Karla M. Corpus
Senior Counsel
NY Regulatory

October 31, 2018

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: FRUIT BELT NEIGHBORHOOD SOLAR REV DEMONSTRATION PROJECT – Q3 2018 REPORT

Dear Secretary Burgess:

Niagara Mohawk Power Corporation d/b/a National Grid ("National Grid") hereby submits for filing its quarterly update to the Fruit Belt Neighborhood Solar REV Demonstration Project Implementation Plan covering the period of July 1, 2018 to September 30, 2018 ("Q3 2018 Report") as required by the REV Demonstration Project Assessment Report filed by the New York State Department of Public Service Staff ("Staff") with the Commission on December 2, 2015 in Case 14-M-0101.

Please direct any questions regarding this filing to:

Anntonette Alberti
Manager, Complex Demo
National Grid
1125 Broadway
Albany, NY 12204
Tel.: 518-433-5213
Mobile: 518-369-2100
Email: anntonette.alberti@nationalgrid.com

National Grid looks forward to continuing to work collaboratively with Staff as it proceeds with the implementation of the Fruit Belt Neighborhood Solar REV Demonstration Project.

Respectfully submitted,

/s/ Kara M. Corpus

Karla M. Corpus
Senior Counsel

Enc.

cc: Tammy Mitchell, DPS Staff, w/enclosure (via electronic mail)
Marco Padula, DPS Staff, w/enclosure (via electronic mail)
Denise Gerbsch, DPS Staff, w/enclosure (via electronic mail)
Michael Summa, DPS Staff, w/enclosure (via electronic mail)
Melanie Littlejohn, w/enclosure (via electronic mail)
Cathy Hughto-Delzer, w/enclosure (via electronic mail)
Anntonette Alberti, w/enclosure (via electronic mail)
Carlos Nouel, w/enclosure (via electronic mail)
Fouad Dagher, w/enclosure (via electronic mail)
Jonathan Nickerson, w/enclosure (via electronic mail)
Pamela I. Echenique, w/enclosure (via electronic mail)
Carol Teixeira, w/enclosure (via electronic mail)
Jason Eno, w/enclosure (via electronic mail)
Janet Audunson, w/enclosure (via electronic mail)

Fruit Belt Neighborhood Solar
REV Demonstration

Q3 2018 Report

October 31, 2018

nationalgrid

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1.0 Executive Summary

The Niagara Mohawk Power Corporation d/b/a National Grid ("National Grid") Fruit Belt Neighborhood Solar REV Demonstration Project ("Demonstration Project" or "Project"), through the partnership with Buffalo Niagara Medical Campus ("BNMC"), Solar Liberty, and the New York State Energy Research and Development Authority ("NYSERDA"), provides solar-generated energy and financial benefits to low-to-moderate income ("LMI") customers.

The LMI customer segments have a very low penetration of solar photovoltaic ("PV") systems due to various economic barriers. National Grid is promoting utility-owned "in front of the meter" solar PV equipment mounted on residential roofs and roofs of faith-based and community non-profit buildings located within the Project area, and is passing on the economic benefits directly to solar PV host customers through a monthly electric bill credit for the lifespan of the solar PV system. Additionally, fifty (59) non-hosting LMI residential customers selected through a lottery system are also receiving a bill credit for two (2) years.

The Project consists of installing residential solar PV systems ranging in size from 3.1kW to 18.5kW, and non-profit organization solar PV systems ranging in size from 15.9 to 28.0 kW per system, totaling 500 kW (or 0.5 MW) of solar PV generation capacity within a single LMI neighborhood. This approach provides a real life scenario for exploring the technical aspects of enhancing grid efficiency. The Project also explores the social aspects of building positive relationships within the Fruit Belt community resulting from the effort to increase energy awareness and Project participation.

This Demonstration Project is testing the following hypotheses:

- Leveraging a utility ownership model to bring solar PV to an underserved LMI segment will expand and animate the market for third-party solar installers;
- Providing solar bill credits to participants in a LMI neighborhood, as well as partnering with NYSERDA to deliver energy efficiency ("EE") programs to further drive energy bill savings, will have a positive impact on bill payment behavior and enable customers to better manage their arrears; and
- Concentrating distributed solar PV resources with reactive power support within an area served by a common substation (versus scattered deployment of conventional solar PV) will deliver measurable grid efficiency benefits.

