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Implementation Plan for Fruit Belt Neighborhood Solar REV Demonstration in Buffalo, New York

January 4, 2016

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Executive Summary

The Fruit Belt Neighborhood Solar REV Demonstration Project to be implemented by Niagara Mohawk Power Corporation d/b/a National Grid ("National Grid" or the "Company") (the "Demonstration") is a solar energy initiative that will primarily deliver two main types of benefits: energy bill savings for low-to-moderate income ("LMI") customers, and grid efficiency benefits for the local distribution system. Through physically concentrating 100 rooftop solar photovoltaic ("PV") systems within a local neighborhood, the Demonstration not only provides the technical conditions necessary for exploring grid efficiency, but also allows for the opportunity to engage the residential community as a whole, which will strengthen relationships and foster energy awareness.

The Demonstration will test the following hypotheses:

- Providing solar bill credits to participants in an LMI neighborhood, as well as offering energy efficiency to further drive energy bill savings, will have a positive impact on bill payment behavior and enable customers to better manage their arrears.
- Concentrating distributed solar PV resources with reactive power support within a boundary served by a common substation versus scattered deployment of conventional solar will deliver measurable grid efficiency benefits.

Customer Benefits

The Demonstration model of "in front of the meter" solar and utility ownership removes existing barriers for LMI residential customers to participate in the solar market today. To take advantage of most solar market offers, customers need to have good credit standing and income levels that allow receipt of tax credits, leaving LMI neighborhoods like the Fruit Belt underserved by the market. This Demonstration will unlock the benefits of solar, and additionally connect customers to energy efficiency, at no-cost to participants, clearing traditional financing obstacles.

The opt-in approach to the Demonstration will enroll up to a total of 300 participants at no cost and on a first-come, first-served basis. To participate, interested Fruit Belt Neighborhood ("Fruit Belt") customers must meet eligibility requirements based on active status of their National Grid electric account, location of residency within neighborhood boundaries, and residence in a dwelling of 1-4 units (*i.e.*, up to a "four-family house"). Participants' National Grid electric accounts may be either in good standing or in arrears; enrollment of the latter will be necessary for the Demonstration to

meet its goal of testing whether its delivered benefits enable customers in arrears to improve their bill payment behavior and better manage their arrearages.

Energy bill savings will be delivered to Demonstration participants in the Fruit Belt through installing rooftop solar on 100 homes (Tier I); extending the monetary credit produced by the solar generation to customers that are interested, but may not be eligible to host solar (Tier II); and connecting all interested participants to energy efficiency ("EE") services by leveraging existing New York State Energy Research and Development Authority ("NYSERDA") and/or other available offerings, whether or not their roof qualifies to host solar (Tier III). All benefits are at no cost to participants and are based on the participant tier structure summarized below:

	Tier I	Tier II	Tier III
Customer Benefits	100 Participants	50 Participants	Additional 150 Participants
Energy Efficiency Services	✓	✓	✓
Rooftop Solar Engineering Assessment	✓	✓	✓
Solar Bill Credits	✓	✓	
Rooftop Solar PV System	✓		
Minor Roof & Electric Panel Repairs (if needed)	✓		

The energy produced by the 100 solar units will be captured in front of the utility meter, aggregated collectively, and monetized. The monetary credit for the totalized generation will then be redistributed equally among Tier I and Tier II residential electric accounts, for a total of 150 participants receiving solar bill credits that will appear as a credit line item on each account's respective monthly electric bills. Assuming that each rooftop solar system is sized at 5 kW, the projected average monthly solar bill credit is expected to be approximately $15-20 per participant for the 150 customers in Tiers I and II.

National Grid hypothesizes that providing solar credits to participants in a LMI neighborhood, as well as offering EE services to further drive bill savings, will have a positive impact on bill payment behavior and enable better management of arrears. The Company will assess the following metrics:

(1) Average Solar Bill Credit;

(2) Collection Rate determined by $\frac{Total\ customer\ payments\ [\$]}{Total\ available\ to\ collect\ [\$]}$; and

(3) Arrears Change Rate measured by $\frac{Initial\ period\ arrears\ [\$] - Final\ period\ arrears [\$]}{Initial\ period\ arrears\ [\$]}$.

Grid Efficiency Benefits

Physically installing solar assets within a concentrated geographic area and along a common electric feeder close to the load provides an opportunity to explore grid efficiency benefits. Concentrating distributed solar resources within a boundary served by a common substation, as opposed to scattered deployment scenarios of community solar based on large arrays, will deliver measurable grid efficiency benefits. This Demonstration will test for: (1) reduction of energy losses; (2) improved voltage monitoring and control; and (3) the monitoring and control of reactive power.

Micro-inverters will be utilized in the Demonstration such that each solar panel will have its own DC to AC micro-inverter. This will allow the system to be more resistant to effects of partial shading and will remove the concern of higher-voltage DC wiring on residential roofs. Micro-inverter usage will allow for reactive power generation when the panels are not producing real power at their maximum output (*i.e.*, mornings, evenings, nights, or cloudy days). This capability will improve the power factor at each home with rooftop solar and on the distribution circuit and will result in improved upstream system efficiencies. There will be multiple power factor control methods employed to test the effectiveness of each to compare the resulting efficiency benefits and the projected costs.

Outreach and Engagement Efforts

National Grid designed the Demonstration with the Buffalo Niagara Medical Campus, Inc. (“BNMC”), its trusted customer partner. The Fruit Belt is a LMI neighborhood, located within the City of Buffalo, comprised of just under 2,000 residents located adjacent to the BNMC. The BNMC has well-established relationships with its surrounding neighborhoods, which makes it uniquely qualified to partner with National Grid in outreach to the Fruit Belt for this Demonstration. Customer/stakeholder engagement and communications will be a three-phased approach focusing on awareness, enrollment, and installation. A comprehensive and collaborative mix of traditional grassroots engagement, marketing, public relations, and media relations will be utilized. The primary goal of the outreach is to increase awareness and educate customers of the benefits to encourage participation.

Demonstration Project Benefit and Cost Summary

Totals	Year 1	Year 2	Years 3-25	Total
Value of Benefits	$120,750	$134,550	$2,277,150	$2,532,450
Tax Credits	$715,584	$0	$0	$715,584
Expenditures	$3,502,200	$240,000	$50,000	$3,792,200
Net Cash Flow	-$2,786,616	-$240,000	-$50,000	-$3,076,616
Net Benefit to Cost	-$2,665,866	-$105,450	$2,227,150	-$544,166

Key Dates and Milestones

- Dec. 12, 2014: REV Demonstration Projects Announced
- Jul. 1, 2015: Fruit Belt Neighborhood Solar REV Demonstration Filed with the New York Public Service Commission ("Commission")
- Aug. 3, 2015: Approval of Fruit Belt Neighborhood Solar REV Demonstration
- Nov. 1, 2015: Demonstration starts
- Dec. 1, 2015: Customer enrollment initiated
- Apr. 1, 2016: Billing system ready
- Aug. 15, 2016: Selection of 100 solar host sites completed
- Nov. 1, 2016: All 100 solar PV systems installed

Scalability and Innovation

The Demonstration is ultimately intended to test the potential for scalability across similar communities in National Grid's service territory – serving as a "first of its kind" model versus "one of a kind." Its approach to concentrate distributed energy resources ("DER"), including solar and energy efficiency, provides a non-wires alternative strategy while engaging the community as a whole.

Additionally, National Grid views this Demonstration as advancing its US Connect21 Strategy, which seeks to transform National Grid's electricity and natural gas networks to support the 21st century digital economy with smarter, cleaner, and more resilient energy solutions. This Demonstration supports many of the Connect21 goals, particularly focusing on energy efficiency and placing renewables where it makes the most sense.

Demonstration Design

Customer Benefits

Neighborhood History and Demographics

The Demonstration will seek participants that are residential electric customers of National Grid located within the Fruit Belt. Adjacent to the BNMC, the Fruit Belt comprises approximately 130 acres and roughly 36 city blocks (Figure 1).

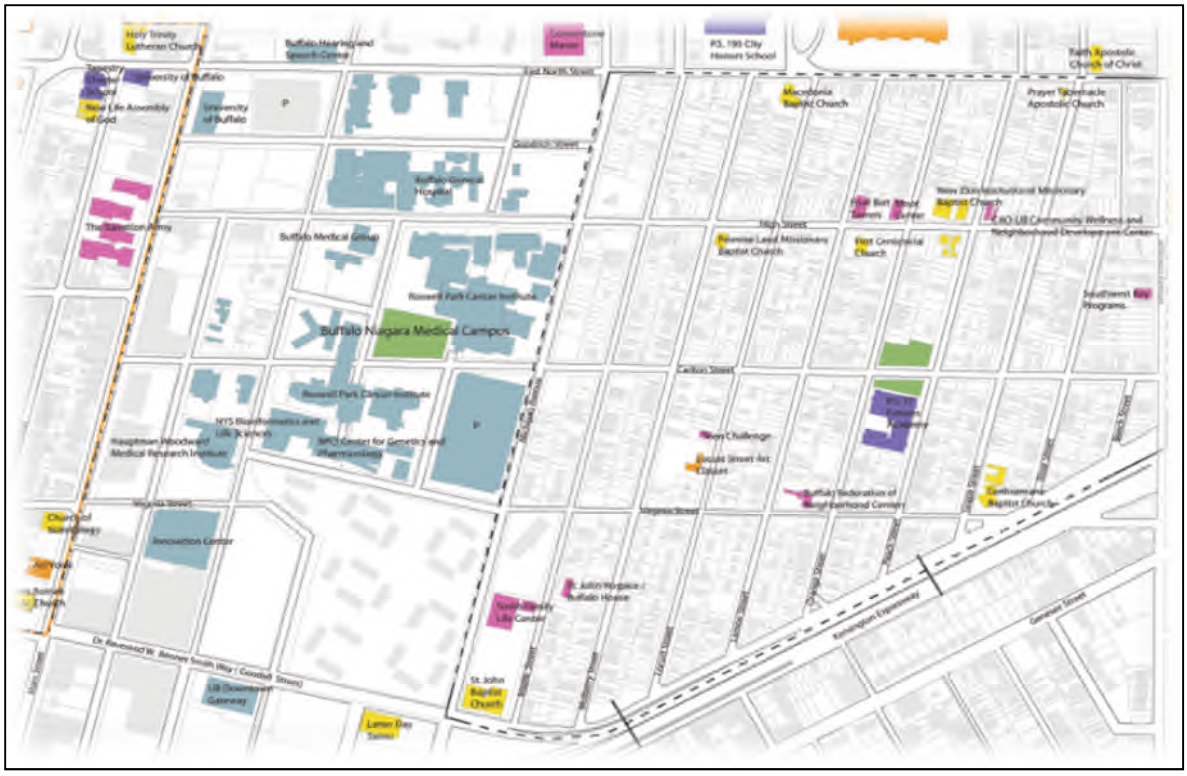


Figure 1: Map Showing the Fruit Belt Neighborhood (right) and the BNMC (left)

The Fruit Belt neighborhood is a mixed-use community of single and multifamily homes, schools, and community centers. The average household income is approximately $23,000, which is less than half of the Buffalo area median income of $46,000,[1] characterizing the neighborhood as LMI. There are about 7,000 National Grid residential electric accounts in the neighborhood, 39% of which carry an arrears balance.[2]

[1] Buffalo Niagara Medical Campus with Sasaki Associates and Madden Planning Group, March 2009, Fruit Belt Neighborhood Strategy, Figure 6 Educational Attainment, pg. 6

[2] Based on internal analysis with data from National Grid's customer billing system.

Approximately 41% of the homes in the Fruit Belt are owner-occupied[3], which is slightly lower than 44% for Buffalo overall.[4]

As an LMI neighborhood, the Fruit Belt is currently underserved by the solar market. To take advantage of most solar market offers, customers need to have good credit standing and income levels that allow receipt of tax credits, leaving LMI neighborhoods like the Fruit Belt underserved. Currently, there is a single rooftop solar array installed in the neighborhood donated by Solar Liberty to the Buffalo City Mission, an inter-faith institution.

Customer Benefits

LMI residents tend to pay a higher share of their disposable income toward their energy bills. For this reason, the primary customer benefit that the Demonstration aims to deliver is energy bill savings, thereby easing some of the burden on managing a tight household budget.

Energy bill savings will be delivered to Demonstration participants in the Fruit Belt through: (1) installing rooftop solar on 100 homes; (2) extending the monetary credit produced by the solar generation to an additional group of customers that are interested, but may not be eligible to host solar; and (3) connecting all interested participants to EE services by leveraging existing NYSERDA and/or other available offerings, whether or not their roof qualifies to host solar.

Beyond the primary customer benefit of energy bill savings, the Demonstration expects to garner several secondary benefits for participating customers, including:

- Enhanced customer knowledge of the energy bill: EE services offered to all participant tiers will allow customers to better understand their energy usage and ways to reduce their energy consumption.
- Leveraged benefits and awareness of additional local and state programs: Through NYSERDA's EmPower New York Program[5], (Assisted) Home Performance with ENERGY STAR® Program and Green Jobs – Green New York Program participating customers will further benefit from leveraged Weatherization Assistance Program funding to identify and address any existing or potential health and safety hazards in the home. Furthermore, participating

[3] Census 2000 Summary File 1 (SF-1) 100-Percent Data, GCT-H6. Occupied Housing Characteristics.
[4] 2006 American Community Survey; S2501. Occupancy Characteristics.
[5] The Demonstration assumes NYSERDA will continue to administer the EmPower New York Program. However, the Commission's December 11, 2015 *Order Extending Clean Energy Programs* in Cases 14-M-0094, *et al*., authorizes NYSERDA to continue to implement Energy Efficiency Portfolio Standard ("EEPS") programs only through February 29, 2016 while the Commission completes its review of the Clean Energy Fund ("CEF") proposal.

customers whose homes have health and safety issues that fall outside the scope and/or budget of the Demonstration (*e.g.*, need for roof replacement, lead paint and/or asbestos abatement needs, major structural issues, etc.) will be referred to existing City of Buffalo programs to determine eligibility for additional assistance.

- Community focus: The neighborhood approach of the Demonstration stands to gain a greater level of customer engagement than a traditional customer-by-customer approach by taking into account the needs and resources of the Fruit Belt community as a whole.
- Local jobs: The Demonstration garners regional and state-wide workforce development benefits by engaging committed vendor partners based in Buffalo, the region, and the greater New York State area. Furthermore, local solar installation partner Solar Liberty is committed to train and employ up to 5 residents of the Fruit Belt neighborhood through a workforce development initiative as part of this Demonstration.

Participant Tiers and Eligibility

Eligibility

Participation in the Demonstration is opt-in. All Fruit Belt residents interested in participating must meet the following underlying criteria:

1. Have an active National Grid account billed under the SC1 residential rate class for electric service;
2. Live in a residence located within the Fruit Belt as defined by the boundaries of E. North Street to the north, Jefferson Avenue to the east; Kensington Expressway to the south, and Michigan Avenue to the west; and
3. Live in a residence of 1-4 units (*i.e.*, up to a “four-family house”)

All residents meeting the above criteria, whether they lease or own their home, are eligible to participate as the primary criterion is having an active National Grid electric account. Renters will need to obtain written permission from their landlords. Energy bill savings will be received by the person who is the owner of the associated National Grid electric account, whether that is the renter or landlord. If a participant moves during the course of the Demonstration and disconnects their electric service, the solar bill credits stay with the meter, and the subsequent National Grid account owner would receive the solar bill credits going forward.

This Demonstration is designed to accommodate single-family style homes as well as dwellings that contain up to 4 units. Residents living in multifamily properties of 5 or more units are not eligible to participate in the Demonstration.

Customers' National Grid account payment history and current account standing will not affect their eligibility to participate. In fact, it will be necessary to enlist a minimum of 35 participants that have accounts with an arrears balance in order for the Demonstration to meet its goal of testing whether its delivered benefits enable customers in arrears to improve their bill payment behavior and better manage their arrearages. However, in order not to penalize customers with accounts in good standing, all customers are eligible to participate as long as they meet the criteria outlined above.

