new technologies. In addition, new revenue models are seen as critical for delivering the services that customers expect and to provide partners' access to customers to further animate markets and deliver new products. In order to meet these needs by delivering innovative customer solutions and in light of resource constraints, partnering with a variety of entities is a desirable approach when a mutual value proposition can be found that is broader than the purchase of goods and services and will enhance customer satisfaction.

Several partners are considering providing in-kind services primarily involving cost-sharing or performance-based payment models (*e.g.,* a partner might provide preferred hosting and professional service rates or a portion of the payment may be made as savings are achieved).

Partnering strategy is critical to the success of certain National Grid customer programs and is formally coordinated by the Company's Partnerships & Joint Ventures department. The Company was recently recognized for excellence in partnership management by the Association of Strategic Alliance Professionals as winner of their Individual Alliance Excellence Award with Earth Networks-WeatherBug®. National Grid believes that the Project offers the opportunity to build on existing partner relationships while developing new alliances to better serve shared customers.

Based on the expected value that their respective product offerings could deliver to customers, their respective proposed business models, and willingness to engage with other partners, the following vendors were selected as partners:

Itron provides solutions that measure, manage and analyze energy and water. Their product portfolio includes electricity, gas, water and thermal energy measurement devices and control technology, communications systems, and software, as well as managed and consulting services. Itron will be supplying the AMF equipment for Clifton Park residents that choose not to opt out of the meter installation.

OPower combines a cloud-based platform, big data, and behavioral science to help utilities reduce their customers' energy usage and better serve customers. This helps consumers lower their total energy costs, and reduce carbon emissions. OPower will be responsible for providing customers with energy insights during the Project and administering the peak time rewards program.

WeatherBug Home integrates hyper-local weather data with connected devices to deliver demand response programs, weather optimization services, home energy scorecards and a mobile

application for energy insights and remote management of connected devices. To deliver these services, WeatherBug Home utilizes local weather information gathered by WeatherBug and parent company Earth Networks, which operate the world's largest real-time weather and lightning sensor networks. WeatherBug Home will be responsible for running demand response events specific to Clifton Park in coordination with the existing DLC program for which they provide demand response and mobile applications services.

Sealed provides customers with the opportunity to pay for home efficiency improvements with energy savings through their Pay As You Save (PAYS) model. Sealed will offer home energy assessments and efficiency retrofit services in Clifton Park, and will offer their PAYS model to interested customers.

Utilidata is a software company that works modernize the electric grid. Their technologies capture real-time electric grid intelligence that enables utilities to make smarter decisions—increasing efficiency and reliability, integrating distributed energy resources, and protecting the grid. Utilidata will provide the VVO system.

Partner	Role
Itron	Metering platform
OPower	Alerts and notifications Behavioral norming DER education and marketing Peak time reward administration Web portal data presentment
WeatherBug Home	DLC demand response and analytics DLC mobile app provider DR events coordination specific to Clifton Park
Sealed	DER Provider
Utilidata	VVO system

Table 1: Partner List for Demonstration Project

Utility Resources and Capabilities

The newly formed New Energy Solutions department of National Grid will manage the project. Additionally, the Company expects to utilize utility staffing from groups throughout the Company including, but not limited to, Regulatory, Pricing, Billing, Customer Service, Energy Supply, Meter Data Services, and Advanced Data & Analytics.

Specific functions to be performed by Company personnel for the implementation of this Project include:

- **Demand Reduction Calculations**: The Advanced Data & Analytics Team will be using interval meter data to determine participants' baseline demand, expected demand during a demand response event, and the demand savings associated with the event. The Advanced Data & Analytics Team will be responsible for providing this data to the peak time rewards program administrator.
- **Price Signals**: The Rate and Pricing Group will investigate development of a TOU rate and demand rate, both of which are intended to incent participants to reduce demand during on peak times.
- **Community Energy Supply Procurement**: The Company's Energy Procurement Group and Customer Choice groups will work with energy manager and other stakeholders on the Community Energy Supply Procurement. The energy manager can conduct the ESCO RFP, assist in negotiating the terms of the ESCO's contract, and work with Clifton Park leaders to define the Town's energy needs and priorities.
- **Marketing**: The Marketing Group will be responsible for developing and promoting the overall Project to Clifton Park including Project benefits, attributes, and opt out instructions. Marketing will work in conjunction with Advanced Data & Analytics to ensure proper targeting and monitoring of pilot performance. Additionally, the Marketing Group will be responsible for oversight of partners such as OPower and Smart Power who will be providing regular customer communications as well as the communications related to DER service providers.

