2020 Commercial and Industrial Energy Efficiency Solutions and Programs

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1. Introduction

The 2018-2020 Three-Year Plan details four central principles that encompass an advanced and innovative approach to serving commercial and industrial (C&I) customers and the building industry at large. These four principles are apparent in all aspects of the 2020 Plan and incorporated in the planning process, which included many workshops and sessions from internal teams to external stakeholders. In addition, each of the Company's programs and the strategies, initiatives, demonstrations, and assessments contained within, are focused on meeting the needs of customers, the environment, and preparing for the future. The plan looks to integrate financing in the large commercial, small business and community initiatives. Below are the four key priorities the Company has identified in the 2018–2020 Three-Year Plan.

Customers - Deliver comprehensive services encompassing all market segments and customers. Such services will enable customers to control their energy use, manage their peak energy use, reduce their bills, and help support their financial well-being.

Least Cost - Deliver energy efficiency services as cost-effectively as possible through optimizing finance and promoting upstream initiatives. Continuing to deliver cost effective energy savings under Least Cost Procurement will create cost savings to all customers, while creating economic benefits that create and maintain local jobs and businesses.

Environment - Provide solutions that minimize greenhouse gas emissions and contribute to Rhode Island's clean energy policy goals, including the Resilient Rhode Island Act.

Future – Innovate to capture savings from new technologies and strategies to position energy efficiency programs for the future including the integration of energy efficiency with demand response, renewable energy, and smart grid technologies. This includes incorporating outcomes from the Rhode Island Power Sector Transformation Initiative and Docket 4600.

Affordability and financing for the Company's customers are important criteria to achieve all the energy efficiency strategies and innovations that the Company is proposing in this plan. The Company has worked closely with both The Rhode Island Infrastructure Bank

(RIIB) and outside sources of capital over recent years to assemble a set of offerings that allow nearly every type of building and project to be financed. National Grid, along with its partners, will continue to educate the market on these mechanisms and provide guidance to customers on which choices may be best for their project.

National Grid is focused on a Market Sector Approach for commercial and industrial programs. This approach allows us to address customer needs that are shaped directly by the industry and geographies in which the customers operate, and on the industry or sectors strategic and commercial pressures. A sector approach allows us to customize solutions that fit the customers' needs and increase participation in energy efficiency. The various initiatives in the program reflect this approach.

Enabling strategies for efficient delivery, better customer experience and participation, in energy efficiency programs, are covered in sections on Finance, Customer Experience and Marketing. Workforce development addressed under the main plan text, covers initiative for training, education and awareness.

Commercial and Industrial customers can participate in energy efficiency through four types of programs.

Four Types of Programs

1. Large C&I New Construction – Focuses on offerings that target ground up new construction, major renovations, tenant fit-outs and end of life replacement equipment.
2. Large C&I Retrofit – Focuses on all services and technologies towards retrofits needed for existing buildings.
3. Small Business/ Direct Install (SMB/DI) – Focuses on providing turn-key solutions to many types of small businesses.
4. Demand Response programs - Focus on reducing peak electric demand and associated costs for large commercial customers. For small commercial customers peak demand reduction will be through direct load control technologies.

It should be noted that the offerings for Large C&I New Construction and Retrofit Programs are also available to small business customers.

The Appendices provide further details to the four programs mentioned above. The following figures and tables are available in the appendix:

1. Sample list of custom measures for New Construction and Retrofit Programs
2. Program logic model for Retrofit Program
3. Program logic model for New Construction Program
4. Goals and incentive description of each of the electric sub-programs
5. Goals and incentive description of gas program measures

Commercial and Industrial Energy Efficiency Programs Overview

The C&I Energy Efficiency programs are organized in the same way as the built environment – customers are making decisions around their investment in higher performing new construction and existing buildings. Depending on the needs and size of the customer within each of the segments, customers can participate in one or more of the four main energy efficiency programs.

- The Large Commercial and Industrial New Construction Program
- The Large Commercial Retrofit Program
- The Small Business Direct Install (SMB/DI) Program
- Demand Response Program (C&I Connected Solutions)

Although there are four energy efficiency programs in the C&I sector, all C&I customers are eligible to participate in the Large Commercial and Industrial New Construction Program and the Large Commercial Retrofit Program. However, the Small Business Direct Install (SMB/DI) Program is restricted to customers who consume less than 1,000,000 kWh per year. Larger and more complicated measures not offered by the SMB/DI vendor go through the New Construction or Retrofit Programs. The following sections describe the various offerings under these three programs. In addition, a logic model describing the C&I programs and how they relate to short and long-term outcomes is provided in Appendix 2 and 3.

In 2019 the Company defined and proposed the following definitions for demonstrations and assessments:

- Demonstration: A demonstration tests a new technology or solution that is delivered as part of an existing program where a technical assessment has estimated the savings and determined that the measure is likely to be cost effective. An example of a demonstration was beneficial electrification of heat in the HVAC program in 2018.

- Assessment: An assessment tests a measure, a bundle of measures, or a solution, that can be delivered as part of existing program where the savings are not known but will be explored as part of the assessment. An example of an assessment is automated window shades in the C&I retrofit program.

Please refer to Attachment 8 for definitions of pilots and pilots proposed under the 2020 Energy Efficiency Plan.

In 2020 the Company will continue to focus on demonstrations and assessments. Below is a list of all activities for demonstrations and assessment for 2020.

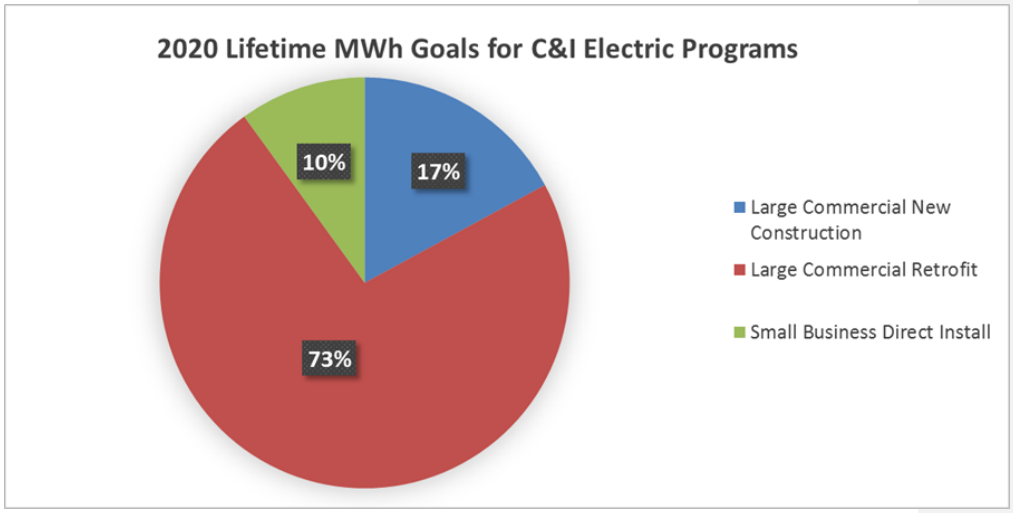
Table 1. Commercial and Industrial Demonstrations and Assessments (2018-2020)

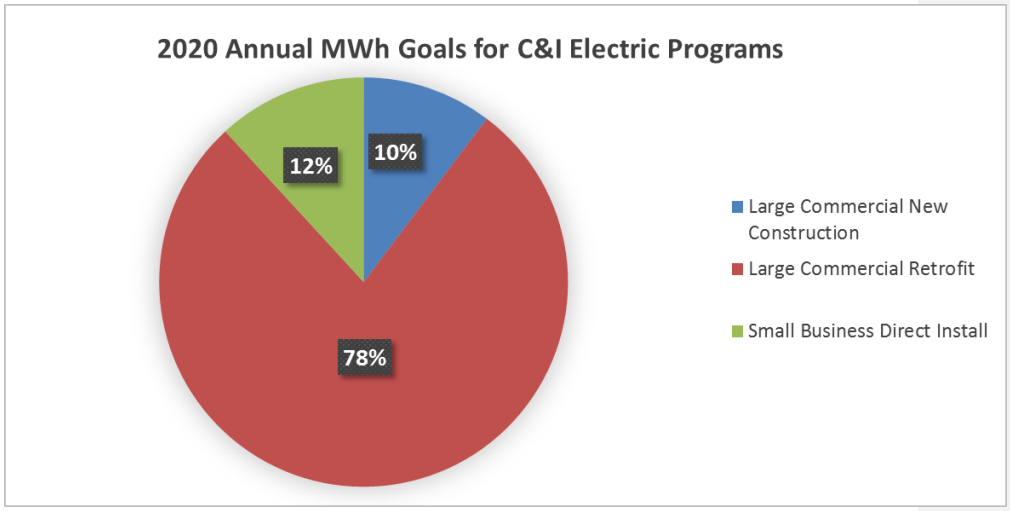
		Name	C&I Programs	Duration	Classification	Evaluation
Industrial	1	Underutilized EE tech. on mechanical power transmission systems	C&I Retrofit	2018-2020	Demo	Vendor Evaluation
	2	SEM	C&I Retrofit	2018-2020	Demo	Independent Evaluation
Lighting	3	Emerging Lighting Market Interventions Secure Lighting Spec (SLS)	C&I NC	2018-2020	Assessment	No Evaluation
HVAC Tech.	4	HVAC Lighting Controls Plus	C&I Retrofit	2020	Demo	Vendor Evaluation
	5	Kitchen Exhaust	C&I Retrofit	2020	Demo	Vendor Evaluation
	6	enVerid	C&I Retrofit	2020	Demo	Vendor Evaluation
	7	Gas Heat Pumps	C&I Retrofit	2020	Demo	No Evaluation
	8	Heat Pumps	C&I Retrofit	2019-2020	Demo	Independent Evaluation

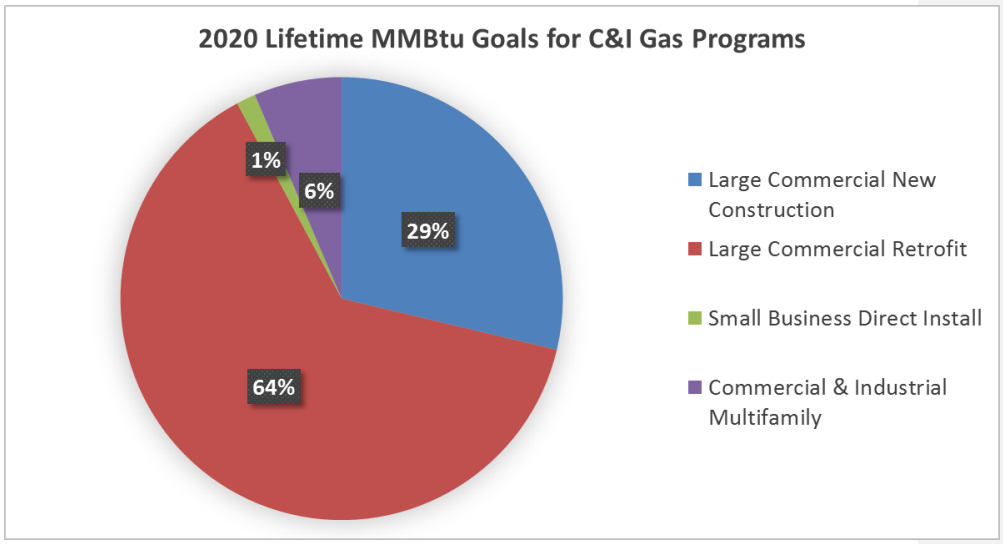
New Construction	9	Performance based Procurement (Accelerate Performance)	C&I NC	2018-2020	Demo	Vendor Evaluation
Innovation	10	Innovative Gas	C&I Retrofit	2020	Demo	No Evaluation
	11	Innovative Electric	C&I Retrofit	2020	Demo	No Evaluation

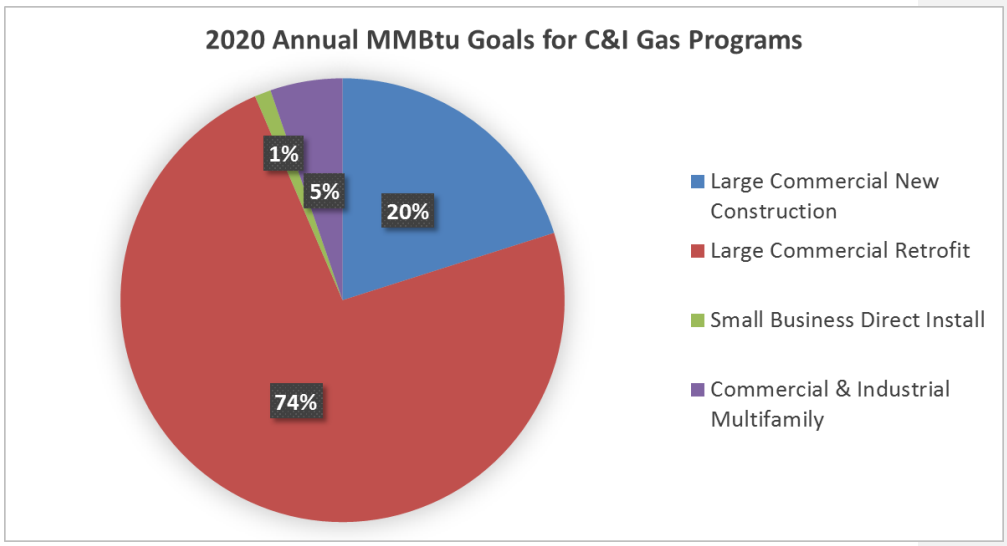
Changes in 2020 - In 2019 the Company began to implement an evaluation process for coordinating demonstrations and assessments with the Evaluation Monitoring and Verification (EM&V) team.

