L. **PA-Specific Programming**

Introduction

In addition to the statewide plan, which is the core of the Compact's approved 2013-2015 Three-Year Plan, the Compact provides specific program enhancements in several plan areas. These program enhancements result from the Governing Board's policy direction to continue existing programs that are both successful and responsive to the Compact's unique customer population. The Compact has tailored the statewide program offerings, where necessary to better meet its customers' unique profiles and needs. The Compact's Governing Board has determined that these enhancements are necessary to continue to best serve the needs and meet the demands of the Compact's unique customer base.

In the following sections, the Compact explains by program the enhancements it proposes for the 2016-2018 Three-Year Plan term. In addition, the Compact provides a description of its enhancements to its 2016-2018 Energy Education offering, associated with the Residential Education offering. See the Statewide Plan for the full program descriptions associated with each program (See Section III of the Statewide Plan, annexed as Exhibit Compact-1 to the Compact's Petition).

Residential and Low-Income Program Descriptions

Residential Whole House

Program Goals	The Compact expects lifetime energy savings of 284,181 MWh.
Program Budget	$50,849,827
Compact Enhancements	<u>Home Energy Services Initiative</u> The Compact has identified cost-effective enhancements during the 2013-2015 term that assist customers with identified barriers such as split incentives and difficulty with co-payments. To address these issues, the Compact has offered 100% incentives, up to the program cap of $4,000, for qualified weatherization incentives (in a fuel blind manner) for year-round renters that are responsible for payment of the electric bill, those customers whose income is within 61-80% of state median income, and those that are operated by municipalities or other government entities. The Compact raised the cap for weatherization to $4,000 for all customers after it identified that average recommendations often surpassed the previous cap of $2,000. The change has allowed customers to make improvements within one year rather than over several years.

	Multi-Family Retrofit Initiative In addition to serving customers whose facilities are heated with electricity, the Compact is proposing to also serve customers with oil- and/or propane-heated facilities in order to provide enhanced benefits for increased participation at Multi-Family sites based upon the pending RCS updates by the Massachusetts Department of Energy Resources. Residential Behavior Feedback The Compact is offering its customers a unique initiative which is designed to promote energy savings through the use of automation tools that will give homeowners the ability to remotely control their homes' energy usage as well as potentially offer demand response incentives.

Residential Products

Program Goals	The Compact expects lifetime energy savings of 332,165 MWh.
Program Budget	$12,691,029
Compact Enhancements	Residential Lighting To continue educating customers in how to make smart, efficient lighting choices, the Compact will work with towns on the Cape and Vineyard in 2016 to offer a free LED bulb to town residents who attend the annual Town Meeting. In addition to the give-away, the Compact will provide residents with educational materials on how to make the best lighting purchase for their needs.

Commercial & Industrial ("C&I") Program Descriptions

C&I New Construction and Major Renovation

Program Goals	The Compact expects lifetime energy savings of 135,687 MWh.
Program Budget	$4,006,049
Compact Enhancements	The Compact continues to offer its municipal customers specialized incentives that cover 100% of incremental custom measure costs as part of this program. In 2016, the Compact proposes to enhance its new construction and major renovation program to include cost-effective thermal measures designed to save oil, propane and other unregulated fuels.

C&I Retrofit Program for Existing Buildings

Program Goals	The Compact expects lifetime energy savings of 793,980 MWh.
Program Budget	$40,053,121
Compact Enhancements	The Compact continues to offer its municipal customers specialized incentives that cover 100% of custom and direct install cost-effective measure costs as part of this program. The Compact also plans to continue two special incentive options first adopted in 2013 to assist small business customers further in overcoming barriers to participation: a 95% incentive option for qualifying small business tenants; and for other small businesses, the zero interest financing option. For 2016, the Compact is rolling out several additional enhancements to its C&I Retrofit Program, each designed to further reduce barriers to participation for key customer segments. First, the Compact proposes to enhance its commercial and industrial retrofit program to include all cost-effective thermal measures designed to save oil, propane and other unregulated fuels. Second, the Compact is launching a new effort for its small C&I customers. The new initiative will be modeled after the HES program and will include a BEA (Business Energy Audit) and a core offering of deemed savings measures, many of which can be installed in the first visit, some at 100% incentive coverage. For its small business direct install customers, the Compact continues to offer higher incentives for standard Direct Install measures (up to 100% rather than up to 70% as offered in the Statewide Plan). Third, the Compact plans to begin phasing in segment-focused delivery options. Fourth, the Compact will also offer 100% incentive for all cost-effective measures for up to 100 (first come, first serve) non-profit corporations on Cape Cod and Martha's Vineyard per year as follows: (a) Non-profit organizations must be a 501(c)(3); (b) Operating more than 5 years with an unrestricted annual operating revenue of less than $15M for non-profit serving low income customers and less than $2M for all other non-profit organizations.