Participant Tiers and Selection Methodology

Demonstration participants will fit into one of three tiers, based on home eligibility for hosting rooftop solar as determined by a rooftop solar engineering assessment. The Demonstration aims to place all interested participants in Tier I by default, on a first-come, first-served basis. Customers will fit into Tiers II and III based on placing out of eligibility for hosting rooftop solar. All benefits offered are at no cost to the customer. The following table summarizes the participant tier structure.

	Tier I	Tier II	Tier III
Customer Benefits	100 Participants	50 Participants	Additional 150 Participants
Energy Efficiency Services	✓	✓	✓
Rooftop Solar Engineering Assessment	✓	✓	✓
Solar Bill Credits	✓	✓	
Rooftop Solar System	✓		
Minor Roof & Electric Panel Repairs (if needed)	✓		

With full participation in each tier, the Demonstration accommodates up to 300 participants, 150 of which, in Tiers I and II, will receive solar bill credits.

Benefits shared by all Tiers

All participants opting in to the Demonstration are assumed to be expressing interest in potentially hosting rooftop solar at their home (*i.e.*, seeking placement in Tier I). Therefore, all will receive a rooftop solar engineering assessment to determine eligibility for hosting solar. The assessment will consider multiple factors such as roof orientation, shading, structural ability to host solar PV panels, and condition of the home's electric panel. The assessment may result in immediate approval for homes deemed solar-ready or conditional approval for homes requiring minor roof and/or electric panel repairs. Alternatively, the assessment may determine that the home is not suitable to host solar. This may be due to reasons such as orientation, shading, or the need for major roof repairs (*e.g.*, roof replacement) for which the Demonstration has not

budgeted the required funding to address. In the case that a home is in need of major roof repair, the property owner will be referred to the City of Buffalo's Emergency Assistance Loan Program.

In addition to all participants receiving a solar rooftop engineering assessment, all will be encouraged to receive whole-home EE services through NYSERDA's EmPower New York Program[5], (Assisted) Home Performance with ENERGY STAR® Program and the Green Jobs – Green New York Program. The EmPower New York Program covers a wide range of energy efficiency measures (including insulation, air sealing, efficient lighting, refrigerator replacement, and more) that can deliver significant energy savings on customers' energy bills, both electric and heating (gas or oil). The program also provides a health and safety assessment. National Grid and NYSERDA have teamed up to assist the Demonstration participants in receiving the maximum benefit from the various energy efficiency services available.

Tier I – "Solar Hosts"

For participants with homes suitable to host rooftop solar:

Benefits

- Energy efficiency services
- Rooftop solar engineering assessment
- Minor roof repairs or electric panel upgrades, if necessary (up to $2,000 in total)
- Installation of a rooftop solar system
- Solar bill credits – The aggregated value of the 100 PV systems will be divided equally among solar hosts (Tier I) and an additional group of 50 participants (Tier II)

Selection

- Capped at 100 participants.
- Requires that the solar rooftop assessment results in either approval (solar-ready) or conditional approval to address up to $2,000 in roof or electric panel repairs needed for the home to become solar-ready
- Selection on a first-come, first-served basis for solar-ready homes

Tier II – "Additional Solar Credit Participants"

For participants that expressed interest, but did not qualify for hosting solar:

Benefits

- Energy efficiency services
- Rooftop solar engineering assessment

Solar bill credits: The aggregated value of the 100 solar PV systems will be divided equally among solar hosts (Tier I) and an additional group of participants (Tier II)

Selection

- Capped at 50 participants: The cap allows a balance of extending the monetary benefit of the aggregated solar generation to participants whose roofs do not qualify, while not extending the credits to such a large group that the value becomes diluted. The cap preserves the ability for the solar credits to represent a meaningful portion of customers' electric bills.
- Selection will either be determined by a lottery for all participants that did not qualify for Tier I, or it will be determined on a first-come, first-served basis. The Company will determine which selection method to use after assessing the level of customer interest in participating in the Demonstration during the outreach and enrollment period.
- Customers may fall into Tier II instead of qualifying for Tier I due to:
    - Rooftop engineering assessment determination that the home is not suitable for solar
    - Rooftop engineering assessment determination that the home requires major roof and/or electric panel repair beyond the project's funding cap of $2,000 (*e.g.*, roof replacement) in order to be suitable to host solar
    - The premise owner not granting permission to install rooftop solar
    - In instances where the rooftop solar PV system is installed at a home of 2-4 units, one of the customers will be placed in Tier I, and the remainder of customers living under the same roof will be placed in Tier II (corresponding to the number of National Grid electric accounts at that address billed under the SC1 rate) by default.

Tier III – "Energy Efficiency Participants"

For all remaining participants that express interest in the Demonstration:

Benefits

- Energy efficiency services
- Rooftop solar engineering assessment

Selection

- Ability to accommodate up to 150 participants – The Demonstration has budgeted for up to 150 additional energy assessments for participants not receiving placement in Tiers I or II. While not a strict "cap" to fill, Tier III exists, at a minimum, to connect interested Fruit Belt residents to energy efficiency solutions offered through NYSERDA's existing EmPower New York Program[5], (Assisted) Home Performance with ENERGY STAR® Program and the Green Jobs – Green New York Program thereby providing a way for these customers to also receive energy bill savings.
- Reasons customers may fall into Tier III:
  - Tiers I and II had already reached full participation at their capped levels
  - Customers were not chosen through the lottery for Tier II (if a lottery system is deemed appropriate)
  - Customers were interested only in the energy efficiency offering of the Demonstration, and not interested in potentially hosting solar

NYSERDA Partnership: Energy Efficiency Services

National Grid will partner with NYSERDA to further reduce the energy burden of participants by integrating an energy efficiency component into the Demonstration. Participants in all tiers of the Demonstration will be enrolled in energy efficiency programs administered by NYSERDA. Participants that are eligible[6] for the EmPower New York program will be provided with energy efficiency upgrades at no cost and with in-home energy education. Participants not income-eligible for EmPower New York will be provided information on how to participate in ENERGY STAR®'s (Assisted) Home Performance, to receive an energy audit through Green Jobs, Green New York, and to learn more about incentives available for energy efficiency improvements.

Beyond reducing participant energy burdens, the incorporation of energy efficiency in the Demonstration seeks to achieve greater carbon emission reductions, increased

[6] To be eligible for the EmPower New York Program, a household's annual income cannot exceed 60% of the State Median Income. In addition, work performed in rental properties will require the landlord's approval.

system-wide efficiency, enhanced energy literacy for customers relative to understanding the elements of the energy bill, and reduction in arrearages. These measurable benefits are reflected in the first and second Test Statements in the Test Statement section.

The inclusion of energy efficiency will additionally allow exploration of potential operational efficiencies and savings that can be gained by potential partnerships to: (1) optimize customer intake channels; (2) strengthen outreach efforts; and to (3) aggregate the delivery of energy efficiency services at the community level in order to reduce costs and improve the quality of efficiency services. This model will serve to leverage National Grid and BNMC's existing relationships with the community as well as NYSERDA's efforts to increase energy affordability and access to clean energy solutions in LMI communities.

All participant tiers will benefit from the Demonstration project funding that will supplement the NYSERDA energy efficiency programs such as air sealing, insulation, electric base load reduction measures, and health and safety hazard mitigation to garner energy efficiency benefits. The Demonstration allocates a total of $300,000, or $1,000 per customer, across all participant tiers for this purpose. In addition, the Demonstration allocates a total of $200,000, or $2,000 per Tier I participant, to address minor to moderate structural issues and/or electric panel replacements that may present a barrier to a Tier I participant's home serving as a solar host site. Upon selection of all (100) Tier 1 participants and successful installation of all (100) solar PV units, any unutilized funding allocated for the remediation of minor to moderate structural issues and/or electric panel replacements for Tier 1 participants will be reallocated to supplement the energy efficiency services offered through the NYSERDA energy efficiency programs.

It should be noted that participant referrals and/or evaluations for additional energy efficiency services will not impede either an individual participant's consideration as a solar host or the Demonstration's customer enrollment targets.

How the Rooftop Solar Engineering Assessments Will Work

Solar Liberty, a locally-based solar installer, will be the partner conducting the rooftop solar engineering assessments that will determine participants' eligibility for Tier I (*i.e.*, hosting solar). Prior to arriving for the assessment, Solar Liberty's engineering team will have devised a site plan specific to each premise by utilizing proprietary software with the most up-to-date satellite imagery available. At the site visit, the team will confirm what was viewed via satellite imagery and utilize tools to assess tilt, orientation, and shading of the roof. The team will also perform a structural assessment to determine if

the roof is able to support solar as well as the home's electric panel, and whether any repair is needed for the home to be solar-ready.

As a locally based, customer-centric company, Solar Liberty can accommodate most customers' schedules and meet with the enrolled Demonstration participants at any time, including weekends. Analysis and engineering review will happen within 24 hours of the site visit. There are no seasonal factors (*e.g.*, snow) that will limit site visits and analysis.

How the Solar Bill Credits Will Work

The energy produced by the 100 PV units will be captured in front of the utility meter, aggregated collectively, and monetized. The resulting revenue, in its entirety, will then be redistributed equally among the residential electric accounts of Tiers I and II, for a total of 150 participants receiving the solar bill credits. The generation revenue will be distributed as a credit on each account's respective electric bill.

Solar Generation Value

Conceptually, the Fruit Belt solar PV projects being installed will perform similarly to all new generation projects that come on-line in the National Grid service territory. All new generation that delivers power to National Grid is subject to the PSC 220 Tariff SC6 rules. Typically, these generation customers are paid hourly Real Time ("RT") New York Independent System Operator, Inc. ("NYISO") energy prices plus NYISO Installed Capacity ("ICAP") at the Spot Market prices each month. The hourly RT prices are based upon the closest electrical Point Identification ("PTID") in the NYISO system for each generator.

The Fruit Belt customers will receive the actual value of the solar generation on a lag basis. To achieve this, the actual hourly solar generation, actual hourly RT prices, and actual Spot Market ICAP prices will be used to calculate the actual value from the prior month. Resulting credits will be given to the customers the following month. This process is easy and straight-forward; however, this could cause large differences in what the customers would see as a monthly credit in July versus January. January days are subject to fewer daylight hours as well as extended periods of cloud or snow coverage. Thus, the proposal is to forecast the generation value over a 12-month forward period, and levelize the monthly credits to customers in order to eliminate the seasonal volatility in the generation and market prices. In addition, the actual solar generation valuation would be calculated each month and these differences would be added (subtracted) to the forecasted, 12 month levelized credits. Overall, customers would see a relatively stable monthly credit and the true benefits would be borne by the Fruit Belt customers. Since the benefits and reconciliations are performed over a 12-month, forward period, actual monthly timing differences in the commodity

reconciliations would flow through the existing Electric Supply Reconciliation Mechanism ("ESRM") process (as explained further in section 4 herein).

Forecasting the Solar Generation Value

The market price data that is currently used in the monthly commodity rate-setting process for the mass market customers, Rule 46.1, will be used to determine the forecast solar generation value each month. In addition, a monthly forecast of the solar generation, either monthly or hourly, will be required to determine the market value. Currently, an on-line solar simulator based on Buffalo weather is used to develop an hourly generation profile for a 1 kW solar panel. This generation profile was then scaled up to the 500 kW project size. This method of developing the hourly profile can be adjusted as actual data is gathered from these Fruit Belt installations. An example calculation is shown in Figure 2. The volatility in the monthly credit is significant due to seasonality associated with both the solar generation and market prices. However, the average credit for a 12-month period can be expected to be approximately $15 for each of the 150 customers. This is based upon current market price forecasts for 2016 in NYISO Zone A.

Fruit Belt Solar Credit Calculator - Forecast 2016 22-Oct-15

				Installed Solar Size	500	kW			Accounts to Credit	150			
				ICAP Capacity (Summer)	372	kW (calculated)							
				ICAP Capacity (Winter)	345	kW (calculated)							
				EFOR'd	85.0%								
		Day Ahead Energy			Monthly			Solar PV	Energy & Ancillary	ICAP	Total $	Credit per	
Month		OnPeak	OffPeak	Ancillary	ICAP	1-EFOR'd		kWhs	Value	Value	Value	Account	
Jan-2016	1	52.20	38.78	1.67	1.31	15.0%		27,778	$ 1,490	$ 68	$ 1,558	$ 10.39	
Feb-2016	2	49.20	37.28	1.80	1.31	15.0%		34,970	$ 1,783	$ 68	$ 1,851	$ 12.34	
Mar-2016	3	41.25	29.25	1.89	1.31	15.0%		54,111	$ 2,333	$ 68	$ 2,401	$ 16.01	
Apr-2016	4	35.23	23.15	1.99	1.31	15.0%		60,997	$ 2,262	$ 68	$ 2,330	$ 15.53	
May-2016	5	37.03	20.35	2.37	3.36	15.0%		72,183	$ 2,781	$ 187	$ 2,968	$ 19.79	
Jun-2016	6	40.55	20.00	2.18	3.36	15.0%		70,273	$ 2,966	$ 187	$ 3,154	$ 21.02	
Jul-2016	7	49.64	23.95	1.91	3.36	15.0%		71,329	$ 3,601	$ 187	$ 3,789	$ 25.26	
Aug-2016	8	45.34	21.30	1.71	3.36	15.0%		65,619	$ 3,065	$ 187	$ 3,252	$ 21.68	
Sep-2016	9	37.40	19.38	2.01	3.36	15.0%		49,462	$ 1,927	$ 187	$ 2,114	$ 14.09	
Oct-2016	10	36.60	19.75	2.25	3.36	15.0%		40,147	$ 1,558	$ 187	$ 1,746	$ 11.64	
Nov-2016	11	37.60	23.75	2.28	1.43	15.0%		23,259	$ 923	$ 74	$ 997	$ 6.65	
Dec-2016	12	38.50	27.25	1.94	1.43	15.0%		21,779	$ 877	$ 74	$ 951	$ 6.34	
								591,908			$ 27,110	$ 180.74	Total
			value/MWh	$ 43.20			Efficiency	14%				$ 15.06	Avg

Figure 2

For the reconciliation process, a similar calculation will be performed to determine the exact value of the solar generation. If actual hourly interval metered data is available, then the actual hourly solar generation would be valued at the hourly NYISO RT prices for the closest PTID to the Fruit Belt area. If hourly data is not available, or until hourly

data is available, the total monthly solar generation can be applied to the same profile used in the forecast.

Monthly Bill Credit

Figure 3 shows how the 12-month forecast solar generation value plus prior reconciliations will be used to calculate the monthly bill credit for August 2016. In this example, forecast generation is excluded during the installation and start-up processes. Any actual generation and market value can be "banked" and trued-up with customers going forward, once the bill credit has started. This process will avoid starting out with a small credit and discouraging the customers on the overall benefit of the Demonstration. Delaying some credits until all, or most, installations are complete would be beneficial.

Figure 3 example represents the August bill credit calculation performed at the end of July. The shaded blue area is the 12-month forecast value for August 2016 through July 2017; the green shade represents the true-ups; and the cumulative reconciliation is the difference from the actual value less the forecast value (for the past 12 months), which equals $495 through July 2016. Thus:

$$\frac{total\ forecast\ value + total\ reconciliation}{12 months * 150\ customers} = forecast\ bill\ credit\ for\ August\ of\ \$15.51.$$

The reconciliation for the past 12 months is necessary since each month only $\frac{1}{12}$ of the total reconciliations are included in the upcoming monthly bill credit. Mathematically, the reconciliations are being spread out over a 12-month period.