Figure 1. Commercial and Industrial Electric and Gas Goals by Program






2020 Lifetime MMBtu Goals for C&I Gas Programs
1%
6%
29%
64%
Large Commercial New Construction
Large Commercial Retrofit
Small Business Direct Install
Commercial & Industrial Multifamily


2020 Annual MMBtu Goals for C&I Gas Programs
1%
5%
20%
74%
Large Commercial New Construction
Large Commercial Retrofit
Small Business Direct Install
Commercial & Industrial Multifamily

2. Large Commercial and Industrial New Construction Program

a. Overview

The New Construction Program is divided into two main categories:

1. **New buildings, major renovations and tenant fit-ups**: This is specifically for those projects that are ground up new construction or major renovations, all of which traditionally involve some level of design and are governed by code. The section below describes this in detail.

2. **End of life replacements**: Typically, with this category there is no design component. Customers purchasing new energy-consuming equipment or replacing equipment that has reached end of useful life are incentivized to purchase and install energy efficient equipment. Measures installed are governed by codes and standards in some cases where equipment has reached the end of its life. Customers are encouraged to make efficient choices with every category of equipment purchase. The baseline energy is considered to be the energy code and savings are calculated from the baseline energy. This works the same way as the "systems approach" described below, whether through prescriptive or custom pathways.

b. 2020 Goals

For the 2020 Plan, the Large Commercial and Industrial New Construction Program has the following goals:

Fuel	Total Net Adjusted Lifetime MMBtu	Annual MWh (Electric)	Annual MMBtu (Gas, Oil, Propane)	Budget ($000)
Electric	524,646	9,403	2,613	$5,255

Fuel	Total Net Lifetime MMBtu	Annual MMBtu (Gas)	Annual MWh	Budget ($000)
Gas	728,177	42,806	0	$2,522

c. Program Delivery

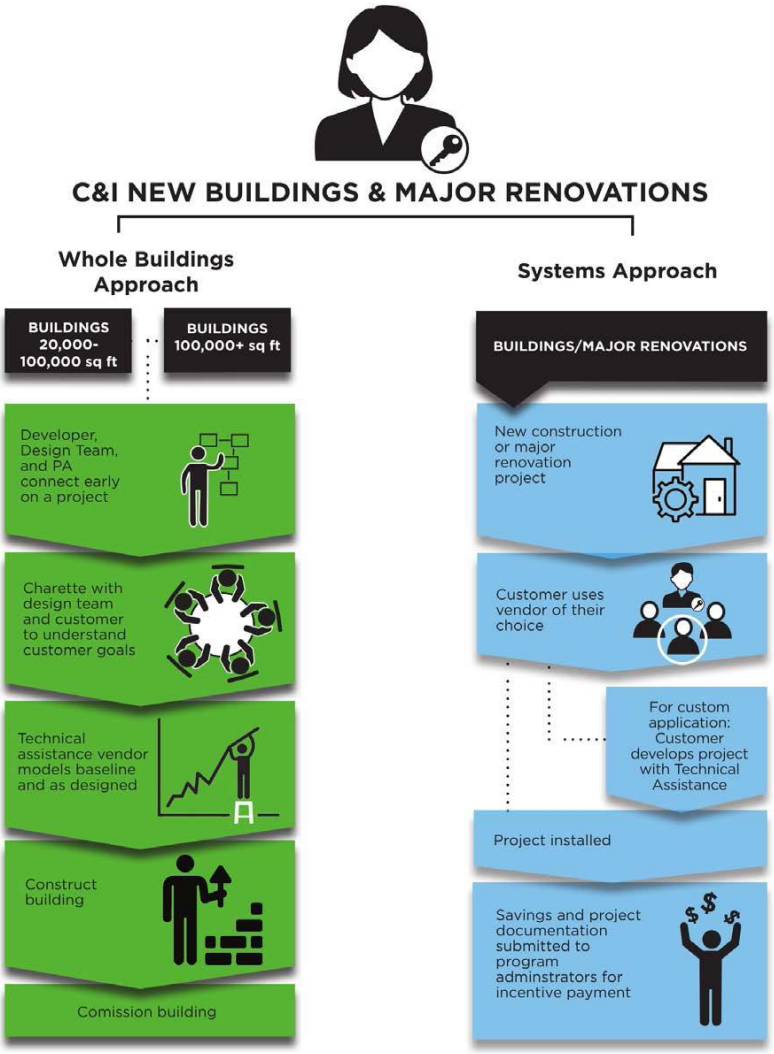
i. New Buildings, Additions, Major Renovations and Tenant Fit-Ups

The services and incentives offered are designed to promote and support high performance building design, equipment selection, and building operation. This program offers both technical assistance and financial incentives based on projected energy savings performance to incentivize building beyond the current energy code baselines. Technical assistance ranges from simple plan review and efficiency upgrade recommendations to complete technical reviews of energy models. In addition, the Company is utilizing existing energy efficiency technical assessment studies to provide engineering support to potential applicants for Advanced Gas Technologies (AGT) incentives. AGT provides an incentive to natural gas C&I customers as part of a demand leveling program. This program provides an incentive for summer load gas projects.

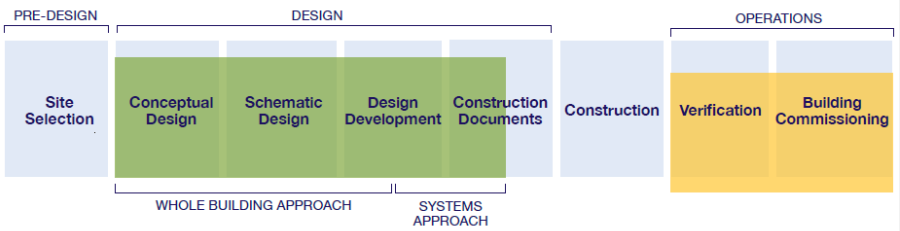
The Large Commercial and Industrial New Construction Program offers two approaches for ground up new construction or major renovation projects:

Systems Approach: The Systems Approach is designed for individual measures and for those projects applying later in the design process and which are generally focused on one or two energy systems to increase efficiency.

Whole Building Approach: The Whole Building Approach takes into account a comprehensive analysis of all building measures together and requires collaboration between National Grid and the Design Team from the conceptual design phase through project completion. It encompasses consideration of all energy saving opportunities, including shell, fenestration, equipment and system interactions.


C&I NEW BUILDINGS & MAJOR RENOVATIONS
Whole Buildings Approach
BUILDINGS 20,000-100,000 sq ft
BUILDINGS 100,000+ sq ft
Developer, Design Team, and PA connect early on a project
Charette with design team and customer to understand customer goals
Technical assistance vendor models baseline and as designed
Construct building
Comission building
Systems Approach
BUILDINGS/MAJOR RENOVATIONS
New construction or major renovation project
Customer uses vendor of their choice
For custom application: Customer develops project with Technical Assistance
Project installed
Savings and project documentation submitted to program adminstrators for incentive payment

New Construction Process



- **Systems Approach for New Construction**

  There are a few ways a customer can take advantage of the New Construction Program using the "Systems Approach."

  Prescriptive Path: The prescriptive path is the quickest and simplest way to participate in the New Construction Program. This is used for equipment that is commonly replacing less efficient equipment and for which savings data is available due to the length of time the measure has been in the marketplace and the number of installations is large enough for there to be a representative sample. A fixed dollar amount is paid to the customer for replacement of a specific piece of equipment.

  Custom Express Path: The custom express path is used when a measure may be relatively new to market. It is a more streamlined approach than the custom path. Custom Express refers to a suite of calculation tools available for TA vendors and partners which utilize pre-approved methodologies, industry standards and engineering best practices. A Custom Express tool is used to determine the project's eligibility for an incentive on a case by case basis. This path can be used in conjunction with the New Construction Program but it is more commonly used for the Retrofit Program applications. The amount of the incentive for a measure going through the custom express path can vary from project to project based on projected savings.

  Custom Path: For customers who wish to achieve deeper and broader savings compared to prescriptive offerings, a custom path is available. This involves a more complex engineering analysis and is frequently used by customers considering complex HVAC equipment and systems. Custom incentives for new

construction projects are designed to cover up to 75% of the incremental cost between standard and premium efficiency equipment.

The sales team has the flexibility to offer incentives that can be negotiated with customers. The Sales staff determines how to negotiate, based on the customer's financial needs. This approach helps the Company to maintain cost control with program budgets.

- **Whole Building Approach for New Construction**

  Under the "**Whole Building Approach**", there are two main pathways for customers who choose to do comprehensive and integrated designs for their projects.

  2.a. Integrated Design Approach is most applicable for buildings that are greater than 100,000 square feet. Buildings smaller than this size that are not a good fit for the Design Express path. Both owners and design teams are eligible for incentives or projects that perform 20% better than energy code. Customer incentives are based on kWH and Therm savings. Incentives are capped at 75% of the incremental cost of the energy saving measures. A fixed incentive is also offered to design teams for attending a design charrette/workshop that will enable them to incorporate energy efficiency early within the project stages. In addition, design team incentives are awarded for achieving energy savings that are 20% above the energy code savings target.

  2.b. Integrated Design Express: This pathway is for smaller buildings in the 20,000 to 100,00 square feet range. Both owners and design teams are eligible for incentives on projects that perform 20% better than the energy code. Customer incentives are based on kWH and Therm savings. Incentives are capped at 75% of the incremental cost of the energy saving measures. In addition, design team incentives are awarded for achieving energy savings that are 20% above the energy code savings target.

  2.c. Operational Verification: To ensure energy savings projects are installed and operated as designed, the Company will continue to provides operational verification service. This service is served by independent third-party vendors for verification of complex building systems, including HVAC projects involving energy management systems or other controls, ensuring proper installation and

operation as designed. National Grid requires all projects which receive an incentive over $100,000 to undergo operational verification. This service is also promoted for projects where the savings are dependent on control measures or operational improvements. National Grid typically provides these services at no cost.

d. Changes in 2020

In 2020, the Company will continue offering custom gas and electric measure options. (Please refer to the appendix at the end of this attachment for a sample of custom measures.)

Rhode Island is currently using the code IECC 2012; the State of Rhode Island will adopt the IECC 2015 code in November of 2019. The Company has set the level of performance above code for incentives at XXXX, based on an internal study conducted in 2019.