Special Marketing and Education Activities

Energy Education

Program Goals	Recognizing that education is key to affecting change in our society, the Compact has made a strong commitment to education outreach and continues to be a nationally recognized leader in the design and implementation of energy education programs. The Compact strives to address the continuing need for greater consumer awareness and encourage the development of deeper and broader community knowledge and commitment of energy efficiency technology and practices. Using a model for science-based learning, the Compact's energy education program aligned with the Massachusetts State Frameworks for Science and Technology allowing teachers to introduce lessons discussing energy efficiency and conservation as well as emerging renewable energy technologies.
Program Budget	$375,000
Compact Enhancements	• Coordination between other PAs and education agencies on teacher training, In-service, workshops and graduate level courses for teachers • Co-ordination for "Kids Teaching Kids" program at the high school and middle school level • Support and coordination for school and community based Energy Clubs • In-class hands-on presentations on 1. Science of Energy and Energy Transformations 2. Energy Sources (renewable and non-renewable) 3. Electricity 4. Energy Efficiency and Conservation 5. Hydrogen Fuel Cells and Biofuels 6. Climate Change • Statewide Awards program in conjunction with other PAs, the Division of Energy Resources and the NEED Youth Awards Program • Support for school-based "Energy" summer camps • Support for school districts STEM improvements through energy education

	New Program Enhancements: • Classroom based energy efficiency education program designed to continue to the home in educational outreach to the school families. • This program will capture savings through measures taken by the students in their own homes through kits supplied to them by the Compact.

Cape Light Compact Demand Response Demonstration Offering

As described below, the Cape Light Compact ("Compact") is proposing a Demand Response Demonstration Offering ("DR Demonstration Offering") as part of its 2016-2018 Three-Year Energy Efficiency Plan.[1] Demand response ("DR"), however, is inextricably linked to grid modernization ("Grid Mod") and rate design. Currently, the Department of Public Utilities ("Department") has docketed each of the electric utilities' proposed Grid Mod plans for Department review and approval. The Compact's ability to implement a fully developed DR Demonstration Offering as part of its 2016-2018 Energy Efficiency Plan is dependent upon the outcomes of the Grid Mod dockets and the related implementation of Time Varying Rates ("TVR") in the Commonwealth.[2]

A. The Compact's Proposed Interim Demand Response Demonstration Offering

1. Offering Overview

The Compact proposes to roll out its DR Demonstration Offering to customers of Cape Cod and Martha's Vineyard in the second quarter of 2016. The goals of this DR Demonstration Offering are to reduce customer demand through curtailment events and to encourage load-shifting through technology and behavioral change.

- Building on the success of the behavioral initiatives pioneered early in the field, the Compact will begin to establish the platform for the "connected home" (and possibly "connected business") and will install The Energy Detective ("TED") devices on up to 200 residential and small commercial electric meters through the Compact's Home Energy Assessment ("HES") and Business Energy Assessment ("BEA") initiatives.
    - TED will allow electric customers to access their electric usage on a real time basis through a Cape Light Compact customized application on their mobile device or computer.
- Through a mobile application, the Compact plans to enable the "connected home," allowing customers to view real time energy use in their homes and businesses and to permit better management of their energy consumption and costs.
- The Compact intends to hold approximately 7-10 events each year over the 2016-2018 timeframe. During these events, customers will be asked to curtail electric usage for a specified number of hours during the event. Customers who successfully participate in the event will be provided an incentive payment.

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[1] The Act Relative to Green Communities (2008) as amended by An Act Relative to Competitively Priced Electricity in the Commonwealth (2012) ("GCA") expressly directs the three-year plans for electric offering administrators "shall provide for the acquisition of all available energy efficiency and demand reduction resources." G.L. c. 25, § 21(b)(1).

[2] The Compact provided comments to the Department in D.P.U. 14-04 (Investigation into Time Varying Rates) and intends to participate in D.P.U. 15-122 (NSTAR Electric Company, d.b.a. Eversource Grid Mod Plan).

- If the customer is participating in the Compact's power supply program, the customer could be eligible for additional savings through a critical peak pricing option.
- Initially, participation in the Compact's DR Demonstration Offering will be targeted towards those customers with central air conditioning and electric heat. Participants will be offered Wi-Fi thermostats free of charge. The Compact will install Wi-Fi thermostats through its direct install core initiatives. Wi-Fi thermostats are available to all other customers with potential co-pays (as applicable).
- The Compact intends to incorporate connected appliances such as dishwashers, washing machines, refrigerators, freezers and smart window ACs. Potential rebates for smart appliances have not been determined at this time.
- The "connected home" is expected to grow in value by providing enhanced DR and energy efficiency benefits as other plug load uses, such as pool pumps/heaters, heat pump water heaters, electric vehicle charging stations become available.

2. Customer Education, Outreach and Engagement

The Compact will build on its existing community outreach efforts to offer the "connected home" DR Demonstration Offering. The Compact will promote the DR Demonstration Offering through its website, e-newsletter, and community civic/energy committee meetings.