While not explicitly identified above, the Company's metering, testing, and billing groups will be engaged to manage a variety of Clifton Park activities relating to meter testing and installation and meter data services enhancements required to process electric and gas interval data. The Implementation Plan will provide more information on above.

Community Outreach / Community Engagement

Outreach to Affected Communities

Company representatives first began meeting with multiple stakeholders in Clifton Park in early 2015 to solicit their reaction and feedback. Below is a summary of the meetings that were held. As the Project continues to develop and advance, stakeholders will continue to be updated.

- **Clifton Park Residents**: The Project was presented to Clifton Park residents in three separate meetings at the Clifton Park YMCA in June 2015. At these meetings, residents heard about the Project and then participated in an open, question and answer discussion.
- **Clifton Park Town Officials:** The Company met in March 2015 with Clifton Park's town supervisor, a representative of the Clifton Park Government Re-Thinking Energy & Environment Now (G.R.E.E.N.) Committee, town council members and department heads to discuss the Project and its benefits to the Town, residents, and businesses.
- **Chamber of Southern Saratoga County**: The Company met with the President and CEO of the Chamber of Southern Saratoga County in March 2015 to describe the Project and solicit ideas on how the Chamber members can partner with the Company on delivering the Project.

- **Local Universities**: The Company had productive meetings with faculty and staff members of the Colleges of Nanoscale Science and Engineering/SUNY Poly located in Albany, faculty and staff for the New York State Center for Information Forensics and Assurance at the State University of New York in Albany and with faculty and staff members of the Center for Future Energy Systems at Rensselaer Polytechnic Institute in 2015.

As the Company moves forward with the Project, the Company has continued to meet and discuss the Project with parties including:

- **Clifton Park Town Officials:** In May 2016 the Company briefed Clifton Park Town officials on the Project as currently being proposed.
- **ESCO**: The Company has had discussions with ESCOs regarding community energy supply and the benefits of a peak time rewards program.

Motivating Customers / Communities

The Company anticipates that participants in Clifton Park will be motivated to participate once the Project components have been presented to them. Once the Project is approved, the Company will reach out through a variety of channels including:

- **Community Engagement**: SmartPower will be reaching out through existing community groups to inform Clifton Park residents of the benefits of the Project as well as timeline. In addition, existing Company personnel have relationships with the Town's leaders and will continue to inform them about the Project and timelines as well as soliciting feedback from leaders through the Project timeframe.
- **Customer Engagement**: The National Grid Marketing Group will engage with Clifton Park residents regarding benefits such as reducing their total energy bill and information about DER services, Community Energy Supply Procurement, and upcoming infrastructure investments. OPower will also be engaging with customers through a variety of channels and web services. Participants will, to the extent possible, be able to see customer-specific information in these communications.

Conditions / Barriers

Market Rules and Standards

The Community Energy Supply Procurement will utilize an ESCO to provide residents with electric and gas supply using a fixed pricing arrangement. In order to enroll customers with the ESCO on an opt out basis, the Company will require a limited temporary waiver of Commission rules regarding express consent to switch suppliers. Once the proposal for the Clifton Park pilot is accepted, the Company will file a request for the required waiver.

National Grid will continue to work collaboratively with Department of Public Service Staff to

determine if proposed time of use and demand reduction offerings may also require Commission approval, and possible tariff filings.

Consumer Protections

Residential customers participating in the Project will continue to be protected under the Home Energy Fair Practices Act ("HEFPA") which includes provisions addressing termination of service for non-payment, offers of deferred payment agreements to customers in arrears, and a host of other consumer protections. Customers participating in any aspect of this Project will remain National Grid customer of record.

Channel or Market Challenges

This Project is designed to bring a multitude of options and solutions to residents of Clifton Park to reduce participants' demand and total energy bills. The Company is moving forward in a purposeful manner so as to not overwhelm customers with information and communications. Monitoring the tone and frequency of communications, while also making them relevant and actionable, should help to minimize the number of customers choosing to opt out. The Company intends to monitor the opt-out rate closely to assure that key information such as usage alerts, price signals, and opportunities to earn rewards continue to be accessible to the majority of participants.

Financial Elements / Revenue Model

Expense and Revenue Budgets

Summarized below are estimated budget costs for the first three years of the Project with Capital and Development costs representing almost 73% of the Year 1 budget.[17] Partner costs in Years 1, 2, and 3 represent 42%, 35%, and 37% of total costs, respectively. Appendix A contains budgets by cost category (*e.g.*, Capital Cost, Development Cost) by partner and National Grid.

