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July 31, 2019

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: CLIFTON PARK DEMAND REDUCTION REV DEMONSTRATION PROJECT-Q2 2019 REPORT

Dear Secretary Burgess:

Niagara Mohawk Power Corporation d/b/a National Grid (“National Grid”) hereby submits for filing its quarterly update to the Clifton Park Demand Reduction REV Demonstration Project Implementation Plan covering the period of April 1, 2019 to June 30, 2019 (“Q2 2019 Report”) as required by the REV Demonstration Project Assessment Report filed by the New York State Department of Public Service Staff with the Commission on December 1, 2016 in Case 14-M-0101.

Please direct any questions regarding this filing to:

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Hon. Kathleen H. Burgess, Secretary
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National Grid looks forward to continuing to work collaboratively with Staff as it proceeds with the implementation of the Clifton Park Demand Reduction REV Demonstration Project.

Respectfully submitted,

/s/ Karla M. Corpus

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Enc.

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**Demand Reduction
REV Demonstration Project
in
Clifton Park
Q2 2019 Report**

July 31, 2019

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1.0 Executive Summary

On January 17, 2017 Niagara Mohawk Power Corporation d/b/a National Grid (“National Grid” or the “Company”) filed an implementation plan for the Demand Reduction REV Demonstration Project in Clifton Park (the “Project”), which is designed to provide residential customers in the Town of Clifton Park (“Clifton Park” or the “Town”) with price signals, tools and information, enabled by infrastructure investments and distributed energy resources (“DER”), to reduce electric demand during peak times and inform the Reforming the Energy Vision (“REV”) Proceeding.¹

The Project aligns with the New York Public Service Commission’s (“Commission”) *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, electric peak reduction is among the most immediate priorities for REV implementation.”² National Grid believes that it is possible to create more responsive relationships with customers by leveraging critical infrastructure, customer outreach and engagement, deep energy insights and actionable information, as well as price signals and DER products and services, which incentivize customers to reduce peak electric load and overall electric and gas energy use. Toward that end, the following elements are included in the Project:

- Infrastructure
 - Advanced Metering Functionality (“AMF”)
 - Volt/VAR Optimization (includes Conservation Voltage Reduction) (“VVO”)
- Customer Outreach & Engagement
- Deep Energy Insights & Actionable Information
- Price Signals
 - Peak Time Rewards (“PTR”)
 - Voluntary Time-of-Use (“VTOU”) Rate
- DER Services
- Utility supported Community Choice Aggregation (“CCA”)

The premises of customers participating in the Project are contained within the town limits of Clifton Park. The total number of impacted customers is approximately 14,400.

Key activities and milestones accomplished this quarter (Q2 2019) are summarized as follows:

¹ Case 14-M-0101, *Proceeding on Motion in Regard to Reforming the Energy Vision* (“REV Proceeding”), National Grid Demand Reduction REV Demonstration Project in Clifton Park Implementation Plan (filed January 17, 2017)(“Implementation Plan”).

² REV Proceeding, *Order Adopting a Ratemaking and Utility Revenue Model Policy Framework* (“REV Track Two Order”)(issued May 19, 2016), p. 72.

Key Item	Outcome
PTR	<ul style="list-style-type: none"> Performed end-to-end testing of PTR systems (ADA, Wipro, Opower, Itron) in preparation for PTR season 3. First PTR event of the season called 6/28/2019.
IS and ADA efforts	<ul style="list-style-type: none"> ADA and Information Services (“IS”) continued in support mode. ADA conducted billing analysis comparing differences in the Clifton Park energy consumption between 2016 and 2018.
VVO efforts	<ul style="list-style-type: none"> VVO devices are in evaluation mode.
Customer Outreach & Marketing	<ul style="list-style-type: none"> PTR season 3 communications sent to customers ahead of events.
TOU Price Signal	<ul style="list-style-type: none"> Continued innovative pricing demonstration design.
DER	<ul style="list-style-type: none"> 2019 DER promotions dependent on innovative pricing demonstration.

Project Elements

A visual of the Project’s key services and offerings are provided below. Except for VVO, customers can opt in or opt out of each Project element. A description of each Project element is included with the individual sections of this quarterly report.