Commented [RJ1]: To be updated for second draft

e. Initiatives specific to New Construction Program

i. Building Energy Code Compliance Support

Overview

The Code Compliance Enhancement Initiative (CCEI) includes robust stakeholder engagement and industry group outreach, in-person classroom and hands-on trainings, project-specific technical assistance circuit riding, development and dissemination of documentation/compliance tools, and other services. CCEI will also continue to provide a first level of technical support for projects pursuing use of the R.I. Stretch Energy Code.

Delivery

Savings listed below are included in the 2020 Goals listed for Large Commercial and New Industrial Program. Note that these values are the ones established in the 2017 evaluation study and do not incorporate the November 2019 state energy code update: the new code baseline will be incorporated for the 2021-2023 Plans. See Attachment 1 for Residential sector savings for this initiative.

Electric: Energy Savings (Annual MWh)	Gas: Energy Savings (Annual MMBtu)
289	358

Changes in 2020

Program content will be refreshed reflecting the state's code update.

ii. Codes and Standards Development Support

Overview

Supporting the development and adoption of more efficient minimum energy efficiency requirements for buildings and the energy-using products within them is a significant untapped energy savings opportunity. Presently, the state receives only 5 of the 10 points available for Codes & Standards in the ACEEE scoring, which holds it back from increasing its rank. The Company is uniquely qualified to increase the energy savings the state locks in through adoption of more efficient codes and standards.

Delivery

There is typically a time lag between when codes and standards are adopted and when they become effective. Due to this time lag, no savings are expected to come to maturity from this potential effort until 2021 at the earliest.

Changes in 2020

Conditional to stakeholder consensus upon near- and long-term pathways for attribution of savings for advancing the state's adoption of more efficient energy codes, the Company will explore providing direct technical guidance during the State's upcoming 2018 IECC code adoption process to increase the energy savings provided by the State's next energy code. Specifically, the Company would prepare energy code change proposals, coordinate with relevant stakeholders, and support the State's Building Code Standards Committee.

The Company will coordinate with stakeholders to develop an evaluation framework enabling savings claims in the 2021-2023 Plan years for successfully adopted codes and standards.

iii. Energy Efficiency Integration with Solar

Overview

The Company currently aligns its energy efficiency programs with solar offerings in Rhode Island in order to help customers achieve zero-energy buildings. The Company coordinates with the Office of Energy Resources' lead on the state's zero-energy initiatives pursuant to the Zero Energy Building Pathway to 2035 – Whitepaper Report of the Rhode Island Zero Energy Building Task Force (2016). (https://www.nationalgridus.com/media/pronet/ri-ee-task-force/cm6459-ri-zne-white-paper-12_16.pdf

Changes in 2020

In 2020 the company will coordinate with the Office of Energy Resources and the Division to further the Solar+ Storage initiative under the Re Growth Program so that customers with solar and battery storage can participate demand response program offerings.

iv. Indoor Agriculture

Overview

In RI, there are currently three dispensaries for medical marijuana with no plans to expand that number anytime soon. Savings opportunities for indoor agriculture are limited to the grow facilities associated with these three dispensaries. The Strategic Sales team will continue outreach efforts to these facilities. The Company will continue to monitor the legislation to legalize recreational marijuana. If there is a change in legislation, the Company will look to address this customer/building vertical at that time with a customized approach. Currently there is no specific energy efficiency offering for indoor agriculture.

v. Exterior Performance Lighting and Controls

Overview

The goal of this initiative is to extend the Company's existing performance lighting offering (currently offered to new and retrofit projects) to exterior lighting applications. Through this initiative, the Company plans to encourage:

a. An understanding of exterior lighting codes
b. Code based lighting controls for exterior projects
c. Code based exterior lighting design that promotes best practices while saving energy.

Initiative Delivery

The exterior lighting design will be encouraged through higher incentives to incorporate additional lighting controls including: bi-level occupancy controls, and scheduled night set-back. Through the combination of "right sizing" the lighting and providing robust controls, this system will exceed current code LPD and code compliant controls practice. Greater exterior lighting codes training including exterior controls best practices and exterior lighting design is currently being developed by the IES. The Company plans on providing this training to its stakeholders to increase best practices. This along with a Performance Lighting PLUS online training will encourage greater knowledge of exterior lighting codes, and best practices.

vi. Performance Based Procurement (Accelerate Performance) Demonstration

Overview

Performance based procurement is a commercial new construction program enhancement that encourages building owners and developers to specify energy performance targets and include them in the project request for proposals. The design and construction teams are selected based on their ability to meet energy performance targets. Performance-based procurement holds teams contractually accountable throughout design and into occupancy, resulting in actual performance and verifiable energy savings.

Performance based procurement results in deep, fully realized energy savings beyond prescriptive code minimums. This increases value to the building owner and delivers greater savings to the new construction sector, where advancing energy codes and standards make energy savings goal achievement more challenging.

Demonstration Delivery

Value to Customers:

- Technical assistance to establish project energy requirements and evaluate team submittals.
- Procurement language that integrates building performance into existing RFP and contract documents.
- Easy-to-use processes from RFP through building operations.
- Connection to financial incentives, OBR and C-PACE, including incentives based on post-construction measured energy performance.
- Training and resources that allow owners to replicate this approach across a portfolio of buildings.

Changes in 2020

This initiative was launched in 2018 and will continue in 2020 and the Company is looking to scope three projects in 2020. The Company has committed dedicated sales resources for this demonstration to acquire projects for this demonstration. Additional training for the Company sales team will be provided in 2020 along with a guide that will assist the sales team in Performance Based Procurement process with customers.

3. Large Commercial Retrofit Program

a. Overview

The Large Commercial Retrofit Program serves the needs of existing buildings in their pursuit to lower energy consumption This program includes three distinct components (similar to the New Construction program) each aimed to address specific market barriers and to advance efficiency: Prescriptive incentives are intended to support trade allies in advancing energy efficiency sales and to provide signals to customers who are making direct purchases that will encourage them to adopt the more efficient and more cost effective option. Custom incentives provide services to investigate opportunities to increase efficiency and support the steps needed to implement the upgrades. Finally, upstream delivery provides a more efficient way for customers to receive reduced pricing at the point of sale for energy efficient equipment purchased.

b. 2020 Goals

For the 2020 Plan, Large Commercial Retrofit has the following goals:

Fuel	Total Net Adjusted Lifetime MMBtu	Annual MWh (Electric)	Annual MMBtu (Gas, Oil, Propane)	Budget ($000)
Electric	2,236,288	71,116	-61,393	$23,666

Fuel	Total Net Lifetime MMBtu	Annual MMBtu (Gas)	Annual MWh	Budget ($000)
Gas	1,609,082	156,481	0	$5,069

c. Program Delivery

i. Prescriptive Path

Prescriptive incentives are available in this program for some of the more commonly installed pieces of energy efficient equipment, both gas and electric, that are replacing standard efficiency equipment.

ii. Custom Express Path

Similar to the New Construction Program above, the Retrofit Program also offers a custom express path for select retrofit measures. Some examples of electric custom express measures under the Retrofit Program include:

- Transformers
- Lighting
- Refrigerated Case Covers
- ECM Motors

Examples of custom express natural gas saving measures under the Retrofit Program include:

- EMS controls
- Energy Recovery Ventilator (ERVs)

- Heat Recovery Ventilators (HRVs)
- Steam Traps
- Pipe, Valve, and Tank Insulation
- Rooftop Units (RTU) Optimization

In additional to the above-mentioned technologies, various gas technologies are offered under the commercial retrofit custom express path. These technologies include, heat exchanger cleaning, Xeros Polymer Laundry Solutions, On-Premise Laundry, Dry Smart, Steam Trap Smart Tags, Greenheck Grease Filters, Removable Insulated Jackets for Big Steam Plants. These technologies are incorporated into various customer initiative offerings like the Restaurant initiative, Industrial Initiative and the Lodging Initiative. Please refer to the Appendix for details on these technologies as well as new gas technologies being developed

iii. Custom Path

A customized approach that assesses the operations of the building through a technical assessment report (TA study) is usually the first step a customer experiences before applying for a custom incentive. Similar to the New Construction Program, the energy efficiency technical assessment studies for the Retrofit Program can also be used by customers to provide engineering support for the Advanced Gas Technologies (AGT) Program.

These Large Commercial Retrofit Program incentives are designed to move customers to adopt more energy efficient operations and measures. Incentives cover up to 50% of the total project cost including labor and equipment. The ability to negotiate custom incentive levels and TA costs for some of the largest customers will also be available for this program. See more details on this in the Large New Construction section above.

d. Changes in 2020

In 2020, the Company will continue to offer custom gas and electric incentives. Refer to the appendix at the end of this attachment for a sample of custom measures and new technologies. In addition, the following technologies will be tested through building projects: In 2020 the Company will continue to focus on a system optimization approach by setting more aggressive, minimum thresholds for efficiency.

e. Initiatives specific to Retrofit Program

i. Grocery Initiative

Overview

The EnergySmart Grocer (ESG) Initiative is focused on achieving electric and gas savings in a combination of local, regional, national grocers and other retail establishments that who sell food and have heavy refrigeration usage.

Initiative Delivery

ESG provides "unitized" incentives—expressed in terms of incentives per linear feet, square feet, horsepower, etc.—for the most common measures relevant to grocers. This facilitates project planning and investment decisions by making the project economics easier to understand. ESG also offers project engineering support to help customers pursue all cost-effective measures in their facilities.

Changes in 2020

In 2020, the Company and our ESG partner, CLEAResult will focus more efforts on reaching and completing projects with mid-size independent grocers and other small food retailers. Likely participants will be identified by CLEAResult's analytics team and then contacted in a series of marketing campaigns. CLEAResult will also be conducting a series of in-person trainings throughout National Grid's territory followed by webinars to educate customers and contractors on the program, the process, and other relevant topics like new technology.

New technologies integrated in 2019	Prospective new technologies for 2020
I. Lids on coffin cases II. Destratification cases III. Shelf edge infiltration reducers IV. Door condensation reduction film	• High efficiency condenser fan motors with onboard controls • CO2 Transcritical with natural refrigerant chillers • Stand-alone natural refrigerant cases • Thermal storage

ii. Manufacturing/Industrial

Overview

The National Grid Industrial Initiative is focused on achieving electric and gas savings in a variety of manufacturing and industrial facilities across the state. The National Grid Industrial Initiative assists plant managers in identifying process improvements and energy efficiency projects. Tight budgets and limited staff time often make it difficult for businesses to take advantage of the savings these projects provide.

Initiative Delivery

The program includes –

1. Manufacturing/ Industrial specific technical support

2. A scoping study of the technical and energy management opportunities for the facility, at no cost to the customer. If a detailed analysis, in addition to a scoping study, is required (e.g. a detailed compressed air study), the costs of the study are shared with customers on a case by case basis.

3. An incentive package that addresses the individual needs of the customer.

4. Project progress tracking and support to overcome implementation barriers.

Changes in 2020

In 2020, National Grid's industrial engineering partner will continue to work with business partners and National Grid account representatives to ensure smaller manufacturers are served by this initiative.

iii. Restaurants

Overview

Restaurants are extremely energy intensive, using about 5 to 7 times more energy per square foot than other commercial buildings, such as office buildings and retail stores. High-volume quick-service restaurants (QSRs) may even use up to 10 times more energy per square foot than other commercial buildings[1].

[1] ENERGY STAR® Guide for Cafés, Restaurants, and Institutional Kitchens, 2015

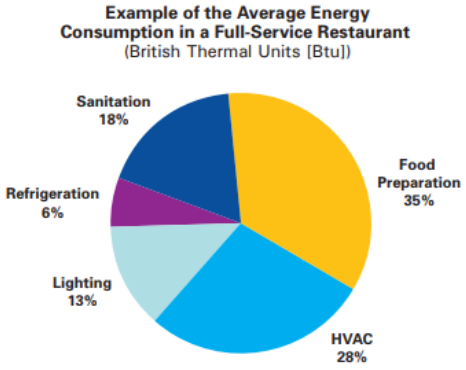
Some of the barriers with the restaurant industry to implement energy efficiency measures is lack of time, cost and lack of knowledge.