The Project also aims to develop an understanding of the drivers for cost efficiency and scalability for a utility-owned model, the corresponding economic and job creation impact, and the overall LMI customer perception of renewables, energy efficiency, and the customer-utility relationship. The

Project has demonstrated an important environmental justice objective, making renewable energy accessible to a LMI community.

Progress to Date and Planned Q4 2018 Goals

Solar Installations:

Activities this quarter consisted of continued interfacing with faith-based non-profit organization engagement. One (1) faith-based non-profit building's solar PV system was installed, inspected by City of Buffalo, connected to the electric grid, and commissioned. As of the end of Q3 2018, sixty-nine (69) residential solar PV systems have been installed and are connected and commissioned. Additionally, solar PV systems on the buildings of two (3) faith-based non-profit organizations and two (2) non-faith-based non-profit organizations have also been installed, inspected by the City of Buffalo, connected, and commissioned.

The solar output metering at a non-profit organization was reporting solar generation during night time hours. The solar array connected to a 3-phase electric system. Research with the generation meter manufacturer revealed an issue with connecting to 3-phase systems, and an approach was designed to mitigate this problem. As of the end of Q3 2018, specialty equipment was ordered but had not been received.

Customer Engagement:

National Grid continued engaging the Fruit Belt community on various aspects of this Project, including EE opportunities and bill credits. Customer stewardship efforts continued, by responding to inquiries posed by solar PV hosts. In particular, customer engagement activities included communication with faith-based organization board members regarding the final solar installation project.

Customer engagement activities included communicating with faith-based organization board members regarding their continued involvement with this Project. Communications involved presenting project details to the faith-based non-profit organization's board and maintaining frequent communications with Board leadership. National Grid also responded to a solar host's inquiry regarding the bill credit. A National Grid representative met with the resident and together they reviewed a copy of the resident's electric bill and addressed the resident's question.

Bill Credit Lottery:

Previously-selected bill credit lottery recipients continued to receive the monthly electric bill credit during this quarter. As described in detail in the Q4 2017 quarterly report, the bill credit lottery was divided into two (2) events. The first was held in Q4 2017 based on the installed kW as of 12/31/17. That group started receiving the bill credit on their January 2018 electric bill. The second bill credit lottery event was to be held following commissioning of all remaining solar PV systems installed under this Project, and was expected to be accomplished in Q2 2018. As discussed in greater detail below, roof replacement on the last building solar host roof was delayed until Q3 2018. Based on the fact that 485kW out of 500 kW being commissioned at the end of Q2, a decision was made to conduct the second bill credit pool lottery. National Grid commenced issuing bill credits to the second group of bill credit lottery pool recipients starting with the July 2018 bill.

Arrearage Analysis:

Monitoring of the previously-developed arrearage customer database continued to determine the bill credit effect on the customers' choice to pay down their arrearage.

Grid Impact Analysis by GE:

General Electric Global Research ("GE") continued evaluating solar PV installation impacts on feeder performance, comparing results of the baseline performance with the performance after solar PV generation began. They studied different use cases requested by National Grid including PV pf settings of 0.97; 0.94 and 0.85; and also started the economic impact analysis of the PV installation on feeders 3466.

Energy Efficiency Implementation by NYSERDA:

NYSERDA continued their customer outreach and engagement for provision of EE services in the Project area. They completed EE upgrades at five (5) residences, and they are processing applications from another seven (7) customers. Of the 52 completed energy efficiency projects, 18 projects received electric reduction services while 34 received comprehensive energy efficiency improvements, at an average cost of $2,300 per project. NYSERDA reported that, on average, households receiving energy efficiency services to date are estimated to save 29.6 decatherms (Dth) of gas and 430kWh of electricity annually.

Program Scale-Up:

National Grid continued developing a plan for a new program consisting of a scale-up of LMI solar deployment based upon the lessons learned on this project. As previously described in the Q2 2018 quarterly report, the proposed program would be made available to National Grid LMI customer home owners located in the Company's upstate New York electric service territory. The offering would continue to use a utility-owned solar system framework, and the expanded program would be offered over a limited time frame. A group of turnkey solar installation contractors would be competitively procured to implement the program. A third-party contractor selected and hired in Q2 2018 to conduct a benefit-cost analysis ("BCA") continued its analysis of a scaled-up program. The contractor's analysis was scheduled to be completed in Q3 2018. However, due to additional analytical activities, it will be completed in Q4 2018. National Grid continued with the financial modeling and analysis process.

