

October 31, 2017

VIA ELECTRONIC DELIVERY

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

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

**NIAGARA MOHAWK POWER CORPORATION d/b/a
NATIONAL GRID: FRUIT BELT NEIGHBORHOOD SOLAR REV
DEMONSTRATION PROJECT – Q3 2017 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, 2017 to September 30, 2017 (“Q3 2017 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:

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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.

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**Fruit Belt Neighborhood Solar
REV Demonstration**

Q3 2017 Report

October 31, 2017

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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 while delivering grid efficiencies to the local electric distribution system.

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 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, up to fifty (50) non-hosting residential customers will be selected through a lottery system to receive a bill credit for two (2) years.

The Project consists of installing residential solar PV systems, ranging in size from three (3) kW to twenty-five (25) kW per system, totaling 500 kW or 0.5 MW of solar PV generation capacity equipped with microinverters within a single 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 utility ownership model to bring solar PV to 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.

Progress to Date and Planned Q4 2017 Goals

Progress continued on this Demonstration Project during Q3 2017 in the areas of customer/non-profit organization engagement; conducting structural, electrical, and roofing reviews and permitting, solar PV system installation, and system interconnection to the grid. As of the end of Q3 2017:

- Thirty-six (36) residential solar PV systems have been installed and connected;
- Four (4) more are connected to the grid and are awaiting City of Buffalo approval before commissioning;
- Seven (7) additional residential and one (1) non-profit entity solar PV system are under construction; and
- The first solar PV installation at one (1) of the neighborhood faith-based organization buildings was connected to the grid.

Customer engagement activities consisted primarily of in-person meetings with faith-based organization officials and interfacing with those residential customers who are homeowners in the home where the roof must be replaced to enable the house to be deemed solar ready.

General Electric Global Research (“GE”), the consultant contracted to evaluate grid effects resulting from the solar PV installations, updated their draft baseline power use model and is writing a draft report for Q4 2017.



The agreement between NYSERDA and National Grid for the provision of EE services in the Project area was further revised, finalized, and signed by both parties. NYSERDA will mobilize their EE services in Q4, 2017.

Of particular significance in this quarter was the positive community outreach and press coverage of the Project as follows:

- On July 17th, a celebration event was held to mark reaching the goal of obtaining 500 kW of commitment from homeowners, community non-profit organizations, and faith-based organizations. In addition to National Grid and Project partners speaking at this event, local political leaders also spoke, yielding positive press coverage of the Project.
- On August 2, at the invitation of the Fruit Belt Coalition, National Grid hosted a table at the neighborhood’s Night Out event. This provided positive exposure for the Project to local citizens, as well as to the Mayor of the City of Buffalo.
- Lastly, an article about the Project was featured in an on-line industry blog, *Utility Dive*, on September 26. (available at: <http://www.utilitydive.com/news/helping-the-sun-shine-everywhere/505745/>)

As more fully set forth below, several major efforts are planned for Q4 2017. Continued engagement with owners of faith-based organization and community nonprofit-owned buildings will

be undertaken to keep the organization building managers informed through the solar PV installation and connection process. Additionally, engagement efforts to reach those previously committing to complete their roof replacement, but have not yet done so, will be undertaken. The solar PV system installation goal is to have all 500 kW of generating capacity planned for the Project to be installed and connected by the end of Q4 2017. Pending timely building permit issuance and minimal weather constraints, and in anticipation of roof replacement work being completed by the end of October or early November 2017, this goal will be attainable. The grid efficiency effects evaluation by GE will continue. Bill pool lottery participants will continue to be identified, the bill pool lottery will be held, and the recipients will be notified of their selection. Furthermore, the arrearage effect analysis is scheduled to commence. NYSERDA will be executing its EE program offerings for Fruit Belt customers who have enrolled in their EE program.

Fruit Belt Neighborhood

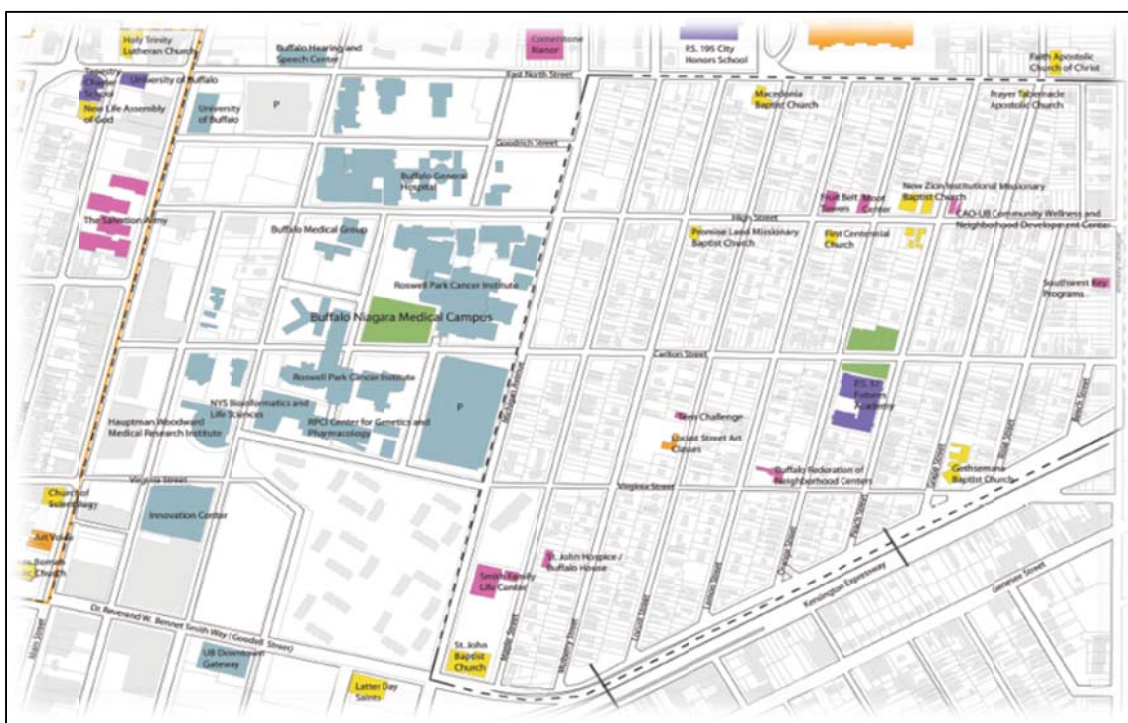


Figure 1-1: Location of the Fruit Belt Neighborhood (dashed perimeter), located adjacent to the Buffalo Niagara Medical Campus