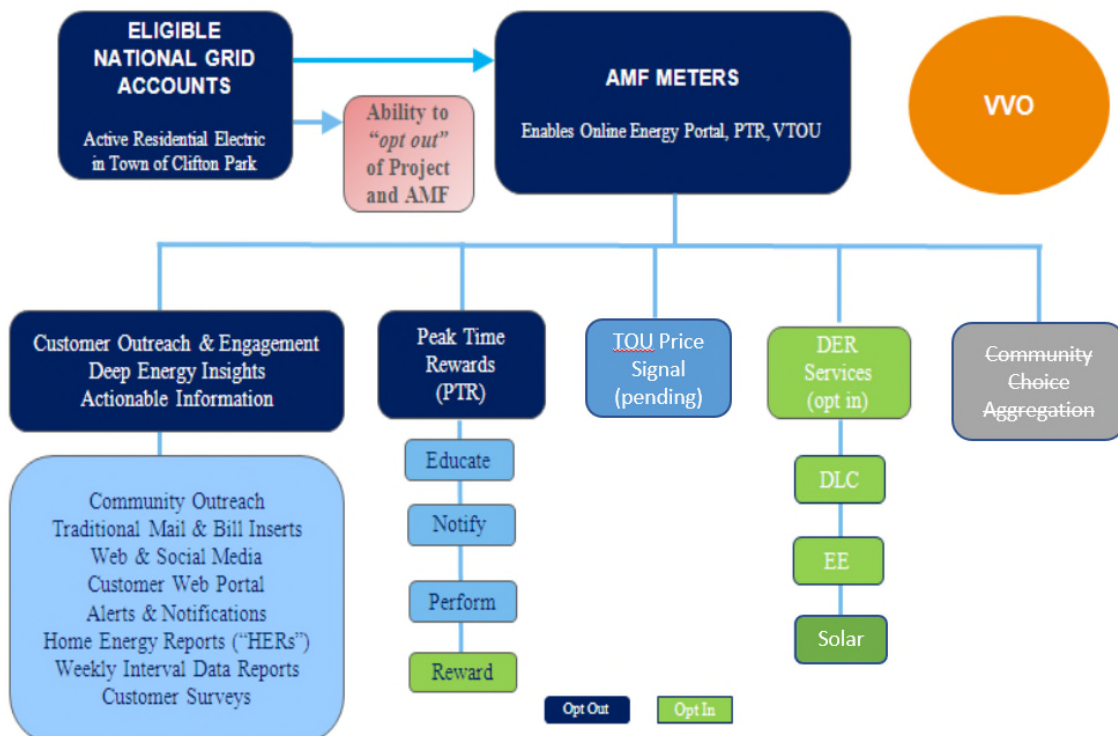


Figure 1: Project Elements

2.0 Highlights Since Previous Quarter

The following highlights key activities accomplished to date on the Project, as well as key activities planned for the next quarter.

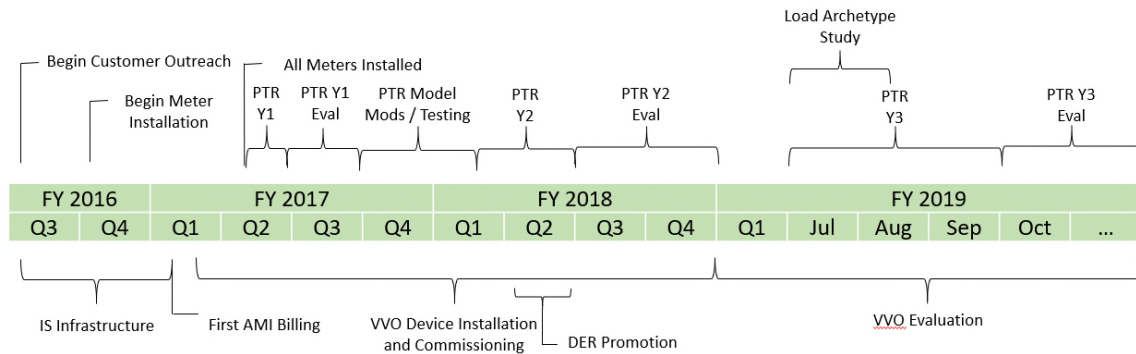


Figure 2: Work Plan Summary

2.1 Major Task Activities

2.1.1 Advanced Metering Functionality

AMF deployment in Clifton Park has replaced existing National Grid electric and gas meter reading and billing processes for customers that have not opted out of the Project. AMF meters are read and select portions of data are transferred over the cellular network to National Grid for utility billing. Portions of data are also transferred to the Project's partners over secure networks to enable various elements of the Project, including the customer web portal. Interval data is used for deployment of PTR, all customer billing, and to support authorized Project evaluation activities.

AMF deployment commenced at the end of the first quarter of 2017. Letters introducing Clifton Park customers to Smart Energy Solutions and postcards alerting customers of the AMF installation timeframe were distributed prior to installations. This allowed for a period during which customers could opt out of the AMF metering technology, as well as certain other aspects of the Project.

Customers choosing not to have AMF installed have been directed to a specialized team at the National Grid Contact Center, which in turn directs Customer Meter Services ("CMS") not to install an AMF technology for those customers. Those customers will instead retain their existing automatic meter reading ("AMR") meter, or if they had previously elected the "AMR Opt-Out Option", retain a non-AMR meter. Additionally, during the Project term, customers have the option to have their AMF meter removed and replaced with an AMR meter at no cost to the customer.

The AMF opt-out rate remains unchanged since the previous quarter at eight-point eight percent (8.8%), or 1,256 premises. AMF meter opt-outs include customers that: 1) called into the National

Grid Customer Contact Center; 2) informed CMS field workers in-person that they did not want the meter; or 3) where National Grid was unable to gain access to account premises after three (3) attempts at access were made without success.

National Grid will continue to monitor AMF opt-outs as the Project continues and new customers move into the Town of Clifton Park and others move out. The National Grid Customer Contact Center will continue to accept customer requests to install or remove the AMF technology and process orders.

A customer with concerns about meter readings requested National Grid remove their AMI meters. National Grid is analyzing the AMI data of the relevant accounts and is testing those meters. The Company intends to develop a communications action plan to address similar issues that may arise in the future.

2.1.1.1 Information Services (“IS”) Activities

Timeframe	Completed Milestones
2 nd Quarter 2019	<ul style="list-style-type: none"> Continued Project support via National Grid’s IS Support team.

2.1.1.2 Meter Installation Activities

Timeframe	Completed Milestones
2 nd Quarter 2019	<ul style="list-style-type: none"> Continued to support normal business practices related to move-in/out of customers.

2.1.2 Volt/VAR Optimization (“VVO”) Device Installations

National Grid will enhance the efficiency of the electric distribution system through the installation of software and devices that better regulate the voltage of the distribution system. These system enhancements will benefit all customers connected to those substations being upgraded. Working with the Project’s VVO partner, Utilidata, National Grid started installing devices on the electric distribution system that monitor voltage along with advanced controllers for voltage regulators and reactive capacitors.