Planned Q4 2018 Goals:

In Q4 2018 GE will continue its grid impact analysis, and National Grid will continue studying the effect of bill credits on arrearages. NYSERDA will continue executing its EE program offerings for Fruit Belt customers. Additionally, National Grid will compile a list of overall key project learnings, and stating how those key lessons learned will shape our plans to scale up an LMI solar offering.

Figure 1-1: Location of the Fruit Belt Neighborhood (dashed perimeter), located adjacent to the Buffalo Niagara Medical Campus

2.0 Highlights Since Previous Quarter

2.1 Major Tasks Completed

- Regulatory Filings:

  The Q2 2018 Quarterly Report was prepared and filed with the New York State Public Service Commission on July 31, 2018.

- Community Engagement:

  - Customer stewardship efforts continued, by responding to inquiries that residential solar PV hosts posed. For example, National Grid responded to a solar host's inquiry regarding the bill credit; the National Grid Project manager met with the resident and together they reviewed a copy of the resident's electric bill.

  - Engagement continued with one (1) faith-based nonprofit organization to ensure its continued participation in the Project. Communications involved presenting Project details to the faith-based non-profit organization's board, as well as numerous telephone calls.

  - National Grid staffed a table at the Fruit Belt Coalition's 2018 Health Fair, held September 29, 2018. At that event, customers were enrolled in NYSERDA's residential EE program, and attendees were offered information on the Project.

  - National Grid prepared and sent letters to bill credit recipients notifying them of the bill credit and providing details about the credits. In anticipation of possible calls to the Company's Upstate New York Call Center staff, National Grid also prepared and provided text responses to FAQs, and provided this information to Call Center staff.

  - Commenced issuing bill credits to the second group of bill credit lottery pool recipients. Crediting started with the July 2018 bill and will extend for twenty-four (24) months.

- Internal Engagement:

    - National Grid's Account Maintenance and Operation team continued to issue bill credit riders on customer accounts upon solar PV system commissioning, and to issue the bill credit rider to accounts selected through the second part of the bill credit lottery.

    - National Grid's Data Analytics Department was engaged to identify the potential market size as part of Company's evaluation of this Project as a model for a larger scale solar initiative.

    - Arrearage analysis continued. One of the challenges discovered in the arrearage analysis process is that the transient nature of some customers leads to short billing histories that prevent meaningful assessment of any bill impacts from receipt of the solar credit. This situation is more prevalent with the bill credit lottery recipients who are tenants; lottery recipients who are home owners show no transience.

- Data Evaluation, Measurement & Verification ("EM&V"):

    - Enphase, Inc. continued to send generation data twice monthly; each deliverable containing either the first fifteen (15) days or second fifteen/sixteen (15/16) days of the previous month's generation data. National Grid's New York Electric Pricing Group calculated and published the bill credit amount each month of the quarter.

    - The quarterly analysis of the bill credit administration system was completed. The automated bill credit system was determined to be delivering the correct credit amount to the bill credit recipients, which during this quarter consisted only of solar PV hosts. Sixty-nine (69) residents and three (3) faith-based non-profit organization buildings were receiving bill credits by the end of Q3 2018. In addition, two (2) non-profit organization buildings were also generating credits, but due to their service class, the organizations do not receive a bill credit. Although not receiving bill credits, non-profit organization leadership of these two buildings chose to participate as a method of contributing to the sense of community within the neighborhood.

    - A technical issue was identified and is being addressed. The solar output metering at a non-profit organization was reporting solar generation during night time hours. This solar array is connected to a 3-phase electric system. Inquiries with the generation meter manufacturer revealed there is an issue with connecting to 3-phase systems. The manufacturer designed a mitigation approach involving replacing the existing meter with one developed specifically for 3-phase power connection. As of the end of Q3 2018, this specialty equipment was ordered but had not been received.

- Benefit Cost and Financial Analyses

  A contractor was hired to conduct a benefit cost analysis ("BCA") of this Project, as a tool for developing a larger solar rooftop initiative. By incorporating certain Project aspects that have positively contributed to its success and omitting those aspects that resulted in negative impacts, an overall structure for an upstate New York rooftop solar project is being developed. In addition to the BCA analysis, National Grid is also conducting a financial analysis that explores the financial impact on stakeholders. Both of these analyses are underway.

- Partner Participation:

  - Solar Liberty:
    - Installed one (1) faith-based non-profit organization's solar PV system array; conducted the electrical connection, coordinated the City of Buffalo's electrical inspection, and commissioned the system.
    - One (1) roof replacement was conducted this quarter. As of the end of Q3 2018, in total, thirty-two (32) residential and three (3) faith-based organization buildings have replaced their roofs
    - The generation data reporting system was discovered to be under-reporting. The system was corrected, and historic generation data presented in Table 5-1 has been updated.