3. Budget Goals

The attached Table 1 provides an estimate of the proposed budget for the DR Demonstration Offering as proposed.

B. The Next Generation of the Compact's DR Demonstration Offering

1. The Importance of Full Implementation of DR

The unique demographics of the Cape and Vineyard, the effects of generation retirement on SEMA capacity costs, the level of energy efficiency program participation, and growth of distributed energy resources present the case for a highly motivated market for DR. The Compact's DR Demonstration Offering will enable the Compact to further explore this market during the 2016-2018 Three-Year term.

Of particular importance is the ability of DR offerings to reduce demand during ISO-NE's annual system peak hour. Doing so allows participants, assuming ISO-NE settlement-quality data is available, to reduce their installed capacity tags. Given that FCM results show SEMA capacity prices for new resources reaching the administratively-set maximum for 2018-2019, reduced demand could help mitigate the multiple-cent price increase Cape and Vineyard ratepayers will face as a result of increasing capacity prices. Because capacity prices will begin increasing dramatically in 2017, a faster rollout is a priority. Reducing peak usage in the SEMA

zone is the most effective method to prevent Cape and Vineyard electric customers from this impending rate increase.

2. Impediments to the Compact's Full Implementation of Demand Response

The Compact's unique status as the only municipal aggregator Program Administrator complicates its implementation of its ideal DR offering during the 2016-2018 Three-Year term. Ideally, the Compact would propose the installation of advanced metering instead of a TED but cannot do so until implementation of the local distribution company's Grid Mod plan. Advanced metering would provide seamless access to real-time energy usage, allowing customers to better understand and manage their consumption, would allow for two-way communications, and would provide the granular and accurate load data which would be required for the implementation of TVR as a method to reduce peak usage.

a. Implementation of TVR

The Compact is supportive of an opt-out TVR offering because experience has shown that while average participant response may be lower for opt-out offerings; higher participation outweighs this effect, resulting in more cost-effective DR offerings.[3] The Compact acknowledges that the Grid Mod plans filed by the distribution companies are inconsistent regarding implementation of TVR offerings. The Compact believes that there must be consistency between the offerings of distribution companies regarding the type of TVR (opt-out or opt-in) and customer TVR eligibility (basic service and competitive supply) so a full array of DR offerings may be available to the maximum number of customers and the full potential benefits of DR realized.

b. Energy Storage

The Compact maintains that a fully integrated DR offering should incorporate energy storage. The availability of TVR is necessary to capture full DR benefits from energy storage. Energy storage, both small and large scale, continues to decrease in price, making it an increasingly viable option for customers interested in DR options. Energy storage is presently being marketed by solar installation companies as a complement to photovoltaic ("PV") installations. Additionally, energy storage is a non-wires alternative ("NWA"), in certain circumstances, that presents a more cost-effective solution than traditional infrastructure upgrades as a means of meeting demand in congested areas. See National Grid DR Pilot Updates, by Tim Roughan, Washington, DC, May 28, 2015 (noting NWAs provide for the integration of customer-facing resources such as energy efficiency and distributed energy resources along with utility/grid-facing resources that together, in specific geographic areas, defer a planned transmission or distribution infrastructure investment). The Compact plans to advocate for policies that will

[3] Page vi, Department of Energy, "Interim Report on Customer Acceptance, Retention, and Response to Time-Based Rates from the Consumer Behavior Studies," June, 2015: http://energy.gov/sites/prod/files/2015/06/f24/ARRA-CBS_interim_offering_impact_report_June2015.pdf.

encourage the effective deployment of storage to defer infrastructure investments and allow storage owners to monetize these benefits.

c. Customer Data and AMI Electric Meters

As noted above, the installation of AMI electric meters is necessary to realize the full benefits of a DR offering. Moreover, participation in ISO New England's Demand Response Program is a priority as it will maximize the benefits of DR for electric ratepayers. ISO New England requires 5-minute interval data for participation in its DR program. This level of customer data is presently not available from the majority of existing electric meters on Cape Cod and Martha's Vineyard.[4] As such, in order to fully implement a DR offering to effectively reduce the peak on Cape Cod and Martha's Vineyard, upgrades to existing customer electric meters to AMI meters will be required. The Compact maintains that the cost for meter upgrades should be borne by the local distribution company on its regulated portion of the electric bill and not through the energy efficiency surcharge. The Compact strongly supports analysis that evaluates whether the cost of deploying AMI meters in the SEMA zone accompanied by full deployment of DR is less expensive for SEMA electric customers than the anticipated customer bill increases due to SEMA capacity prices, as noted above.

[4] While TED can provide real-time usage data for customers, it may not satisfy the data requirements for participating in ISO-NE energy and capacity markets. The Compact will work with ISO-NE to establish whether or not data from the installed TEDs can be used in these markets.