The Company currently offers energy efficiency services to non-chain small to medium sized restaurants through the Direct Install and Large Retrofit/New Construction Programs. In addition, the Company also offers a strategy for National chain restaurants that was started in 2016, through SEMP initiative. The strategy is to approach a corporate office with an energy efficiency action plan that can be tailored to the needs of a particular chain. An MOU is then signed between the corporate office and the Company that outlines the plan. The ideal candidates for this initiative are chain restaurants with 24/7 operations and a large number of stores. Efficiency measures include: lighting, HVAC, refrigeration and restaurant equipment.

Changes in 2020

In 2020 the Company will use a targeted approach for chain restaurants (not participating in the SEMP initiative), in Rhode Island.

The restaurant initiative is designed to provide technical assistance and financial incentives to restaurants seeking to lower their operating costs through energy efficient improvements and upgrades to their cooking, HVAC, water heating, lighting equipment and systems. The initiative offers personalized guidance and financial incentives to make energy efficient improvements easy and affordable for participating restaurants. National Grid's dedicated team works closely with restaurant owners and/or operators to develop an energy efficiency roadmap specific to their needs. The customer will get an on-site assessment and an assessment report that identifies opportunities and details costs, energy savings, incentives and payback. The installed measures are a comprehensive mix of lighting, HVAC, refrigeration and controls as applicable.



The goal is to help restaurants lower operating costs, increase profit margins and achieve immediate and long-term energy savings.

iv. Lodging/Hospitality Initiative

Overview

Lodging establishments in Rhode Island have participated in the Company's programs but there is potential for broader and more comprehensive results through a more targeted approach. The Company has researched hospitality programs in the U.S. Based on this research there is strong indication that a targeted offering to this customer segment can result in more comprehensive energy efficiency savings than has previously been achieved.

Initiative Delivery

In 2020 the Company will begin to provide lodging customers with a comprehensive approach to energy efficiency specifically tailored to hotels and motels as well as spas and resorts. The strategy will be to identify customers who are likely to have interest in installing energy efficiency measures, provide them with site assessments to identify qualifying opportunities, determine savings, develop incentive applications and provide project management and oversight through the installation process.

The Company will identify the array of potential energy efficiency measures most relevant to specific lodging types including occupancy (card or sensor based) controls for room heating and cooling, decorative and other lighting, commercial laundry and food service equipment through this initiative.

Changes in 2020

This is a new initiative in 2020

v. Boiler Tune-Up Initiative

Overview

Boiler Tune-up initiative is a go-to-market strategy to engage with boiler service provider companies, provide incentives to customers to regularly tune-up their boilers to achieve energy efficiency.

Initiative Delivery

Boiler Tune-Up is available for hot water and steam boilers that are 100 HP, 4.2 million btus input, or greater. There are three vendors that have performed the services. The Company is open to adding other service providers if they have qualified individuals and calibrated combustion analysis equipment. The uptake has been low and sporadic. The largest barrier in the market to this measure is that the service providers who do this work have for decades managed annual maintenance service contracts with their customers, which included boiler tune up.

Changes in 2020

IN 2020 the Company will launch a marketing campaign to increase up take. The campaign "Green up your building" by tuning boiler, adding insulation, repairing steam traps, adding controls, is a way by which the Company looks to increase participation and energy savings via this initiative.

vi. Strategic Energy Management Planning (SEMP)

Overview

The Strategic Energy Management Planning (SEMP) Initiative is available to National Grid's largest C&I customers who have the potential to go deeper with energy efficiency, have a level of in-house sophistication to make organizational changes to plan for multi-year energy planning, and are motivated by corporate and institutional sustainability goals.

Initiative Delivery

A Memorandum of Understanding (MOU) offers a way to document a commitment between the customer and the Company to work together to achieve mutually stated goals through specific actions that are tailored to the customer's facilities over a multi-year planning horizon. As such, an MOU (though non-binding in this case) can set the stage for achieving deeper and more comprehensive energy efficiency savings and is more likely to succeed than a "one measure" or "one year" approach. Typically, MOUs include participation and a commitment by upper management, the establishment of specific, very aggressive energy efficiency saving targets, and measurement and verification strategies to document savings throughout the target facilities along with an incentive

structure that meets the customer's financial criteria. This offering goes far beyond energy efficiency into sustainability and branding support for the customer.

The Company currently has six SEMP MOUs. Three are large university campuses, the fourth is with a hospital group comprising of RI's five largest hospitals. The fifth is with a large commercial customer. In addition, a State SEMP focused on State facilities has been in place since 2016. In 2020 the Company will continue to work with these customers to help achieve their MOU goals.

The Company is also engaging with SEMP customers with non-energy efficiency solutions within its SEMP initiative, such as renewables, storage, electric vehicles, and distributed energy resources and technologies.

Changes in 2020

In 2020 the Company will ramp up efforts to engage more customers with SEMP initiatives. The potential customers include colleges and universities in Rhode Island not yet engaged with SEMPs, cities, industrial customers and with chain restaurants.

In 2020 the educational SEMP customers will have access to specialty services from an energy solutions provider who specializes in campus energy infrastructure from energy efficiency to mechanical/electrical infrastructure needs.

K-12 Schools in Rhode Island will be included as part of the State SEMP agreement. In sections below are details of the State SEMP that includes K-12 schools.

Hospitals: The Company will continue to work with Rhode Island's five largest hospitals (all under one partnership) through the multiyear Strategic Energy Management Planning (SEMP) initiative, which is up for renewal in 2019. The medium sized healthcare facilities will continue to be addressed through the channel sales group.

Colleges and Universities: These are currently served through either the Company's large commercial programs with a dedicated sales team or the Company's SEMP initiative. With a master-metered portfolio of buildings within the campus, most universities are tied to sustainability goals and climate action plans to reduce their greenhouse gas emissions. The Company's SEMP initiative allows enrolled university customers to engage in multi-year campus energy planning and assists them in identifying comprehensive and long-term energy efficiency opportunities. The Company has three SEMP agreements in place with colleges and universities and is currently engaged in conversations with three other

college campus's in Rhode Island for SEMP agreements. The Company will continue to explore opportunities for further SEMP university customers. Besides SEMP, the Company continues to provide energy services to universities in Rhode Island.

vii. Municipal and State Buildings

Overview

The Company provides specific support to State and Municipal buildings via project management support, implementation support, technical support and financial mechanisms to achieve energy efficiency in State, Quasi-State and municipal buildings, in addition to incentives through the Energy Efficiency programs.

Initiative Delivery

Project/Energy Management Support: In 2016, the Rhode Island Infrastructure Bank's (RIIB) Efficient Buildings Fund (EBF) was created to provide capital for comprehensive projects in the municipal and quasi-public agency space. The time and expertise required to identify, develop, and oversee these projects can be beyond the resource capacity of many towns and cities and so the Company provides this support as part of the State and Municipal initiative and via a SEMP.

Implementation Support: The Company provides support for energy efficiency project implementation and street lighting via a vendor that has been successful in the past. Municipalities recognize the value of this type of support as it provides a trusted partner to bring the time and expertise municipalities lack to identify, develop and oversee complex projects. To continue to serve this sector, there are several support mechanisms in place:

- URI will be supporting municipalities as they learn to use Portfolio Manager as well as meet the EBF's energy reporting and energy management plan development requirements. National Grid also has an automated process by which customers can authorize upload of utility data onto Portfolio Manager. This system is being used in for benchmarking using Portfolio Manager. Please refer to the section on Automated Benchmarking Systems for details.

- The Company supports municipal engagement in OER and RIIB programs like vendor selection, engineering support, and implementation of upgrades through the energy efficiency programs.
- The Company provides energy audits to select municipal/school/wastewater customers to support their EBF applications. In the past few years the Company has provided in the range of approximately 50 energy audits annually.
- For financing in this sector, the Company will continue to offer On-Bill Repayment for electric and gas measures. The Company and other partners such as OER assist RIIB with municipal projects currently enrolled in the EBF program through RIIB, and on municipal projects that subscribe. The Company serves on the appropriate committees in order to ensure that customers have access to finance, that the process is easy, and that the Company and RIIB are working with customers in a coordinated way.

Changes in 2020

In combination with the Efficient Buildings Fund (EBF) through RIIB and the Company's existing collaboration with municipal customers, the Company forecasts continued momentum in energy efficiency in the municipal sector
Support in 2020 will continue to include reviewing project submittals, supporting city/town Council approvals, implementation planning, reviewing efficiency project proposals, RFP development, and bidder selection.

viii. State SEMP

Overview

In June 2016, a joint Memorandum of Understanding (MOU) was signed between the Company, OER, Department of Administration (DOA) and Department of Capital Asset Management and Maintenance (DCAMM). The purpose of this three year period MOU is to strengthen the State's commitment to economic growth and climate change mitigation, and to Lead by Example through the Governor's Executive Order (EO 15-17) that requires all State facilities to reduce their energy consumption 10% by the end of fiscal year 2019 (June 30, 2019). Consistent with this EO, this MOU is designed to integrate strategic energy planning across State, and Quasi State, facilities to leverage the Company's programs and best practices to achieve a minimum cumulative energy savings

of ten percent (10%) below fiscal year 2014 levels by the end of fiscal year 2019. This MOU pertains to building projects (both retrofits and new construction) for State facilities.

The ten percent savings goal has been achieved.

Changes in 2020

The Company is currently pursuing another three year State SEMP. This SEMP will include, municipalities, State building, Quasi State buildings, water and waste water facilities, State colleges, State Universities and K-12 Schools. The inclusion of schools is new in 2020.

The SEMP will target another 10% reduction in energy use, by the above stated facilities by 2022

The Company anticipates 10-20 school renovation in 2020 and 3-5 new construction school buildings per year under this SEMP agreement.

In 2020 National Grid plans to assist the state SEMP with:

- Continue to identify and prioritize projects from the scoping studies and retro-commissioning reports that have been completed thus far.
- The Company is currently working with agencies and purchasing departments to develop three request qualifications and proposals that will be awarded in 2019 for the fiscal year ending June 30, 2019. Multiple buildings will be included addressing HVAC, Lighting and Insulation measures.
- The Company is also working with multiple State agencies on exterior lighting projects for 2020.
- Identifying remaining projects and proposing a budget for the remaining buildings to be included in the FY 2019 budget (due in January, 2018).

In addition, National Grid will continue to offer building operator certification trainings in 2020.

In 2020, National Grid will continue to provide scoping studies (energy audits) commissioning studies with the assistance of consultants, to create Request for Proposal documents coordinated with the agency and State purchasing. At this time, the Company is following multiple approaches to delivering energy efficiency based on building size and building function:

- For smaller buildings, multiple measures such as lighting, HVAC and others will be bid out (with assistance from lighting auditors and consultants) and installed in multiple facilities. This will provide economy of scale for buildings, typically by agency.
- For larger facilities, with similar needs (like lighting), multiple facilities and sites will be audited, specs written and an RFP will be developed and installed in multiple buildings.

In 2020 the Company will work with RI Department of Education (RIDE), OER, Northeast Energy Efficiency Partnerships (NEEP), and other interested parties to promote high performance and sustainability in K-12 public schools.

Under the State SEMP agreement, the Company will set goals with school districts with MOU agreements that roadmap comprehensive renovations and new construction projects, alongside energy efficiency improvements and energy goals. These efforts will be integrated with its efforts on EBF with RIIB.

Schools are eligible for National Grid's Large C&I programs including services such as benchmarking, audits, technical assistance, design support, incentives for energy efficiency, strategic planning support and with writing RFP's for procurement of design and construction teams (Performance based Procurement: Accelerate Performance Program).

Building Operator Certification classes sponsored by National Grid in the Rhode Island and Massachusetts service areas are available to schools and many school facility managers have taken advantage of this program and follow up by actively engaging in energy efficiency solutions at their facilities.

ix. Equipment & System Performance Optimization

Overview

The Equipment & System Performance Optimization (ESPO) Initiative repackages elements of the previous retro-commissioning pathway into three pathways intended to be more streamlined and user-friendly. The three tracks are: Low Cost Tuning Measures, Targeted Systems Tuning, and Whole Building & Process Tuning.