National Grid will evaluate the extent to which optimized regulation of the voltage and power factor of the electric distribution system benefits customers, ultimately reflected by improved feeder power factor, flatter voltage profiles, reduced feeder losses, reduced peak demand, and reduced energy consumption by customers. National Grid’s targeted efficiency gain through the VVO portion of the Project is approximately three percent (3%).

VVO installation scope includes:

- Three (3) substation transformer load tap changers;
- Eleven (11) feeders, including:
 - Twelve (12) line voltage monitors;
 - Thirty-one (31) advanced switching capacitors; and
 - Five (5) pole top regulators
- A central controller and data concentrator installed at the National Grid Control Center in Liverpool, New York;
- Supervisory control via National Grid’s Supervisory Control and Data Acquisition (“SCADA”) and Energy Management System (“EMS”); and
- Cellular connectivity between all field, substation devices, and the data concentrator.

Timeframe	Completed Milestones
2 nd Quarter 2019	• VVO devices are in evaluation mode.

2.1.3 Customer Outreach

National Grid has engaged residents of the Clifton Park community to learn about the Project and solicit input. The strategies include:

- Community outreach;
- Mail and bill inserts; and
- Web and social media.

Community Outreach

The National Grid marketing team performed studies of Clifton Park residential customers to assess areas of concern and to present recommendations. The studies were conducted by Market Probe moderators, a third-party market research group, via:

- Outreach sessions with Clifton Park residents in June 2018;
- Phone and online annual surveys completed; and
- Testimonial campaign with radio and billboard outreach prepared to launch.

Mail and Bill Inserts

Prior to the installation of AMF, National Grid delivered a set of communications via standard mailings to introduce Clifton Park customers to Smart Energy Solutions and notify them of the imminent arrival of the AMF meter technology. Customers were asked to contact National Grid if they did not want to receive a new AMF meter. Each letter spoke to the key benefits of the Project and touched upon key Project elements available immediately and in the future. These communications were sent in the form of direct mail and bill inserts.

Thereafter, National Grid also sent out a series of meter installation notifications letting customers know when their new meters would be installed. Included in these communications was an invitation to attend one of the Company's customer outreach and education meetings to learn more about the Project, ask questions, and interact with the National Grid team.

Following the installation of an AMF meter, customers received educational materials focused on the various Project elements, such as enrolling in PTR. Bill inserts will continue to be incorporated four (4) times per year as new Project elements are rolled out, and media updates will be on-going throughout the year. Additionally, video tutorials have been created and were made available on the National Grid website.

Web and Social Media

National Grid continues to expand the existing Clifton Park micro-site, a component of the Company's current <http://www.nationalgrid.com> website, to include information on the Project for all Clifton Park residents.

The Project website includes the following information:

- Frequently Asked Questions Video overview of the Project:
 - <https://vimeo.com/209611691/bd2127692f>;
- Frequently Asked Questions pdf:
 - https://www.nationalgridus.com/media/pdfs/resi-ways-to-save/cp_faqs.pdf;
- Information about PTR;
- DER product and service options available (e.g., New York Solar Marketplace); and
- <http://www.ngrid.com/cliftonpark> will be updated throughout the year to announce the rollout of new products and services.

National Grid also proactively monitors open social media sites to join any conversations regarding the Project and to help answer questions about it.

The Project tracks customer interaction with the Opower web portal. Emails, bill inserts, direct mailings, and social media contributed to raising awareness of the information available to customers, as evidenced by increasing levels of interaction throughout the PTR season. Customer outreach activities continue outside of the PTR season to encourage ongoing customer engagement.

Areas of the portal experiencing common customer interaction include:

- My Energy Use;
- Ways to Save;
- Compare My Bills;
- Dashboard; and
- Home Energy Audit.

The following key performance indicators (“KPIs”) have been created to track and measure success of Customer Outreach:

- Customer Acceptance of AMF Technology;
- Awareness;
- Customer Control of Energy Usage;
- Customer Satisfaction with National Grid; and
- Portal Engagement, such as:
 - Login Creation;
 - Enrollment in Points and Rewards; and
 - Profile Completion.