Fruit Belt Solar Credit Calculator - Monthly Bill Credit

Month	Solar Generation Value Forecast $	Solar Generation Value Actual $	Monthly Reconciliation	12 month cumul Reconciliation on 2month lag	Total 12 month Value divided 12	Monthly Bill Credit
Jan-2016						
Feb-2016						
Mar-2016	$ -	$ 197	$ 197			
Apr-2016	$ -	$ 771	$ 771			
May-2016	$ 2,671	$ 2,465	$ (206)	$ 197	$ 2,292	$ 15.28
Jun-2016	$ 3,154	$ 2,888	$ (266)	$ 968	$ 2,378	$ 15.85
Jul-2016	$ 3,789			$ 761	$ 2,353	$ 15.69
Aug-2016	$ 3,252			$ 495	$ 2,327	$ 15.51
Sep-2016	$ 2,114					
Oct-2016	$ 1,746					
Nov-2016	$ 997					
Dec-2016	$ 951					
Jan-2017	$ 1,699					
Feb-2017	$ 1,964					
Mar-2017	$ 2,616					
Apr-2017	$ 2,355					
May-2017	$ 2,930					
Jun-2017	$ 3,063					
Jul-2017	$ 3,745					
Aug-2017	$ 3,275					
Sep-2017	$ 2,016					
Oct-2017	$ 1,675					
Nov-2017	$ 968					
Dec-2017	$ 947					

Figure 3

Energy Supply Reconciliation Mechanism

In the Figure 3 example, the actual supply cost reconciliation($supply\ cost - supply\ revenue$) of August 2016 will be performed in September 2016. As a result, the actual value of the solar generation will be known as well as its impacts in reducing the cost of the NYISO energy purchases. In the reconciliation process, the lower supply cost is offset by the lower revenue associated with the bill credit. If all 150 bills were sent out, then the estimated reduced revenue associated with the Demonstration credit would be $2,896.

For example, if the actual value of the solar generation reduced supply costs by $3000, then the reconciliation would be $2896 less $3000, or a $104 credit. This credit would flow through the ESRM to all commodity customers. Thus, all commodity customers would get a direct monthly impact from the true-up of the solar generation. Because the

Demonstration includes the actual prior reconciliations in our forecast for the next 12 months, the 150 participating customers will eventually see the true value of the solar generation in their bill credit. Over the long run, no National Grid commodity customers will see any impact from this bill credit and true-up process.

Generation Metering

The Company will install generation metering at each applicable home's solar PV unit. Each solar array will be metered by a separate automatic meter reading ("AMR") kWh meter. The meters will each be set to separate 'dummy' premises/service points in the Company's billing system ("CSS") to establish the location for sending orders to the field for maintenance, repairs, etc. The meter data will be downloaded monthly to the Company's Field Collection System ("FCS"). FCS will send all the data to CSS monthly in order to post to individual accounts and retain the reading history. FCS will generate a monthly report of the 100 generation meters and register reads to send to the billing system as well as the NY Electric Supply group, who will calculate the credit amount as described in Section 3 above.

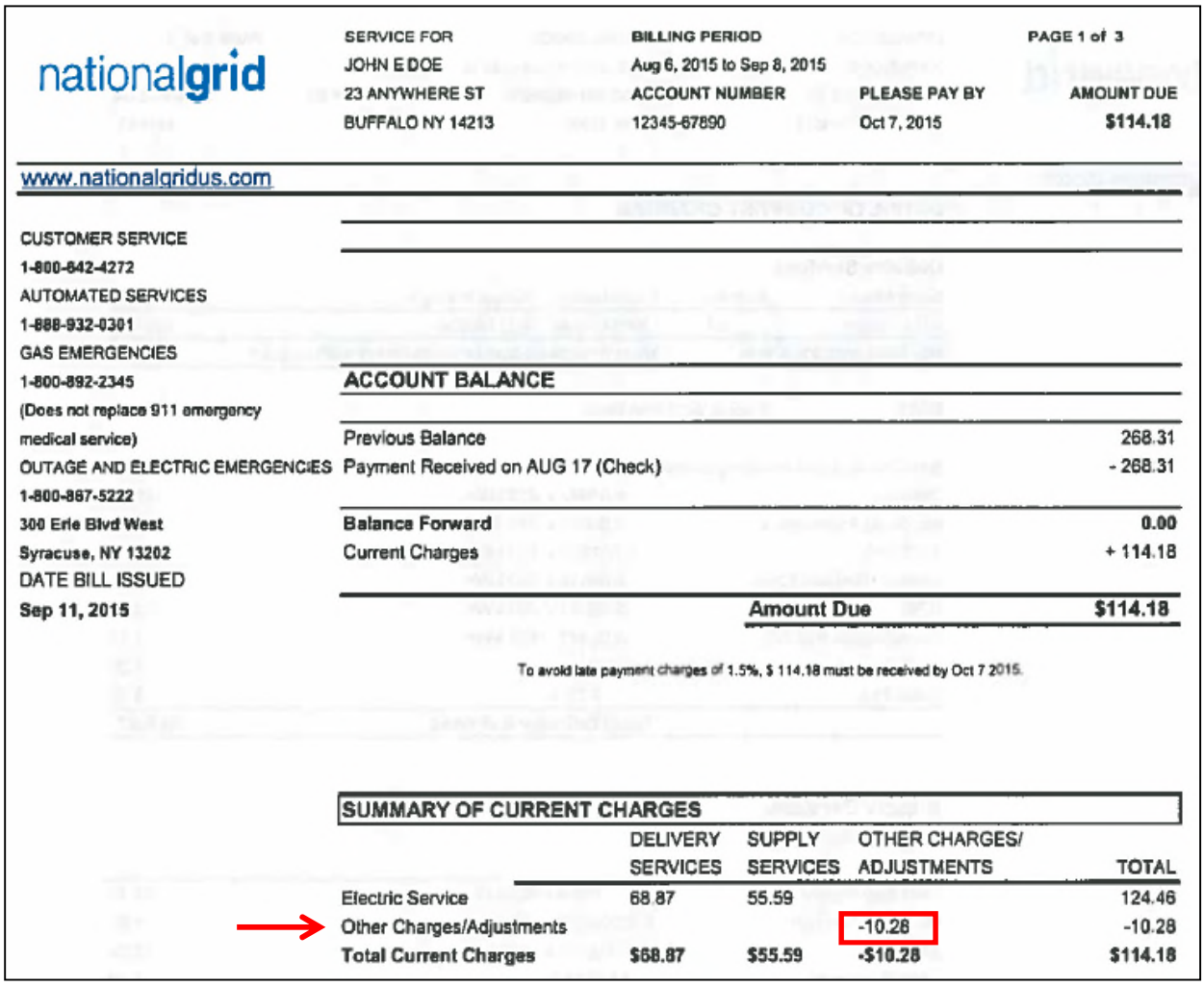
Monthly Credit on Customer Bills

The billing system will disburse the credits equally on Tiers I and II participants' bills. The credits will be posted using a regular, automated billing system debit/credit transfer process. Once posted, the credit will appear on the bill in the "Other Charges/Adjustments" section. The credit will be absorbed into the accounts receivable balance. When payments are posted to the account, a payment processing order will be issued. The order will first apply the payment towards oldest amount owing before applying to the 2nd oldest amount owing, etc. according to standard procedure.

Snapshots of sample bills are provided below to illustrate how the solar credit line item will appear on the customers' bills. Sample Bill 1 would apply to a customer not in arrears. Sample Bill 2 would apply to a customer with an arrears balance. The credit would display as "Fruit Belt Solar Demonstration Credit" or an appropriate abbreviation if there is a space limitation on the bill.

Sample Bill 1 – For a customer that is not in arrears

Page 1 of the bill shows the total for "Other Charges/Adjustments," which will include the solar bill credit (circled in red):



nationalgrid

SERVICE FOR	BILLING PERIOD		PAGE 1 of 3
JOHN E DOE	Aug 6, 2015 to Sep 8, 2015		
23 ANYWHERE ST	ACCOUNT NUMBER	PLEASE PAY BY	AMOUNT DUE
BUFFALO NY 14213	12345-67890	Oct 7, 2015	$114.18

www.nationalgridus.com

CUSTOMER SERVICE
1-800-642-4272
AUTOMATED SERVICES
1-888-932-0301
GAS EMERGENCIES
1-800-892-2345
(Does not replace 911 emergency medical service)
OUTAGE AND ELECTRIC EMERGENCIES
1-800-867-5222
300 Erie Blvd West
Syracuse, NY 13202
DATE BILL ISSUED
Sep 11, 2015

ACCOUNT BALANCE

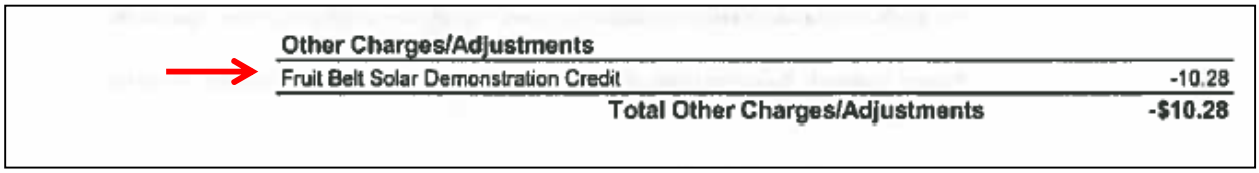
Previous Balance	268.31
Payment Received on AUG 17 (Check)	- 268.31
Balance Forward	**0.00**
Current Charges	+ 114.18
Amount Due	**$114.18**

To avoid late payment charges of 1.5%, $ 114.18 must be received by Oct 7 2015.

SUMMARY OF CURRENT CHARGES

	DELIVERY SERVICES	SUPPLY SERVICES	OTHER CHARGES/ ADJUSTMENTS	TOTAL
Electric Service	68.87	55.59		124.46
Other Charges/Adjustments			-10.28	-10.28
Total Current Charges	**$68.87**	**$55.59**	**-$10.28**	**$114.18**

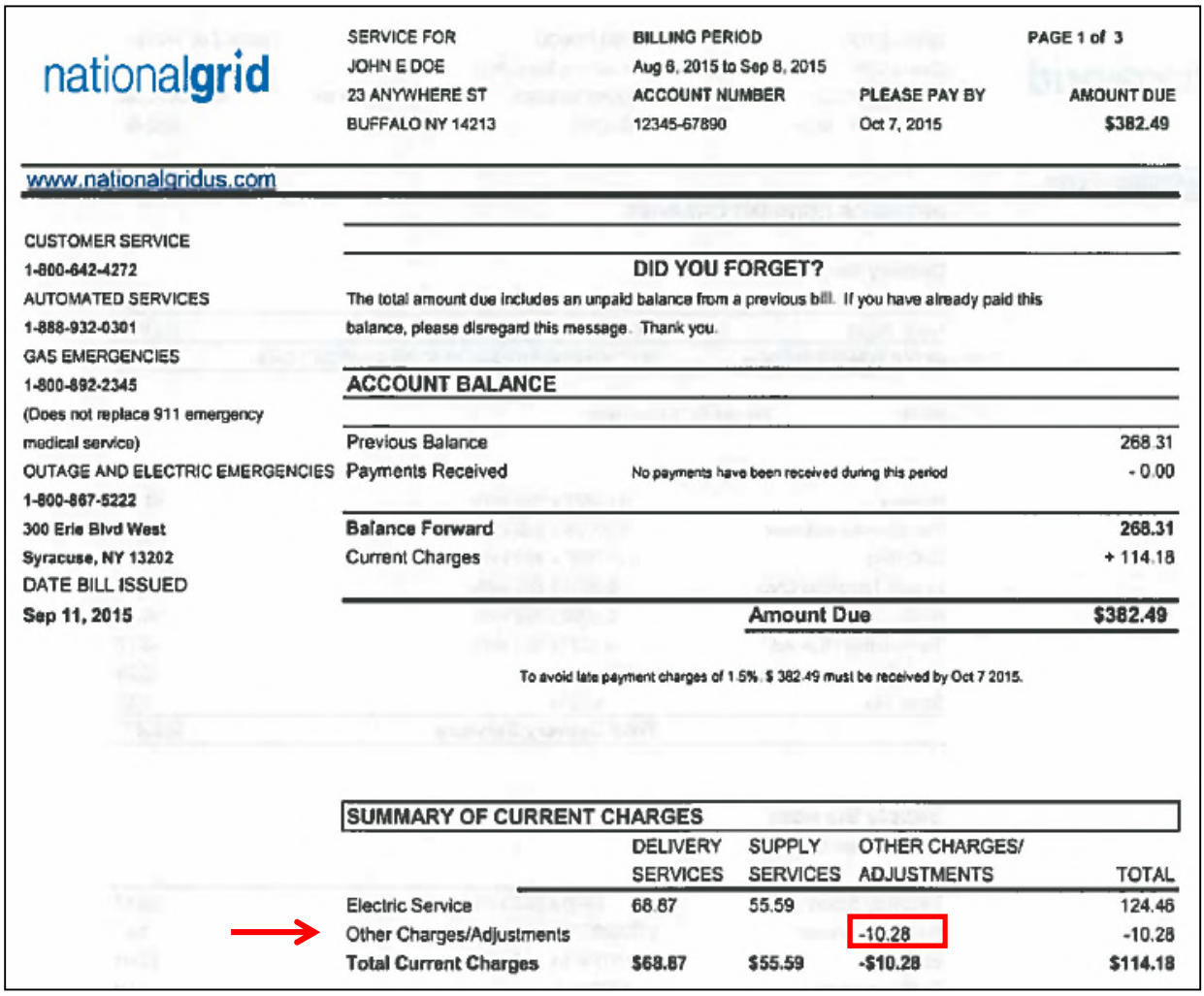
Page 3 of the bill contains the detailed lined item:



Other Charges/Adjustments	
Fruit Belt Solar Demonstration Credit	-10.28
Total Other Charges/Adjustments	**-$10.28**

Sample Bill 2 – For a customer carrying an arrears balance

Page 1 of the bill shows the total for “Other Charges/Adjustments,” which will include the solar bill credit (circled in red):



nationalgrid

SERVICE FOR
JOHN E DOE
23 ANYWHERE ST
BUFFALO NY 14213

BILLING PERIOD
Aug 8, 2015 to Sep 8, 2015
ACCOUNT NUMBER
12345-67890

PAGE 1 of 3
PLEASE PAY BY
Oct 7, 2015
AMOUNT DUE
$382.49

www.nationalgridus.com

CUSTOMER SERVICE
1-800-642-4272
AUTOMATED SERVICES
1-888-932-0301
GAS EMERGENCIES
1-800-892-2345
(Does not replace 911 emergency medical service)
OUTAGE AND ELECTRIC EMERGENCIES
1-800-867-5222
300 Erie Blvd West
Syracuse, NY 13202
DATE BILL ISSUED
Sep 11, 2015

DID YOU FORGET?

The total amount due includes an unpaid balance from a previous bill. If you have already paid this balance, please disregard this message. Thank you.

ACCOUNT BALANCE

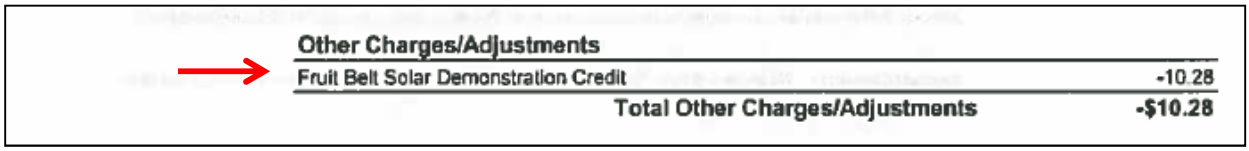
Previous Balance		268.31
Payments Received	No payments have been received during this period	- 0.00
Balance Forward		268.31
Current Charges		+ 114.18
	Amount Due	$382.49

To avoid late payment charges of 1.5%, $ 382.49 must be received by Oct 7 2015.