Initiative Delivery

- The Low-cost Tuning track offers a prescriptive-like approach to individual RCx interventions with end-uses including HVAC, refrigeration, and steam. These common measures can be implemented by the customer's own staff, maintenance contractors, or retro-commissioning agents, and in place of weeks of pre- and post-implementation trend data, straightforward site-specific parameters are collected in order to estimate savings via "custom express" calculation tools.
- The Targeted Systems and Whole Building tracks offer increased upfront support (investigation funding and proactive engineering discussions) to take the burden of documenting savings off the customer. These more traditional retro-commissioning pathways are expected to be implemented by dedicated retro-commissioning agents or customers with more advanced building management capabilities.

As with all custom projects, account and technical representatives will work with the customer and their implementers in order to identify the appropriate pathway in advance of undertaking a retro-commissioning project.

In addition, the Company will facilitate transfer of information from the controls vendor to third party retro-commissioning vendors or TA vendors with some expertise in that area. The Rhode Island Products and Growth team will work with Massachusetts counterparts to encourage development of more expertise in this area.

Changes in 2020

Equipment & System Performance Optimization (ESPO) Initiative is a new offering to customers in 2020.

x. Strategic Energy Management Demonstration (SEM)

Overview

Strategic energy management (SEM) is a set of processes for business energy management. The main goal of SEM is to activate industrial and manufacturing customers, through a multiplicity of interventions including individual and group coaching, to address O&M measures in the short term, pursue capital measures in the

medium term and establish a culture of continuous improvement in its energy performance over a longer-term period.

Success is judged from a custom built model that takes into account the host of factors that may influence energy use within a facility. While an increase in capital measures is a frequent and desirable outcome of the SEM process, it is excluded from the ultimate savings reported by the initiative.

The energy benefits of SEM include reduced energy consumption through improved energy efficiency and energy conservation, improved demand management and the potential for reduced demand charges, decreased overall energy cost, and reduced greenhouse gas (GHG) emissions.

Initiative Delivery

In 2019, National Grid and its implementation partner Cascade Energy recruited 11 sites to participate in the SEM demonstration, which matched the upper end of the Company's goal. The custom models to claim savings were completed in September. Three workshops have held along with numerous activities such as treasure hunts. Customer participation has been consistent and enthusiastic. The Company hopes to claim some electric and gas savings in 2019.

Change in 2020

In 2020, the Company will ensure that the program produces savings that are expected based on examples from other jurisdictions. If these savings materialize the company may launch another cohort in 2021.

xi. Lighting Designer Incentives (LDI)

Overview

Most lighting projects involve replacing old lighting fixtures with new, energy efficiency fixtures. This yields savings but leaves more savings untouched due to the lack of redesign. The LDI incentive goes directly to the lighting design team to fund their design and modeling efforts to achieve lighting energy savings while maintaining quality lighting design. The goal of this incentive is to have an early and deep impact on lighting projects, ensuring that energy efficiency and lighting quality is considered from the beginning and supported until the end of a project. The lighting designer becomes an energy efficiency

champion, fighting for the best energy efficiency lighting for incentives. These lighting design solutions will have greater persistence because they are designed by professionals who have balanced the human needs of the project with the performance requirements of the lighting system, creating quality lighting designs that are "right-sized" for the project to meet the lighting end use needs in an energy efficient manner.

Initiative Delivery

The Company currently maintains a list of qualified Lighting Designers, as well as Engineers and Architects who have demonstrated at least 5 years of lighting design experience. The Company also markets the program to the construction and design community. The Performance Lighting PLUS training will continue in 2020 and will target architects and engineers and to goal is to increase familiarity and participation in the LDI.

xii. Solid State Street Lighting

Overview

Customer eligible for Street Lighting incentives and tariffs include any municipal city or town, fire districts, any municipal water utility board, Kent County Water Authority, Rhode Island Commerce Corporation, Quonset Development Corporation, Rhode Island Airport Corporation, Narragansett Bay Commission and the State of Rhode Island.

The Company has two options for Street Lighting ownership, Company Owned Street Lighting and Customer Owned Street Lighting.

The Company provides incentives to customers for qualified LED lighting fixtures and controls that meet criteria of the Design Lights Consortium. Information regarding energy efficiency incentives is provided by National Grid and OER. Historically, National Grid has not provided lighting design for street lighting because this is a customer option based on safety and security needs as well as the aesthetic preference.

Initiative Delivery

i. Customer Owned Street Light Equipment

Customers eligible for the customer-owned Solid State Street Lighting initiative, convert street lighting to LED are offered incentives of $0.15 per kWh of first-year savings for qualifying LEDs and $0.25 per kWh of first-year savings for qualifying controls associated

with either the dimming or part-night run hours as set forth in the street lighting tariff - Street and Area Lighting S-05 – Customer Owned Equipment S-05 tariff (Rate S-05)

In addition to the incentives provided by the systems benefit charge mentioned above, the OER provides grant funding to communities for LED street lighting. There is a $300,000 cap on the funding to individual cities and towns from OER.

Rhode Island Infrastructure Bank's (RIIB) Efficient Buildings Fund financing is also available to interested cities and towns.

ii. Company Owned Street Light Equipment

Under the Company's tariffs for company-owned street and area lighting, an LED option is available to customers. When a customer leases its street lights from National Grid and requests the exchange of an existing luminaire for an LED fixture, an energy efficiency incentive is paid to that customer. The incentive is the same amount ($0.15 per kWh of first-year savings) as is offered for qualifying LEDs in the customer-owned option. Current company-owned street lighting tariffs bill energy consumption is based on a dusk-to-dawn schedule. Currently, there is not an option for billing on other schedules such as part-night or dimming with the use of adjustable controls. Therefore, there is no energy efficiency incentive currently available for these adjustable controls. However, as the technology evolves and if it becomes a cost-effective option for its customers, the Company will consider the inclusion of adjustable controls or operating schedules in a future tariff filing and include an incentive in a future energy efficiency program for company owned street lights. The Company will continue monitoring the accuracy, cost and other issues involved with street lighting controls.

Like a multifamily building or leased commercial space where the tenant pays the electric bill, as long as the landlord (in this case, National Grid) approves the replacement, the customer leasing the street light will receive the energy efficiency incentive directly.

The table below reflects some of the similarities and differences between the two ownership options available to customers for solid state street lighting.

Distinction	Customer-Owned	Company-Owned
LED Fixture	Customer owns the equipment and is responsible for the	National Grid owns, installs, and maintains the equipment. The

Distinction	Customer-Owned	Company-Owned
	purchase, financing, and maintenance	customer requests the exchange of existing or installation of new lighting
Energy Efficiency Incentive	Customer receives a one-time incentive payment for the installation of LED equipment (after satisfactory post-inspection by National Grid)	Customer receives a one-time incentive payment for the installation of LED equipment (after satisfactory post-inspection by National Grid.)
Purchase/Lease	Customer purchases the equipment	National Grid leases the equipment to the customer
Outreach	League of Cities and Towns, Annual Department of Public Works (DPW) meeting with Company, and various other meetings	League of Cities and Towns, Annual DPW meeting with Company, and various other meetings
Technical Support	Customer is responsible	Customer is responsible

Changes in 2020

Of the 39 towns and fire districts in Rhode Island qualify for LED street lighting. To date 17 towns in Rhode Island and three fire districts have completed the purchase of street lights. Of these town, 5 have installed and completed the lighting controls installs and deployment. 11 other towns are in varying stages of controls installation completion. All these town will complete and be paid their incentive for controls in 2019, for the work completed.

21 more towns are in various stages of purchasing streetlights. Of these 21, 4 towns are looking for the Company Owned option. These21 projects will be completed by 2020 and one other will potentially be completed in 2021.

National Grid is actively pursuing completion of these projects by 2021.

xiii. Commercial Real Estate and Offices

Overview

Commercial Real Estate (CRE) sector due to the split incentive between owners and tenants and difficulty accessing decision makers, poses specific challenges and barriers. The Company serves this customer segment with specific services to engage customers, like benchmarking and finance tools as well as specific incentives tied to office performance-based design approach that benefits owners and tenants.

Initiative Delivery

- **Benchmarking**: The Company provides automated benchmarking services for commercial office spaces that allows building owners to be aware of their buildings energy use and compare it with that of its peers. After a facility has been benchmarked, National Grid has various resources to help its owners achieve lower energy consumption per square foot.
- **Commercial Property Assessed Clean Energy (C-PACE):** C-PACE is an ideal tool for some commercial real estate owners and developers. It allows them to finance energy and related improvements in a way that is widely considered "off book" and can be passed through to renters in many types of leases. To advance the use of this unique mechanism National Grid works with the Rhode Island Infrastructure Bank (RIIB) and Sustainable Real Estate Solutions (SRS) to bring awareness to commercial building owners.

- **Sustainable Office Design:** The Company markets the "Sustainable Office Design" (SOD) initiative to address Class A type office spaces. The Sustainable Office Design (SOD) initiative promotes high-performance office lighting and controls for quick turnaround tenant fit-outs. This is an easy to use, performance-based design approach that benefits owners or tenants with energy savings depending upon the lease arrangements. A fixed incentive per square foot along with a pre-set design criteria and lighting designer incentives will provide easy participation for the tenant fit-out projects.

Changes in 2020

The Company will continue to refine its automated benchmarking capabilities in 2020. National Grid will work with partners such as the City of Providence, Chambers of Commerce, and other entities to ensure that customers are aware of this tool, its benefits.

In 2020, the Company will look for ways to engage and inform tenants and leasing agencies of financial tools and mechanisms to increase participation in this initiative.

xiv. Multifamily

Overview

The Multifamily Initiative provides joint residential and commercial energy services to condominiums and apartment complexes for energy efficiency upgrades with no cost audits. The C&I program specifically offers incentives for master metered gas measures that typically include boiler upgrades, reset controls and insulation and air sealing. The remaining areas are addressed through residential incentives via a common point of contact such as a property manager or building owner to comprehensively service the facility. The Multifamily program also serves customers like non-profits, group homes and houses of worship that traditionally do not fit within the predefined program structure. These efforts are being coordinated with the Residential New Construction Program, Multifamily Retrofit Program and the Small Business Services Program.

xv. Extended Care Facilities such as Nursing Homes/Assisted Living

Overview

The Company has, over the past few program years, investigated different ways to try and serve nursing homes, rehabilitation facilities, and assisted living spaces beyond simple lighting retrofits. This market segment presents challenges to participate in comprehensive energy efficiency. The vast majority of these facilities either did not have the resources or did not want to prioritize the resources to investigate energy efficiency opportunities, even with a generous cost share, let alone act on them.

However, there is now Commercial Property Assessed Clean Energy (C-PACE) as a tool. C –PACE further defined in the “Affordability and Financing” section below, allows customers access to low cost private capital for terms that greatly exceed most

conventional business loans. It also allows the customer to capitalize all costs related to the project. This means that the Company now has a solution to the largest barrier to moving forward with deeper and broader efficiency measures in this segment. These measures include, but are not limited to, HVAC improvements (including heat pumps), envelope improvements, energy management systems, energy efficient laundry systems, and Combined Heat and Power (CHP).

xvi. Farm/Agriculture

xvii. Combined Heat and Power Initiative

Overview

A combined heat and power (CHP) facility is "equipment used to produce electric energy and forms of useful thermal energy (such as heat or steam), used for industrial, commercial, heating, or cooling purposes, through the sequential use of energy."[2] Generally speaking, due to current installation costs, CHP systems are best suited to customer sites where there are significant and coincident thermal and electrical loads for a vast majority of the hours of the year. Notably, significant thermal loads during summer nights and/or swing season (spring, fall) periods aren't especially common outside of manufacturing facilities, though lower CHP installation costs could help to expand the potential population of sites where CHP could be cost effective and offer reasonable payback periods for customers.