2016 Cape Light Compact Demand Response Budget						
Sector	**Program Planning and Administration**	**Marketing and Advertising**	**Participant Incentive**	**Sales, Technical Assistance & Training**	**Evaluation and Market Research**	**Total Program Costs**
A - Residential	$ -	$ 4,500	$ 5,850	$ 156,957	$ -	$ 167,307
B - Low-Income	$ -	$ -	$ -	$ -	$ -	$ -
C - Commercial & Industrial	$ -	$ 500	$ 650	$ 17,440	$ -	$ 18,590
Grand Total	**$ -**	**$ 5,000**	**$ 6,500**	**$ 174,397**	**$ -**	**$ 185,897**

2017 Cape Light Compact Demand Response Budget						
Sector	**Program Planning and Administration**	**Marketing and Advertising**	**Participant Incentive**	**Sales, Technical Assistance & Training**	**Evaluation and Market Research**	**Total Program Costs**
A - Residential	$ -	$ 4,500	$ 11,700	$ 224,817	$ -	$ 241,017
B - Low-Income	$ -	$ -	$ -	$ -	$ -	$ -
C - Commercial & Industrial	$ -	$ 500	$ 1,300	$ 24,980	$ -	$ 26,780
Grand Total	**$ -**	**$ 5,000**	**$ 13,000**	**$ 249,797**	**$ -**	**$ 267,797**

2018 Cape Light Compact Demand Response Budget						
Sector	**Program Planning and Administration**	**Marketing and Advertising**	**Participant Incentive**	**Sales, Technical Assistance & Training**	**Evaluation and Market Research**	**Total Program Costs**
A - Residential	$ -	$ 4,500	$ 17,550	$ 292,677	$ -	$ 314,727
B - Low-Income	$ -	$ -	$ -	$ -	$ -	$ -
C - Commercial & Industrial	$ -	$ 500	$ 1,950	$ 32,520	$ -	$ 34,970
Grand Total	**$ -**	**$ 5,000**	**$ 19,500**	**$ 325,197**	**$ -**	**$ 349,697**

2016-2018 Cape Light Compact Demand Response Budget						
Sector	**Program Planning and Administration**	**Marketing and Advertising**	**Participant Incentive**	**Sales, Technical Assistance & Training**	**Evaluation and Market Research**	**Total Program Costs**
A - Residential	$ -	$ 13,500	$ 35,100	$ 674,452	$ -	$ 723,052
B - Low-Income	$ -	$ -	$ -	$ -	$ -	$ -
C - Commercial & Industrial	$ -	$ 1,500	$ 3,900	$ 74,940	$ -	$ 80,340
Grand Total	**$ -**	**$ 15,000**	**$ 39,000**	**$ 749,392**		**$ 803,392**

Eversource PA-Specific Materials

Demand Reductions

Eversource recognizes the importance and need to achieve demand reductions due to their numerous benefits such as the possibility to delay or defer transmission and distribution projects, mitigating spikes in electric prices, and lowering emissions. Eversource is committed to the research and customer engagement necessary to implement demand reductions properly. During the 2016-2018 Three Year Plan, Eversource will investigate these opportunities.

The Company has had tremendous success in its previous Three Year Plans by building a deliberate, systematic go-to-market strategy for its offerings that provide real value to its customers. Eversource will continue working to understand customers' needs and how best to serve them. It is important to note that not all customers consume electricity in the same manner and as such there is no "one size fits all" path to demand reductions. The Company will continue to take a customer first approach when exploring and subsequently introducing new technologies and offerings geared towards demand reduction. Eversource will kick off the 2016-2018 Plan with in-depth research to ensure demand reduction initiatives are aligned with customer and Company objectives.

This effort will be informed by activities already underway at Eversource. The Company is a regional participant in the additional Avoided Energy Supply Cost (AESC) study geared towards determining critical peak costs. This is a key first step in determining which demand reduction measures may be cost effective and appropriate for customers. Eversource has also teamed with the Fraunhofer Center for Sustainable Energy Systems and Navigant Consulting to better understand how customers' energy use coincides with peak demand at the system level and what technologies might alleviate that coincident demand.

Within its current portfolio of energy efficiency offerings, Eversource has identified several measures that are focused at reducing demand which it will emphasize during the 2016-2018 Three Year Plan. LED bulbs and lighting controls have the potential to significantly lower peak demand. Eversource will continue to push LED bulbs and lighting controls to its customers and work towards influencing the lighting market through its upstream programs. The Company intends to pursue a similar strategy with efficient HVAC equipment. Also within its existing portfolio, the Company plans to continue aggressively pursuing combined heat and power (CHP) opportunities, for both small and large units.

A new way the Company plans to help reduce demand is by offering a training program to building operators so that they use their existing equipment and systems as efficiently as possible. These trainings should help reduce demand by allowing existing systems to run more efficiently, encourage customers to add additional efficient equipment, and ensure the persistence of demand reductions by educating building operators on how to use their equipment properly over a long period of time.