SUMMARY OF CURRENT CHARGES

	DELIVERY SERVICES	SUPPLY SERVICES	OTHER CHARGES/ ADJUSTMENTS	TOTAL
Electric Service	68.87	55.59		124.46
Other Charges/Adjustments			-10.28	-10.28
Total Current Charges	$68.87	$55.59	-$10.28	$114.18

Page 3 of the bill contains the detailed lined item:



Other Charges/Adjustments

Fruit Belt Solar Demonstration Credit	-10.28
Total Other Charges/Adjustments	-$10.28

Customer/Stakeholder Engagement and Communications

Customer/stakeholder engagement and communications will be a three-phased approach that includes awareness, enrollment, and installation. National Grid will employ a comprehensive and collaborative mix of traditional grassroots engagement, marketing, public relations, and media relations. National Grid will work with the BNMC team to introduce the Demonstration as a National Grid Pilot Demonstration ("PD") to the neighboring community. The primary goal of the outreach is to increase awareness and educate customers of near and long-term benefits to stimulate participation.

Why Grassroots, Why the BNMC as Partner

Based on the target neighborhood and potential audience for the Demonstration, National Grid believes that a strong grassroots communications program is essential to gaining community support and participation. While standard marketing and public relations tactics will be employed where appropriate, a street-level, face-to-face communications strategy will be the primary focus, especially early on as the program and its intended benefits are communicated to the neighborhood and other key stakeholders.

The BNMC is a self-sustaining social enterprise successfully combining innovation, job creation, and urban revitalization. It serves as the umbrella organization of the anchor institutions that make up the BNMC located within the 120-acre campus bordering Allentown, the Fruit Belt, and Downtown. The BNMC fosters conversation and collaboration among its member institutions, its partners, and the community to address critical issues impacting them including entrepreneurship, energy, access and transportation, workforce and procurement, neighborhoods, and healthy communities with the goal of increasing economic development and building a strong community.

As such, the BNMC team is uniquely qualified to partner with National Grid on the Demonstration project in the Fruit Belt, adjacent to the medical campus. The NG/BNMC partnership will facilitate conversation with Fruit Belt residents, organizations, and leadership to raise awareness and participation in the project. It is expected that the project will be received favorably by local residents, however, based on previous BNMC experience and understanding of neighborhood issues, it is critical to engage residents in a thoughtful, targeted approach to build credibility and support for the project.

For these reasons, a neighborhood engagement approach, including personal outreach to neighborhood leaders, open forums where residents can ask questions, and working through organizations and individuals trusted by Fruit Belt residents, can lead to greater interest and acceptance of the Demonstration.

Examples of past successful Fruit Belt neighborhood engagement led by the BNMC are detailed in Appendix 1. Letters of support from stakeholders are provided in Appendix 2.

Stakeholder/Customer Engagement & Communications to Date

Program Conception (Fall 2014 – Spring 2015): COMPLETE

Audience: Fruit Belt Leaders, Potential Partners and influencers

Key Messages: Preliminary planning; request for input and support

a. Conducted preliminary meetings with multiple Fruit Belt neighborhood leadership groups including:
   i. Orchard Community Initiative
   ii. Fruit Belt Advisory Council
   iii. Buffalo Federation of Neighborhood Centers
   iv. Fruit Belt Coalition
   v. Fruit Belt Homeowners and Tenant Council

b. Secured letters of support from key leaders including Orchard Community Initiative and the Fruit Belt Advisory Council.

c. Communicated with key legislative contacts to apprise them of the project and seek input and support including Common Council President Darius Pridgen, Buffalo Common Council President, State Assemblywoman Crystal-Peoples-Stokes, and State Senator Tim Kennedy.

Conditional Program Approval (Spring/Summer 2015): COMPLETE

Audience: Overall Community

Key Messages: The Commission has granted preliminary approval to the Demonstration; project details may change pending final approval

a. National Grid issued a press release regarding project approval; in-depth media coverage in Buffalo News.
b. Hosted a BNMC Four Neighborhoods-One Community Meeting on July 15, 2015 highlighting the project and featuring Dennis Elsenbeck from National Grid to outline the project and answer questions from the local community. Four Neighborhoods One Community meetings are held quarterly on the Medical Campus and are designed to share information and gather input from local residents on issues of concern including transportation, parking, workforce development, local procurement, entrepreneurship and healthy communities.

c. Developed and posted an Executive Summary and Frequently Asked Questions regarding the project on a “community bulletin board” on the BNMC website, designed to provide up to date information regarding the project for interested stakeholders.
d. National Grid conducted discussions with City legislative leaders regarding the project.

Stakeholder/Customer Engagement & Communications Remaining

Phase 1: "Awareness"

Phase 1 of the Demonstration communications will be a comprehensive and collaborative mix of traditional grassroots engagement, marketing, public relations, and media relations. National Grid will work with the BNMC to introduce the Fruit Belt Neighborhood Solar Demonstration. The primary goals of Phase 1 are to increase awareness and educate customers of near and long-term benefits to stimulate participation.

Audience	Details	Key Message	Communication Tactic/Channel/Owner(s)
Customers	• Current Fruit Belt Residents • Owners/Renters	• Unique, stand-alone opportunity • Way to generate $ savings on your bill • AT NO COST TO YOU • Community Benefits – Shared Savings • Participation is optional • Not all will be eligible/Why • Join us at these events to learn more • Visit us at these sites to learn more • Call us at this # to learn more • Brought to you by National Grid in partnership with BNMC and the State of NY in support of the Governor's REV Initiative	• 4 Neighborhood 1 Community meetings (BNMC/National Grid) • Community Advocacy Meetings (National Grid/BNMC) • "At the Table" lunches (BNMC/National Grid) • "We know ™" One Page print mailer (BNMC) • Project Description One Pager/Leave Behind (National Grid) • Partner Communications (UB, Roswell) • Community Weeklies-Newsletters (Community Org TBD) • Dedicated Project Website (National Grid) • Community Websites (BNMC) • e-newsletter (BNMC) • Paid Social Media targeted to Community Facebook Pages (National Grid) • Community Weeklies-Newsletters (Community Org TBD) • Targeted Mobile Advertising (National Grid) • Public Transportation Advertising (National Grid/BNMC) • Informative Demonstration Video leveraged via mobile, social, events (National Grid) • Toll Free/716 Phone #

Neighborhood Orgs & Leaders	• Buffalo Federation of Neighborhood Communities (BFNC) • Orchard Community Initiative (OCI) • Fruit Belt Homeowners/Tenants Assoc. • Fruit Belt Advisory Council • Block Clubs (Fruit Belt United, Mulberry Street, Fruit Belt Coalition) • Faith-based Organizations • Allentown Association/Non-Fruit Belt neighbors • McCarly Garden Task Force	• The Demonstration is a worthwhile program for those Fruit Belt residents who elect to participate, and to overall community • Partner with us to help communicate program • Test program for underserved neighborhoods • NO COST OPPORTUNITY • Opportunities range from home energy assessments, bill credits, solar installations • Educational opportunity for additional cost savings measures for those who may not meet eligibility requirements • Brought to you by National Grid in partnership with BNMC and the State of NY in support of the Governor's REV Initiative	• Personal Outreach- Face to Face group and/or individual meetings (National Grid/BNMC) • Community Websites (BNMC) • Dedicated Project Website (National Grid) • Community Advocacy Meetings (National Grid/BNMC) • Project Description One Pager/Leave Behind (National Grid) • Informative Demonstration Video (National Grid)
Neighborhood Gov't Reps	• NYS Assemblyperson • Crystal Peoples Stokes • Common Council President • Darius Pridgen • NYS Senator • Tim Kennedy • Erie County Legislator • Barbara Miller Williams • City of Buffalo	• The Demonstration is a worthwhile program for those Fruit Belt residents who elect to participate, and to overall community • Partner with us to help communicate program • Test program for underserved neighborhoods • Opportunities range from home energy efficiency services, bill credits, solar installations • Educational opportunity for additional cost savings measures for those who may not meet eligibility requirements • Brought to you by National Grid in partnership with BNMC and the State of NY in support of the Governor's REV Initiative	• Personal Outreach- Face to Face group and/or individual meetings (National Grid/BNMC) • Community Websites (BNMC) • Dedicated Project Website (National Grid) • Community Advocacy Meetings (National Grid/BNMC) • Project Description One Pager/Leave Behind (National Grid) • Informative Demonstration Video (National Grid)

Government Reps:	• Mayor • Common Council • County • State • Federal	• The Demonstration is a worthwhile program for those Fruit Belt residents who elect to participate • Partner with us to help communicate program • Brought to you by National Grid in partnership with BNMC and the State of NY in support of the Governor's REV Initiative	• Personal Outreach- Face to Face group and/or individual meetings (National Grid/BNMC) • Community Websites (BNMC) • Dedicated Project Website (National Grid) • Community Advocacy Meetings (National Grid/BNMC) • Project Description One Pager/Leave Behind (National Grid) • Informative Demonstration Video (National Grid)
Media	• Neighborhood/ethnic media • (Criterion. Challenger, Black WNY) • Local/Regional • Trade Press • Social media	• Unique Demonstration project that will benefit residents and test potential new solar distribution model in underserved neighborhoods • Partner with us to help communicate program • Test program for underserved neighborhoods • Opportunities range from home energy efficiency services, bill credits, solar installations • Educational opportunity for additional cost savings measures for those who may not meet eligibility requirements • Brought to you by National Grid in partnership with BNMC and the State of NY in support of the Governor's REV Initiative	• Personal Outreach- Face to Face group and/or individual meetings (National Grid/BNMC) • Community Websites (BNMC) • Dedicated Project Website (National Grid) • Community Advocacy Meetings (National Grid/BNMC) • Project Description One Pager/Leave Behind (National Grid) • Informative Demonstration Video (National Grid)
Partners	• GE • Solar Liberty	• GE/Solar Liberty/NYSERDA in partnership with the State of NY/ National Grid/BNMC proud to leverage our expertise/technology for the advancement of community based renewables in the underserved Fruit Belt community.	• Partner preferred tactics/channels TBD

Employees	• BNMC • National Grid	• Be proud of this unique partnership b/w National Grid/BNMC & State of NY in support of the Governor's REV Initiative • Part of an innovative approach to raising solar adoption rates while assisting a traditionally underserved community	• Internal Communications Channels for each organization

Stakeholder/Customer Engagement – Phase 2 "Enrollment"

Building off momentum from Phase 1, Phase 2 presents a mix of more targeted education/awareness messaging (until the Demonstration thresholds are met) with a new customer focus on driving enrollment. Using similar tactics as Phase 1, National Grid with the continued support of BNMC, partners, and engaged community stakeholders will deliver, in clear, easy to understand language, the process for enrollment and participation in the Demonstration. The primary audience will be customers with ongoing secondary communications to all other stakeholders to identify milestones and share in additional opportunities to support each other.

Audience	Details	Key Message	Communication Tactic/Channel/Owner(s)
Customers	• Current Fruit Belt Residents • Owners/Renters	• Describe 3 Tiers of Eligibility • To determine Tier eligibility, call this # After assessment • If eligible you will: o Estimated timeline detailing process start to finish • If NOT you can: o Alternative National Grid or Buffalo Programs to further assist those interested in making changes but not eligible.	• Community Advocate Meetings (National Grid/BNMC) • Tabling/Enrollment Drives at Fruit Belt Community Events during defined enrollment period (National Grid/BNMC) • "At the Table" lunches (BNMC/National Grid) • "We know ™" One Page print mailer (BNMC) • Project Enrollment Kit Digital/Print (National Grid) • Dedicated Project Website Updates (National Grid) • Community Websites (BNMC) • e-newsletter (BNMC) • Dedicate toll free/716 Area Code Info/Enrollment Line
Neighborhood Orgs & Leaders	• Buffalo Federation of Neighborhood Communities (BFNC) • Orchard Community Initiative (OCI) • Fruit Belt Homeowners/Tenants Assoc. • Fruit Belt Advisory Council • Block Clubs (Fruit Belt United, Mulberry Street, Fruit Belt Coalition) • Faith-based Organizations • Allentown Association/Non-Fruit Belt neighbors • McCarly Garden Task Force	• Describe 3 Tiers of Eligibility • To determine Tier eligibility, call this # After assessment • If eligible you will: o Estimated timeline detailing process start to finish • If NOT you can: o Alternative National Grid or Buffalo Programs to further assist those interested in making changes but not eligible.	• Community Advocate Meetings (National Grid/BNMC) • Tabling/Enrollment Drives at Fruit Belt Community Events during defined enrollment period (National Grid/BNMC) • "At the Table" lunches (BNMC/National Grid) • "We know ™" One Page print mailer (BNMC) • Project Enrollment Kit Digital/Print (National Grid) • Dedicated Project Website Updates (National Grid) • Community Websites (BNMC) • e-newsletter (BNMC) • Dedicate toll free/716 Area Code Info/Enrollment Line

Neighborhood Gov't Reps	• NYS Assemblyperson • Crystal Peoples Stokes • Common Council President • Darius Pridgen • NYS Senator • Tim Kennedy • Erie County Legislator • Barbara Miller Williams • City of Buffalo	• Describe 3 Tiers of Eligibility • To determine Tier eligibility, call this # After assessment • If eligible you will: o Estimated timeline detailing process start to finish • If NOT you can: o Alternative National Grid or Buffalo Programs to further assist those interested in making changes but cannot participate • NS is a worthwhile program for those Fruit Belt residents who elect to participate, and to overall community	• Personal Outreach- Face to Face group and/or individual meetings (National Grid/BNMC) • Community Websites (BNMC) • Dedicated Project Website (National Grid) • Community Advocacy Meetings (National Grid/BNMC) • Project Description One Pager/Leave Behind (National Grid) • Informative Demonstration Video (National Grid)
Government Reps	• Mayor • Common Council • County • State • Federal	• Demonstration updates	• Personal Outreach- Face to Face group and/or individual meetings (National Grid/BNMC) • Direct Email Fruit Belt Solar Newsletter
Media	• Neighborhood/ethnic media (Criterion, Challenger, Black WNY) • Local/Regional • Trade Press • Social media	• Describe 3 Tiers of Eligibility • Estimated Monthly Cost Savings • Estimated Annualized Aggregate Savings • Estimated EE Metrics • The Demonstration is a worthwhile program for those Fruit Belt residents who elect to participate, and to overall community • Brought to you by National Grid in partnership with BNMC and the State of NY in support of the Governor's REV Initiative	• Personal Outreach- Face to Face group and/or individual meetings (National Grid/BNMC) • Community Websites (BNMC) • Dedicated Project Website (National Grid) • Community Advocacy Meetings (National Grid/BNMC) • Project Description One Pager/Leave Behind (National Grid) • Informative Demonstration Video (National Grid)

Stakeholder/ Customer Engagement – Phase 3 "Installation"

With the Demonstration participation at capacity and all eligible participants defined in all 3 tiers (Home Energy assessment/Bill Rebates/Solar Installations), the primary focus of this stage of engagement and communications is direct between the participants, National Grid, and solar installers with supplemental communication to all other stakeholders marking milestones with planned public relations (PR) events at the first and last installations.