  - NYSERDA:
    - Pursuant to the partnership Agreement between NYSERDA and National Grid, NYSERDA continued delivering no-cost energy efficiency improvements to residents of the Fruit Belt neighborhood.
    - To date, two hundred seventy-four (274) residents expressed interest in receiving a home energy assessment, in-home energy education, air sealing, insulation, low-flow devices, high efficiency lighting, and replacement of inefficient refrigerators and freezers. Table 2-1 provides solar PV system host and non-host EE Project participant data.
    - Of the fifty-two (52) completed energy efficiency projects, eighteen (18) projects received electric reduction services while thirty-four (34) received comprehensive energy efficiency improvements, at an average cost of $2,300 per project.
    - NYSERDA reported that, on average, households receiving energy efficiency services to date are estimated to save 29.6 decatherms (Dth) of gas and 430kWh of electricity annually.
    - NYSERDA will continue to focus attention on prompting the remaining solar hosts and bill credit lottery recipients to undertake energy efficiency improvements, with one (1) additional round of outreach to be conducted before the end of 2018.

Table 2-1: Metrics for Energy Efficiency Component by Participant Type - as of 9/30/18

Status	Solar Hosts	Bill Credit Lottery Recipients	Non-Hosts	Total
Customers contacted [a]	26	59	189	274
Customers who responded [b]	13	12	56	81
Enrollments (projects currently in process) [c]	1	1	3	5
Projects completed [d]	10	8	34	52

a. *Customers contacted:* Unduplicated number of customers responding to National Grid outreach efforts indicating that they are interested in energy efficiency services as of 9/30/18.
b. *Customers who responded*: Quantity of customers that have returned an application for energy efficiency services to NYSERDA as of 9/30/18.
c. *Enrollments:* Quantity of energy efficiency projects in process as of 9/30/18.
d. *Projects completed:* Quantity of energy efficiency projects that have been completed as of 9/30/18.

- GE:
  - GE is conducting the grid efficiency analysis. The installation delay for the last solar PV array extended their analysis process. Analysis is expected to be completed in mid-December 2018.
  - Validated the baseline results with National Grid using new data collection at Station 34 for the period of June-August 2018.
  - Studied different use cases requested by National Grid including solar PV power factor (pf) settings of 0.97; 0.94 and 0.85.
  - Started the economic impact analysis of the solar PV installation on feeders 3466.

- BNMC:
  - BNMC did not conduct activities in support of the Project during this quarter.

- Community Participation:
  - Residential Participation: As of the end of the Q3 2018, one hundred and seventy-six (176) owners had proposed their houses become solar PV system host houses. This total is comprised of the following quantities:
    - Sixty-nine (69) of those houses became solar PV hosts.
    - Sixty-seven (67) houses have been disqualified due to roof orientation, roof pitch, excessive shading, viable roof hosting size, and/or a location outside of the Project area.
    - Twenty (20) homeowners opted out of the Project for personal reasons.
    - Twenty (20) houses need their roof replaced as a first step to becoming eligible to host a solar PV system. However, the owners have not chosen to replace their roof and become a solar PV system host.
  - Faith-Based Non-Profit Organization Participation: As of the end of Q3 2018, three (3) faith-based non-profit organizations had become a solar host.

- Non-Faith-Based Non-Profit Organization Participation: As of the end of Q3 2018, one (1) non-faith-based non-profit organization that operates two (2) buildings within the Fruit Belt Project area had become hosts.

2.2 Key Metrics

Table 5-1 presents the Key Metric Reporting Matrix. Q3 2018 activities consisted primarily of construction, electrical connection, city inspection, and continued customer engagement.

2.3 Challenges, Changes, and Lessons Learned This Quarter

Challenge or Change	What was the Resulting Change to Scope/Timeline?	Strategies to Resolve	Lessons Learned
A faith-based organization's board requested the electrical connection process be placed on hold while they determined whether or not they wanted to continue participating in the Project.	The board's decision-making process delayed connection by approximately 1.5 months.	National Grid met with the organization's Board; explained the Project in detail, including the benefits to the community as a result of the organization's Project participation.	When dealing with a customer that is governed by a board, obtain in writing the name of the point of contact and official process for decision making earlier in the Project.
Some solar equipment is so new to the market that it has not been fully vetted in all conditions.	One solar PV system is improperly reporting the total amount of power generated.	Hold detailed discussions between the solar meter manufacturer and the solar installer to fully explore the issue and the possible equipment strategies to mitigate the issue.	Provide to the solar equipment manufacturer a list of the field conditions in which their equipment is expected to be installed and request the manufacturer provide written verification that their equipment will perform per their product description, prior to installation.