2.0 Highlights Since Previous Quarter

2.1 Major Tasks Completed

- Regulatory Filings:
 - The Q2 2017 Quarterly Report was prepared and filed with the New York State Public Service Commission on July 31, 2017.
- Community Engagement:
 - Customer stewardship efforts continued, consisting of enrolling customers who had previously expressed interest in the Project, establishing appointments, and obtaining customer authorization signatures. A total of twenty-six (26) customer outreach contacts were made; several of which were to the same customers who made an appointment for a structural inspection but failed to be home at the agreed-upon scheduled time.
 - The Project outreach team continued to visit owners of houses that were determined eligible to host solar PV arrays once their roofs are replaced or repaired. They offered owners the option of using unused solar-readiness funds toward their roof replacement, provided they indeed enroll to become a solar PV host. A total of eleven (11) owners of homes needing roof replacement or repair were visited.
 - National Grid and Solar Liberty held second meetings with one (1) faith-based nonprofit organization owner to conduct a post-installation review of the building's roof replacement and obtain additional structural information. This organization became the third faith-based organization to enroll in the Project, bringing the total quantity of non-residential buildings enrolled in the Project to five (5).
 - Upon obtaining the Project's target of 500 kW of solar PV installation commitment from Project participants, a celebration was held on July 17, 2017, at an open lot located across from the Moot Community Center and adjacent to the First Centennial Missionary Baptist Church, at the corner of High and Orange Streets. In addition to National Grid and Project partners speaking at this event, local political leaders also spoke, yielding positive press coverage of the Project.
 - For several years, the FruitBelt Coalition¹ has been one of thousands of communities across the country holding a celebration on National Night Out. This year, at the FruitBelt Coalition's invitation, National Grid hosted a table at the August 2 National Night Out event. More than two hundred (200) residents attended the event, with sixty-two (62) stopping by National Grid's table to learn

¹The FruitBelt Coalition is a non-profit organization developed out of a need to protect and improve the quality of life within the historical Fruit Belt neighborhood and Medical Corridor.

about the Project. Eleven (11) attendees completed the form to enroll in the NYSERDA EE program offered to homeowners and tenants, alike.

- The publishers of an on-line industry blog, *Utility Dive*, contacted National Grid to request an interview for an article about the Project. The interview was granted, and the article was published on September 26, 2017. A copy of the article is included in Appendix C to this report.
- Seventhwave, a non-profit organization advancing economic and environmental sustainability, contacted National Grid to obtain a profile of the Project for use in their analysis on renewable energy availability to LMI communities. Information provided will be cited in their publication due out in 2018.
- Internal Engagement:
 - In support of the grid efficiency monitoring and evaluation, meters on Substation 34 feeders 3463, 3466, and 3467 were installed.
- 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. Bill credit recipients, by the end of the quarter, totaled thirty-six (36).
- Partner Participation:
 - Continued conducting two (2) separate progress calls with Solar Liberty each week to ensure timely information flow; one to address overall Project matters and another to address specific installation issues.
 - Solar Liberty:
 - Installed eleven (11) residential solar PV system arrays.
 - Commenced installation of one (1) solar PV system array on a nonprofit-owned building.
 - Interconnected twenty-eight (28) solar PV system installations to the grid, bringing the total number of connected residential PV systems to thirty-six (36).
 - Conducted eleven (11) residential and one (1) nonprofit faith-based organization construction management reviews.

- Conducted seventeen (17) residential and one (1) nonprofit faith-based organization building structural reviews.
 - Pursued and obtained ten (10) electrical one-line drawings.
 - Prepared and submitted eleven (11) building permit applications to the City of Buffalo.
 - Issued roofing assistance checks to seven (7) additional houses and two (2) faith-based non-profit organizations that undertook roof replacements to become solar PV ready. This brings the total-to-date quantity of roof replacements completed under this Project to eighteen (18) residential and two (2) faith-based organization buildings.
- NYSERDA:
 - Both National Grid and NYSERDA made updates to the agreement specific to EE services to be provided as part of the Project. The agreement was finalized and signed by both parties.
 - The secure FTP site access was established between the two (2) parties.
 - The funding transfer mechanism was reviewed.
 - National Grid commenced organizing the newest data to be transferred to NYSERDA. Transfer will take place during Q4 2017.
 - GE:
 - GE and National Grid held routine conference calls during which GE provided inventories of input data requirements and reported on their progress on model development. National Grid also reported on the solar PV system connection progress and the meter installation progress at the substation.
 - GE completed the use case study of feeders F3463 and F3467.
 - GE commenced drafting their preliminary report. It will be submitted to National Grid as a draft following GE's in-house review and updating.
 - GE's planned feeder performance analysis was delayed, as seventy percent (70%) of solar PV installations per feeder (the minimum quantity required for meaningful analysis) was not achieved this quarter. Additionally, the new feeder metering required to conduct the analysis was not completed until close to the end of this quarter.



Figure 2-1: National Grid hosted a table at the neighborhood National Night Out event, organized by the FruitBelt Coalition.

- BNMC:
 - BNMC's Project activity this quarter consisted of communication with the leader of one (1) of the local churches that enrolled to become a solar PV host.
 - Community Participation:
 - As of the end of the Q3 2017, of the one hundred and seventy-four (174) houses proposed by owners to become solar PV system hosts, approximately seventy-three (73) of those houses are expected to become hosts, with the bulk of those non-host homes rejected on the basis of roof shading and roof size. The following are quantities as of the end of Q3 2017:
 - Eight (8) additional customers expressed interest in becoming a solar PV host during this quarter, bringing the overall total to one hundred and seventy-four (174) customers, excluding non-profit organizations.
 - 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.
 - Fourteen (14) homeowners opted out of the Project for personal reasons.
- Of the remaining ninety-three (93) houses:

- Twenty-seven (27) residential and one faith-based organization's solar PV systems were energized during Q3 2017, bringing the total number of solar PV systems installed and energized under the Project to thirty-six (36).
 - Eleven (11) residential solar PV systems were installed and one (1) non-profit building solar PV system installation was commenced.
 - Six (6) houses are currently in the review process for solar PV.
 - Forty-two (42) houses have now been reviewed and determined to need roofing repairs that cost more than the \$2,000 allocation provided by the Project. Of those, owners of eighteen (18) houses have completed their roof replacements, and owners of an additional eight (8) houses have committed to replacing their roofs during Q4 2017. Additionally, one faith-based organization has also committed to replacing its roof in Q4 2017.
 - Homeowners of a total of fifteen (16) houses needing a roof replacement have not accepted the roof replacement assistance funding in exchange for replacing their roof and becoming a solar PV host.
 - Six (6) houses and one (1) faith-based organization building are now in the process of building permit application preparation and review.
 - Four (4) houses and one (1) non-profit building were determined to be build-ready and are scheduled for a solar PV system installation in Q4 2017.
 - Solar PV system installation is under construction at eleven (11) houses and one non-profit organization building.
- Meetings were held with the executive director of the FruitBelt Coalition to keep the organization informed of the Project participation needs and to obtain contact information for certain residents who expressed interest but had provided outdated contact information.