Audience	Details	Key Message	Communication Tactic/Channel/Owner(s)

Customers	• Demonstration Participants	• Installation Prep
		• Installation Date
		• Completion
		• During the process for any issues/concerns or questions please
		  o Call us at
		  o Visit us at
		  o Send an email to
			• Direct 2 way Communications (National Grid/Solar Liberty)
			• Dedicated Project Website (National Grid/Solar Liberty)
			• Toll Free/716 Phone #
			• Dedicated email address

Neighborhood Orgs & Leaders	• Buffalo Federation of Neighborhood Communities (BFNC) • Orchard Community Initiative (OCI) • Fruit Belt Homeowners/Tenants Assoc. • Fruit Belt Advisory Council • Block Clubs (Fruit Belt United, Mulberry Street, Fruit Belt Coalition) • Faith-based Organizations • Allentown Association/Non-Fruit Belt neighbors • McCarly Garden Task Force	• Demonstration Updates • Milestone Dates • PR Events Beginning/End	• Personal Outreach- Face to Face group and/or individual meetings (National Grid/BNMC) • Dedicated Project Website (National Grid/Solar Liberty) • Email/Direct Mail Updates

Neighborhood Gov't Reps	• NYS Assemblyperson • Crystal Peoples Stokes • Common Council President • Darius Pridgen • NYS Senator • Tim Kennedy • Erie County Legislator • Barbara Miller Williams • City of Buffalo	• Demonstration Updates • Milestone Dates • PR Events Beginning/End	• Personal Outreach- Face to Face group and/or individual meetings (National Grid/BNMC) • Dedicated Project Website (National Grid/Solar Liberty) • Email/Direct Mail Updates
Government Reps	• Mayor • Common Council • County • State • Federal	• Demonstration Updates • Milestone Dates • PR Events Beginning/End	• Personal Outreach- Face to Face group and/or individual meetings (National Grid/BNMC) • Dedicated Project Website (NG/Solar Liberty) • Email/Direct Mail Updates
Media	• Neighborhood/ethnic media • (Criterion. Challenger, Black WNY) • Local/Regional • Trade Press • Social media	• Demonstration Updates • Milestone Dates • PR Events Beginning/End	• Press Release/Media Alert Updates (National Grid/BNMC) • Press Event (National Grid/BNMC/Solar Liberty/GE)

Alignment with New York State Energy Initiatives

In addition to the goals of the REV Proceeding, the Demonstration aligns with the guiding principles of the State's major energy initiatives:

The Energy to Lead: 2015 New York State Energy Plan Vol. 1

The Demonstration's scope addresses five key elements of the 2015 New York State Energy Plan that help to establish it as a replicable, scalable model to drive implementation:

- Energy Affordability
- The transition to a "clean energy economy"
- Reliability and Resiliency
- Regulatory Reform, and
- Environmental Justice

As referenced earlier, this initiative will feature a utility ownership model, which will demonstrate the possibilities and flexibility of an alternative business model. Ultimately, this type of innovation creates an avenue for more customers to engage, especially in a LMI urban area, to the benefit of the entire National Grid electric system and its customers.

The Green Jobs – Green New York ("GJGNY") Act of 2009

This proposal supports the workforce development vision of the Green Jobs - Green New York Program ("GJGNY") to lessen the burden of energy costs on consumers while spurring local job growth in the clean energy sector.

In particular, the project would support GJGNY's critical objective of "target[ing] communities in areas where energy costs are particularly high in relation to a measure of median household income" by creating permanent jobs through the involvement of Solar Liberty, a Buffalo-based partner that has committed to hiring five local residents to support the installation and ongoing work resulting from the Demonstration. Additionally, the potential involvement of other local partners will further support the workforce development.

The New York State Regional Economic Development Councils' ("REDCs") Cleaner, Greener Communities ("CGC") Program

The primary goal of the CGC Program is to encourage communities to foster public-private partnerships along with regional sustainable growth strategies in order to promote energy efficiency and renewables integration. The Demonstration seeks to

support this goal by engaging the residents in the Demonstration area to contribute towards, and benefit from, New York State's clean energy economy.

Proceeding on Motion of the Commission to Consider a Clean Energy Fund ("CEF")

In its response to the New York State Public Service Commission's Order to consider the establishment of a Clean Energy Fund ("CEF"), NYSERDA's proposal identifies several key economic, supply-side, and community barriers that each customer segment faces in the State's drive "to advance cleaner, more resilient, and affordable energy infrastructure for New York State."[7]

The Demonstration holistically addresses three specific LMI residential barriers referenced in the CEF Proposal:

1. "LMI residents are financially stressed, and lack the capital or willingness to take on debt to cover energy efficiency and distributed generation investments, despite the attractive economic value of these investments."
2. "Employment is inhibited by unpredictable volume of local work or availability of incentives to stimulate volume."
3. "EE and DG/RE services providers often avoid disadvantaged communities based on the expectation that return on their marketing investment will be low."[8]

The Demonstration addresses the lack of capital barrier by offering a solution at zero cost to the participating customer that includes opportunities in both energy efficiency and solar PV. This enables participation in new clean technology market for those currently excluded due to recognized market barriers. By working closely with local third parties, additional market stimulation allows for job creation at a local level. Through the proposed revenue-neutral, utility ownership model, various LMI community barriers are effectively addressed to allow for the community's greater participation in, and greater benefit from, the State's clean energy economy.

The Western New York Regional Sustainability Plan

The Demonstration drives the vision statement of the Western New York Sustainability Plan "to create a future where social and environmental issues are addressed within a framework of a sustainable regional economy. The pursuit of sustainability includes the creation and maintenance of conditions under which our communities utilize the

[7] New York State Energy Research and Development Authority, Clean Energy Fund Proposal filed 9/23/2014, p. 5.
[8] New York State Energy Research and Development Authority, Clean Energy Fund Proposal filed 9/23/2014, pp. 65-66.

resources we have in the most effective ways in order to permit social and economic growth while preserving natural resources."[9] As a tangible, representative project that encompasses many of the implementation goals and strategies outlined in the Sustainability Plan, the Demonstration promotes the use and development of renewable energy through integrating public education.

Grid Efficiency Benefits

The residential PV systems used in the Demonstration are based on solar panels with integral micro-inverters. Many solar installations employ a single inverter for all panels in the array. In such cases, the panels are in a series, connected in strings. There may be multiple strings connected in parallel depending on the power rating and voltage delivered to the single inverter. Since solar panels are DC devices, special care must be taken in the routing and protection of the DC wiring. Hence, certified solar installers are required for arrays interconnected with DC voltage. Once connected to the inverter, which is normally located remotely from the solar panels, the DC energy is converted to AC before interconnecting to household wiring. Typically, if a shadow is cast on one panel in a string, power from that whole string is interrupted. Utilizing solar panels with individual inverters (one per panel) creates performance benefits for small residential arrays. Unlike single inverter systems, when a shadow is cast on one solar panel, only that panel will experience power reduction. Additionally, because the micro-inverters convert the DC power to AC at the panel itself, AC power flows through roof and home wiring, avoiding any special interconnection provisions required beyond normal, standard practice. The power produced by the individual solar panels in the solar PV system will be aggregated and interconnected to the customer at the service entrance. The micro-inverters selected for the Demonstration can generate reactive power at any time when the panels are not producing real power at their maximum output (*i.e.*, in the morning and evening, on cloudy days, and at night). This capability will be used in the Demonstration to improve the power factor at the home as well as on the distribution circuit. This will result in improved upstream electric power system efficiencies. There will be multiple power factor control methods employed to test the effectiveness of each, with the goal of evaluating the efficiency benefits gained in relation to projected costs.

Meters and control systems will be utilized both at homes as well as the substation in order to provide monitoring and feedback for verification and control. These will include:

- Existing house consumption meter – This is a standard single-phase 120/240V revenue meter (not a net energy meter). For the Demonstration sites, a smart

[9] Western New York Regional Sustainability Plan 2013, Executive Summary, http://regionalcouncils.ny.gov/sites/default/files/regions/westernny/Western-NY-CGC-Plan-Report.pdf

meter will be installed at the same time as the interface/interconnect device to provide more granular interval data and some operational data (*i.e*., volts, current, and power factor). However, for concept roll-out, the existing automatic meter reading ("AMR") drive-by meters that are installed at the premises now will be sufficient.

- Solar generation meter – This meter measures the solar generation independently of the premises' consumption. It will be part of the interconnection at the customer's premises, and will be installed at the same time as the solar panels.
- Power factor meter – This meter will measure the phase angle of the home/solar combination at the premises' service entrance, i.e., it will be located on the utility-side of both the existing consumption meter as well as the solar generation meter. It will be part of the interconnection at the premises, and installed at the same time as the solar panels. Since it will be housed within the interconnecting device, this meter requires some development by the interconnecting device manufacturer.
- Substation meter – These meters will be located at the head-end of each feeder (likely three in total). They will be high-performance meters that measure many power system parameters with great accuracy. They will either be located within, or on the individual circuits just outside of, the substation. These meters will be installed early in the Demonstration to provide baseline circuit data.
- Home gateway – A gateway will be located at each home with a solar array. The purpose of the gateway will be to communicate with all micro-inverters at that location in order to provide dispatch control signals, monitoring, and diagnostics.
- Centralized control system – A system to control and dispatch reactive power from all of the micro-inverters simultaneously can be located at either the substation or an alternate location. It will make use of feedback from the meters to calculate and send dispatch signals to the gateways.

Various use cases will be tested as described in the Test Scenarios section of this plan. A two-way wireless communication system will be utilized for data transmission between the gateways, field metering, and control and monitoring locations. This communication system is presently planned as a 4G cellular wireless system. A separate wireless system will exist between the home gateway and the individual micro-inverters and will be part of the home solar system. Through the collection and processing of both real-time solar PV system data and central control system circuit data, reactive power dispatch signals will be calculated and sent to the gateways and, in-turn, to the micro-inverters for the non-autonomous use cases. The reactive power output from the micro-inverters will be adjusted to minimize the amount supplied by the electric grid, which will optimize circuit efficiency. Circuit voltage will be monitored during the use cases to assure it stays within required parameters.

For the Demonstration, the adjustment of reactive power, and thus the effect on circuit efficiency, will be limited to the capabilities of the number of solar PV systems installed on the individual distribution circuits. The use case results will be compared to the base case results in order to determine the effect that the solar PV systems have on distribution circuits and upstream efficiencies.

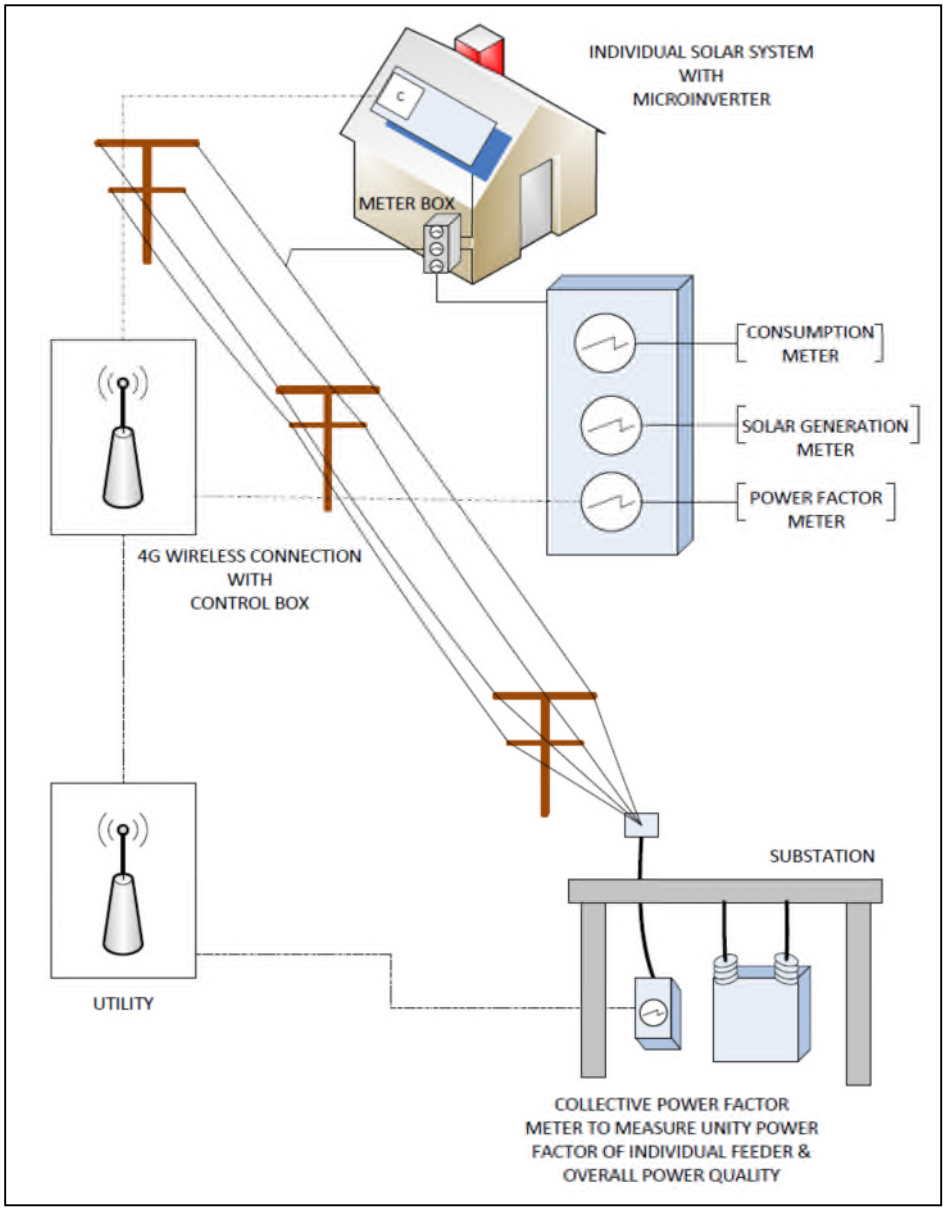


Figure 4: Illustration of Equipment and Set-Up to Measure Grid Efficiency

Test Statements

In addition to delivering the expected primary customer benefit of energy bill savings, the Demonstration allows the opportunity to test additional benefits that fall into two categories: (1) customer bill payment behavior and arrears management, and (2) grid efficiency benefits.

<table>
<tr><th>Test Statement</th><th>If…</th><th>Then…</th></tr>
<tr><td>Providing solar and energy efficiency to customers will lower their electric bills by a meaningful amount.</td><td>The value of solar generation of 100 units (estimated at 5 kW each) is divided equally among 150 participants as a bill credit, and participants are offered additional ways to save energy through efficiency.</td><td>The expected bill reduction will be at least $15 per month or about 15-20% of their monthly electric charges.</td></tr>
<tr><td rowspan="2">Providing solar credits to participants in a LMI neighborhood, as well as offering energy efficiency to further drive bill savings through reduced energy consumption, will have a positive impact on bill payment behavior and enable better management of arrears.</td><td rowspan="2">LMI participants’ electric bills are reduced due to solar bill credits and energy efficiency measures.</td><td>Participants will be able to pay 3-5% more of their total balance (current charges + arrears) than the control group.</td></tr>
<tr><td>Participants will pay down 5% more of their arrears balance compared to the control group.</td></tr>
<tr><td rowspan="3">Concentrating distributed, solar resources with VAR support within a boundary served by a common substation vs. scattered deployment of conventional rooftop solar will deliver measurable grid efficiency benefits.</td><td>Volt/VAR optimization is enabled on a per system basis.</td><td>The power factor of customers’ electric service will improve, reducing local losses.</td></tr>
<tr><td rowspan="2">Power is generated along the feeder and Volt/VAR optimization is enabled on a substation basis.</td><td>Substation power factor will improve, reducing system losses.</td></tr>
<tr><td>Circuit and substation losses will be reduced based on the number of solar PV systems installed on the homes on each circuit.</td></tr>
</table>

Note: Before specific per-circuit targets can be developed for grid efficiency benefits, the following will need to be determined:

1. How many solar PV systems are installed on each circuit;
2. Existing operating conditions; and
3. The results from network modeling of the circuits.

Preliminary estimates from rough modeling of the aggregated solar PV system output on a typical 4160V circuit show that the combined grid efficiency benefits from the real and reactive power generated may be on the order of 15,000 kWh per year. More detailed modeling and estimates will be developed early in the Demonstration.

Test Population

To test the hypotheses related to customer bill payment behavior and arrears management, participants in Tiers I and II (those receiving the solar bill credit) will be compared to a control group. The control group will represent similar account attributes to that of the participant group including risk score and accounts receivable aging. The risk score is calculated by Experian, which applies its proprietary algorithm to the customer's National Grid payment history exclusively, including 12 months of bill payment history as well as related factors, such as terminations for non-payment. The risk score is distinct from a credit score and utilizes National Grid data exclusively. The customer's identity will be safeguarding and an individual risk score will not be revealed to other parties. As for the accounts receivable aging profile, a similar breakdown of customers not in arrears and those in arrears will be selected based on the profile of those that participate in the Demonstration. For example, if 25% of the customers who participate in the Demonstration do not have any arrears, then the control group will include 25% that are not in arrears.