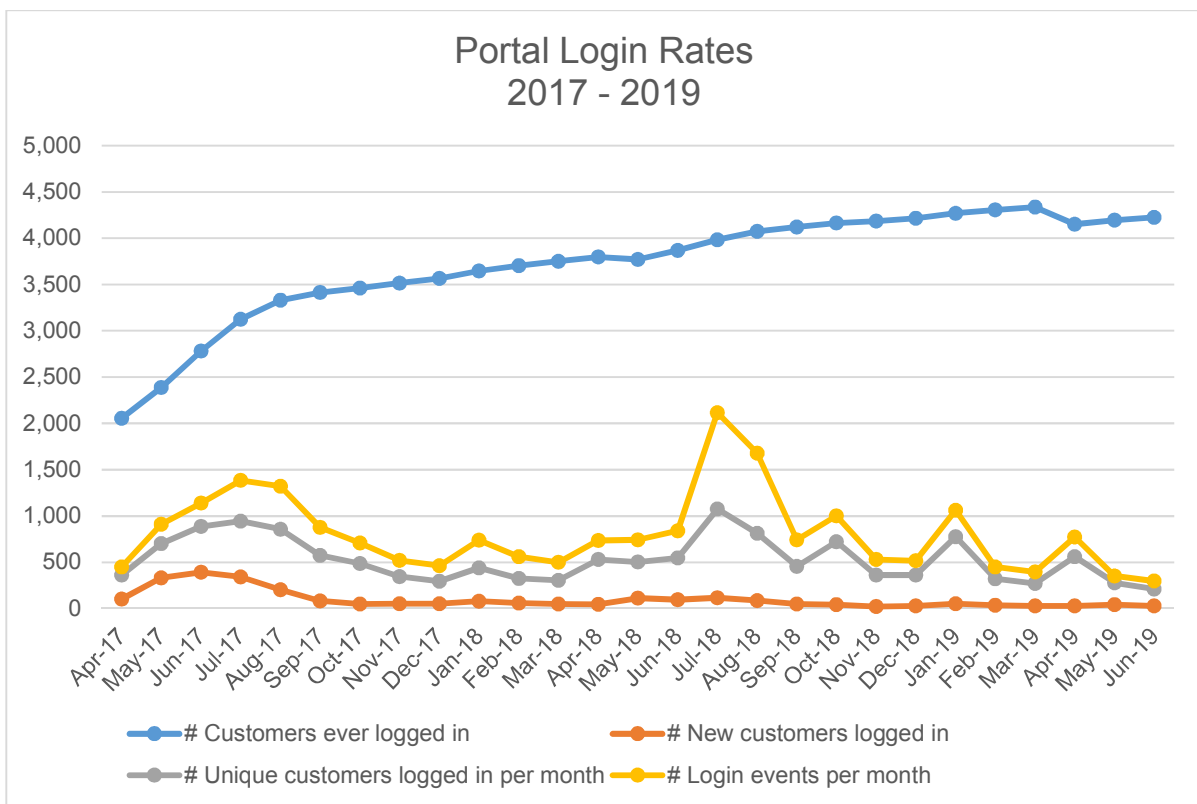


Figure 3: Portal Activity

Timeframe	Completed Milestones
2 nd Quarter 2019	<ul style="list-style-type: none"> Continued outreach on energy saving tips, checking usage and general portal engagement.
	<ul style="list-style-type: none"> PTR season introduction letter mailed to all customers.
	<ul style="list-style-type: none"> Hosted strategy session with marketing agency.
	<ul style="list-style-type: none"> Completed email marketing calendar that will be deployed July – September 2019.

2.1.4 Peak Time Rewards (“PTR”)

National Grid seeks to incentivize Clifton Park customers to reduce electric use during specified peak times. Participating customers are rewarded for curtailing electric load through behavioral actions such as turning off lights and adjusting their thermostats or utilizing customer-controlled technology.

Key elements of PTR include:

- Event performance analytics performed on all customers with AMF;
- No penalties for failure to reduce load during PTR events;
- Pre-event and post-event email notifications;
- Rewards earned by those enrolled in “Points and Rewards”; and
- Rewards awarded based on participation in up to twenty (20) PTR events per year.

National Grid reviews load forecasts for the New York Independent System Operator (“NYISO”) system and Zone F (which includes Clifton Park), as well as local Clifton Park weather forecasts, to determine whether to call a PTR (a/k/a “Conservation Day”) event.

PTR events are entered into two (2) systems; one triggers customer event notifications to Clifton Park customers and the other sets in motion the energy use predictive model, which will compare predicted values to actual AMF metered usage, to determine curtailment participation. Over 8,000 pre-event emails notifying that a conservation event is scheduled are sent out to Clifton Park customers for each event.

Upon determination of whether each account has curtailed, each customer electric service account is assigned a value of ‘true’ or ‘false’ for each event, based on its curtailment determination. Those accounts enrolled in the Points-and-Rewards program which are assigned a value of ‘true’, are then awarded points.

National Grid tracks customer enrollments in PTR as a measure of customer engagement. Enrollment in Point-and-Rewards has increased each month as the Project has progressed. PTR enrollment enables customers participating in PTR events/Conservation Days to earn rewards.