Since 2012, the CHP provisions of the Least Cost Procurement law in R.I.G.L. §39-1-27.7[3] have required the Company to document the support for the installation and investment in clean and efficient CHP annually in its energy efficiency program plan by including a plan for identifying and recruiting qualified CHP projects, incentive levels, contract terms and guidelines, and achievable megawatt targets.[4]

Initiative Delivery

For 2020, the Company will continue to offer a CHP incentive. In 2020, the Company's emphasis will be on increasing the support for qualifying efficient CHP projects through the energy efficiency programs, as intended by the legislation. Due to the high capital cost

[2] CFR Title 18, Part 292, Sub-Part A, 292.101 – Definitions
[3] See R.I.G.L. § 39-1-27.7(c) (6) (ii) through (iv); For the legislative history, see P.L. 2012, Ch. 363, S2792 Sub A (Enacted June 21, 2012).
[4] See R.I.G.L. § 39-1-27.7(c) (6) (iii).

and technical requirements of installing CHP, there is a very long lead time for a successful installation. With small numbers of projects and wide ranges of possible project sizes, the Company anticipates substantial variability in MW realized in any given year. Noting this, the Company is proposing a target of 1 MW of installed capacity that is expected to correspond to approximately 8,000 MWh of savings.

The he Company also has a prescriptive measure path for small CHP systems, e.g. fewer than 35 kW.

To qualify for a CHP energy efficiency incentive, a proposed project must meet the following conditions:

- Host customers must be in the franchise service area of the Company.
- Proposed systems must either be (i) thermal leading and sized so the recoverable heat can be used to offset other facility thermal loads and generate electricity as a by-product, or (ii) using waste energy or waste heat to generate electricity.
- Both new construction and retrofit installations are eligible; in either case, the baseline system must be carefully documented.
- The overall minimum total system efficiency of the proposed CHP units must be 55% or greater[5]. System efficiency is calculated as Annual Useful Energy/Annual Natural Gas Input where
    - Annual useful energy = Net Annual kWh*3,413/100,000 + utilized thermal output (therms)
    - Annual natural gas input = CHP gas input in therms (HHV)
- The equipment to generate electricity may be an internal combustion engine, gas turbine engine, steam turbine, back pressure turbine, or fuel cell and the facility will capture waste heat for use in the facility.

Wasted energy systems and back pressure or extraction turbines can qualify. For these facilities to qualify the following conditions must be met; because these systems are designed to take advantage of existing on site wasted energy or inefficient processes, there is no minimum total system efficiency requirement.

[5] The RI DEM's Air Quality Regulations (http://www.dem.ri.gov/pubs/regs/regs/air/air43_12.pdf; Page 11) set a minimum system design efficiency of 55% for CHP to be eligible to apply for Emission Credits. As noted in the incentive levels section below, a higher energy efficiency incentive is available for systems with efficiencies of 60% or greater.

- Host customers must be in the franchise service area of the Company,
- All thermal and electric output of the CHP facility should be used on site,
- While it is expected that most of these applications will be retrofit, both new construction and retrofit installations are eligible; in either case, baseline system must be carefully documented,
- The project must pass cost effectiveness screening.

The Company will undertake the following steps to support qualified CHP projects.

Identification and Recruitment of Qualified CHP Projects

The Company currently works with vendors and customers to identify CHP opportunities at customer locations. The Company promotes CHP systems and outlines the process for qualification and implementation of CHP facilities through the Company's energy efficiency programs. The Company has sales and technical staff that are the primary points of contact for customers and vendors with potential CHP projects. The Company will continue to communicate criteria for CHP assessment and will communicate to vendors so that their presentations to customers will be more consistent with Company technical assistance requirements.

Scoping Study/Qualification

The Company will offer technical assistance on CHP projects beginning with a preliminary scoping of a potential site. This scoping will be based on an evaluation of:

- Monthly (or hourly, where available) electric, gas, and other fuel usage
- All site-specific forms of thermal energy end uses
- Coincidence of electric and thermal loads
- Proposed project cost

This scoping will determine if further study of the site appears favorable, i.e., provides CHP operating hours and load factors that would be an appropriate application of CHP.

Technical Assistance Study

Assuming a favorable screening during preliminary scoping, National Grid will offer to co-fund a TA study of CHP with the customer. The TA study will be performed by an independent, qualified engineering firm. This study will assess thermal and electric loads,

propose an appropriate CHP size and technology, compile a budget cost estimate, and identify potential barriers to the technology, etc. National Grid typically funds 50% of the cost of any TA study conducted by a preferred vendor selected by the Company, and up to 50% of the TA for other qualifying independent engineering firms. Any TA study by a CHP vendor or its representative which fulfills the CHP TA requirements may be accepted, though no co-funding will be provided. The TA study must be completed, submitted, and approved by the Company prior to implementation. The TA study must include an assessment of the likely on-peak kW reduction from the CHP given the proposed nameplate rating, the net CHP output after subtracting parasitic loads associated with the CHP, projected availability based on anticipated site-specific operating characteristics, and performance data on other similar units. (On-peak kW reduction = Net Output x Availability x % Loaded.) This kW load reduction should be used in the benefit-cost screening.

As indicated in the incentive levels section below, a larger incentive is available for CHP projects that include the implementation of energy efficiency measures at the host facility. If the customer wants to meet a higher tiered incentive and did not previously qualify for that higher tier, the company could include another audit. This audit would propose measures to fulfill that requirement with new energy efficiency opportunities. These opportunities themselves will be eligible for energy efficiency incentives and will help make sure that the CHP facility is correctly sized for the facility's needs and will avoid creating a disincentive for future load reduction at the site.

Cost Effectiveness

The screening for cost effectiveness specific to CHP is included in the Total Resource Cost Test Description included as Attachment 4.

Incentive Levels

If a project has been shown to be cost effective, it will be eligible for an incentive. Incentives will be determined following cost effectiveness screening in consultation with National Grid personnel. The following rules will apply to all CHP projects (regardless of size) in the determination of the incentive. However, the amount of incentive the Company is willing to offer and commit to the customer could depend upon the amount of funds that are budgeted or remaining in the budget of the energy efficiency program or unique attributes of the project.

- For cost effective CHP projects, the target energy efficiency installation incentive ("installation incentive") in 2020 is $900 per net kW, where net is nameplate kW output minus CHP auxiliary kW. For CHP projects with efficiencies of 60% or greater, the target installation incentive in 20209 is $1,000 per net kW. Wasted energy, back pressure turbines, and extraction turbines are eligible for incentives of $900/kW.
- For cost effective CHP projects where the host customer also commits to implementing energy efficiency measures representing at least 5% of site energy use or the maximum load reduction identified by a TA Study, whichever is less. [6] The maximum installation incentive in 2019 is up to $1,125 per net kW, and the CHP sizing must incorporate the load reduction. For CHP projects with efficiencies of 60% or greater and that have similar energy efficiency participation, the maximum installation incentive in 2019 is up to $1,250 per net kW. A customer may be treated as having made this commitment to energy efficiency if they have made investments to achieve similar load reductions through energy efficiency within the previous five years.
- All CHP projects are also eligible to receive other incentives, such as the Advanced Gas Technology (AGT) incentive, subject to the incentive package cap described below.
- CHP facilities greater than 1 net MW may be offered an additional performance incentive, as further provided in the section entitled "Special Considerations for Large CHP Systems," below.
- The CHP system costs must include: all system, auxiliary, and interconnection costs, and CHP maintenance. If the CHP system is receiving a tax credit or other financial arrangement that reduces the cost of the CHP to the customer without distributing that cost reduction as an additional cost to other electric or gas ratepayers, it may be treated as a credit against the cost of the CHP project.
- The CHP incentive package cap from the Company will be 70% of the total project cost inclusive of the installation incentive, incentives related to gas service, present value of any performance incentive, system reliability procurement incentive, and any other incentives related to the transaction.

[6] If CHP facility sizing is determined by electric load (or not constrained by either electric or thermal load), the requirement will be 5% of electric usage; if the facility sizing is determined by thermal load, the requirement will be 5% of thermal energy usage. The energy efficiency measures will themselves be eligible for incentives, and are not part of the CHP incentive package cap described below.

For new construction installations, the incentive cap will be 70% of the incremental cost difference between the cost of what would have been done absent the CHP project and the cost of the CHP project.

- Retainage of 20% of the energy efficiency incentive payment will be held until commissioning is completed.

Other Contract Terms and Guidelines

In order to ensure proper operation of the CHP facility and persistence of energy savings, the following terms and guidelines will be required:

- Minimum requirements document. As part of the TA study, a minimum requirements document ("MRD") will be developed. This MRD will contain engineering hardware and operational specifications that directly affect the savings estimates developed in the TA study. Compliance with the MRD will be necessary to receive rebate payments.
- All systems will require electric, thermal and gas metering for commissioning and monitoring of system efficiencies. Metering hardware and data collection services may be provided at little or no cost to the customer.
- The project must be commissioned. Commissioning is a process following installation whereby a third party verifies that the project is installed and operating as detailed in the TA study and MRD.
- The customer must sign and produce a contract for O&M services through the first planned major overhaul of the CHP unit after post installation commissioning. On-going O&M contracts for a minimum of ten (10) years from project commissioning are recommended.
- The customer must apply for interconnection service as soon as practical and not operate the unit until they receive the authorization to interconnect from the Company. While there may be site-specific interconnection considerations for particular projects, please see the attached link for information on interconnection:
  http://www.nationalgridus.com/narragansett/business/energyeff/4_interconnect.asphttp://www.nationalgridus.com/narragansett/business/energyeff/4_interconnect.asphttp://www.nationalgridus.com/narragansett/business/energyeff/4_interconnect.asp

- As noted in section 5.a.i. of the Plan, kW-demand savings achieved via the electric energy efficiency programs, including CHP, will continue to be reported by the Company to ISO-NE as Other Demand Resources ("ODR") and the revenue generated will be used to fund future energy efficiency projects through the Company's programs.

Delivery Service Tariffs Applicable to CHP Installations

Customers receiving an incentive payment for installation of CHP will be billed for delivery service charges on the appropriate general service tariff. The Company's general service tariffs, Rates G-02, G-32 and G-62, include a CHP Minimum Demand Provision for those CHP installations that receive an energy efficiency incentive pursuant to this Plan. For Customers subject to this CHP Minimum Demand Provision, the monthly Demand will be the greater of a) the Demand as normally defined under the tariff provisions; or b) the Minimum Demand, which shall be 50% of the greatest fifteen-minute reading from the Customer's generation meter(s) as measured in kilowatts during the month. The Customer Charge, Transmission Demand Charge, all per kWh charges and any other applicable charges and credits will be in addition to the Minimum Demand Charge. This rate treatment is designed to mitigate the cross-subsidies from other customers in the same rate class. The Company believes it is very important to ensure that a customer who is receiving incentives through the energy efficiency program continues to pay a fair share of the costs of the distribution system upon which the customer will continue to rely when the CHP unit is off-line.

Special Considerations for Large CHP Projects

A project that is greater than 1 MW of net nameplate capacity shall be defined as a "Large CHP Project" and may be eligible for special considerations that support the development of CHP, while accounting for its unique characteristics.

Qualification

The cost of the project will be reviewed by a design/build or general contractor experienced with CHP projects and revised as necessary.

Incentive and additional terms and conditions

If a Large CHP Project passes the benefit cost test described in Attachment 4, the appropriate incentive will be determined, based on the guidelines for all CHP projects set forth in the section entitled "Incentive Levels," above.

An additional performance-based energy efficiency incentive, capped at $20/kW-year ($1.66/kW-month) for a period of up to ten years, will be offered as part of the incentive package for any project greater than 1 net MW. No payments will be made until the unit is in operation and provides demonstrated load reduction and will be made semi-annually based on actual metered load reduction. Load reduction performance will be based on the net daily metered kW output of the system during ISO-New England's on-peak periods averaged over each six month period.

Performance incentives will be subject to budget limitations and, in all cases, will be subject to the 70% total project cost cap applicable to all CHP projects set forth in the section entitled "Incentive Levels," above. The total incentive package will include any incentives related to gas service, and the present value of the above-described performance incentive.

The customer will have to repay a portion of the incentive to the Company if the project is abandoned, removed from the premises, sold, or otherwise no longer utilized as the primary source of heat and electricity by the customer, within 10 years from the date of final incentive payment authorization. The repayment will be the energy efficiency installation incentive times the number of years remaining until the required ten years of service divided by ten. Other incentives, such as any Advanced Gas Technologies (AGT) incentives, may also have similar reclaim provisions.