2.2 Key Metrics

Attached Appendix C contains the Key Metric Reporting Matrix. Q3 2017 activities consisted primarily of field inspections, building permit document development and submittal, construction, electrical connection, 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
The City of Buffalo Building Department's initial screening is sometimes premised upon information secured via web research, including Google map views which may not be current.	Building permits for two (2) houses and one (1) faith-based organization building were initially denied based on inaccurate information.	National Grid requested on-site meetings with a Building Department staff member and Solar Liberty staff to review the issues. The Building Department staff ultimately issued the permits.	Compare Google Earth images with field conditions and submit photographs of actual structure conditions and surroundings for any buildings for which the Google Earth image is no longer accurate.
Vacation schedules of various Project participants impacted turnaround times.	Some building permits and certificates of completion were delayed.	Project team to secure coverage during any vacations or other absences that may affect the Project's production schedule.	Project team members must secure adequate coverage to keep the Project timeline on track.
Eight (8) customers committed to replacing their roofs, then requested two (2) successive monthly extensions, and subsequently chose not to enroll in the Project.	Other customers ready for participation were put on a waiting list. The review process for these houses subsequently started much later than necessary. As a result, construction of those solar PV systems will take place during Q4 2017, when winter weather could further delay installation.	Contact waiting list customers frequently to ensure they remained interested, and limit roof replacement extensions to one (1) month.	Timely roof replacement completion is required to meet Project timelines.

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 2017 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.

Table 3.1 Checkpoints/Milestone Progress

	Checkpoint/Milestone	Anticipated Start/End Date Stated in Q2 2017 Report	Revised Start-End Date	Status
1	Finalize contracts with Partners	08/16	<i>Completed</i>	●
2	Customer/Stakeholder Outreach: Phase 1: Community Meetings	04/16- 06/16	04/16- 10/17	●
3	Customer/Stakeholder Outreach: Phase 2: Enrollment	04/16-08/17	04/16-10/17	●
4	Customer/Stakeholder Outreach Phase 3: Installation	10/16-11/17	<i>Unchanged</i>	●
5	Solar PV Assessments	05/16- 9/17	05/16- 10/17	●
6	Site Selection and Design	01/16 – 8/17	01/16-10/17	●
7	Meter Installation	07/16-10/17	<i>Unchanged</i>	●
8	Permitting	06/16 -10/17	<i>Unchanged</i>	●
9	Solar PV Installation	06/16-11/17	<i>Unchanged</i>	●
10	Interconnection	07/16-11/17	<i>Unchanged</i>	●
11	Bill Credits Administrated	08/16 ongoing	<i>Unchanged</i>	●
12	Solar Workforce Hiring	03/17-08/17	<i>Completed</i>	●
13	GE Grid Efficiency Analysis	10/16 – Q1 2019	<i>Unchanged</i>	●
14	Internal Systems Capability	10/15-11/17	<i>Unchanged</i>	●

KEY

- On Track
- Delayed start, at risk of on-time completion, or over-budget
- Terminated/abandoned Checkpoint/Milestone

1. Partner Contracts Executed.

Status: ● **[Completed]**

National Grid’s contract with GE was signed in Q3 2016. No further action on this task is required. The Solar Liberty contract was also previously executed.

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

Status: ● [Ongoing]

Outreach and Education Phase 1 continued in Q3 2017 to drive Project enrollment. Phase 1 efforts consisted of continuing the individual customer visits to two (2) different customer groups: those who had previously expressed interest but had not provided the required documentation or access permission; and those needing a roof replacement and needing to learn about the Project's roofing financial assistance offering. In addition, Project representatives continued to provide information to potential and existing participants regarding enrollment, bill credits, and EE services.

All targets for Q2 2017 were met.

Targets/Actuals in Q3 2017:

- Target: Visit customers requiring roof replacement to become solar ready to determine if they will utilize the Project's financial assistance toward replacing their roofs. Obtain signed W-9 forms from those who do agree to replace their roofs using such funds.
 - Actual: Visited customers requiring roof replacement in order to become solar ready to determine if they will utilize the Project's financial assistance toward replacing their roof. Obtained signed W-9 forms from those who agreed to receive such funds and replace their roofs.
- Target: Reach the remaining nonprofit faith-based and community organizations owning buildings within the Project area who had not previously determined if they wish to enroll their buildings in the Project. For those who wish to enroll, obtain a signed access agreement and proceed to conduct the appropriate next steps in the Project process.
 - Actual: Contacted the one remaining nonprofit faith-based organization who had not previously determined if it wished to enroll their buildings in the Project. Obtained a signed access agreement and proceeded to conduct the appropriate next steps in the Project process. There were no community organizations who had not previously determined whether or not they wanted to enroll in the program.
- Target: Visit customers who previously agreed to replace their roofs to determine if they still plan to replace those roofs by the end of August 2017. Obtain a signed W-9 form from those agreeing to replace their roofs using the Project's solar readiness funds.
 - Actual: Visited or spoke via telephone to all customers who had previously agreed to replace their roofs, but had not yet done so by the end of August. Granted one (1) month extensions to those still planning on replacing their roofs.
- Target: Obtain signed solar PV host agreements from homeowners once their house has been determined to be solar ready.
 - Actual: Obtained signed host agreements from all but one (1) home owner who had their roof replaced and whose house was declared solar ready.

Targets in Q4 2017:

- Target: Communicate, either in person or by telephone, with customers who previously committed to complete a roof replacement but who have not yet done so, to advise them that their opportunity to participate in the Project has expired, because there is now insufficient time to complete all the remaining Project inspection, permitting, and construction activities before the winter weather prevents construction in the remainder of 2017. The construction phase of the project needs to be completed by the end of 2017 so that the grid monitoring can be conducted for a full year, with reporting on

- Target: Obtain signed W-9 forms from those Project participants who completed their roof replacement in late Q3 2017 or will do so in early Q4 2017.
- Target: Obtain signed solar PV host agreements from homeowners once their house has been determined to be solar ready.