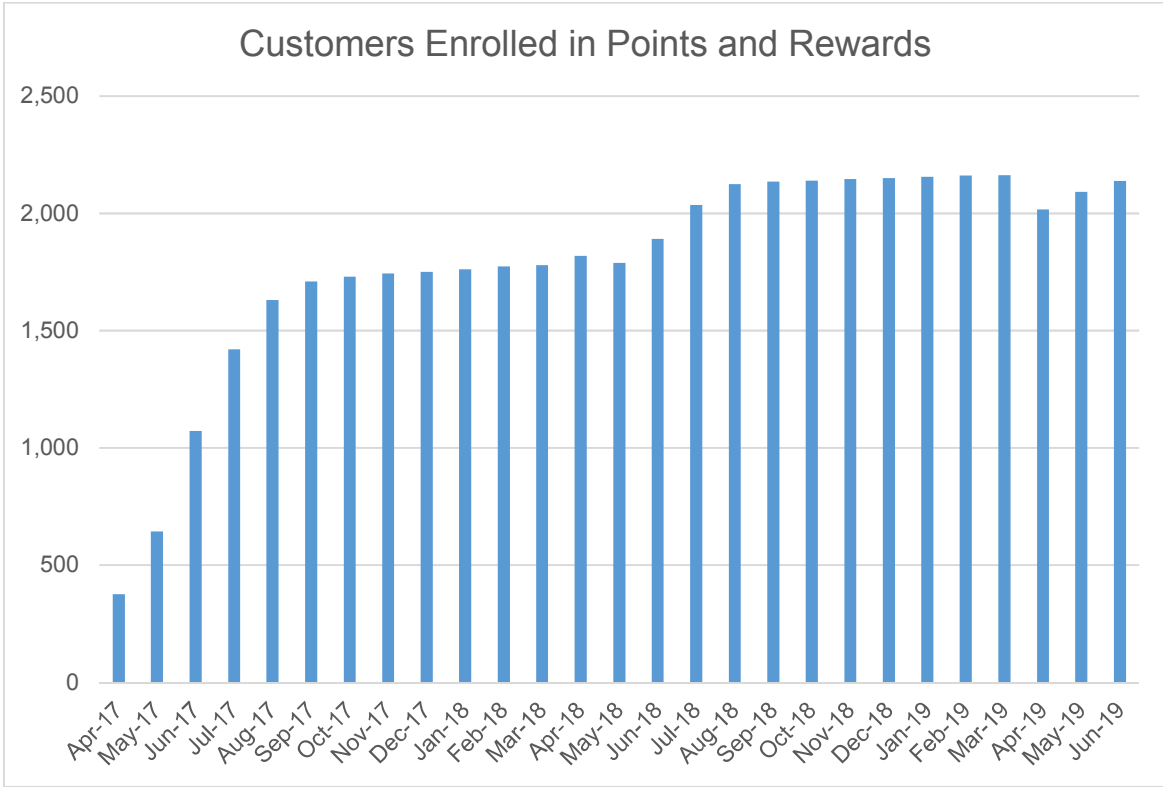


Figure 4: Points & Rewards

Timeframe	Completed Milestones
2nd Quarter 2019	<ul style="list-style-type: none"> • Conducted end-to-end system testing (Wipro, ADA, Opower, Itron) prior to start of PTR season 3.
	<ul style="list-style-type: none"> • First event of season 3 called 6/28/2019.

2.1.5 Advanced Data Analytics (“ADA”)

National Grid’s Advanced Data Analytics Project team developed the residential energy use predictive model to determine the expected energy use during a PTR event. The predictive model uses prior customer level energy consumption data and event weather conditions to predict customers’ energy consumption during events. The predicted values are compared to the actual AMF data to determine whether curtailment has occurred and to ascertain which customers are to be awarded points. The results of these analyses will be used to determine if the aggregated community load meets certain threshold requirements for bidding into the NYISO wholesale electricity market.

Timeframe	Completed Milestones
2 nd Quarter 2019	<ul style="list-style-type: none"> Continued to support normal business operations. Conducted billing analysis comparing differences in the Clifton Park energy consumption between 2016 and 2018. Results included in Appendix A.

The ADA report indicates that Clifton Park customers presented the most significant saving trend from 2016 to 2018 in the summer season, in terms of both the number of customers and savings. The savings in the shoulder months was a slightly less than in the summer, while the winter showed a non-significant change from 2016 to 2018.

2.1.6 Time-of-Use (“TOU”) Price Signals

National Grid is seeking regulatory alignment between Clifton Park, AMI Business Case³, Beneficial Electrification, and Smart Home Rate (“SHR”).

Timeframe	Completed Milestones
2 nd Quarter 2019	<ul style="list-style-type: none"> Initiated strategic alignment of Clifton Park, Beneficial Electrification, AMI Business Case, and SHR.

2.1.7 Distributed Energy Resource (“DER”) Opportunities

National Grid seeks to animate the market by facilitating DER provider opportunities as part of the Project. DER products and services will be opt-in offerings to customers, publicized via the customer engagement channels outlined above, as well as community outreach. DER services may include energy efficiency, demand response, or renewable distributed generation opportunities.

National Grid is continuing to consider additional DER opportunities spanning renewable energy, energy efficiency, and PEVs. As such, NY Solar Marketplace has been established to help customers evaluate solar energy options and is being promoted in Clifton Park.

Timeframe	Completed Milestones
2 nd Quarter 2019	<ul style="list-style-type: none"> 2019 DER promotions dependent on innovative pricing demonstration.

³ Case 17-E-0238, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Niagara Mohawk Power Corporation d/b/a for Electric Service*, Order Adopting Terms of Joint Proposal and Establishing Electric and Gas Rate Plans, (issued March 15, 2018), Attachment 1, Joint Proposal, Section 15.4.

2.1.8 Community Choice Aggregation (“CCA”)

National Grid engaged with Clifton Park officials and community members on the potential for adoption of a utility-supported CCA in early 2017. After the filing of the Project’s Implementation Plan, the Town decided to not pursue a CCA.

2.1.9 Project Management Group

The National Grid Project Management Group is a construct of individuals who strive to keep the Project on track regarding scope, schedule and budget, while lending visibility into processes, accomplishments, and financial tracking. This group regularly engages in, and promotes, the following:

- Weekly Core Team Status Reporting;
- Monthly General Staff Meetings;
- Quarterly New York PSC Reporting;
- Issues Tracking;
- Lessons Learned Recording and Review;
- Change Log Processes; and
- Financial Reporting activities.

Timeframe	Completed Milestones
2nd Quarter 2019	<ul style="list-style-type: none">• Conducted weekly status reviews with core team leads, monitoring progress, providing corrective measure(s), and escalating issues, as needed.• Provided weekly updates to National Grid’s Finance Department and Performance Excellence Team regarding the Project for management review.• Evaluated PTR season 2 results.• Initiated PTR season 3.