Options for CHP proposal that fails cost effectiveness testing

If a CHP project does not pass the benefit-cost test, the Company will work with the customer to develop other solutions that may still support the CHP facility. Such other solutions may include one or all of the following:

- Re-analyzing the optimal size of the CHP unit, or the number of generators. A different sized CHP unit might provide better efficiencies and pass the benefit cost test.
- Identifying other load reduction opportunities at the facility. Benefits can be garnered from load reduction in lieu of achieving that load reduction through CHP.

Targeted Outreach and Support for Potential CHP Customers

The Company believes that significant savings can be generated with this technology in the coming years. The Company is focused on developing a pipeline of projects for small, medium and large customers. In addition to having a specific sales point person for CHP projects, the Company has a CHP program manager who helps customers navigate the technical and procedural aspects of bringing a CHP unit online. The Company also works with a TA vendor that provides assistance in identifying and executing CHP projects. In addition, the Company works with CHP vendors to offer RI customers smaller CHP units where installation and operations are turn-key. Furthermore, in 2016, the Company introduced a CHP manual to assist customers who are deciding if CHP is an option for their facilities. Other strategies that will enhance CHP acceptance will also be considered, such as: preparing and distributing case studies, providing plant operator training, and providing easier customer access to CHP unit performance data. Link to the manual: http://ngrid.com/ri-chp

Installation of Incremental or Additional Energy Efficiency Measures for Customers who have Previously Installed CHP

The Company will individually review the installation of proposed incremental energy efficiency measures for customers who have previously installed CHP on site or who are adding additional energy efficiency equipment that might affect the performance of an existing CHP unit. The Company will carefully categorize and protect the benefits attributed to previously installed CHP projects, while at the same time foster any additional cost-effective energy efficiency measures that further reduce total energy use.

There are two types of project categories. The first category is "CHP Optimization" and involves measures which are installed with the purpose of increasing the output or operating efficiency of the existing CHP or other distributed generation (DG) unit; for example: the addition of combustion air precooling on a gas turbine CHP unit. In order to maintain compliance with ISO-NE's FCM rules, such projects will be tracked in the FCM, if applicable, as incremental output of the associated DG facilities.[7] The second category is "Incremental EE", which includes "traditional" energy efficiency measures installed with the intent of reducing energy consumption in sites that have previously installed CHP. These measures may or may not affect CHP performance and output.

[7] ISO-NE's FCM rules require that new CHP facilities, or energy efficiency measures that result in the increased output of an existing CHP facility, are tracked in the FCM as distributed generation resources.

For locations where an existing CHP unit covers a large percentage of the total load at the facility, additional energy efficiency savings measures installed may result in lowering the output of the CHP system instead of a load reduction on the Company's electric grid. Therefore, to assess savings that can be claimed by the energy efficiency programs, hourly load mapping may be required to accurately assess the net savings on the Company's electric and gas distribution systems, which will be assessed at the Company's electric and/or gas revenue meters at the customer's site. In cases where a typically electric measure (like lighting) reduces the electric load enough to require reducing the CHP output, gas savings may result from a normally electrical energy efficiency measure and could be claimed in the Gas utility DSM programs.

Changes in 2020

For 2020, the Company will explore leads for additional projects that may complete in future years. The Company will also further examine the CHP process for customers. The Company will also consider enhanced incentive levels for CHPs that use biomass like waste products.

In 2020 the Company has established a notification process, for incentive levels for large projects exceeding $3 million for a measure, to the PUC, OER, EERMC and Division. The notification will occur after the cost benefit screening and before the offer letter to the customer is finalized. The notification will include a detailed explanation of the customer's measure including cost benefit screening, minimum requirements documents and a technical assessment study, if available Please refer to the main text for details.

Additionally, effective in 2018, the Company established a process by which the Customer Gas Connections account managers obtain approval for large gas load additions (> 50,00 cfh) from Long Term Planning & Operations Engineering, and Gas Supply (NE Portfolio Planning) prior to executing a Commercial Gas Services/Main agreement with an applicant for firm gas service. [8]

CHP Savings from "Site" to "Source": As mentioned in the main text of this plan, the Company has proposed to move from Net Annual MWh and Annual kW to Net Lifetime all-fuel savings (MMBtu) goal to fully capture the net effects of all-fuel savings efforts. To

[8] Reference to 4755-Responses Div Set 9, 9-8.
E:\RHODE ISLAND ANNUAL PLANS\2018\RI\Navy CHP - copied over from dsdata 8-17\Final Data Request Responses\4755-Responses DIV Set 9 (PUC 11-28-18).pdf

convert MWh savings to MMBtus, the company proposes to use an industry conversion factor. For CHP savings, a modified conversion factor to convert CHP savings from "site" to "source" was derived, that compares the gas required to operate a CHP unit, with the generation mix required to generate the source electricity it displaces. Please refer to Section 2 of the main text for the rational and conversion factors used for CHP savings from "site" to "source".

xviii. Products Offered Through "Upstream"

When the Company refers to an "Upstream" initiative it is referring to the practice of offering an incentive directly to a manufacturer or distributor (mainly distributors in Company initiatives) of efficient equipment instead of offering an incentive to the customer through an application form after the sales transaction has been made. This allows them to sell the product for less and make it more appealing to a potential customer. It also allows the customer to acquire this more efficient equipment without the burden of paperwork and waiting for reimbursement. It is also often a more cost-efficient way to deliver savings to the program.

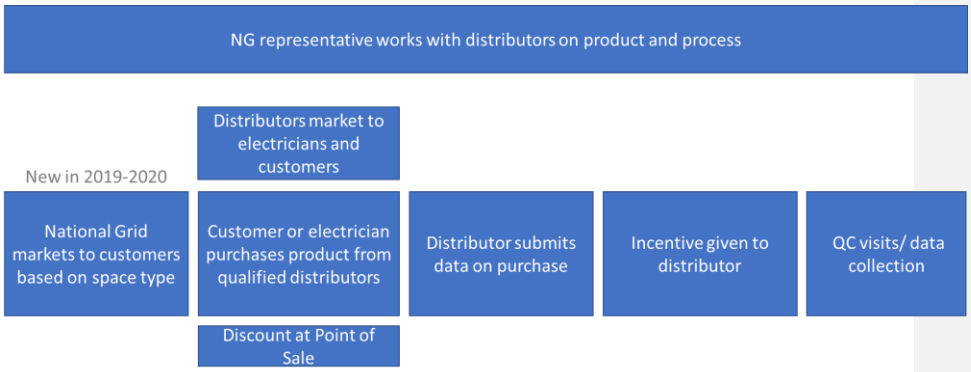
Upstream Lighting

Upstream lighting is the most mature Upstream initiative and largest source of savings in the Company's Upstream portfolio. National Grid incentivizes dozens of different lamps and luminaires for a large variety of applications.

In 2020, the Company's goal is to attain more savings from luminaires with multiple control strategies without negatively impacting savings.

New measures for 2020
Adding 3' and 8' TLED's
Parking Garage and Canopy Fixtures
Occupancy and Wall Sensor Controls – Potential
High Bays with Controls - Potential

Although the Company is constantly striving to deliver savings "deeper" than lighting, a rapid expansion to savings in lighting has had a positive effect (decreasing kW demand) in both winter and summer peak times due to the fact that commercial lighting is generally on during these times.



Upstream HVAC

This initiative currently offers air-cooled air conditioning and heap pumps systems, water-cooled air conditioning and heat pump systems, ductless mini and multi split systems, variable refrigerant flow systems, as well as dual enthalpy economizer controls and electronically commutated motor (ECM) circulator pumps for hydronic heating or service hot water applications.

In 2020, National Grid's goal will be to strengthen the marketing and training to end use customers and installation contractors. Customer outreach methods, tested in 2019, including social media and direct mail, will be used to help promote the initiative in 2020.

New measures for 2020
Upstream HVAC Clean Water Pump
High Efficiency Condensing Units

**It is important to note that savings from this particular set of products will be calculated from new construction baselines, not retrofit.*

Upstream Gas Equipment

This initiative offers customers a number of different water heating options to fit their needs. These products are stocked at more than 45 distributors in RI and MA.

In 2020, the Company will continue working closely with its partner Energy Solutions to increase unit throughput and distributor participation. Energy Solutions, our partner in this initiative, will continue to sign up new distributors, train them on the initiative, provide return on investment sales training to sales staff, and promote the initiative out in the industry and throughout the state.

Measures Available in 2018/2019	2020 Measure Offering
WATER HEATER - INDIRECT	WATER HEATER - INDIRECT
WATER HEATER - ON-DEMAND 82	WATER HEATER - ON-DEMAND 94
WATER HEATER - ON-DEMAND 90	Water Heating Boiler - 94% TE
WATER HEATER - ON-DEMAND 94	COND WATER HEATER 94%MIN 75-300
WATER HEATER - ON-DEMAND 95	
WATER HEATER TANK 0.67 EF	
Water Heating Boiler - 85% TE	
Water Heating Boiler - 92% TE	
COND WATER HEATER 95%MIN 75-300	
COND WATER HEATER 90%MIN 75-800	

*Bolded items are being removed in 2020

* It is important to note that savings from this particular product will be calculated from new construction baselines, not retrofit.

Upstream Kitchen Equipment (Electric and Gas)

National Grid currently offers more than 9 different types of energy efficient cooking equipment across both fuels.

New Measures for 2020

Refrigerator, Glass Door, <15 ft3, Electric
Refrigerator, Glass Door, 15-29.9 ft3, Electric
Refrigerator, Glass Door, 30-49.9 ft3, Electric
Refrigerator, Glass Door, ≥50 ft3, Electric
Refrigerator, Solid Door, <15 ft3, Electric
Refrigerator, Solid Door, 15-29.9 ft3, Electric
Refrigerator, Solid Door, 30-49.9 ft3, Electric
Refrigerator, Solid Door, ≥50 ft3, Electric
Freezer, Glass Door, <15 ft3, Electric
Freezer, Glass Door, 15-29.9 ft3, Electric
Freezer, Glass Door, 30-49.9 ft3, Electric
Freezer, Glass Door, ≥50 ft3, Electric
Freezer, Solid Door, <15 ft3, Electric
Freezer, Solid Door, 15-29.9 ft3, Electric
Freezer, Solid Door, 30-49.9 ft3, Electric
Freezer, Solid Door, ≥50 ft3, Electric
Natural gas broiler – potential

xix. Retrofit Program Demonstrations and Assessments

i. Underutilized Energy Efficiency Technologies on Mechanical Power Transmission Systems Demonstration

Overview

Objective is to investigate adoption of higher efficiency belt and gear reduction drives associated with various types of machinery used in commercial and industrial facilities, such as belt drives on fans, pumps, production machinery, and other mechanical equipment. Another area of opportunity is replacement of low-cost worm gear drives commonly incorporated as part of OEM equipment such as conveyors, material handling equipment, and as sub systems of major machinery. OEM equipment suppliers typically incorporate low cost lower mechanical efficiency components and systems into their products. This demonstration will attempt to promote cost effective retrofit of higher efficiency components and systems into these products or assemblies. Hopefully over the medium to longer term, this initiative could lead to an upstream incentive program targeting OEM markets.

Delivery

Benefits: Upgrading conventional v-belt drives to notched or synchronous belt drives with efficiency can result in efficiency improvement ranging from 1-3%. The incremental cost associated with this upgrade is more than offset by energy savings over the life of the equipment.

Changes in 2020

While this initiative started in 2018, the Company is still in the process of screening the demonstration for measure scalability, benefit cost and savings potential. If this demonstration screens for the above stated criteria it will move to the next stage in 2020 and we will look to install technology on customer sites to evaluate this demonstration.

ii. Strategic Energy Management (SEM)/Continuous Energy Improvement (CEI) Demonstration

Overview

Strategic energy management (SEM) is a set of processes for business energy management. The main goal of SEM is to activate industrial and manufacturing customers, through a multiplicity of interventions including individual and group coaching, to address O&M measures in the short term, pursue capital measures in the medium term and establish a culture of continuous improvement in its energy performance over a longer-term period. This last part is of critical importance in this initiative that we are testing.

Demonstration Delivery

The Company and its vendor only worked with customers who named an Energy Champion and where there is clear executive support.