Solutions/strategies in the event results are below expectations:

As of the end of Q3 2017, the estimated total kW committed, or expected to commit to join the Project, is 501 kW based on the commitments to date. As such, attaining the 500 kW installed goal is expected to be achievable. If additional enrollment is needed to reach the 500 kW installed goal, this could be achieved by targeting and re-visiting those customers who initially enrolled but later chose not to move forward with hosting a solar PV system.

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

Status:  [Ongoing]

Enrollment continued during Q3 2017, focusing on residences and one (1) nonprofit-owned faith-based organization, with some unsolicited residential enrollment supplementing the total committed kW. As first noted in the Q4 2016 report, enrollment of a greater number of roofs capable of hosting >5 kW results in meeting the installed goal of 500 kW via fewer houses. The enrollment endpoint definition was modified to “a maximum of 500 kW of installed solar on a maximum of 100 “solar-ready” houses and nonprofit-owned buildings.”

Targets/Actuals in Q3 2017:

- Target: Obtain a signed host agreement for two (2) nonprofit community buildings located in the Project area.
 - Actual: The signed host agreements were obtained.
- Obtain a Project enrollment commitment for the remaining uncommitted forty-three (43) kW of solar PV generating capacity.
 - Actual: The enrollment commitment was obtained for all remaining kW of solar generating capacity.
- Execute the agreement between National Grid and NYSERDA to provide EE services in the Project area.
 - Actual: The agreement between National Grid and NYSERDA to provide EE was executed.

Target in Q4 2017:

- Obtain signed host agreements for houses currently undergoing inspections.

Solutions/strategies in the event results are below expectations:

If the 500 kW of installed PV is not expected to be reached, National Grid will re-visit customers who initially enrolled but later chose not to host a solar PV system to determine why they chose not to enroll and determine if there are program benefits or references from neighbors who did choose to host that would cause them to change their position and opt to become a solar PV host.



Figure 3-1: The Project was expanded in Q1 2017 to enable non-profit faith-based organizations located within the Project area to become solar PV hosts.

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

Status: ● [Ongoing]

Customer engagement activities continue throughout the solar PV host approval process for each homeowner who signed up to participate in the Project.

Targets/Actuals in Q3 2017:

- Target: Continue to maintain positive engagement throughout the installation, scheduling, and implementation process with each homeowner enrolled to host a solar PV system.
 - Actual: Maintained positive customer engagement by continuing to have contracted staff meet with residents to answer questions and to obtain signed solar PV host agreements. In addition, Solar Liberty continued to conduct reminder calling to customers to help ensure appointments would be kept.

Target in Q4 2017:

- Target: Continue to maintain positive engagement throughout the installation, scheduling, and implementation process with each customer enrolled to host a solar PV system.



Figure 3-2: Installing the second rooftop solar PV system in the Fruit Belt neighborhood

5. Solar Assessments.

Status: ● [Ongoing]

Curbside assessments continued to be conducted at each house for which the owner expresses interest, and for which the Google review shows to be viable. This process will be continued until 500 kW of rooftop solar PV systems are secured via host agreements. Structural assessments, which are conducted following the curbside review and are thus not part of the target/actual evaluation criteria, are conducted by a third-party engineer.

Targets/Actuals in Q3 2017:

- Target: Complete a Project cumulative total of one-hundred ten (110) residential and five (5) nonprofit-owned initial solar PV site assessments.
 - Actual: The cumulative quantity of solar PV solar assessments conducted from Project inception through the end of Q3 2017 is one hundred and five (105).
 - Actual: Completed two (3) faith-based and two (2) community nonprofit-owned site assessments.
- Target: Complete a Project cumulative total of eighty-five (85) residential and three (3) faith-based nonprofit-owned structural assessments.
 - Actual: The cumulative quantity of solar PV structural residential assessments and faith-based non-profit buildings conducted from inception through the end of Q3 2017 is ninety (90) and three (3), respectively.

- Target: Complete a Project cumulative total of one-hundred ten (110) residential and two (2) community nonprofit-owned building roof assessments.
 - Actual: The cumulative quantity of solar PV roof assessments conducted from inception through the end of Q3 2017 is one-hundred nine (109).
 - Actual: Completed one (1) faith-based nonprofit-owned roof assessment, bringing the Project cumulative total non-profit building roof assessments to five (5).

Targets in Q4 2017:

- Complete any remaining solar PV site assessments needed to achieve the Project's 500 kW solar PV installation goal.
- Complete any remaining structural assessments at residential and faith-based nonprofit-owned buildings necessary to achieve the Project's 500 kW solar PV installation goal.
- Complete any necessary residential roof assessments necessary to achieve the Project's 500 kW solar PV installation goal.

Solutions/strategies in the event results are below expectations:

If solar PV assessments of the remaining houses cannot be achieved in a timely manner, National Grid will meet with the contractor and request additional staffing resources be placed on the job and require them to conduct the curbside and roof assessments within ten (10) days of customer enrollment. Structural assessments require coordination with the customer to permit entry into the house, thus the structural assessment step most always requires more than ten (10) business days to complete. National Grid will request its stewardship contractor meet with customers needing a structural analysis and together, call the structural engineer to schedule a structural review at a mutually agreeable date/time.

6. Site Selection and Design

Status: ● **[Ongoing]**

A solar array design (site plan) is prepared for each residence and nonprofit-owned building for which the owner expressed interest, and is deemed eligible following completion of the curbside solar assessment process and the roof assessment.

Targets/Actuals in Q3 2017:

- Target: Continue to design a site plan for each house or other building at which a curbside review shows the structure likely to be solar eligible.
 - Actual: A site plan was completed for each house at which a curbside review was completed and which showed the house likely to be solar eligible.
 - Actual: A site plan was completed for the one (1) faith-based non-profit building that was enrolled in the Project this quarter.

Target in Q4 2017:

Continue to design a site plan for each home or other building at which a curbside review shows the structure to likely be solar eligible.

Solutions/strategies in the event results are below expectations:

- Site plan development for those buildings whose owners express interest, which pass the solar screening assessment, and which pass the roofing assessment will be expedited so as to ensure installation can be completed before winter weather conditions prevail.