2.2 Challenges, Changes, and Lessons Learned






Qtr	Issue or Change	Resulting Change to Project Scope/Timeline?	Strategies to Resolve	Lessons Learned
Q2.19	Preparation for PTR season 3 was hindered by changes in partner staffing. Systems were not in operation-ready mode in a timely manner.	Extra time and effort were required to complete end-to-end system testing.	None.	Allow time in the Project schedule for early system testing. Even if the system was operating in past season(s), changes may have taken place to create anomalies that must be rectified.
Q2.19	PTR system design prevents calling of events on/during holidays and weekends, with constrictive hours that do not necessarily align with peak load.	The Project schedule was not changed, but constraints in system operations prevented calling PTR events when they otherwise could have been called.	None.	Carefully consider all aspects of system operational designs early in the Project.
Q2.19	Financial reporting encountered issues and delays.	Accuracy, timeliness and confidence regarding Project financial reporting were hindered.	Identify responsible parties and systems to gain greater insight into the Project financial reporting process.	Clearly identify all work orders, incremental costs, and the financial reporting systems required to ensure accuracy and timeliness.

3.0 Next Quarter Forecast




During the 3rd Quarter of 2019, the Project team will continue Phase 2 of the Project.








3.1 Check Points/Milestone Progress

3.1.1 Summary

Checkpoint/Milestone	Anticipated Start-End Date	Revised Start-End Date	Status
1 Phase 1: Network Configuration and Meter Deployment; PTR Operations	1/2/17 – 6/16/17	1/2/17 - 7/17/17	Complete
2 Phase 2: VVO; REV Operations and Evaluation	6/19/17 – 9/30/19	6/19/17 – 9/30/19	
3 Phase 3: Project Wrap-up	10/1/19 – 3/31/20	10/1/19 – 3/31/20	
Key			
 On-Track			
 Delayed start, at risk of on-time completion, or over-budget			
 Terminated/abandoned checkpoint			

3.1.2 Work Stream – 3rd Quarter 2019

Work Stream	Future Milestones	Status
Information Systems (“IS”)	<ul style="list-style-type: none"> Support Project via National Grid’s IS Support team. 	
AMI	<ul style="list-style-type: none"> Support normal business practices related to move-in/out of customers. 	
	<ul style="list-style-type: none"> Load archetype study to be initiated to enable more granular profiling of residential energy usage. 	
VVO	<ul style="list-style-type: none"> Continue study to evaluate overall system performance, leveraging AMI data for additional efficiencies. 	

Work Stream	Future Milestones	Status
Customer Outreach	<ul style="list-style-type: none"> • Continue PTR season 3 communications and education engagement. 	
	<ul style="list-style-type: none"> • Engage portal conservation days with actionable information. 	
PTR	<ul style="list-style-type: none"> • Conduct PTR season 3. 	
ADA	<ul style="list-style-type: none"> • Provide PTR season 3 support to Project team. 	
TOU Price Signal	<ul style="list-style-type: none"> • Not pursued under initial Project, however, Project team anticipates transition to innovative pricing. 	
DER	<ul style="list-style-type: none"> • Not pursuing due to anticipated transition to innovative pricing. 	
Project Management Group	<ul style="list-style-type: none"> • Conduct weekly and monthly Project update meetings. 	
	<ul style="list-style-type: none"> • Monitor and report Project success Key Performance Initiatives. 	
	<ul style="list-style-type: none"> • Continue tracking, monitoring and controlling the Project schedule, tracking on a weekly basis. 	
	<ul style="list-style-type: none"> • Continue tracking, monitoring and controlling the Project financials, tracking on month-by-month basis. 	
	<ul style="list-style-type: none"> • Continue to identify, monitor and manage risks and issues as they arise. 	
	<ul style="list-style-type: none"> • Work with AMI team on future rate structure strategies. 	
	<ul style="list-style-type: none"> • Strategize on integration of SHR in Clifton Park. 	
Project Evaluation	<ul style="list-style-type: none"> • Develop Project evaluation plan and evaluate potential contractors. 	
	<ul style="list-style-type: none"> • Evaluate additional AMI data analytics to capitalize on availability of meter data. 	