Test Scenarios

Customer Bill Reductions

The Demonstration will utilize individual customers' monthly energy consumption to conduct usage comparisons in order to measure total electric bill savings resulting from energy efficiency, solar bill credits, and increased energy awareness. The bill analysis will be weather-adjusted to account for temperature variability between two comparison periods, such as January 2016 usage compared to January 2015.

Customer Bill Payment Behavior and Arrears Management

Two metrics – Collection Rate and Arrears Change Rate – have been developed to test customer bill payment behavior and arrears management and will compare a participant group with a control group. Each metric will be calculated on an individual account basis, but will be reported on an aggregate basis. Calculating each metric by individual

account in the participant and control groups allows the opportunity to adjust for any outliers, if necessary. The Demonstration will have a "target" to enroll at least 35 customers carrying an arrears balance out of the 150 (or about 23%) in Tiers I and II receiving solar bill credits in order to test these hypotheses.

Both Collection Rate and Arrears Change Rate will be studied quarterly with a cumulative view. For example, the first quarterly report will study the results of these metrics over a 3-month period; the next quarterly report will view the results over a 6-month period, and so forth. It is expected that the results of these metrics will carry more significance over the long-term, while the quarterly frequency allows for understanding the data, including determining the level of "noise" that may exist with shorter frequency.

Collection Rate

"Collection Rate" is a measurement of customer bill payment behavior. Participants in Tiers I and II are expected to pay a higher percentage of their total bill compared to the control group due to the reduction in the total bill as a result of the solar credits.

$$Collection\ Rate = \frac{Total\ Customer\ Payments\ [\$]}{Total\ Dollars\ Available\ to\ Collect\ [\$]}$$

"Total customer payments" will include payments made by the customer during the study period. "Total dollars available to collect" will include the accounts receivable balance at the beginning of the study period plus new billings incurred during study period.

Arrears Change Rate

The "Arrears Change Rate" is a measurement of customers' management of their arrears balances. Participants in Tiers I and II receiving solar bill credits are expected to have a higher rate of paying down their arrearages compared to the control group.

$$Arrears\ Change\ Rate = \frac{Beginning\ Period\ Arrears\ [\$] - Ending\ Period\ Arrears\ [\$]}{Beginning\ Period\ Arrears\ [\$]}$$

"Beginning period arrears" is the outstanding accounts receivable greater than 30 days at the beginning of the study period. "Ending period arrears" is the outstanding accounts receivable greater than 30 days at the end of the study period.

Grid Efficiency Benefits

Solar PV arrays are intended to produce watts *(i.e*., real power) which can be used to perform real work and have monetary value on the electric system. Electric loads also require reactive power (*i.e*., VARS), which performs no work but is needed for other purposes, such as magnetizing motor and transformer cores, and energizing capacitive loads. Both watts and VARS require electrical current flow on the power system. Any flow of electric current creates losses on the system due to the impedance of electric equipment and wires. Any time electrical current can be reduced, losses are reduced. Generating real and reactive power at the load (*i.e*., the premises rather than delivering it from centralized generation will effectively reduce losses along the lines. As mentioned previously, the micro-inverters being used for the Demonstration have the capability to generate real power when the sun is shining and the solar PV panels are producing, and reactive power even when the sun is not shining. Since watts and VARS are mathematically orthogonal, they both may be generated simultaneously. However, since the micro-inverter has a finite rating, one trades off for the other, *i.e*., if we prioritize watts first ("watts priority") and the micro-inverter is generating at its maximum rating, there is no extra capability to generate VARS; conversely, if reactive power is prioritized ("VARS priority"), the output of real power will be limited. The majority of use cases proposed for the Demonstration will utilize the micro-inverters in a watts priority mode to optimize the output of solar generated real power. Additionally, the real power generated at peak delivery times has a greater impact on the reduction of losses than reactive power generated at off-peak times.

Proposed use cases will include looking at the following architecture options. Each use case will be reviewed during the modeling phase of the Demonstration to assess its potential value.

1. The default option is to set the micro-inverters to watts priority and unity power factor.
    - This would represent a "standard" or typical solar PV installation.
    - For this use case, the gateway (defined previously) would provide micro-inverter monitoring and diagnostics only.

2. The second option is to set the micro-inverters to watts priority, but use the reactive power capability of the inverters to improve the local power factor while maintaining maximum solar generation. This use case would:
    - Improve each customer's power factor while maximizing the solar generation.
    - Make use of a power factor meter on the line-side of the generation and customer meters at the home to provide feedback to the control system housed in the solar PV system gateway.

- Make use of local communication between the gateway, micro-inverters, and sensing meter.
- Create the opportunity to assess value to be determined by cycling this optimizing control on and off for set intervals to determine the respective benefits. The interval time length will be determined via input from the circuit modeling phase of the Demonstration.

3. The third option is to set the micro-inverters to watts priority, but use the reactive power capability of the inverters in response to feeder voltage or frequency variations while maintaining maximum solar generation. This use case would:
   - Make use of the voltage and frequency sensed by one of the meters at the customer's service entrance to provide feedback to the control system housed in the PV system gateway, or alternatively could be provided as an autonomous function of the micro-inverters, in which case the gateway would be used for monitoring and diagnostics only.
   - Make use of local communication between the gateway, micro-inverters, and sensing meter.
   - Provide reactive power up to 24 hours per day.

4. The fourth option is to set the micro-inverters in a VARS priority mode, to prioritize the reactive power capability of the inverters in response to feeder voltage or frequency variations. This use case would:
   - Make use of the voltage and frequency sensed by one of the meters at the customer's service entrance to provide feedback to the control system housed in the PV system gateway, or alternatively could be provided as an autonomous function of the micro-inverters, in which case the gateway would be used for monitoring and diagnostics only.
   - Make use of local communication between the gateway, micro-inverters, and sensing meter.
   - Provide reactive power up to 24 hours per day.

5. The fifth option would be to send commands to the home gateways from a central control located at the substation, or other utility location, to centrally manage reactive power control. The commands should take into account which homes have more reactive power capacity. The gateway itself will have the intelligence to determine which micro-inverters have more reactive power capacity and dispatch them accordingly. This use case would:
   - Make use of a control system at the substation or other remote location (through a feeder optimizing algorithm).

- Make use of a substation meter for power factor reference and feedback to the control system.
- Utilize communication between the substation meter and the central control system.
- Utilize communication between the central control system and micro-inverters.
- Provide reactive power up to 24 hours per day.

Checkpoints

Checkpoint	**Description**
Customer Interest	– Measure: Number of participants – How: Managed list by the outreach team – When: Bi-weekly during outreach campaign – Target: Up to 300 participants – Mitigation Strategies: Review messaging and increase outreach efforts
Energy Efficiency Participation	– Measure: Number of energy efficiency program sign-ups and/or participants – How: Managed by EE services provider – When: Monthly throughout project – Target: Up to 300 participants – Mitigation Strategies: Recruit additional applicants / increase outreach
Solar Host Qualification	– Measure: Number of rooftop engineering assessments resulting in “solar-ready” approval – How: Managed list by Solar Liberty – When: Bi-weekly during enrollment period – Target: 100 participants – Mitigation Strategies: Increase outreach efforts
Avg. Solar Bill Credit	– Measure: Avg. solar bill credit – How: National Grid’s billing team to perform analysis – When: Quarterly after solar installs are complete – Target: Avg. bill credit of 15-20% for Solar Participants – Mitigation Strategies: Investigate efficacy of installed systems

Collection Rate	– Measure: Total customer payments divided by total dollars to collect – How: Analysis by National Grid Credit & Collections team – When: Quarterly with a cumulative view (period of 3 months, 6 months, 9 months, etc.) – Target: Avg. 3% to 5% increase in collection rate compared to control group – Mitigation Strategies: N/A
Arrears Change Rate	– Measure: Beginning period arrears minus from ending period arrears, divided by beginning period arrears – How: Analysis by National Grid Credit & Collections team – When: Quarterly with a cumulative view (period of 3 months, 6 months, 9 months, etc.) – Target: 5% more than the control group – Mitigation Strategies: N/A
Greater electric distribution efficiency	– Measure: Distribution grid efficiency – How: Pre-reading vs. post reading of the substation's voltage, reactive power, and distribution line losses – When: Baseline testing pre-installation, interval testing, and post-installation after all 100 sites have been installed – Target: 15,000 kWh per year reduction in line losses; improvement over baseline data to be determined – Mitigation Strategies: N/A
Optimization on a per system basis	– Measure: Power factor of each system – How: Pre-reading vs. post reading of each solar host site's voltage and reactive power – When: Baseline testing pre-installation, interval testing, and post-installation after each system has been installed – Target: TBD; improvement of each home's power factor – Mitigation Strategies: N/A

Note: Before specific targets can be developed for grid efficiency benefits, the following will need to be determined:

1. How many solar PV systems are installed on each circuit;
2. Existing operating conditions; and
3. Results from network modeling of the circuits.

Project Structure and Governance

Project Team

National Grid

Utility Skill Sets

- Project Management
- Stakeholder and Customer Engagement
- Billing
- Credit and Collections
- Pricing
- Meter Data Services
- Meter Testing and Engineering
- Network Asset Strategy
- Procurement
- Data Analytics

Partners

Buffalo Niagara Medical Campus (“BNMC”)

BMNC is a self-sustaining social enterprise successfully combining innovation, job creation, and urban revitalization. BNMC serves as the umbrella organization of the anchor institutions that make up the BNMC located within a 120-acre campus bordering the Allentown and Fruit Belt neighborhoods of downtown Buffalo. The organization fosters conversation and collaboration among its member institutions, its partners, and the community to address critical issues impacting them including energy, entrepreneurship, access / transportation, workforce and procurement, neighborhoods, and healthy communities.

BNMC Skill Sets for the Demonstration

- Program Design
- Stakeholder and Community Engagement

New York State Energy Research and Development Authority (“NYSERDA”)

NYSERDA promotes energy efficiency and the use of renewable energy sources. These efforts are key to developing a less polluting and more reliable and affordable energy system for all New Yorkers. Collectively, NYSERDA’s efforts aim to reduce greenhouse gas emissions, accelerate economic growth, and reduce customer energy bills. NYSERDA works with stakeholders throughout New York including residents,

business owners, developers, community leaders, local government officials, university researchers, utility representatives, investors, and entrepreneurs.

NYSERDA Skill Sets for the Demonstration

- Administers EmPower New York Program (energy efficiency services program for income eligible customers)
- Referrals to other NYSERDA-administered programs such as (Assisted) Home Performance with ENERGY STAR® Program based on income eligibility

Solar Liberty

Solar Liberty is a Western New York-based turnkey installer of solar PV systems for residential, commercial, and utility scale applications. Over twelve years of operation, more than 90 MW of solar equipment has been distributed and installed. With a focus on New York State, Solar Liberty has over 1,300 successfully completed installations across New York, ranging from local 2.5 kW residential systems to the 10.6 MW array being built this year in Babylon, Long Island. Solar Liberty is honored to be the recipient of the "Outstanding Achievement Award" by both NYSERDA and the U.S. Department of Energy. Solar Liberty's mission is to educate everyone and anyone who is interested in learning the value that solar energy brings. A critical part of this mission is to ensure solar energy is available to those in need. As evidence, Solar Liberty had donated 75 solar PV arrays, ranging from 25 to 50 kW in size, to New York State non-profits. The list includes the Buffalo City Mission, which is located in the Fruit Belt.

Solar Liberty Skill Sets for the Demonstration

- General Contractor in charge of all subcontracting partners
- Equipment procurement, warehousing, and logistics
- Solar site assessments
- Solar installation
- Solar maintenance and repairs
- Workforce development
- Community engagement and education support

General Electric Global Research ("GEGR")

With research concentrations in Manufacturing & Materials Technology, Aero-Thermal Mechanical Systems, Chemistry and Chemical Engineering, Diagnostics & Biomedical Technologies, Electrical Technologies and Systems, Software Sciences and Analytics, and Advanced Technologies, General Electric's GRC is the nerve center for innovative work across technologies and collaboration across GE's businesses.

GEGR Skill Sets for the Demonstration

- Feeder network modeling
- Performance assessment

National Grid

Philip A. Austen, Interim Project Manager	philip.austen@nationalgrid.com
Sydney Forrester, Solutions Delivery	sydney.forrester@nationalgrid.com
Laura Tadevossian, Stakeholder Engagement	laura.tadevossian@nationalgrid.com
Clayton Burns, Engineering & New Products	clayton.burns@nationalgrid.com
Eliza Davis, Partnerships & Joint Ventures	eliza.davis@nationalgrid.com
John Spring, Procurement	john.spring@nationalgrid.com
Pamela Dise, NY Pricing	pamela.dise@nationalgrid.com
Carol Teixeira, NY Pricing Electric	carol.teixeira@nationalgrid.com
Jason Eno, NY Pricing Electric	jason.eno@nationalgrid.com
Jeffrey Koenig, Collections	jeffrey.koenig@nationalgrid.com
Michele Wilder, Billing	michele.wilder@nationalgrid.com
Pamela DiBella, Billing	pamela.dibella@nationalgrid.com
Stephen Brady, Media Relations	stephen.brady@nationalgrid.com
Kerry Burns, Media Relations	kerry.burns@nationalgrid.com
Brian Cronin, Marketing & Communications	brian.cronin@nationalgrid.com
Alberto Bianchetti, Government Relations	alberto.bianchetti@nationalgrid.com
Michele Haritos-Buck, Meter Data Services	michele.haritos-buck@nationalgrid.com
Nicholas Ritts, Meter Engineering	nicholas.ritts@nationalgrid.com
Stephen Koscs, Telecom Engineering	stephen.koscs@nationalgrid.com
Larry Durante, Meter Testing	larry.durante2@nationalgrid.com

BNMC

Paul Tyno, Director of Energy Initiatives	ptyno@bnmc.org
Susan Kirkpatrick, Community Relations	skirkpatrick@bnmc.org
Ekua Mends-Aidoo, Community Relations	emends-aidoo@bnmc.org
Kari Bonaro, Community Relations	kbonaro@bnmc.org

NYSERDA

Kevin Hale, Director of Utility Affairs and Strategic Partnerships	kevin.hale@nyserda.ny.gov
Christopher Coll, Senior Project Manager	christopher.coll@nyserda.ny.gov

Solar Liberty

Robert Gauchat, VP of Sales and Operations	rgauchat@solarliberty.com
Adam Rizzo, President & CEO	akrizzo@solarliberty.com
Nathan Rizzo, Vice President	nathan@solarliberty.com

GE Global Research

Khaled Bahei-eldin, Technology Transfer	bahei@ge.com
Mohammed Agamy, Micro-inverter circuits and control (GEGR Project Lead)	agamy@ge.com
Ibrahima Ndiyae, Power System Modeling	ndiaye@ge.com
Santosh Veda, Power System Control	veda@ge.com

Roles & Responsibilities

NATIONAL GRID

Responsibility	Description
Project Management	Responsible for overall project management and coordination with partners, vendors and stakeholders
Stakeholder & Customer Engagement	Responsible for outreach to customers and partners
Billing	Responsible for testing and implementing billing system changes to accommodate billing the solar credit to participating customers
Credit and Collections	Responsible for managing test scenarios related to customer bill payment behavior and arrears management
Pricing	Responsible for solar credit rate development, any rate statement filings if necessary, final review of test bills
Meter Data Services	Responsible for collecting field data from the interval meters.
Meter Testing	Responsible for designing and installing complex metering installations.
Network Asset Strategy	Responsible for designing the communication systems and programming of the meters.
Procurement	Responsible for executing contracts with partners.
Data Analytics	Provides support for data analysis and billing inquiries.