3.0 Next Quarter Forecast

Annotated below is the status of the open checkpoints and milestones stated in the January 4, 2016 Implementation Plan, with dates as of this Q3 2018 Report.

As previously noted in the Q1 2017 Report, as the Customer/Stakeholder Outreach Phase 1 (Awareness) and Phase 2 (Enrollment) efforts were undertaken during Q2 2016 and Q3 2016, it became evident that these phases are actually occurring simultaneously, with enrollment occurring as an output of these efforts. Also note that the Phase 3 (Installation) Outreach efforts commenced upon the customer's initial expression of interest and continued throughout the analysis, permitting, and installation processes. This differs from the Implementation Plan, which indicates all customers would first be identified, with installation to immediately follow thereafter.

As noted in previous quarterly reports, the overall Project schedule has extended due to the following) primary factors: customer delays in decision making, combined with participation withdrawal, along with adverse winter weather conditions. These factors created a prolonged solar PV installation period. Additionally, NYSERDA required greater than expected time to complete its EE installation work. Finally, this quarter, poor customer roofing contractor scheduling practices delayed installation of the Project's last solar PV system by at least one (1) month.

Table 3.1 Checkpoints/Milestone Progress

	Checkpoint/Milestone	Anticipated Start/End Date Stated in Q1 2018 Report	Revised Start-End Date as of the end of Q2 2018	Status
1	Finalize contracts with Partners	Completed	*Completed*	
2	Customer/Stakeholder Outreach: Phase 1: Community Meetings	Completed	*Completed*	
3	Customer/Stakeholder Outreach: Phase 2: Enrollment	Completed	*Completed*	
4	Customer/Stakeholder Outreach: Phase 3: Installation	10/16-7/18	*Completed*	
5	Solar PV Assessments	Completed	*Completed*	
6	Site Selection and Design	Completed	*Completed*	
7	Meter Installation	07/16-07/18	*Completed*	
8	Permitting	Completed	*Completed*	
9	Solar PV Installation	06/16-07/18	*Completed*	
10	Interconnection	07/16-07/18	*Completed*	

11	Bill Credits Administrated	08/16 - ongoing	*Ongoing*	
12	Solar Workforce Hiring	Completed	*Completed*	
13	GE Grid Efficiency Analysis	10/16 – Q1 2019	*Ongoing*	
14	Internal Systems Capability	Completed	*Completed*	

KEY

On Track

Delayed start, at risk of on-time completion, or over-budget

Terminated/abandoned Checkpoint/Milestone

1. Partner Contracts Executed.

Status: [Completed]
There were no activities conducted under this previously-completed task.

2. Customer/Stakeholder Outreach: Phase 1: Community Meetings.

Status: [Completed]
There were no activities conducted under this previously-completed task.

3. Customer/Stakeholder Outreach: Phase 2: Enrollment.

Status: [Completed]
There were no activities conducted under this previously-completed task.

4. Customer/Stakeholder Outreach: Phase 3: Installation.

Status: [Completed]
Customer engagement activities continue throughout the solar PV host approval process for the homeowners who signed up to participate in the Project.

Targets/Actuals in Q3 2018:

- Target: Continue to maintain positive engagement throughout the scheduling, installation, and implementation process with final customer who is hosting a solar PV system.
  - Actual: The target for Q3 2018 was met.

5. Solar Assessments.

Status: [Completed]
There were no activities conducted under this previously-completed task.

6. Site Selection and Design.

Status: [Completed]
There were no activities under this previously-completed task.

7. Meter Installation.

Status: [Completed]
As part of each house or building solar PV installation, an electronic metering system is commissioned. This system reports electrical generation date per solar PV panel. Data collected is aggregated by the contracted system operator and sent to National Grid.

Targets/Actuals in Q3 2018:

- Target: The last solar PV system installed under this Project will be connected within five (5) business days following the City of Buffalo's post-construction review of the installed solar PV system.
    - Actual: Meter installation was conducted at one (1) faith-based solar PV system; it was not completed within five (5) days of receiving the City of Buffalo's post-construction review certificate due to the customer's internal decision making schedule.