Another new way the Company plans to promote demand reduction is by educating its customers about their peak demand consumption through its Customer Engagement Platform (CEP). The CEP will offer customers visualizations and high level analytics around their consumption patterns through its ability to pull in historical usage and interval data (where available). Demand reductions will be driven by the CEP's ability to offer custom behavioral and widget based solutions to reducing consumption.

As always, Eversource is committed to exploring and advancing new technologies. Given the increased interest in demand reductions, the Company will be searching for promising technologies that can

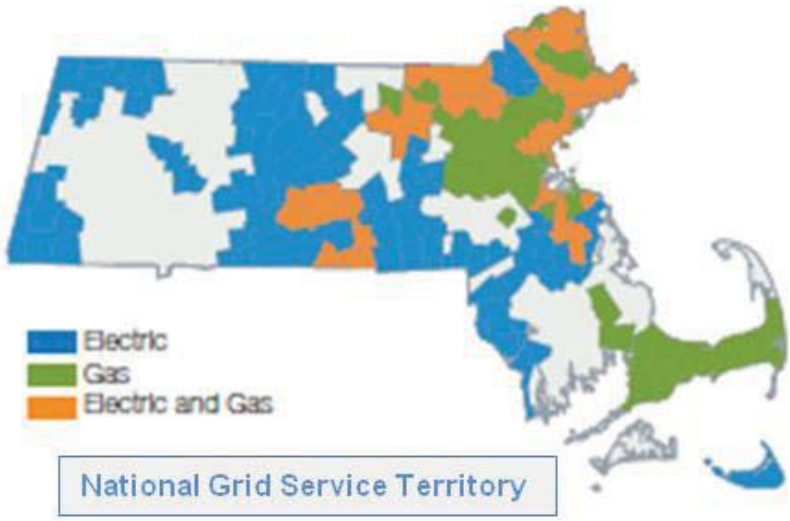
reduce demand in a cost effective manner and meet customers' needs. Eversource has a history of promoting new technologies where appropriate and intends to continue this strategy.

Lastly, it is important to note that energy efficiency is only one channel for reducing demand and the Company will leverage alternative channels to achieve its goal of lowering peak demand as well. To that end, Eversource has proposed spending over $100 million for advanced meters, over $7 million for storage technologies, and nearly $10 million for Volt VAR Optimization in its Grid Modernization plan. Opt-in time of use (TOU) rates have also been shown to reduce peak demand and are included in the Company's Grid Modernization plan. It is anticipated that energy efficiency will work in tandem with other grid modernization initiatives to maximize the impact the Company can have on reducing peak demand.

2016-2018 Energy Efficiency Plan:
National Grid Specific Elements

A. Overview

National Grid is committed to providing its customers with comprehensive energy efficiency solutions which drive economic and environmental benefits in support of the principles of the Green Communities Act, the Global Warming Solutions Act, and energy policy in the Commonwealth. The Company fully supports the efforts outlined in the 2016-2018 Massachusetts Statewide Three-Year Electric and Gas Energy Efficiency Plan and will supplement those efforts to take into account the unique communities it serves.



National Grid's service territory spans the full breadth of the state from Suffolk to Worcester to Berkshire counties. Thus, our 1.2 million electric customers in 172 communities and 850,000 gas customers in 116 communities represent a unique array of diverse demographic and economic circumstances. Our vision as a company is to create a more resilient, reliable, agile, efficient, and environmentally-sound energy network for all our customers, while connecting people, innovative technologies, and energy information. In light of this, National Grid has developed a variety of initiatives described below which collectively lay the groundwork to create this future.

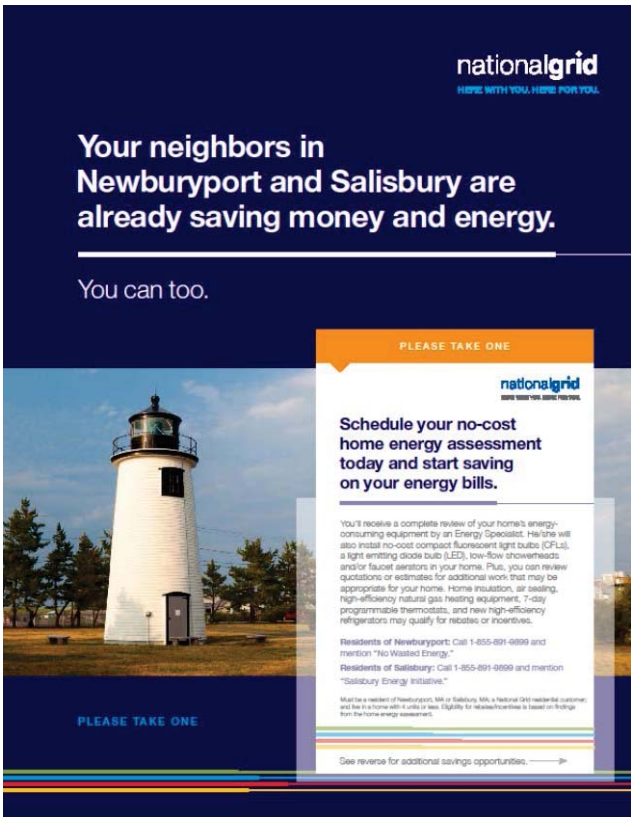
B. Customer Partnerships

Communities Initiative: During 2013-2015, National Grid deployed a Communities Initiative in which the Company partnered directly with municipalities. National Grid began the program in 2013 with Medford, and expanded it in 2014 with Chelmsford, Malden, Newburyport, Salisbury, and Shirley. The Company plans to continue with this grant program in 2016-2018.