PARTNERS

Partner	Description
BNMC	
Program Design	As a frequent partner with National Grid on energy issues, BNMC partnered with National Grid to design the Demonstration for the Fruit Belt.
Stakeholder and Community Engagement	Help facilitate communication and logistics with the Fruit Belt neighborhood, where BNMC already has established relationships.
General Electric	
Feeder network modeling	Designing and creating a model for the network baseline, use cases, and substation central control.
Performance assessment	Data collection and analysis to establish baseline, final performance, and control refinement.
Solar Liberty	
General Contractor	Solar Liberty will act as the general contractor for the Demonstration, managing the work of all subcontracting partners that will be contributing system components as well as premises' services such as roof repair contracting.
Procure solar PV panels, racking systems, micro-inverters, and generation meters	Solar Liberty will procure the components of the system including solar PV panels, racking, micro-inverters, generation meters, and any supporting equipment that is aligned with the goals of the Demonstration and will enable the testing of the use cases listed in the implementation plan.
Solar site assessments	Conducting the combined structural/solar assessments (roof ability to support solar, and whether electrical panels need repair/upgrade, as well as solar assessment, shading, orientation, etc.).
Solar site installations	All solar installation services, including permitting, electrical and mechanical work, and inspection and management of roof repair contractors.
Solar maintenance and repairs	Responsible for the long-term maintenance and repairs of the solar installations.
Workforce development	Recruit, train, and hire 5 local residents.

Warehousing & Logistics	Warehouse the materials and coordinate transportation of materials to each job site as required.
NYSERDA	
Energy Efficiency	Will provide access to the EmPower New York Program administered by NYSERDA that provides energy efficiency measures to eligible low-income participants as well as referrals to additional NYSERDA and/or other available programs.

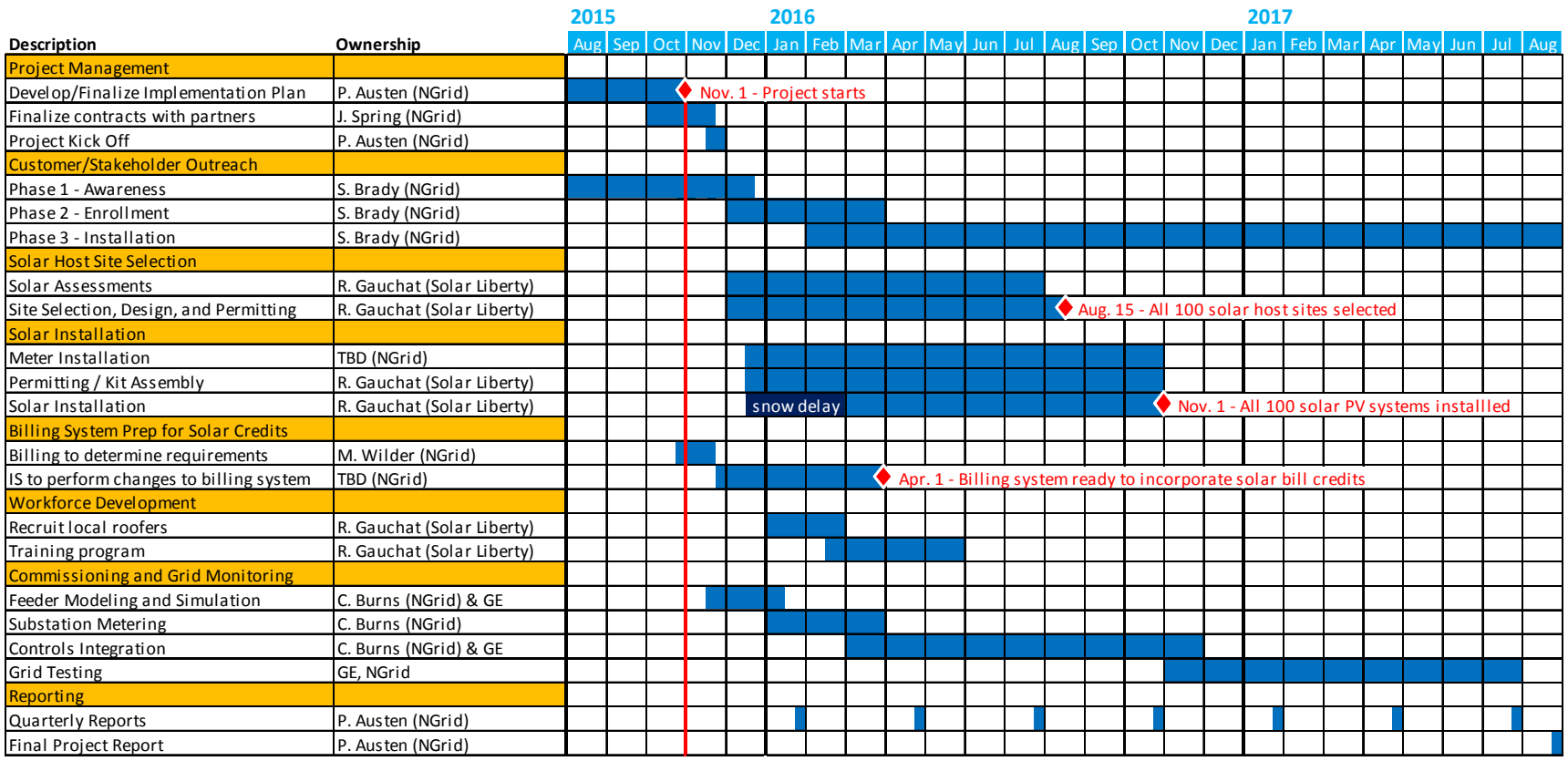
Governance

Decision Making Body	
Utility Participation	Partner Leads
Ed White Vice President	Paul Tyno BNMC
Philip Austen Director	Adam & Nathan Rizzo Solar Liberty
Dennis Elsenbeck Director	Khaled Bahei-eldin GE Global Research
Fouad Dagher Director	Kevin Hale NYSERDA

Decision Making Logistics	
Meeting Format	Meeting Frequency
Workshop with full set of stakeholders on program goals and objectives	Annually
In-person performance evaluation and strategy- setting meeting with work stream owners and senior leadership from National Grid and partners	Quarterly
Short-format tactical conference call with key National Grid and partner work stream owners	Weekly
In-person or tactical as needed on program strategy and planning	Ad hoc

Work Plan and Budget

Work Plan



Post-Demonstration

At the conclusion of the Demonstration, National Grid will evaluate final results of the Demonstration to inform how to proceed with the operation and ownership of the 100 solar PV systems. The Company will explore alternative ownership models for the existing panels, and the solar bill credits will be continued for Tier I solar hosts. National Grid will evaluate the continuation of the monetary credits for Tier II participants based on the Demonstration's resulting bill impacts.

Moreover, should the success of the Demonstration lead to contemplation of LMI solar PV demonstrations in other parts of the Company's service territory, National Grid will consider other ownership arrangements. The Company will continue to engage with various third parties to explore their willingness to participate.

Finally, while this Demonstration does not offer any new opportunities for participating customers to engage with their energy usage through new rate design options, National Grid will examine the potential for new price and rate design options that could be tested and/or proposed in the future. During the term of the Demonstration, the Company will capture and analyze participating customers' metering data to determine if, in fact, there are opportunities for future new and innovative rate designs.

Project Benefits and Costs

Benefits

The Demonstration expects to deliver several benefits, including tangible benefits that can be assigned monetary value as well as intangible benefits that are not easily quantified. This project and its learnings may serve as a future model for National Grid and other utilities to engage LMI communities through solar PV participation.

The following are assumptions made for the tangible benefits assigned monetary value:

- Solar credits for 150 customers in Tiers I and II will continue over the 25-year life of the solar units.
- All 300 participants will sign up for EE services.

- For those that qualify for NYSERDA's EmPower NewYork Program, on average, each customer would save approximately 679 kWh per year following installation of electric energy efficiency measures. At a rate of $0.14 per kWh, that translates to $95 per year.
- Through NYSERDA's EmPower New York Program, on average, each customer saves approximately 260 therms per year following installation of gas energy efficiency measures. At a rate of $1.00 per therm, that translates to $260 per year.
- The estimate for reduction in participant arrears is based on an internal analysis of customer accounts in the Fruit Belt (Substation 34). Using the average arrears balance for all accounts within that boundary, of which about 39% are in arrears, and assuming customers can reach a 5% reduction in arrears over a two-year period, it is expected that a total of $450 reduction in arrears for a participant group of 150 (Tiers I and II participants) can result each year. Targets for reductions in arrears will be updated after the participant and control groups have been identified.
- A 15,000 kWh per year reduction in distribution line losses is estimated that would fall into the category Unaccounted for Energy ("UFE"), which would be valued at the wholesale market price. In NYISO Zone A for 2016, that would be approximately $0.04 per kWh, translating to about $600 per year. Targets for grid efficiencies will be updated after modeling analysis is conducted as part of the Demonstration.
- Installed capacity ("ICAP") value is already included through the solar bill credit calculations.

In addition to the benefits that are able to be quantified and monetized, the Demonstration garners the following intangible benefits:

- Greenhouse gas emission reductions
- Customer engagement in an underserved market
- Grid resiliency
- Community stewardship
- Local economic development, and
- Increased community awareness of energy–related issues

Costs

The following 10-year budget view breaks down costs and credits of the Demonstration compared with expected benefits. The budget for the Demonstration makes the following budgetary assumptions:

- Within the community boundary, 100 residential rooftops suitable to host solar PV arrays will be identified and secured for the project.
- A subset of the 100 residential rooftops suitable to host solar may require structural and/or electric panel repairs. A portion of the project budget has been allocated to address this potential barrier to customer participation.
- The expected asset life of all equipment for the program (PV module, micro-inverter, and mounting system) is 25 years.
- All installations will qualify for the federal Investment Tax Credit ("ITC") of 30%, as the Consolidated Appropriations Act of 2015 extended the 30% ITC. The Emergency Economic Stabilization Act of 2008 allowed investor-owned utilities eligibility to the 30% ITC. Prior to this, public utilities were not eligible for ITC benefits.[10]

Project Benefit and Cost Summary

(Following page)

[10] Michael Mendelsohn and Claire Kreycik, National Renewable Engineering Laboratory, "Federal and State Structures to Support Financing Utility-Scale Solar Projects and the Business Models Designed to Utilize Them." http://www.nrel.gov/docs/fy12osti/48685.pdf, pg. 2.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Years 10-25	**Total**
Estimated Value of Benefits											
Customer Electric Bill Savings from EmPower NY Energy Efficiency	$28,500	$28,500	$28,500	$28,500	$28,500	$28,500	$28,500	$28,500	$28,500	$28,500	**$285,000**
Customer Gas Bill Savings from EmPower NY Energy Efficiency	$78,000	$78,000	$78,000	$78,000	$78,000	$78,000	$78,000	$78,000	$78,000	$858,000	**$1,560,000**
Customer Electric Bill Savings from Solar Bill Credits	$13,500	$27,000	$27,000	$27,000	$27,000	$27,000	$27,000	$27,000	$27,000	$432,000	**$661,500**
Reduction in Participant Arrears	$450	$450	$450	$450	$450	$450	$450	$450	$450	$7,200	**$11,250**
Reduction in Distribution Line Losses	$300	$600	$600	$600	$600	$600	$600	$600	$600	$9,600	**$14,700**
Total Value of Benefits	$120,750	$134,550	$134,550	$134,550	$134,550	$134,550	$134,550	$134,550	$134,550	$1,335,300	**$2,532,450**
Revenues											
Project Revenues	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Rebates	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Tax Credits											
30% Fed Income Tax Credit (ITC)	$715,584	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$715,584**
Total Revenues & Credits	$715,584	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$715,584**
Operational Expenditures	$2,092,200	$240,000	$2,778	$2,778	$2,778	$2,778	$2,778	$2,778	$2,778	$30,554	**$2,382,200**
General Admin & Planning											
National Grid	$15,000	$15,000	$0	$0	$0	$0	$0	$0	$0	$0	**$30,000**
Partners	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Marketing and Workforce Development											
National Grid	$50,000	$125,000	$0	$0	$0	$0	$0	$0	$0	$0	**$175,000**
Partners	$75,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$75,000**
Incentives											
National Grid	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Partners	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Implementation											
National Grid	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Partners	$1,727,200	$0	$2,778	$2,778	$2,778	$2,778	$2,778	$2,778	$2,778	$30,554	**$1,777,200**
Evaluation & Analysis											
National Grid	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Partners	$225,000	$100,000	$0	$0	$0	$0	$0	$0	$0	$0	**$325,000**
Capital Expenditures	$1,410,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$1,410,000**
(100) Solar PV Systems											
National Grid	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Partners	$1,400,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$1,400,000**
(100) Generation Meters & Channels											
National Grid	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Partners	$10,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$10,000**
Total Expenditures	$3,502,200	$240,000	$2,778	$2,778	$2,778	$2,778	$2,778	$2,778	$2,778	$30,554	**$3,792,200**
Net Cash Flow	-$2,786,616	-$240,000	-$2,778	-$2,778	-$2,778	-$2,778	-$2,778	-$2,778	-$2,778	-$30,554	**-$3,076,616**
Net Benefits to Costs	-$2,665,866	-$105,450	$131,772	$131,772	$131,772	$131,772	$131,772	$131,772	$131,772	$1,304,746	**-$544,166**

Reporting Structure

Reporting Expectations

Measures, Results, and Relevant Information	Reporting Frequency
Program Results	
Customer interest, participation data by Tier, and solar installation progress	Quarterly
Avg. solar bill credit value	Quarterly
Collections Rate and Arrears Change Rate	Quarterly
Grid efficiency metrics	Frequency TBD
Progress report, including performance against timeline and budget	Quarterly

Appendix 1: BNMC Neighborhood Engagement Examples

Successful Fruit Belt Neighborhood Engagement Examples led by the BNMC:

Four Neighborhoods One Community Master Plan & Update

The 2010 BNMC Master Plan Update revisited broad strategies that were laid out in the first BNMC Master Plan undertaken in 2003. Among other things, the update established a planning framework to accommodate the growth in surrounding neighborhoods into the future. The Fruit Belt Neighborhood Plan was developed through a comprehensive and community-oriented process. Integrated through all aspects of the planning effort was a commitment to community engagement and coordination with other planning initiatives. Planning for the Fruit Belt involved a comprehensive consultation process that included interviews with a wide variety of stakeholder groups from the public, private, and non-profit sectors including the City of Buffalo, community development organizations, housing organizations, neighborhood and civic organizations, the NFTA, and BNMC member institutions.

After the completion of the BNMC Master Plan Update, the creation of the “Four Neighborhoods, One Community” Quarterly Stakeholder Meetings were formed. This meeting brings together the surrounding neighborhoods to discuss pertinent initiatives and potential collaborative opportunities between the Medical Campus and the neighborhoods.

Fruit Belt Leadership Training

The 2010 Master Plan Update included feedback from Fruit Belt Neighborhood residents to identify the issues specific to the neighborhood, develop implementation strategies, and establish support for action and investment in the neighborhood. One of the key resident issues was building a unified voice. As a result of this feedback, the University at Buffalo and BNMC, Inc. decided to partner with Medical Campus member institutions to provide a four-month leadership training to address this issue. Member institutions on the BNMC such as the University at Buffalo, Kaleida Health, Roswell Park Cancer Institute, and others have helped to make a difference in the Fruit Belt community by providing leadership training for stakeholders and dedicated community members to provide them with the resources and skills necessary to continue to effect change in the Fruit Belt. As community leaders learned how to strategically leverage partnerships with organizations on and near the BNMC, the training provided an opportunity to pass on knowledge that will lead to a healthier and more sustainable Fruit Belt neighborhood.

The results-oriented training, useful within any organizational structure, included an in-depth look at skills such as team building, effective decision making, project management, budgeting, meeting management, and more. As the residents continue to invest their time and resources in the betterment of their historic neighborhood, the mark left will indeed be a stronger and more unified community. Impacts of the training include the formation of Orchard Community Initiative, formed by several block clubs and civic associations within the Fruit Belt after the Leadership Training. This group was given $7,500 by the BNMC, Inc. to build upon a project in the neighborhood of their choice. OCI offers minor home repairs in conjunction with Westside Neighborhood Housing Services.