8. Permitting.

Status: [Completed]
The permit for the faith-based non-profit was renewed, as it had expired since it was originally obtained in 2017.

9. Solar Installation.

Status: [Completed]
Solar PV system Installation continued, and this task was completed.

Targets/Actuals in Q3 2018:

- Install, connect, get inspected, and commission one (1) faith-based non-profit organization building solar PV system.
    - Actual: one (1) faith-based non-profit organization building solar PV system was installed, connected, inspected, and commissioned.

10. Interconnection.

Status: [Completed]
National Grid's Interconnection team is responsible for processing permits for making the electrical connection from the solar PV system to the electric grid.

Targets/Actuals in Q3 2018:

- Complete the remaining solar PV system interconnection within five (5) business days of the City's inspection of the solar PV system installation.

- Actual: System connection to the electric grid at houses equipped with overhead electric feeds was completed within twenty (60) days of installation due to the customer's internal decision-making process.

11. Bill Credits Administered.

Status: 🟢 **[Ongoing]**
The billing system to calculate and distribute the bill credits was created in Q1 2016. The system has been used each month since its first implementation in Q2 2016.

Targets/Actuals in Q3 2018:

- Target: Continue to distribute all bill credits for the previous month's solar PV credit using the designed bill credit system.
  - Actual: Monthly bill credits are being generated and issued for each of the solar PV systems installed and commissioned to date.

Targets in Q4 2018:

- Target: Continue to distribute all bill credits for the previous month's solar PV credit using the designed bill credit system.

12. Workforce Development (Recruitment of Local Solar PV Employees).

Status: 🟢 **[Completed]**
There were no activities conducted under this previously-completed task.

13. GE Commissioning and Grid Monitoring.

Status: 🟢 **[Ongoing]**
GE grid efficiency analysis consists of feeder modeling and simulation, controls integration, and grid testing.

Targets/Actuals in Q3 2018:

- Target: Collect one (1) year of load data starting from July 2017 to include solar PV participants that have been online for at least one (1) year.
  - Actual: Collected Station 34 baseline results for the period of June-August 2018, as this data has a consistent amount of PV generation equipment contributing to the total generation.
- Target: Conduct the one (1) year scenario (July 2017 to July 2018) to validate the simulation platform (load and solar PV profiles) with National Grid load measurements.
  - Actual: Conducted analysis of Station 34 baseline data for the period of June-August 2018, as this data has a consistent amount of PV generation equipment contributing to the total generation.
- Target: Prepare to submit final report in Q4 2018.
  - Actual: Continued to make preparations to submit the final report in A4 2018.
  - Studied different use cases requested by National Grid including PV pf settings of 0.97; 0.94 and 0.85
  - Started the economic impact analysis of the PV installation on feeders 3466.

Targets in Q4 2018:

- Target: Complete the economic impact analysis of the PV installation on the Fruit Belt feeders
- Target: Prepare and submit the final report of the performance validation

14. Internal Systems Capability.

Status: 🟢 **[Ongoing]**
The toll-free number continued to operate in Q2 2018.

Targets/Actuals in Q3 2018:

- Target: Discontinue operation of the toll-free number.
    - Actual: National Grid decided to continue operating the toll-free number for Q3 2018 because the last PV system had not been installed, as the Company's commitment was to operate the number throughout the construction process. That process was completed on 9/28/18.

Target in Q4 2018:

- Target: Discontinue operation of the toll-free number.

4.0 Work Plan & Budget Review

4.1 Updated Work Plan

As stated in the Q1 2018 report, the Project schedule was anticipated to extend to the end of Q1 2019. However, it has now been determined that the Project will conclude at the end of Q4 2018. An updated Project completion schedule is forth in Table 4-1, below:

Schedule Milestone*	Implementation Plan Date	Actual/ Projected Date	Reasons for Extension
Project Start Date:	Nov-15	Jan-16	DPS final approval received two (2) months from initial approval required to complete the project.
Host Sites Selection Completed:	Aug-16	Dec-17	Customer enrollment strategy was revamped after initial enrollment efforts were deemed ineffective.
500 kW of solar PV Installed:	Nov-17	Sept-18	Adverse weather conditions, customer delays, customers' roofing contractor delays, and customer decision making process delays.
Total Project Completion:	Aug-17	Dec-18	Time required for completion of Energy Efficiency projects and grid impact analysis.