4.0 Work Plan and Budget Review

4.1 Updated Work Plan

ID	Task Name	Start	Finish	2017												2018												2019											
				Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
1	Clifton Park Integrated Program	1/2/2017	9/30/2019	[Gantt bar spanning from Jan 2017 to Sep 2019]																																			
2	IS	3/31/2017	8/4/2017	[Gantt bar from Mar 2017 to Aug 2017]																																			
3	ADA	4/17/2017	6/30/2017	[Gantt bar from Apr 2017 to Jun 2017]																																			
4	Design	5/8/2017	5/31/2017	[Gantt bar from May 2017 to May 2017]																																			
5	Initial Testing	5/31/2017	6/15/2017	[Gantt bar from May 2017 to Jun 2017]																																			
6	Development	5/30/2017	5/31/2017	[Gantt bar from May 2017 to May 2017]																																			
7	Testing	4/17/2017	6/15/2017	[Gantt bar from Apr 2017 to Jun 2017]																																			
8	Meters	3/17/2017	7/28/2017	[Gantt bar from Mar 2017 to Jul 2017]																																			
9	VVO	2/24/2017	1/31/2019	[Gantt bar from Feb 2017 to Jan 2019]																																			
10	Field Devices	10/13/2017	1/31/2019	[Gantt bar from Oct 2017 to Jan 2019]																																			
11	Substations	2/24/2017	6/15/2018	[Gantt bar from Feb 2017 to Jun 2018]																																			
12	Elnora Substation	12/1/2017	6/15/2018	[Gantt bar from Dec 2017 to Jun 2018]																																			
13	Grooms Substation	2/24/2017	2/2/2018	[Gantt bar from Feb 2017 to Feb 2018]																																			
14	Xformer 1	4/28/2017	6/30/2017	[Gantt bar from Apr 2017 to Jun 2017]																																			
15	Xformer 2	2/2/2018	2/2/2018	[Gantt bar from Feb 2018 to Feb 2018]																																			
16	Utilidata Server	8/18/2017	1/31/2019	[Gantt bar from Aug 2017 to Jan 2019]																																			
17	PTR	4/28/2017	9/30/2019	[Gantt bar from Apr 2017 to Sep 2019]																																			
18	Phase 1	4/28/2017	5/29/2017	[Gantt bar from Apr 2017 to May 2017]																																			
19	Phase 2	7/17/2017	9/30/2019	[Gantt bar from Jul 2017 to Sep 2019]																																			
20	Outreach (O&E)	1/2/2017	9/30/2019	[Gantt bar from Jan 2017 to Sep 2019]																																			
21	Phase 1 Marketing Communications	2/13/2017	10/20/2017	[Gantt bar from Feb 2017 to Oct 2017]																																			
22	Direct Mailings Traditional Mail and Inserts	2/2/2017	2/13/2017	[Gantt bar from Feb 2017 to Feb 2017]																																			
23	Points and Rewards Enrollment	5/16/2017	6/6/2017	[Gantt bar from May 2017 to Jun 2017]																																			
24	Conservation Day letter	6/19/2017	6/19/2017	[Gantt bar from Jun 2017 to Jun 2017]																																			
25	Bill Inserts	7/6/2017	7/6/2017	[Gantt bar from Jul 2017 to Jul 2017]																																			
26	Pricing	5/25/2018	5/25/2018	[Gantt bar from May 2018 to May 2018]																																			
27	Meter Installation Notifications	3/3/2017	6/2/2017	[Gantt bar from Mar 2017 to Jun 2017]																																			
28	Community Outreach meeting	4/27/2017	1/8/2018	[Gantt bar from Apr 2017 to Jan 2018]																																			
29	Contact Center Training	5/10/2017	5/10/2017	[Gantt bar from May 2017 to May 2017]																																			
30	Opt-out Monitoring	6/30/2017	9/29/2017	[Gantt bar from Jun 2017 to Sep 2017]																																			
31	AMO	6/5/2017	9/30/2019	[Gantt bar from Jun 2017 to Sep 2019]																																			
32	Project Management Operations	2/20/2017	9/30/2019	[Gantt bar from Feb 2017 to Sep 2019]																																			
33	Procurement	1/2/2017	8/21/2017	[Gantt bar from Jan 2017 to Aug 2017]																																			

4.2 Updated Budget

The overall Project budget remains unchanged from that reported in previous quarterly reports. However, \$13,063,123 has been shifted from fiscal year 1 (2017) to fiscal year 2 (2018), given additional time needed to set up the network and configure meters prior to commencement of the installation process⁴.

Project Task	2 nd Quarter 2019 Actual Spend	Project Total Spend to Date	Project Budget ⁵	Revised Budget*	Remaining Balance
	CapEx				
	\$ 40,994	\$ 8,844,050	\$ 12,516,057	\$ 8,766,057	\$ (77,993)
	OpEx				
	\$ 325,121	\$ 7,272,392	\$ 14,437,176	\$ 13,936,353	\$ 6,663,961
Total	\$ 366,115	\$ 16,116,442	\$ 26,953,233	\$ 22,702,410	\$ 6,585,968

A difference between the Implementation Plan budget (\$26,819,336)⁶ and the current revised budget (\$26,953,233) exists due to an increase in actual meter costs and associated fees. The overall difference is \$133,897.

*Note: An adjustment was made in Q1 2019 to reduce the total Project budget by \$4,250,823 for use towards other REV demonstration projects.

⁴ Fiscal year 1 consists of April 1, 2016 through March 31, 2017; fiscal year 2 consists of April 1, 2017 through March 31, 2018.

⁵ The Company updated the Project budget to reflect incremental costs, and to illustrate costs that are capital or operating expenses.

⁶ Case 14-M-0101, *supra* note 1, p. 33.

5.0 Progress Metrics

Checkpoint ⁷	Progress / Target Completion
Infrastructure	
AMF Acceptance vs. Opt Out	Continuing to monitor opt-out rates as Project progresses, and through the life of the Project. Current opt-out rate is eight and eight tenths percent (8.8%).
VVO System Benefits	Established infrastructure required to enact VVO and monitor progress. Equipment installation and commissioning completed. Initiated VVO evaluation period.
Customer Outreach and Engagement / Deep Energy Insights and Actionable Information	
Customer Outreach and Engagement	Continuing engagement through life of the Project. Annual surveys tracked against initial baseline survey.
Customer Energy Portal Engagement	Continue customer engagement metrics related to portal use, PTR participation, etc.
Price Signals	
PTR	Began PTR in July 2017; continue evaluation through life of the Project regarding participation rates and curtailed load.
TOU Price Signal	Strategic transition to innovative pricing demonstration.
DER	
DER Opportunities	Promotion of Connected Solutions DR and related technologies, National Grid's New York Solar marketplace, and energy efficient pool pumps and pool pump timers.

⁷ See Implementation Plan, pp. 24-26, for specific metrics.

6.0 Appendix A – Preliminary Clifton Park Customer Billing Analysis

Objective:

The objective of this evaluation is to investigate if customers in Clifton Park reduced their electric consumption after the smart meter installation by analyzing monthly billing data. It is expected to see a difference in electric consumption following the installation of smart meters (*i.e.*, 2016 vs. 2018).