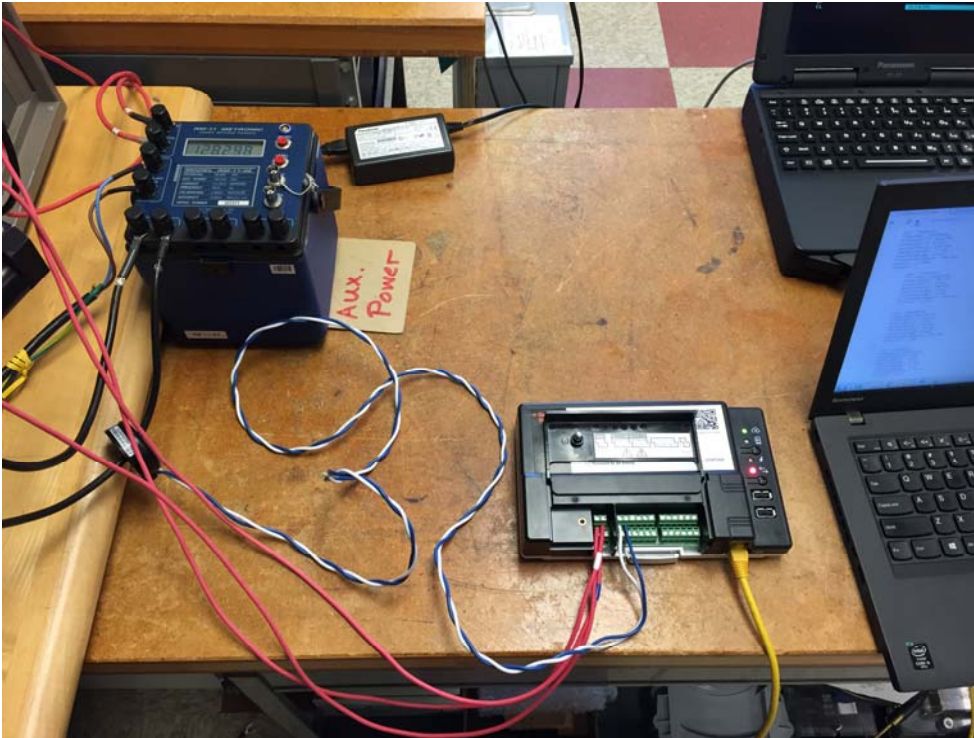


Figure 3-3: Four tests conducted using the Enphase meter showed it met the accuracy required by the ANSI C12.20 standard.

7. Meter Installation

Status: ● [(Revised) 11/30/2017]

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 2017:

- Target: All solar PV systems installed in Q3 2017 will be connected within five (5) business days following the City of Buffalo's post-construction review of the installed solar PV system.
 - Actual: Most solar PV systems installed during Q3 2017 were connected within (five) 5 business days following the City of Buffalo's post-construction review of the installed solar PV system. Three systems were commissioned within ten (10) business days due to a combination of weather conditions and site access.

Solutions/strategies in the event results are below expectations:

Since the next systems only utilize an Envoy system with no secondary meter, and with the Envoy meter being part of the solar PV panel installation, delays in meter installation are not expected. Per the previously-established protocol, as stated in the Q1 2017 Project quarterly report, National Grid will communicate with Solar Liberty and the supplier to identify and rectify the installation backorder situation.

Target in Q4 2017:

- All solar PV systems installed in Q4 2017 will be connected within five (5) business days following the City of Buffalo's post-construction review of a the installed solar PV system.



Figure 3-4: Use of safety harnesses by all roof workers is one of several safety protocols followed by the contractor's field installation crews.

8. Permitting

Status: ● [Ongoing]

The City of Buffalo has been approving solar PV system permit applications generally within three (3) weeks following receipt of the application. This quarter, three (3) applications were delayed beyond this time period due to the City of Buffalo's initial use of outdated Google Earth Images prior to conducting in-person site visits.

The City imposed no new permitting application data requirements during this quarter.

Targets/Actuals in Q3 2017:

- Target: Continue to submit building permit applications to the City of Buffalo Building Department in small groups of no more than five (5).
 - Actual: All Project building permit application submittals to the City during this quarter were in groups of five (5) or fewer.

Target in Q4 2017

- Target: Continue to submit building permit applications to the City of Buffalo Building Department in small groups of no more than five (5).

Solutions/strategies in the event results are below expectations:

Hold a third project meeting with the City of Buffalo Building Department to discuss the rate of building permit application review. Determine what else can be done by Solar Liberty to facilitate an expedited permit application review process.

9. Solar Installation**Status:**  **[Ongoing]**

Solar PV system Installation continued based on the quantity of permitted applications available.

Targets/Actuals in Q3 2017:

- Connect, get inspected, and commission the thirty (30) residential solar PV systems. One (1) non-profit organization solar PV system installed but not connected in Q2 2017.
 - Actual: Twenty-four (24) residential and one (1) faith-based non-profit organization building solar PV systems were inspected, connected, and commissioned during the quarter. The six (6) solar PV systems that were not connected and commissioned are served by underground electric feeds and require additional steps that were commenced but not completed in Q3 2017.
- Install twenty-five (25) residential rooftop solar PV systems and three (3) nonprofit-owned building rooftop solar systems.
 - Actual: Installed eleven (11) residential and commenced installation of one (1) faith-based non-profit owned building solar PV system.
- Connect twenty (20) of the twenty-five (25) new residential systems and all three (3) of the non-profit-owned buildings to the electric grid by the end of Q3 2017.
 - Actual: Connected eight (8) residential solar PV systems to the electric grid. No non-profit-owned buildings were connected to the electric grid this quarter.

Targets in Q4 2017:

- Install, connect, get inspected, and commission all remaining residential, as well as two faith-based and one (1) non-profit organization building solar PV systems.

Solutions/strategies in the event results are below expectations:

- National Grid will meet with Solar Liberty to identify what issues prevent shorter analysis times and what solutions can be implemented to decrease the turnaround time. If the issue lies with one of their contractors, National Grid will ask Solar Liberty to meet with those

contractors to analyze the situation and determine viable solutions to increase the pace of installations.

10. Interconnection

Status: ● [Ongoing]

Interconnection of thirty-three (33) installed solar PV rooftop systems was completed in Q3 2017.

Targets/Actuals in Q2 2017:

- Target: Complete, or schedule for completion, each solar PV system interconnection within five (5) business days of installation.
 - Actual: System connection to the grid at houses equipped with overhead electric feeds was completed within fifteen (15) business days of installation. Houses equipped with underground electric feeds were not completed due to homeowner coordination issues and electrical contractor delays.

Target in Q4 2017:

- Complete connection of each solar PV system permitted or installed in Q4 2017.