Cost Categories	Year 1	Year 2	Year 3	Total
Capital Costs	$ 8,107,192	$ 970,642	$ -	$ 9,077,834
Development Costs	$ 3,389,163	$ 626,400	$ 477,000	$ 4,492,563
Operations & Maintenance Costs	$ 2,237,025	$ 1,909,019	$ 1,797,100	$ 5,943,144
Customer Engagement & Education	$ 1,930,000	$ 1,621,500	$ 1,426,500	$ 4,978,000
TOTAL	$ 15,663,379	$ 5,127,561	$ 3,700,600	$ 24,491,541

Table 2: Three Year Preliminary Budget

As of May 2016, the net book value of the Company's depreciated electric meters and gas ERTs that would be removed in connection with the Project are $1.3 million and $200,000, respectively. As the Company replaces the electric meters and gas ERTs through this Project in

[17] Assumes AMF meter installation completed in Year 1 and VVO installation completed in Year 2. The unrecovered assets associated with the removed meters in Clifton Park have not been included in the Project costs but will be booked in the depreciation reserve account when removed.

accordance with the Project schedule, the Company will account for these assets using its standard accounting processes and procedures.

Revenue projections range from $12,000-$25,000, $35,000-$100,000, and $60,000-$150,000 in years 1, 2, and 3, respectively. Current sources of revenue include lead generation fees, demand response revenue, as well as estimates of other potential sources such as the sale of aggregated data and potential future offerings such as solar. The revenue projection ranges reflect assumed levels of compensation by partners (*e.g.*, ranging from 2% to 5% of product value).

Revenue Source	Year 1	Year 2	Year 3
Customer Acquisition and Lead Fees	$12,000 - $25,000	$35,000 - $75,000	$60,000 - $125,000
Demand Response Revenue	$0	$750	$750
Other Potential Revenue Sources	$0	$0 - $20,000	$0 - $20,000

Returns and Cost-Effectiveness

Returns & Cost Effectiveness

The return on investment for the Project will be reflected in participants' reduced total energy bills and reduced demand achieved through the Project's infrastructure investment, price signals including the peak time rewards program, DER services, and Community Energy Supply Procurement.

In addition, non-economic value derived from the Project includes:

- increased community engagement and choice related to energy supply;
- expanded energy literacy related to DERs and energy efficiency;
- reduced greenhouse gas emissions due to DER adoption and renewable supply options;
- community engagement around a common program;
- valuable learnings about community energy supply procurement, TOU rates, peak time rewards, demand response, and energy communication, education and engagement; and
- meaningful result and findings to assess program scalability across New York State.

Reporting

Information to be Included in Quarterly Reports to the Commission

Quarterly progress reports on the stakeholder and business model work will be provided to the Department of Public Service ("DPS") Staff and filed with the Secretary. These reports will include at a minimum an overview of project progress against timeline/plan and results as they become available. The quarterly report template is provided below and will continue to be

refined as the Project's Implementation Plan is finalized.

QUARTERLY REPORTING TEMPLATE

Milestones
Last Project Milestone:
Next Project Milestone:

Tasks/Timeline
Completed Project Tasks Since Last Report:
Changes or Impacts to Schedule since Last Report:
Lessons Learned:
Work Stream Coordination:

Risks
Identified Risks:
Risk Mitigation Plan:

Finance
Total Incremental Spend to Date:
Target Incremental Spend:
Actual Incremental Spend:
Incremental Spend Variance:
Non-Incremental Spend:
In-kind and grant support (specifically for REV Demo):

Additional Notes:

Conclusion

Post-Demonstration Qualitative and Quantitative Benefits

There are numerous post-demonstration benefits that may be realized by customers, the Company and our partners. Customers will have choices on how they meet their individual energy needs. Customers will be empowered to make more educated energy decisions through energy usage information, and time of use rates and other price signals. Customers will better understand the benefits that technology can afford them in managing their usage.

As customers become more knowledgeable and comfortable with energy choices, we anticipate they will begin to demand additional services and products. The establishment of partnerships in the Project will facilitate the new product development that may become necessary to meet the more sophisticated future needs of customers.

The new information channels that will be established in the Project between customers, partners and the Company will give customers additional knowledge to more actively participate in DER services. It will also give the partners and the Company the market information that will enable them to develop innovative DER offerings customers are more likely to utilize. This increased participation provides societal benefits by reducing greenhouse gases and providing customers with health and well-being benefits and helping customers to reduce their whole energy bills.

APPENDIX A: Partner and National Grid Budgets

(REDACTED)