Data Available:

1. Clifton Park monthly customer billing data: Five-year customer billing data was employed to create a reliable energy consumption trend for each customer.
2. Customer Smart Meter interval data.
3. Weather data from the Albany airport station

Methods:

1. Considering possible seasonal variation of customer behavior patterns, the whole analysis was separated into three categories: summer, winter, and shoulder months. Each category uses two typical months for analysis: July and August for summer, January and February for winter, and May and October for shoulder months.
2. For each category, by correlating the customer energy consumption with the cooling degree day (“CDD”) for summer or heating degree day (“HDD”) for winter (in case some customers may use electric heating), it was determined whether a customer is sensitive to temperature (*i.e.*, temperature driven). Here, $r = 0.2$ was set to be a threshold value for the decision.
3. For a temperature driven customer, the following model was established to investigate the relationship between electric consumption and CDD (summer) or HDD (winter).

$$\text{Consumption} = \text{Base} + \text{Slope} * \text{CDD (or HDD)} + \text{Remaining}$$

Excluding the common base across the different years and the temperature driven consumption from the total consumption, the term “Remaining” reflects the non-temperature driven portion. By comparing the “Remaining” portion from year to year, it can determine if a customer purposely used more/less energy.

For example:

If the Remaining Part of 2016-July > that of 2018-July, it is suggested that the customer “really” saved energy in 2018-July by changing their energy usage behavior.

4. For a non-temperature driven customer, the comparison was directly based on the total consumption.

Note: The billing cycles are different from year to year, so the analyses in both 3 and 4 were based on the average consumption and average CDD (or HDD).

5. Then, pair t-test was employed to examine the significance of the difference (saving) from 2016 to 2018.

Results:

If the energy consumption in 2018 was less than in 2016, either based on the “remaining” part for temperature driven customers or the total consumption for the non-temperature driven customers, the scenario is called “saving”. The comparison between 2016 and 2018 for different seasons are shown in the following table.

Season	Customers with savings	Customers with no savings	p-value (pair t-test)
Summer	7994	5124	2.2 e-16
Winter	7037	6081	0.668
Shoulder	7518	5600	2.2 e-16

The Clifton Park customers presented the most significant saving trend from 2016 to 2018 in the summer season, in terms of both the number of the customers with savings and the p-value. The saving in the shoulder months was a little less than in the summer, while the winter showed a non-significant change from 2016 to 2018. These preliminary results can be further analyzed to determine the extent of energy savings.

7.0 Appendix B – One Page Summary



Clifton Park REV Demo

7/5/19 (Q2 2019)

Overall Status (Active)

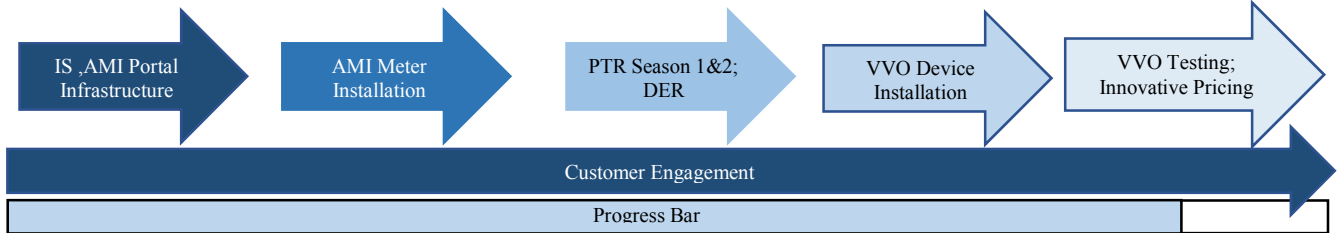
Project Start Date: 01/17/2017

Project End Date: 03/31/2020

Budget: \$22,702,410

Current Quarter Spend: \$443,444

Cumulative Spend: \$19,077,265



Project Summary: Address REV principles to reduce peak demand, increase DER adoption and give customers greater insight into their energy usage so they can make more informed energy decisions. Primary deliverables include: installation of approx. 13,300 AMI electric meters and 11,500 gas ERTs, energy management education and engagement; implementation of a Peak Time Rewards (PTR) program; improve system wide efficiency. Partners include Itron, Opower/Oracle, Utilidata; vendors include Wipro, Verizon, Navigant. An adjustment was made in Q1.19 to reduce total project budget by \$4,250,823 for use towards other REV Demo projects.

Cumulative Lessons Learned		
The Customer	Market Partner	Utility Operations
<ul style="list-style-type: none"> Customer participation has been moderate despite specific marketing campaigns and customer outreach meetings. Meter acceptance rate > 90% Portal usage is at 24% Points-and-rewards enrollment ~16% 	<ul style="list-style-type: none"> DER promotion dependent on available information to disseminate (e.g. NY Solar Marketplace launch). Partner system restrictions limit availability to deliver Peak Time Rewards. 	<ul style="list-style-type: none"> Meter deployment was challenged by temporary workforce hiring. VVO construction was challenged by reallocation of resources due to storm duty obligations.

Application of lessons learned: National Grid is aligning its AMI opportunities in Clifton Park with its broader AMI Business Case through its proposal to transition Clifton Park into an innovative pricing REV demonstration. Both regulators and the Company agree a rewards structure (e.g. PTR) will not be pursued full-scale. An innovative pricing demonstration will include omni channel marketing, multiple touch-point customer engagement, along with an enhanced customer portal to deliver the benefits of AMI technology to better manage energy usage and succeed on innovative pricing designs.

Issues Identified: Rewards-type structure is not sustainable and does not align with other regulatory initiatives.

Solutions Identified: The Company is moving away from rewards-type structure and transitioning to innovative pricing demonstration.

Recent Milestones/Targets Met: All VVO devices have been installed, commissioned, and are in test mode; PTR season 3 is underway.

Upcoming Milestones/Targets: Perform load archetype study for customer segmentation, continue PTR season 3, and develop transition plan to innovative pricing demonstration.