Solutions/strategies in the event results are below expectations:

If the issue requires action by National Grid, the Project manager will meet with the appropriate Project personnel to get that action underway. If National Grid determines Solar Liberty or its contractors are the source of the issue, National Grid will confer with Solar Liberty to identify the specific facts and direct Solar Liberty or its contractors to take action to rectify the situation.

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. Figure 3-6 below shows an example of the monthly calculated bill credit statement.

Targets/Actuals in Q3 2017:

- 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.

Target in Q4 2017:

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

Solutions/strategies in the event results are below expectations: Once identified, any issue with the bill credit system will be reviewed and resolved as soon as feasible.

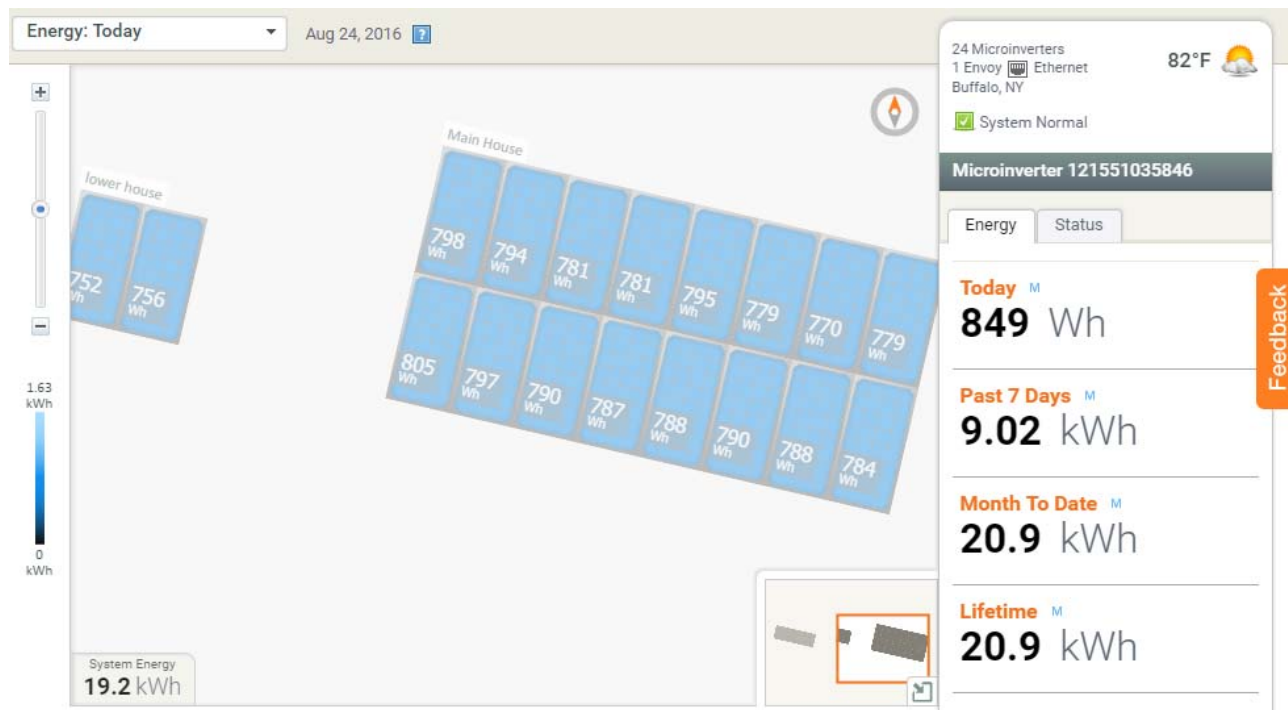


Figure 3-5: The Enphase metering system is capable of concurrently reporting the output of each individual solar PV panel.

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

Status: ● **[(Revised) Q3 2017]**

The Buffalo Federation of Neighborhood Centers, Inc. and the FruitBelt Coalition, both of which have their main offices in the Fruit Belt, were contacted to identify additional candidates for solar PV installations.

Targets/Actuals in Q3 2017:

- Continue to pursue solar PV installation candidates who reside in the Fruit Belt.
 - Actual: Job positions were advertised through the FruitBelt Coalition and through the Buffalo Federation of Neighborhood Councils. Additionally, job positions were advertised through various faith-based organizations located in the Fruit Belt. However, no solar installation contractor job applications received this quarter.

Target in Q4 2017:

- Continue to pursue solar PV installation job candidates who reside in the Fruit Belt.

Solutions/strategies in the event results are below expectations:

National Grid, has, and continues to, maintain contact with community leaders and ask them to advertise the available installer positions.

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 2017:

- Target: Complete the Use Case study of F3463 and F3467.
 - Actual: Completed.
- Target: Complete the Use Case study draft report.
 - Actual: The preliminary report was completed and will be sent to National Grid for comment in Q4 2017.
- Target: Commence the feeder performance analysis.
 - Actual: This analysis was not commenced this quarter as the requisite seventy percent (70%) of solar PV installations per feeder (to conduct a meaningful analysis) could not be confirmed. New station metering or its equivalent was also not in place to support the performance analysis.

Targets in Q3 2017:

- Receive the draft Use Case Study final report.
- Commence and progress the feeder performance analysis.

14. Internal Systems Capability.**Status:** ● **[[Ongoing]]**

The toll-free number continued to operate in Q3 2017. The Sanction Paper, an internal document used by National Grid for cost authorization, was originally completed in Q3 2016. It was updated in Q3 2017 to reflect a correction in the cost allocation stated in the final Implementation Plan.

Targets/Actuals in Q3 2017:

- Target: Maintain internal systems in working condition.
 - Actual: The internal systems were maintained in working order.

- Target: Update the National Grid Sanction Paper using the capital cost listed in the final Implementation Plan budget.
 - Actual: The Sanction Paper revision was completed.

Target in Q4 2017:

- Maintain internal systems in working condition.