Table 4-1: Project Milestone Planned and Extended Dates

*As noted in the Q4 2017 report, six (6) tasks (Customer/Stakeholder Outreach – Community Meetings, Installation, Permitting, Meter Installation, Solar PV Installation, and Interconnection) were extended due to the late Q4 2017 addition of new participants, and due to weather conditions adverse to solar PV system construction. See Appendix A, Table A-1.

4.2 Updated Budget

There were no new items identified this quarter that may adversely impact the Project budget. However, a review of capital costs conducted previously identified assessing an internal lending fee that was not necessary. This fee was removed in the Q3 2018 report, resulting in a decreased total Opex cost. The Project budget and spending data are presented below in Table 4-2.

Project Task	Quarterly Actual Spend	Project Total Spend to Date	Project Incremental Cost Budget[1]	Incremental Cost to Date	Total Remaining Incremental Budget Balance
CapEx					
	$77,960	$1,856,479	$2,468,868		
Grants Credited Against Incremental Capital Costs					
n/a	n/a	n/a	n/a	n/a	($) n/a
OpEx					
Project Administration and Planning	$214	$929,464	$30,000		
Marketing and Workforce Development	$0	$156,590	$250,000		
Incentives	$0	$14,245	$0		
Implementation	$2,733	$132,793	$718,332		
Evaluation and Analysis	$31,224	$215,402	$325,000		
Total:	**$34,171**	**$1,598,494**	**$1,323,332**		
Grand Total:	**$112,131**	**$3,454,973**	**3,792,200**	**$3,100,595**	**$691,605**

Table 4-2: Quarterly Project Cost Data

Note: Project *costs* reported in Table 4-2 consist of the total of the incremental and the non-incremental costs incurred. However, the Project *budget* values listed consist only of incremental costs. The Project's total incremental cost as of September 30, 2018 was $3,100,595, leaving a remaining incremental budget of $691,605. Only the incremental costs are assessed to the Project budget.

[1] An internal review of the Project budget revealed certain costs (*e.g.,* installation costs) were incorrectly categorized as operational costs (Opex), when in fact they are capital costs (Capex). The budget was revised starting in the Q4 2017 quarterly report to reflect this re-categorization, and to include incremental costs. However, the total Project budget has not changed.

5.0 Progress Metrics

Table 5-1 presents key Project metric tracking data available as of the end of Q3 2018. As discussed in Section 2.1, a generation data reporting system error was identified during this quarter. The error was eliminated, and historical generation data was re-calculated based on the remedied system. Corrected historical data are presented in Table 5-1.

Time Frame		Outreach	Residential Customer Tier						Solar Installation Progress (Houses and Non-profit Buildings)					Generation and Credits (Residential and Non-profit Organization Buildings)			
Project Quarter	Calender Year	Residential Expressions of Interest (Calls Received, Canvass Response)	Tier 1 Eligibility	Tier 1 Enrollment	Tier 2 Eligibility	Tier 2 Enrollment	Tier 3 Eligibility	Tier 3 Enrollment	Roof Assessments Completed	Structural Assessments Completed	Electrical Assessments Completed	Rootop Systems Installed	Roortop Systems Connected	kW online	kWh generated	Quarterly Bill Credit Distributed [$]	Residential Bill Credit Recipient Qty
1	Q1 2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$0.00	0
2	Q2 2016	34	5	1	0	0	14	0	14	10	14	1	0	0	0	$0.00	0
3	Q3 2016	28	10	1	0	0	16	0	26*	9	5	1	2	12.22	2,408	$33.96	2
4	Q4 2016	78	16	2	0	0	34	0	54	21	24	2	2	10.92	2,631	$116.99	2
5	Q1 2017	14	40	2	0	0	14	0	13	19	16	3	2	12.74	5,670	$268.10	2
6	Q2 2017	12	8	2	0	0	13	0	9	13	13	31	2	13.00	14,112	$361.36	2
7	Q3 2017	8	-1	2	0	0	6	0	19	18	18	15	28	194.219	52,581	$615.00	28
8	Q4 2017	2	-8	0	34	8	10	30	3	9	9	15	20	85.132	31,335	$2,610.00	28
9	Q1 2018	0	-1	4	0	0	82	7	0	0	0	4	7	85.79	56,276	$4,170.00	5
10	Q2 2018	0	0	0	25	0	0	0	0	0	0	1	10	70.885	138,544	$4,560.00	10
11	Q3 2018	0	0	-3	0	1	0	0	0	0	0	1	1	15.95	150,517	$5,790.00	1
12	Q4 2018																
	Totals:	176	69	11	59	9	189	37	112	99	99	74	74	500.856	454,074	$18,525.41	80

* = Five added after changing minimum roof system size from 4.0 kW to 3.0 kW.