The Communities Initiative is designed specifically to accommodate the special circumstances of any community, regardless of demographic or socioeconomic characteristics. Each municipality is given participation and savings goals based upon past program performance levels in that specific town, creating a level playing field for achieving goals. Participating municipalities are provided with start-up funding and supported with training in education and outreach to their residents. Regular check-in calls allow municipalities to share their outreach tactics with each other and provide some sense of competition. Specific phone numbers and key words are set up for each municipality in order to track participation due to the program, and additional rewards

are based on audits performed and additional measures completed, such as insulation and heating systems. The approach specifically rewards communities for increasing the volume of not just home energy assessments, but also measure installations, such as weatherization and heating systems.

For the 2013-2015 initiative, selection for the Communities Initiative was based on responses to an open request for information (RFI) to all of National Grid's dual-fuel communities. In 2016-2018, the Company anticipates coordinating efforts with other PAs so that initiatives like this can be expanded to communities where National Grid is either the electric provider or the gas provider, but not always both.



Geotargeting/Non-wires Alternatives: One consideration in choosing communities will be whether locations have projected high congestion and/or future planned infrastructure investments. The increase of energy efficiency in those areas due to the concentrated marketing tactics and/or enhanced incentives of the Communities Initiative may be able to alleviate the congestion.

The idea of geotargeting energy efficiency is not new to National Grid. In a 2011 study[1] on the Aquidneck Island area of Rhode Island, Opinion Dynamics Corporation found that National Grid efforts to target marketing to specific towns resulted in measurable increases to the energy efficiency participation in those areas above and beyond what would have otherwise been expected. In addition, a number of steps have been taken toward exploring non-wires alternatives (NWAs) in New England. National Grid defines NWAs as projects that combine multiple technologies, including energy efficiency, in a specific, geographical area with a goal of deferring a transmission or distribution investment. As part of its 2012 System Reliability Procurement Report[2], National Grid began implementing its first non-wires alternative (NWA) pilot in Little Compton and parts of Tiverton Rhode Island in an effort to reduce 1 MW of load (primarily through energy efficiency but also with some demand response efforts) during the area's peak times in order to defer a $2.9 million investment in an additional distribution feeder to serve the area. This pilot is now in the fourth year of its six-year

[1] *Evaluation of National Grid's Community Pilot Program - Energy Action: Aquidneck and Jamestown Final Report*. Prepared by Opinion Dynamics Corporation in October 2011.
[2] *2012 System Reliability Plan Report – Supplement*. Prepared by National Grid in February 2012.

planned lifetime, and the distribution investment, originally planned for 2014, has still not been constructed.

National Grid has also started to explore NWAs in Massachusetts on Nantucket. In 2015, implementation began on an initial plan, primarily composed of energy efficiency. In the long term, the goal of this project will be to defer 18 MW over 17 years to defer the construction of a third cable to serve the island's load by at least ten years. About 5-7 MW of this total reduction is projected to come from energy efficiency. The larger effort is projected to include renewables, energy storage, demand response and potentially time varying rates as potential sources of load reduction during peak hours.

In its 2016-2018 Plan, National Grid would like to expand on its experience with NWAs by employing targeted efforts to geographically concentrate some energy efficiency efforts in areas of greater need, i.e. areas that are projected to have higher load congestion over time or that are projected to need a distribution or transmission upgrade related to load growth. While no areas of need beyond Nantucket are projected for implementation in 2016-2018 at the time of this filing, screening for areas will take place on a rolling basis, and projects will be proposed as they are identified.

Nonprofit Referrals: While municipal partnerships are one way to diversify our marketing channels, nonprofit partnerships are another means to potentially reach more customers. In 2016-2018 National Grid intends to begin a Nonprofit Referral program, partnering with small, local nonprofits to reach their membership. This initiative will also reward nonprofits based on completed audits and installed measures.

D. Demand Response

National Grid proposes to offer broad demand response (DR) solutions to reduce customer demand through peak shaving solutions and load shifting opportunities. National Grid also plans to explore opportunities for gas DR. Demonstration projects will provide insights and help develop best practices and strategies to guide the deployment of solutions at scale. The Company, in consultation with the Council and other PAs, will develop a common framework for cost-effectiveness and proposed performance incentives for all demand response programs.