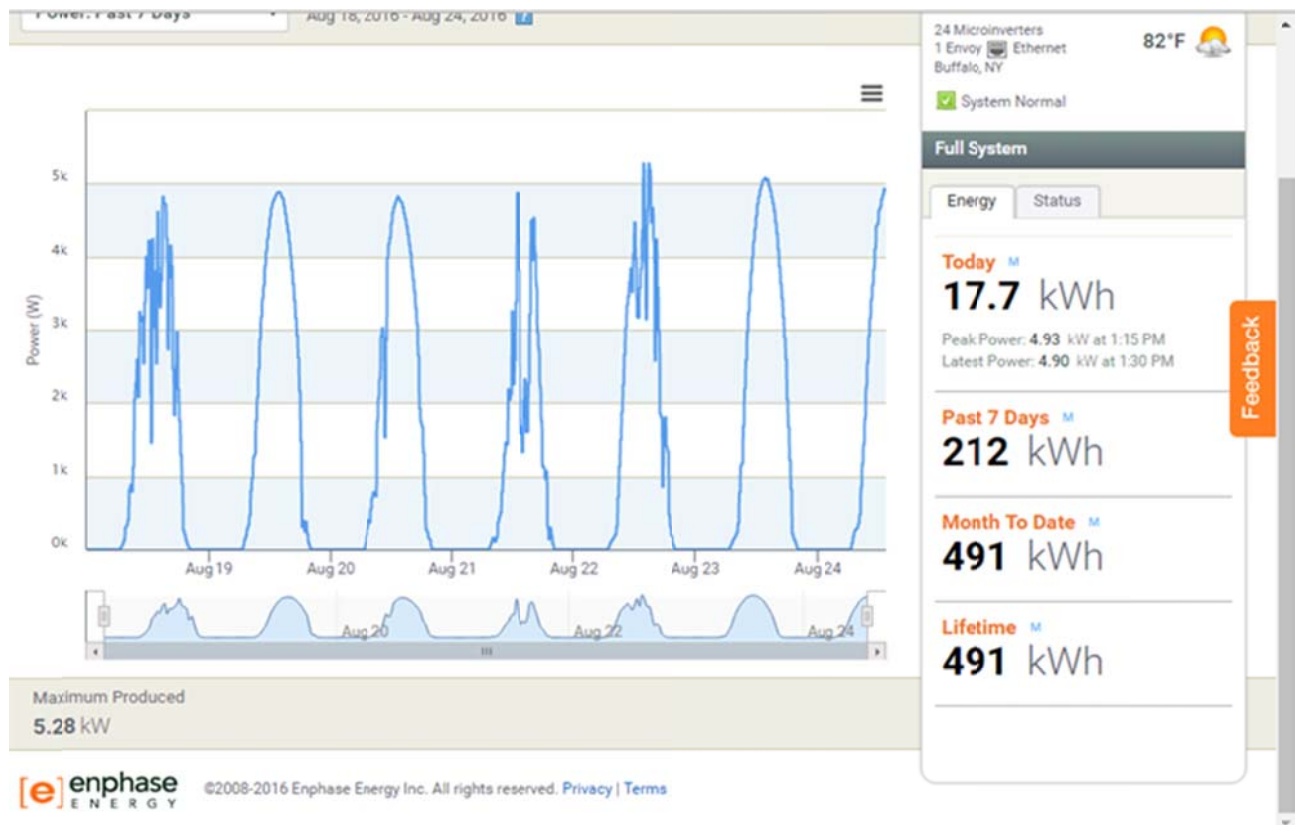


Figure 3-6: The Enphase system provides multiple reporting displays, including a 7-day total daily output graph.

P.S.C. 220 ELECTRICITY
 NIAGARA MOHAWK POWER CORPORATION
 INITIAL EFFECTIVE DATE: SEPTEMBER 28, 2017

STATEMENT TYPE: FBP
 STATEMENT NO. 14
 PAGE 1 OF 1

**NIAGARA MOHAWK POWER CORPORATION
 STATEMENT OF FRUITBELT SOLAR DEMONSTRATION PROJECT BILL CREDIT**

EFFECTIVE: SEPTEMBER 28, 2017 BATCH BILLINGS

Applicable to Billings Under P.S.C. No. 220 Electricity

All rates are dollars unless stated otherwise

Delivery Rates

This credit is for approved premise accounts in the FruitBelt Neighborhood Solar REV Demonstration project			Solar Bill Credit
Service Classification	Zone		
S.C. No. 1	Approved Customer Premise Accounts	Zone A	\$ (15.00)

Figure 3-7 Fruit Belt Solar Bill Credit Rate Sheet.

4.0 Work Plan & Budget Review

4.1 Updated Work Plan

There were no changes to the overall Project work scope and work plan this quarter.

The Project timeline was not changed. Three (3) tasks (Solar Assessments, Solar Selection and Design, and Permitting) were extended due to field conditions. See Appendix A, Figure A-1.

4.2 Updated Budget

The following item may impact the budget:

1. As previously noted in the Q2 2017 report, the meter collar connection equipment proposed for use in this Project was not approved by National Grid. The incremental cost for interconnecting houses or other buildings using the dedicated service entrance cable

without a dedicated meter channel costs an additional \$1,152 per structure, or cumulatively \$115,200 if all one hundred (100) houses/buildings are connected using this approach.

Solutions:

The following solution was previously proposed:

- Continue to design solar PV systems using a dedicated service entrance cable. Utilize unused solar-readiness funds to address this cost. Also, with some structures being equipped with the equivalent kW of multiple houses, fewer connections are needed, resulting in some cost savings.

The revised Project budget² is presented below:

**Fruit Belt Neighborhood Solar
Quarterly Budget Status
Q3 2017**

Operational Expenditures					
Task	Incremental Cost Budget	Incremental and Non- Incremental Quarterly Spend	Incremental and Non- Incremental Spend to Date	Incremental and Non- Incremental Total Expected Completion Cost	Total Spend Versus Incremental (without non- incremental) Budget Variance
General Administration and Planning	\$ 30,000	\$ 9,986	\$ 178,836	\$ 220,255	\$ (190,255)
Marketing and Community Engagement	\$ 250,000	\$ 9,239	\$ 155,417	\$ 160,000	\$ 90,000
Incentives	\$ -	\$ 12,000	\$ 12,245	\$ 12,245	\$ (12,245)
Implementation	\$ 1,344,700	\$ 28,906	\$ 83,430	\$ 1,344,700	\$ -
Evaluation & Analysis	\$ 325,000	\$ (50,000)	\$ 55,177	\$ 300,000	\$ 25,000
Totals:	\$ 1,949,700	\$ 10,131	\$ 485,105	\$ 2,037,200	\$ (87,500)
Capital Expenditures					
100 Solar PV Systems	\$ 1,842,500	\$ 497,560	\$ 1,416,660	\$ 1,755,000	\$ 87,500
Totals:	\$ 1,842,500	\$ 497,560	\$ 1,416,660	\$ 1,755,000	\$ 87,500
Project Totals:	\$ 3,792,200	\$ 507,691	\$ 1,901,765	\$ 3,792,200	\$ -

Project costs reported above are total incremental and non-incremental costs, while the budget values listed are the incremental cost only. Total task budget costs consisting of combined incremental and non-incremental costs were not developed. The Project's total incremental cost as of September 30, 2017 was \$177,820.