Notes:

1 Although Tier 1 and Tier 2 customers are eligible for the energy efficiency offerings, the customers may not necessarily enroll to receive these offerings.

2 The quarterly bill credit distributed is a function of an algorithm that accounts for participant quantity and the seasonal fluctuation in kWh generated.

3 Not all enrolled customers choose to fully participate in the EE program.

Table 5-1

nationalgrid

Appendix

Appendix A: Updated Gantt Chart (as of the end of Q3 2018)

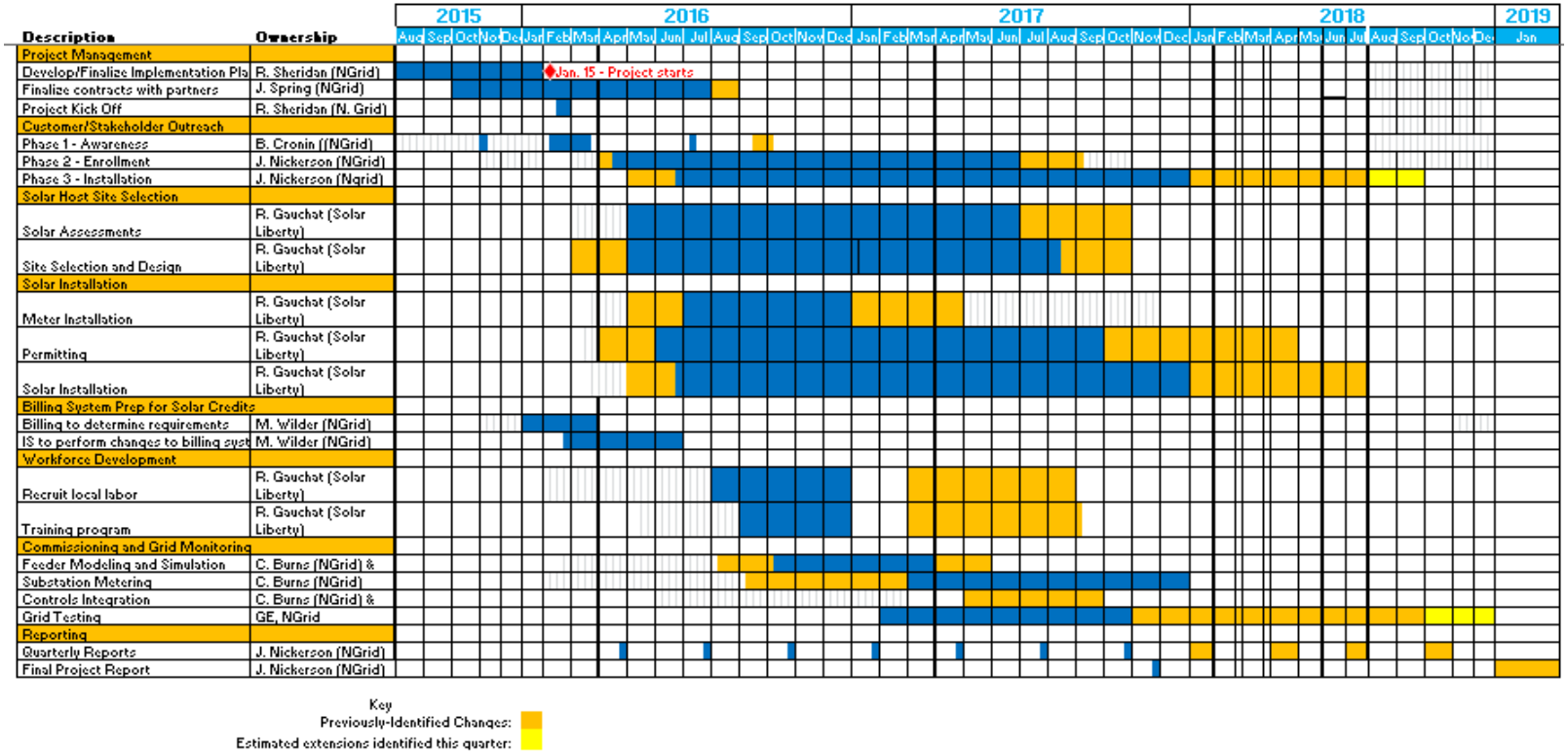

Table A-1 – Updated Gantt Chart