Commercial and Industrial Demand Response

Multi Year Strategy: Commercial and Industrial (C&I) demand response demonstration projects will be deployed to explore options for direct load control, as well as customer initiated interruptible load demand response in 2016 with further demonstration activities in 2017 and 2018, as appropriate. National Grid will analyze data collected from the demonstration projects to assess the market potential, test delivery strategies, identify market barriers, and develop the framework for cost-effectiveness for the screening of demand response (DR) programs. Findings from these demonstration projects and related evaluations, along with additional research and analysis, will inform and refine any future implementation of DR. National Grid plans to propose performance incentives for DR-related efforts after incremental DR-related benefits are better understood and determined through the demonstration projects.

Proposed Initiatives: For small commercial customers where interval meters do not currently exist, National Grid will focus on direct load control demand response. This initiative will explore opportunities to reduce peak load by providing incentives for the installation of technologies that automatically reduce energy usage during demand response events. Some of the potential technologies under consideration, where applicable, include Wi-Fi thermostats that control air conditioners, heat pumps, smart plugs, and smart water heaters. In addition, National Grid will research opportunities for other demand response-enabled technologies for small commercial customers, such as network lighting.

For large commercial and industrial customers with interval meters, National Grid will focus on interruptible load demand response. Here, customer meter data allows for measuring actual curtailment. Facility-specific assessments will be used to identify the most appropriate curtailment strategies for each customer, and could include HVAC system controls, network lighting controls, energy management systems (EMS), and other demand reducing opportunities specific to each customer facility. National Grid will coordinate energy efficiency assessments to include demand response opportunities where appropriate.

Technology Deployment: National Grid will provide incentives for demand response enabled technologies such as Wi-Fi thermostats, open automated demand response (ADR) enabled equipment, and network lighting controls through the ongoing energy efficiency programs to position the market for larger deployment of demand response in the future. Future investments in grid modernization, enabling widespread use of time varying rates and including a scalable demand response management system, could further enhance demand response capabilities. As new demand response-enabled technologies emerge, National Grid will continue to evaluate those technologies and, as appropriate, incorporate them into to its portfolio offerings.

Residential Demand Response

Multi-Year Strategy: Similar to the commercial and industrial demand response strategy, the residential demand response strategy will explore demonstration projects and seek to position the marketplace for broad deployment of demand response in the future. Lessons from planned demonstration projects in 2016 will be used to further develop and enhance residential demand response initiatives in 2017 and 2018.

Proposed Initiatives: For residential customers, National Grid intends to pursue full scale deployment of mature demand response-enabled technologies such as Wi-Fi thermostats, while also testing new technologies and progressively scaling those that prove successful. In 2016, National Grid plans to demonstrate the benefits of automated demand response with Wi-Fi thermostats. This technology allows the house to be pre-cooled prior to a demand response event and manages the indoor temperature during such an event, so that it is always within a given range to maximize customer comfort. This control strategy uses two-way communication through the in-home Wi-Fi network to maximize potential savings for customers with minimal impact on comfort. Also in 2016, National Grid plans to implement small-scale demand response with connected washers and dryers, and smart window air conditioning. In 2017 and 2018, National Grid plans to explore connected electric hot water heaters, heat pump water

heaters, dishwashers, pool pumps and electric vehicle charging stations. Most of these technologies have both energy efficiency and demand response savings, and therefore the company intends to promote them though the existing energy efficiency programs.

Communication, Education and Engagement: National Grid strives to deliver customer solutions that optimize customer benefits. Therefore, significant efforts will be made to educate and engage customers with information through direct mail, email, and online portals. The company is currently exploring the best means to leverage existing customer communication channels such as our home energy reports and our in-person home energy assessments. Specific topics of focus may include the benefits of demand response, and the automatic smart control that allows National Grid to maximize in-home comfort and demand savings.

Budgets and Expected Results: National Grid is proposing budgets for demand response initiatives and has estimated the expected MW reduction associated with these efforts. The MW reduction targets are estimates based on the learnings from the Smart Energy Solutions pilot in Worcester and demand response programs from across the country. These MW reduction estimates will be refined and revised in the subsequent years based on findings from the demonstration projects.

The demand savings presented in the table below should not be considered formal goals. Rather, they are intended to provide a preliminary estimate of incremental demand savings from contemplated DR efforts. Goals for efforts that prove to be cost-effective will be set after the results of the proposed demonstration projects can be considered.

The demand response savings presented in the "Preliminary Estimate of Expected Demand Savings" table below reflect the average reduction in capacity per hour during a demand response event from residential and C&I demand response strategies that may be deployed in 2016 – 2018. These estimates are dependent on the expected time and length of a demand response event. The preliminary DR savings provided in the table are based on an average of 87 hours of residential demand response hours for each customer and 40 C&I demand response hours in a year for commercial customers. The assumed length of the demand response events will vary from 2-4 hours for residential customers.