² An internal review of the Project budget revealed certain costs were incorrectly categorized as operational costs (Opex), when in fact they are capital costs (Capex). The budget was revised to reflect this re-categorization. However, the total Project budget has not changed.

5.0 Progress Metrics

Appendix B presents key Project metric tracking data available as of the end of Q3 2017. Note tier description fields were added to more accurately reflect true Tier enrollment status. Also, note that eligibility for a tier does not guarantee enrollment in a tier.

Appendix B: Metric Tracking

Time Frame		Outreach	Residential Customer Tier						Solar Installation Progress (Houses and Non-profit Buildings)					Generation and Credits (Residential and Non-profit Organization Buildings)				Residential Arrearage Participant Evaluation
Project Quarter	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	Rooftop Systems Installed	Rooftop Systems Connected	kW on-line	kWh generated	Bill Credit Generated (\$)	Cumulative Qty of Bill Credit Recipients	Arrearage Participant Quantity
1	Q1 2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0.00	0	0
2	Q2 2016	34	5	1	0	0	14	0	14	10	14	1	0	0	0	\$0.00	0	0
3	Q3 2016	28	10	1	0	0	16	0	26	9	5	1	2	12.22	2,408	\$33.96	2	0
4	Q4 2016	78	16	2	0	0	34	0	54	21	24	2	2	10.92	2,631	\$116.99	3	0
5	Q1 2017	14	40	2	0	0	14	0	13	19	5	3	2	12.74	5,670	\$268.10	6	0
6	Q2 2017	12	8	2	0	0	13	0	9	13	5	31	2	13.00	19,537	\$361.36	8	0
7	Q3 2017	8	-1	32	0	0	6	0	19	18	0	14	28	200.83	16,879	\$715.00	14	0
8	Q4 2017																	
9	Q1 2018																	
10	Q2 2018																	
11	Q3 2018																	
12	Q4 2018																	
Totals:		174	78	40	0	0	97	0	109	90	53	52	36	249.81	47,125	\$1,495.41		

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

Note: The following modifications were made this quarter to focus reporting on most salient proj

1 Although customers are eligible for several items in Tier 1 and Tier 2, a customer who qualifies for these will not necessarily enroll in either of these.

2 The 'Cumulative

Table B.1 – Metric Tracking Table

Appendix C: Web Article



SPONSORED POST

Helping the Sun Shine Everywhere

AUTHOR

Chris Warren

PUBLISHED

Sept. 26, 2017

The Fruit Belt neighborhood on the east side of Buffalo, New York has a long legacy of cultivation. The neighborhood earned its name from the proliferation of orchards and vegetable gardens that sprouted up when German farmers first settled in the area in the 1800s.

More recently, though, the Fruit Belt's history of cultivation has not extended to the renewable energy boom that has seen solar panels dot the roofs of so many homes across New York. The reason has little to do with a lack of interest in the economic and environmental benefits of solar energy among Fruit Belt's mostly low-to-moderate income residents. Instead, it has everything to do with economics. "Historically, low income people are barred from participation in renewables because the financial

incentives for solar are given as tax credits at both the state and federal level,” said Jon Nickerson, Lead Project Manager with the utility National Grid’s New Energy Solutions division. “Tax credits are claimed on the IRS’s Form 1040 long form. If you’re low income, you’re not filing that form and therefore you’re not able to take advantage of the tax credits. You have no tax-based financial incentive to install a solar

National Grid is working to change that dynamic in the Fruit Belt neighborhood with an effort that will provide lessons about the most effective way to extend the benefits of renewable energy to other low income areas around New York. As an effort under New York’s Reforming the Energy Vision (REV) initiative, National Grid’s Fruit Belt Neighborhood Solar REV Demonstration Project is financing the purchase and installation of approximately 100 rooftop solar photovoltaic (PV) systems totaling 500 kilowatts at homes around this historic neighborhood. National Grid will own, service and maintain the PV systems for the entirety of their expected 25-year lifetime.

The solar energy generated from these systems feeds directly into the local distribution grid, and those who host the panels on their roof – along with 50 other interested area residents whose roofs were either too shaded or otherwise impractical for solar – receive a monthly credit on their utility bill that is based on the aggregate generation of all the PV systems installed under this project in the neighborhood. Besides probing the best ways to expand renewable energy into low-to-moderate income neighborhoods, the project also provides National Grid with a unique opportunity to analyze the grid impacts of having a significant amount of solar generation in a concentrated area.

Much has already been learned since the project first launched in April of 2016. Though National Grid reached its enrollment goal this past summer and has nearly half of the 100 solar systems installed and generating electricity, the utility’s initial community outreach efforts weren’t well-suited to the community. Rather than trying to raise awareness about the project through email, National Grid found it was far more effective to build trust and interest from neighbor-to-neighbor.

To do that, the utility worked with a neighborhood improvement group called the Fruit Belt Coalition, which recommended encouraging local churches to install solar PV systems. “Once those were up, the local population attending the churches could see the systems on the roof and that helped develop a comfort level that translated into additional enrollment in the program,” said Nickerson.

National Grid also learned just how compelling the bill credit component of the program was to many residents. “The money piece here is persuasive. There are customers who are in arrears on their bills by \$10 month. But if they get a \$15 credit each month, they can climb out of arrears by making the same payment each month,” said Nickerson. “The ability to climb out of arrears holds significant social value.”

National Grid will commence a full-year study to analyze the grid impacts of the solar once all the systems are installed. But already there are lessons emerging, including some that may indicate the best way to consistently meet the electricity needs of customers even as solar generation varies due to cloud cover and the seasonal duration of daylight. That variation in solar generation has an impact on the grid, but so does having solar energy produced near where it is consumed. “We are a transmission and delivery company, so we buy generation from a source that is some distance away from the load and by the time we get it to customers we lose a few percent because of line loss,” said Nickerson. “In this case, we will avoid the line loss, and that has a monetary value we will quantify.”

All of these lessons from the Fruit Belt neighborhood will provide helpful data and guidance to National Grid as it pursues what the company calls its vision to become the “utility of the future” – the topic of a future article on Utility Dive. By expanding customer choice and pursuing decarbonization, the Fruit Belt solar project hints at the possible services and benefits a future National Grid aims to provide to more and more of its customers.

For those who are already being impacted, the upside is easy to see. “Once the neighborhood clearly grasped the implications of the project and what it meant to them individually, we really saw it mushroom in popularity,” said Nickerson.