Community Canvassing/JARC grant

The “Job Access, Reverse Commute” grant was a collaborative effort between the BNMC, Inc., Buffalo CarShare, and GoBike Buffalo to facilitate and encourage the use of alternative transportation modes and public transit among employees on the BNMC and residents of the surrounding neighborhoods, including the Fruit Belt. In addition, the program aimed to increase the number of neighborhood residents employed at BNMC institutions by providing better access to career and training opportunities available on and around the Medical Campus. Canvassers employed by the BNMC, Inc. knocked on 5,000 doors within a one-mile radius around the campus and had 1,500 conversations regarding workforce and transportation barriers. As a result of the canvassing, BNMC was able to build relationships, identify GoBuffalo Champions who acted as liaison between BNMC and the neighborhood, and educate residents about opportunities on the Medical Campus for workforce training. In addition, 170 bike helmets were distributed and the canvass was credited with increasing GoBike and Buffalo CarShare memberships.

Active Living by Design/Robert Wood Johnson Foundation Grants

Part of the BNMC’s focus is in creating and maintaining sustainable environments for the greater community as well as employees, patients, and visitors to the Medical Campus. In 2009, the BNMC received two grants totaling nearly one million dollars from the Robert Wood Johnson Foundation to support environmental and policy changes to increase active living and healthy eating in our overall community, including adjacent neighborhoods. As part of the program, the BNMC sought input from local residents for their views on necessary changes in the community that would eventually lead to policy changes and infrastructure improvements to support healthy active living. The BNMC put an emphasis on youth engagement in this process that also led to the formation of the Youth Advisory Council, providing a voice to the City’s younger residents. The impact of the grants and BNMC’s work in this area helped to improve infrastructure that

supports active living, and helped to create policies to develop a healthier food system and in support of environmental changes to enhance healthy lifestyles.

BNMC Team

Ekua Mends-Aidoo, Manager of Community Relations, leads the community relations/outreach function for the Buffalo Niagara Medical Campus, Inc. Ekua meets regularly with the neighbors within a mile radius of the campus, fostering a strong working relationship on opportunities of collaboration. Several BNMC team members are engaged in neighborhood engagement efforts on issues related to transportation, parking, workforce and procurement initiatives, and food and active living programs.

Ekua also leads the BNMC's Corporate Social Responsibility plan, which is currently being designed to focus on engagement within the neighborhoods through volunteering efforts, sponsorships, and events. In addition, BNMC team members have an active presence in a number of neighborhood organizations and are frequent participants in community events and outreach efforts.

Appendix 2: Letters of Support

(Following pages)

nationalgrid

HERE WITH YOU. HERE FOR YOU.

October 14, 2014

Mr. Matthew Enstice, Chief Executive Officer
Buffalo Niagara Medical Campus, Inc.
640 Ellicott Street
Buffalo, NY 14203

Re: Letter of Support for the Buffalo Niagara Medical Campus Inc.'s *Community Solar Project Proposal*

Dear Matt:

On behalf of National Grid USA, we are pleased to express our on-going support of the Buffalo Niagara Medical Campus, Inc.'s *Community Solar Project Initiative* and our larger *energizeBNMC* partnership, as envisioned in the BNMC's *5-Year Energy Innovation Plan*. The proposed Project supports four key Opportunity Areas identified in the *Plan* for the Campus proper and its surrounding communities: cost-cutting energy efficiency, fostering local economic growth, creation of a Community Learning Hub, and pioneering innovations in health and energy. Through directly engaging and benefiting the residents of the City of Buffalo's Fruit Belt neighborhood, we feel this project would help to increase the Community's adoption of energy efficiency in an innovative and sustainable way, bring about lasting workforce development benefits for the larger Buffalo-Niagara region, and result in valuable insights as to how such a model can contribute to the resiliency and efficiency of the electric grid.

We are excited for the opportunity to co-lead this project with BNMC, Inc. in support of the Fruit Belt Neighborhood and the wider Buffalo-Niagara region. Thank you for your continued effort and leadership in these exciting times.

Sincerely,

Edward White, Vice President, Customer Strategy and Environmental
National Grid USA

October 15, 2014

Re: *Community Solar Initiative Project Proposal*

On behalf of the Buffalo Niagara Medical Campus, Inc., which represents 9 member institutions and close to 70 public and private companies, we are pleased to lead the proposed *Community Solar Project Initiative* in support of our *5-Year Energy Innovation Plan* and our larger *energizeBNMC* Partnership with National Grid.

The proposed Project supports four key Opportunity Areas identified in the BNMC's *Energy Innovation Plan* for the Campus proper and its surrounding communities: cost-cutting energy efficiency, fostering local economic growth, creation of a Community Learning Hub, and pioneering innovations in health and energy. Through directly engaging and benefiting the residents of the City of Buffalo's Fruit Belt neighborhood, we feel this project would strengthen our over-arching *Four Neighborhoods, One Community* vision through increasing the Community's adoption of energy efficiency in an innovative and sustainable way and creating lasting workforce development benefits for the larger Buffalo-Niagara region.

We are excited for the opportunity to lead this first-of-its-kind project in support of the Fruit Belt Neighborhood and the wider Buffalo-Niagara region.

Sincerely,

Matthew Enstice, CEO
Buffalo Niagara Medical Campus, Inc.

GE
Global Research
One Research Circle
Niskayuna, NY 12309
United States

T 518-387-7357
F 518-387-5449

October 14, 2014

Mr. Matthew Enstice
Chief Executive Officer
Buffalo Niagara Medical Campus, Inc.
640 Ellicott Street
Buffalo, NY 14203

Subject: Letter of support for Residential PV effort at Buffalo Niagara Medical Campus.

GE Global Research (GE-GR) is pleased to offer this letter of support for the Buffalo Niagara Medical Campus (BNMC) and National Grid in their joint effort for the installation of residential PV in the City of Buffalo's Fruit Belt neighborhood. GE Global Research is prepared to support this effort as defined in the attached statement of work, with a Rough Order of Magnitude (ROM) estimate in the amount of $300,000 for the effort. GE may have additional scope for the program with other organizations in GE, including GE Ventures. For the avoidance of doubt, GE will not have any responsibility or obligation for the PV installation.

GE-GR views this project as an opportunity to increase customer engagement and model utility ownership of distributed energy resources, as envisioned in the REV straw proposal. The BNMC is a strong partner for demonstrating new technologies and models for utility ownership of distributed energy resources and customer engagement.

This ROM is for discussion only, and is not to be used as a Not-to-Exceed (NTE) budget nor does it bind GE-GR contractually. GE-GR will be pleased to submit a formal proposal upon receipt of a formal Request for Quotation or Request for Proposal.

To receive a formal quotation from GE-GR, please send a Request For Quotation referencing this ROM to: Matt Nicholls, Business Development Manager, (nicholls@ge.com) (518) 387-6107.

Kelly Fletcher
GE Energy Business Programs Manager

GE Global Research Scope of Work for BNMC Fruit Belt Solar Proposal
Demonstration of Control Platform and Use Cases

This statement of work encompasses GE Global Research scope to develop and demonstrate a control capability and use cases for residential PV, for National Grid and Buffalo Niagara Medical Campus.

Task 2 –Feeder Network Modeling: GE Global Research will perform the following sub-tasks:

Sub-Task 2.1 – Data collection post PV installation and architecture tradeoffs

This task will involve collecting data from the National Grid substation and PV microinverters. The data will be used to perform architecture tradeoffs. The architecture options will be simulated in a hardware in the loop setup in GE's RTDS (real time digital simulator) to estimate benefits and ensure robustness and reliability before other project partners deploy the system

The tradeoffs will include looking at the following architecture options:

- The default option is to set the inverters to P priority and unity power factor

-The second option would be to enable the microinverters to output VARs in response to feeder voltage variations

-The third option would be to send commands to the home hubs from the substation central control to centrally manage Volt/VAR coordination. The commands should take into account which homes have more Q capacity. The hub itself will have the intelligence to determine which microinverters have more Q capacity and dispatch accordingly

Sub-Task 2.2– Substation central control

This task will involve the development of substation level Volt/VAR control that monitors the feeder voltage profile, the Q capacity available per home from the home hubs and intelligently dispatches the Q command to each home hub taking into account the maximization of PV active power. The central control will based on GE's 'RenewablesIQ' platform.

Sub-Task 2.3 – Reverse power flow management

This task will involve the development of central substation controls that monitor the net power flow on the feeder and intelligently sends a curtailment command to each home hub depending on their P capacity. Internally within the home, the hub will also intelligently curtail the microinverters according to their P capacity to ensure maximum PV production.

Task 6 –Performance Assessment: GRC will perform the following sub-tasks:

Sub-Task 6.1 – Data collection and baseline establishment

This task will involve collecting data from the National Grid substation and any downstream data acquisition to establish the baseline feeder characteristics (losses and voltage profile)

Sub-Task 6.2 Final data collection, control refinement and analysis

Following the implementation of the final architecture and controls, data will be collected to establish the new baseline and quantify benefits

GE
Global Research
One Research Circle
Niskayuna, NY 12309
United States

June 25th, 2015
Mr. Matthew Enstice
Chief Executive Officer
Buffalo Niagara Medical Campus, Inc.
640 Ellicott Street
Buffalo, NY 14203

Subject: Letter of support for Residential PV effort at Buffalo Niagara Medical Campus.

GE Global Research (GE-GR) is pleased to offer this letter of support for the Buffalo Niagara Medical Campus (BNMC) and National Grid in their joint effort for the installation of residential PV in the City of Buffalo's Fruit Belt neighborhood. GE-GR is prepared to support this effort as defined in the attached statement of work, with a Rough Order of Magnitude (ROM) estimate in the amount of $300,000 for the effort. For the avoidance of doubt, GE will not have any responsibility or obligation for the PV installation. This ROM is for discussion only, and is not to be used as a Not-to-Exceed (NTE) budget nor does it bind GE-GR contractually. GE-GR will be pleased to submit a formal proposal upon receipt of a formal Request for Quotation or Request for Proposal. To receive a formal quotation from GE-GR, please send a Request For Quotation referencing this ROM to: Jeff Popielarczyk, Business Development Manager, (popielar@ge.com) (518) 387-6908.

GE-GR views this project as an opportunity to increase customer engagement and model utility ownership of distributed energy resources, as envisioned in the REV proposal. The BNMC is a strong partner for demonstrating new technologies and models for utility ownership of DERs and customer engagement. As distributed PV installations become more widespread, analyzing the role of these installations in providing grid services and developing the controls to integrate them with existing infrastructure is an important objective that this demonstration will support.

GE is maintaining and contributing to the technology and intellectual property portfolio of the proposed project. This portfolio is currently over ten patents and applications. This represents tens of thousands of dollars annually invested to grow and maintain the portfolio. GE has invested over $500k to date on the fundamental micro-inverter technology committed to the proposed project. GE is engaged in the development of the commercial micro-inverter design that will be fielded during the program. This effort is estimated to be in excess of $75k.

GE-GR is excited for this opportunity to be a partner on this project in support of the Fruit Belt Neighborhood and the wider Buffalo-Niagara region.

Jeff Popielarczyk
Business Development Manager

GE Global Research Scope of Work for BNMC Fruit Belt Solar Proposal
Demonstration of Control Platform and Use Cases

This statement of work encompasses GE Global Research scope to develop and demonstrate a control capability and use cases for residential PV, for National Grid and Buffalo Niagara Medical Campus.

Task 2 –Feeder Network Modeling: GE Global Research will perform the following sub-tasks:

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This task will involve collecting data from the National Grid substation and any downstream data acquisition to establish the baseline feeder characteristics (losses and voltage profile)

Sub-Task 6.2 Final data collection, control refinement and analysis

Following the implementation of the final architecture and controls, data will be collected to establish the new baseline and quantify benefits

Pastor Alan R. Core
First Centennial M.B. Church
273 High Street
Buffalo, NY 14203

October 9, 2014

Matthew K. Enstice
Buffalo Niagara Medical Campus
640 Ellicott Street
Buffalo, NY 14203

Re: Letter of Support for the Buffalo Niagara Medical Campus Inc.'s *Community Solar Project Proposal*

Dear Mr. Enstice:

On behalf of Fruit Belt Advisory Council, we are pleased to share our support of the Buffalo Niagara Medical Campus, Inc.'s *Community Solar Project initiative* that seeks to engage and benefit the residents of the City of Buffalo's Fruit Belt neighborhood adjacent to the BNMC. Through the installation of (100) residential PV systems on a sub-set of homes, the proposed project aims to accelerate the Community's adoption of energy efficiency in an innovative way, generate workforce development benefits for the larger Buffalo-Niagara region, and to contribute to the resiliency of the electric grid.

The Fruit Belt Advisory Council was established in 2013 by Councilmember President Darius Pridgen. It consists of a 19 member board that is representative of churches, residential homeowners, not-for-profits, businesses, tenants, schools. These community stakeholders have come together to provide community input and advice to the Buffalo Common Council on decisions affecting the community.

We are excited for the opportunity to partner with the BNMC, Inc. and the proposal partners on this project in support of the Fruit Belt Neighborhood, and the wider Buffalo-Niagara region. If you require additional information, please do not hesitate to contact me.

Sincerely,

Pastor Alan R. Core

President

Fruit Belt Advisory Council

Orchard Community Initiative

Matthew Enstice, President
Buffalo Niagara Medical Campus
640 Ellicott Street
Buffalo, NY 14203

Re: Letter of Support for the Buffalo Niagara Medical Campus Inc.'s *Community Solar Project Proposal*

Dear Mr. Enstice:

On behalf of the Orchard Community Initiative, we would like to express our support of the Buffalo Niagara Medical Campus, Inc.'s *Community Solar Project initiative* that seeks to engage and benefit the residents of the City of Buffalo's Historic Fruit Belt neighborhood adjacent to the BNMC. Through the installation of (100) residential PV systems on a sub-set of homes, the proposed project aims to accelerate the Community's adoption of energy efficiency in an innovative way, generate workforce development benefits for the larger Buffalo-Niagara region, and to contribute to the resiliency of the electric grid.

The Orchard Community Initiative was established in 2012 by a group of 24 leaders who completed a leadership training program for stakeholders within the Fruit Belt neighborhood. It consists of forward thinking members whose mission is to create a better quality of life for all Fruit Belt residents by providing a collective community environment to be established for and by the residents and those with a vested interest in the Fruit Belt Community.

We welcome the opportunity to further discussions with the BNMC, Inc. and the proposal partners on this project in support of the Fruit Belt Neighborhood, and the wider Buffalo-Niagara region. If you require additional information, please do not hesitate to contact me.

Sincerely,

Zaid B. Islam
President
Orchard Community Initiative

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

ANDREW M. CUOMO
Governor

RICHARD L. KAUFFMAN
Chair

JOHN B. RHODES
President and CEO

Edward White
Vice President of New Energy Solutions
National Grid
40 Sylvan Road
Waltham, MA 02451-1120

Re: Fruit Belt Neighborhood Solar REV Demonstration Project

Dear Mr. White:

On behalf of NYSERDA, we are pleased to be partnering with National Grid to deliver solar and energy efficiency solutions to the residents of the Fruit Belt neighborhood in Buffalo as part of this Reforming the Energy Vision (REV) demonstration project. This model will serve to leverage National Grid and the Buffalo Niagara Medical Campus's existing relationships with the community as well as the New York State Energy Research and Development Authority's (NYSERDA) efforts to increase energy affordability and access to clean energy solutions in low-to-moderate income communities.

Through the direct installation of residential solar systems and the delivery of energy efficiency services to homeowners, the proposed project aims to accelerate the community's adoption of clean energy in an innovative way, generate jobs in the Buffalo-Niagara region, and expand access to clean energy options for low-moderate income households. In addition to reducing energy consumption, the incorporation of energy efficiency in this project seeks to achieve greater carbon emission reductions, increased system-wide efficiency, enhance energy literacy for customers, and positively contribute to a reduction in utility bill arrearages.

We are excited for the opportunity to partner with National Grid on this REV demonstration project. Please do not hesitate to contact me at 518-862-1090 x3266 if you require any additional information.

Sincerely,

K C Hale

Kevin C. Hale
Director, Utility Affairs and Strategic Partnerships