NATIONAL GRID DR BUDGETS							
Year	**Program**	**Program Planning and Admin.**	**Marketing and Advertising**	**Participant Incentive**	**Sales, Technical & Training**	**Evaluation and Market Research**	**Total PA Costs**
2016	**Residential**	$187,375	$210,000	$596,282	$1,778,956	$110,904	**$2,883,517**
	Commercial and Industrial	$198,104	$31,500	$99,750	$642,664	$38,881	**$1,010,899**
	Total	**$385,478**	**$241,500**	**$696,032**	**$2,421,620**	**$149,785**	**$3,894,415**
2017	**Residential**	$214,411	$210,000	$1,497,254	$2,618,084	$181,590	**$4,721,339**
	Commercial and Industrial	$206,617	$57,750	$3,139,500	$3,527,500	$277,255	**$7,208,621**
	Total	**$421,028**	**$267,750**	**$4,636,754**	**$6,145,584**	**$458,845**	**$11,929,960**
2018	**Residential**	$238,601	$210,000	$2,698,890	$3,519,067	$266,662	**$6,933,221**
	Commercial and Industrial	$366,163	$57,750	$3,294,375	$3,518,187	$444,494	**$7,680,969**
	Total	**$604,764**	**$267,750**	**$5,993,265**	**$7,037,254**	**$711,156**	**$14,614,190**
2016-2018	**Residential**	**$640,387**	**$630,000**	**$4,792,426**	**$7,916,107**	**$559,157**	**$14,538,077**
	Commercial and Industrial	**$770,883**	**$147,000**	**$6,533,625**	**$7,688,351**	**$760,629**	**$15,900,489**
	TOTAL	**$1,411,270**	**$777,000**	**$11,326,051**	**$15,604,458**	**$1,319,786**	**$30,438,566**

Preliminary Estimate of Expected Demand Savings

NATIONAL GRID DR SAVINGS		
Year	**Program**	**Average hourly MW Reduction during an event**
2016	**Residential**	**2.6**
	Commercial	**0.3**
2017	**Residential**	**6.5**
	Commercial	**40.5**
2018	**Residential**	**11.0**
	Commercial	**41.0**

E. Electric Vehicle Charging Stations

National Grid believes that there is a unique opportunity to leverage the Company's energy efficiency related customer interactions to help the Commonwealth achieve its Clean Energy and Climate Plan transportation objectives. Promoting electrical vehicle (EV) charging stations along-side energy efficiency could increase customer interest and program participation while introducing a new tool to help manage energy loads over the long term. As part of its 2016-2018 Plan, the Company would like to explore the promotion of EV charging stations through the energy efficiency programs by examining potential funding mechanisms and quantifying the energy savings that could result from these efforts. Should this exploration show that the addition of EV charging stations can deliver program and customer benefits, National Grid would like to implement an integrated strategic promotion of this technology.

F. R&D and Technical Demonstration

National Grid is committed to evaluating new and innovative technologies to provide Massachusetts customers with enhanced savings and benefits. It is essential to develop and test next generation products to ensure they meet claimed economic benefits as well as the highest standards of reliability and safety

National Grid works with the Massachusetts Technical Assessment Committee (MTAC) in a collaborative manner that enables all stakeholders to consider the technologies demonstrated for future program design and implementation. The projects are both proactive and reactive in the marketplace as solutions develop.

The Company is planning the following residential demonstrations in 2016-2018: Smart Appliance Control and Multi-Channel Communication Platform for Connected Home; micro combined heat and power (MCHP); and other technologies as they emerge in the marketplace.

In addition, National Grid will be examining the following commercial demonstrations for 2016-2018: Performance Lighting Existing to Code -Tier Zero; Lighting Controls with Demand Response; Adaptive LED Troffer –Enhanced Controls Logic; Lighting Designer Incentive (LDI); Lighting Re-Specification Incentive; Building Tune Up (BTU_p); Lab Buildings Retrocommissioning (RCx) and/or Deep Dive; and Distributed Refrigeration.

G. Education

National Grid has been a long-term supporter of the National Energy Education Development (NEED) Project, bringing energy efficiency curricula and trainings to teachers in Massachusetts. In 2016-2018, the Company will supplement the NEED trainings with take-home energy-efficiency kits. Teachers who participate in the trainings will be able to request these kits, which contain instant-savings measures such as light bulbs, showerheads, and faucet aerators, as well as educational materials. After in-class lessons about energy-efficiency, students will bring the kits home and complete surveys regarding which measures their families install. In this way, the Company can capture additional savings and expand the reach of the education program beyond teachers and students, and to parents as well.

National Grid will continue offering a school lighting fundraiser in 2016-2018. In much the same style as other school fundraisers, in which students sell magazines, candy, or wrapping paper, students can sell light bulbs, smart power strips, and showerheads to family and friends, with all profits from the sale going to the school. This motivates students to not only learn about energy efficiency, but also to share what they have learned within their community.

It is the hope that the increased awareness and commitment represented by installing instant savings measures through the take home kits and lighting fundraiser will encourage families to pursue additional energy efficiency opportunities while fostering a culture of sustainability.