Savings are derived from a site-specific regression model that considers the host of factors that may influence energy use within a facility. While an increase in capital measures is a frequent and desirable outcome of the SEM process, it is excluded from the ultimate savings reported by the initiative.

In 2019, National Grid and its implementation partner Cascade Energy recruited 9 sites to participate in the SEM demonstration. In addition, there are 4 wastewater sites from

Rhode Island, who are participating in the Massachusetts mixed manufacturing and wastewater SEM cohort. The energy models were developed over the summer of 2019. Three workshops have been held along with numerous activities such as treasure hunts. Customer participation has been consistent and enthusiastic. The Company plans to claim some electric and gas savings in 2019.

Changes in 2020

In 2020, the Company will continue the cohort workshops ensure that the program produces savings that are expected based on examples from other jurisdictions. If these savings materialize and are determined to contribute positively to least-cost procurement, the company may launch another cohort in 2021.

iii. Secure Light Spec (SLS) Assessment

Overview

SLS is a partnership with Lighting Manufacturer Reps (LMR) through software integrated into their quotes system to incorporate utility incentives. SLS goal is to increase projects participating in energy efficiency programs and capture savings. Manufacturer Representatives (LMR) to engineer and deliver lighting & controls packages that exceed energy code or Industry Standard Practice (ISP), whichever is higher, by 25% or more.

Delivery

The goals of the Secure Lighting Spec are:

a. Establish a special partnership between National Grid and Lighting Manufactures Representatives (LMR) to participate in targeted code-based lighting incentive programs.
b. Utilize the LMR application engineers to implement best practice lighting design and photometric modeling for deep energy savings and qualitative lighting outcomes for the Company's customers and building occupants, while meeting IES standards.
c. Achieve substantial energy savings by utilizing the lighting engineering capabilities of the LMR. Savings are based on projects achieving 25% or greater energy savings beyond what is required by the energy code.

d. Incorporate energy efficiency incentive estimates early in project quotes to clients & customers through the LMR pre-approved product portfolio.
e. Reduce the lighting system initial costs through advanced lighting engineering, energy efficiency incentives and operating costs for customers and clients for projects that meet energy efficiency goals.

Changes in 2020

This demonstration was proposed in 2018 and will continue in 2020. In 2019 two potential vendors were identified and the Company will continue to work with them on an EE interface that integrates with the LMR quotes software.

iv. HVAC Lighting Controls Plus

Overview

Comprehensive Network Lighting Control Plus (NLC+) go beyond traditional advanced lighting controls, which themselves represent nearly half of the remaining lighting energy savings potential according to the US Department of Energy. NLC+ systems have the hardware and software capabilities to act as a simple stand-alone energy management system or to interface seamlessly into more sophisticated existing building systems. In either case the very local and granular occupancy and other sensing data from the NLC+ system facilitates additional savings from HVAC, plug loads, and complete energy management. The resulting architecture and data also create a wide variety of non-energy benefits (NEBs) and IoT use cases including improved space utilization, enhanced security, improved occupant comfort and productivity, demand response capabilities, and reduced maintenance.

Delivery

The Company will explore and advance a more holistic approach to controls projects, addressing multiple end uses beyond lighting. To be successful, these holistic projects will need to capture the full value of all energy and non-energy benefits. This demonstration directly explores the following parameters to inform the Company's retrofit and new construction programs.

- Assess the capabilities of the most comprehensive NLC+ platforms available
- Test the full feasibility and value from all energy and non-energy benefit streams, including measuring energy and demand impacts, and quantifying NEB value

- Use these benefits to propose an optimal initiative design for NLC+

Changes in 2020

NCL+ is a new proposed demonstration in 2020

v. Kitchen Exhaust Demonstration

Overview

Implement a package of kitchen exhaust controls which significantly reduce the amount of exhaust and required make up air. Recommended strategies to include in a package are electrostatic filtration, demand-controlled ventilation and operator behavior change.

This project will develop and quantify three potential strategies to reduce energy use in commercial kitchen exhaust systems. Strategies to be studied are: electrostatic filtration, behavior-change campaigns, and demand control ventilation. Electrostatic filtration and the behavior-change campaign are very new measures and will be field tested.

Delivery

Customer segment targeted with this measure are commercial kitchens (found in restaurants, grocery stores, residence halls, offices, etc).
The goals is to test the savings potential of all three strategies and if viable integrate into programs as a prescriptive measure.

Changes in 2020

This is a new demonstration in 2020

vi. enVerid Demonstration

Overview

enVerid HVAC Load Reduction (HLR) technology is a new adsorbent air cleaning technology to clean indoor air rather than bringing in fresh air and conditioning it. The HLR model actively manages HVAC cooling and heating load with in a space and also manages indoor air quality. Potential benefits are load reduction from heating and cooling. This technology also results in reduced maintenance of HVAC system, and reduces initial size and capacity of new HVAC system.

Delivery

The Company will test this technology in one or two customer sites and determine savings, customer benefits and integration into existing systems, as well as develop materials to educate contractors, owners and trade allies on technology and its benefits.

The application of this technology is for large commercial customers. This technology can be a prescriptive offering within the energy efficiency programs.

Changes in 2020

This is a new demonstration in 2020.

vii Gas Heat Pumps

Overview

Gas Heat Pumps are a technology that, manufacturers of this product state, can be twice as efficient than conventional boilers resulting in fuel savings. Gas Heat Pumps are ideal for facilities with simultaneous need for heating and cooling including, athletic facilities, pools, food and beverage processing plants, hotels and multi-unit residential buildings.

Delivery

For this demonstration, the Company will research test facilities that have already installed this technology and potentially install this technology on customer sites to determine savings potential and benefits.

Changes in 2020

This is a new demonstration in 2020

4. Small Business Direct Install Program

a. Overview

The Small Business Direct Install Program (SMB/DI Program) provides turn-key services to commercial and industrial customers who consume less than 1,000,000 kWh per year.

There is no upper limit of gas consumption that disqualifies a customer from receiving the gas measures offered by the SMB/DI program. The Company has delivered this program for more than two decades through a local vendor, who is known as the “Regional

Program Administrator" or "RPA". The RPA is responsible for program management, data entry, and quality control. The RPA is located in Rhode Island, and employs local staff, local electricians and energy efficiency lighting materials procured through a competitive bid process. As of 2011, customers served by natural gas are also eligible for direct installation of natural gas energy efficiency measures.

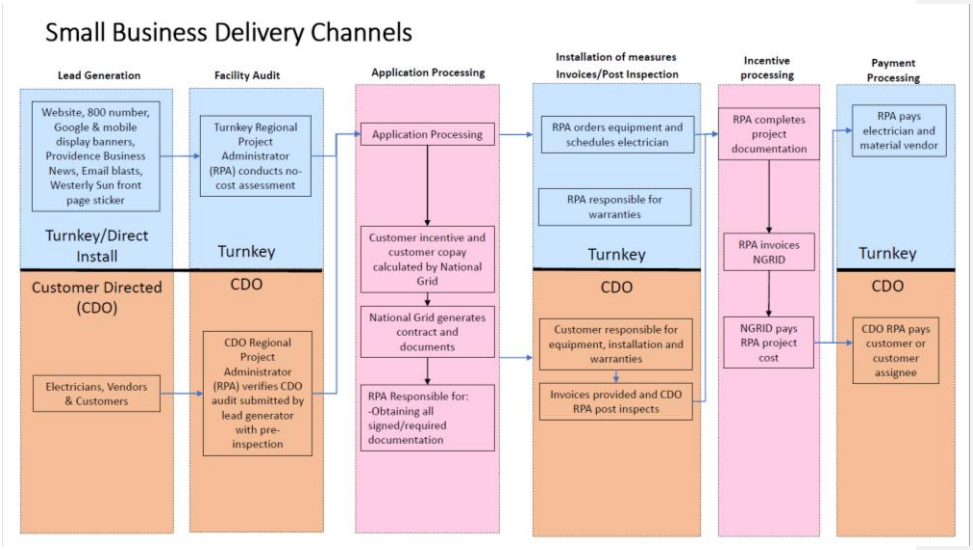
There are two paths for customers to participate in the Small Business Program, a Turn Key/Direct Install Option that's completely managed by the RPA or the Customer Directed Option (CDO), where the customer is responsible for equipment installation, but the RPA is responsible for application processing, post inspection and payment processing.

b. 2020 Goals

Fuel	Total Net Adjusted Lifetime MMBtu	Annual MWh (Electric)	Annual MMBtu (Gas, Oil, Propane)	Budget ($000)
Electric	306,550	10,803	-8,901	$7,335

Fuel	Total Net Lifetime MMBtu	Annual MMBtu (Gas)	Annual MWh	Budget ($000)
Gas	35,829	2,523	0	$124

c. Program Delivery



Customers are provided turn-key services consisting of:

- An Energy Audit
- Direct Installation of Measures
- Company incentive contribution of up to 70% of the total project cost
- On-bill repayment (OBR) for eligible customer's project costs and a financing term to 60 months (never more time than to establish positive cash flow) at zero (0) percent interest or a lump sum payment with a 15% discount, resulting in most customers' projects having a positive cash flow when they choose the OBR repayment option.

Since its inception when the SMB/DI Program focused primarily on lighting and refrigeration direct install measures, it has broadened its scope over the years to include identifying:

- Cost-effective "custom" electric and gas measures, such as Energy Management Systems (EMS).

- Time dependent opportunities such as replacing roof top HVAC units and heating systems.
- Participation in residential programs where buildings may have both commercial and residential properties in the same buildings.

As noted previously, the Company is continuously working with its engineers and technical assistance experts to try and move as many measures from the custom category to prescriptive or "custom express" to streamline the process for customers as much as possible. This should encourage the vendor and the customer to install these measures more frequently and reduce the technical costs of the program.

In addition to cost-effective custom and time dependent measures mentioned above, the SMB/DI Program, under both turnkey and CDO, offers incentives on the following measures:

- LED lamps and luminaires
- Occupancy sensors and controls
- Energy Management Systems (EMS)
- Thermostats (including Wi-Fi)
- Insulation
- Hot water reset
- Low flow pre-rinse spray valves
- Refrigeration measures such as evaporator fan controls, efficient evaporator fan motors, automatic door closers and door heater control devices for walk-in coolers
- Pipe Insulation

d. Changes in 2020

As part of an effort to increase participation in the Direct Install Small Business Program, in 2020, for the third year, the Company will target businesses as well as residents as part of the Community Initiative. Many residents are also small business owners. By targeting residential customers to learn about the Small Business Direct Install Program, the Company has an opportunity to tap a segment of its customer base that may have been

hard to reach in the past. Cities and towns taking part in the Community Initiative have goals for small business as well as residential involvement.

In addition, National Grid will build on the connections made with community leaders through the Community Initiative to determine how and when to target certain business types or geographic locations in a city or town. Some ideas include door to door direct install/audit scheduling, as have been done in several areas in the past or holding information sessions in Spanish or Portuguese.

To complement the strategy above to reach the small business sector in these targeted communities, National Grid plans continue to work with local Chambers of Commerce and other local small business groups to schedule workshops that address many of these customers' small business needs including energy efficiency and demand response.

In 2020, the Company will be working with community leaders and stakeholders to set appropriate goals for serving businesses in areas that have with lower incomes and those in Environmental Justice zones. A number of tools will be used in this effort including past participation data and EPA's Environmental Justice Screening and Mapping Tool.

The Company will also explore the door to door direct install/audit scheduling model in municipalities not participating in the Community Initiative with areas dense enough to support this type of effort.

The Company is also constantly reviewing additional products or technologies that may help save small businesses energy. In 2019, the program offered filament style LED lamps to appropriate businesses such as bars, restaurants, and small lodging facilities. In 2020, the company is exploring the deployment of commercial size heat pump water heaters.

Frequently, very small businesses (under 25,000 kWh consumed per year) do not need an energy audit to realize that they can make energy improvements to their spaces. To that end, in 2020, National Grid will be segmented marketing campaigns directed at these customers and local electricians with messaging to let them know of all the Upstream energy efficiency products that they or their electrician can purchase at a discount to decrease energy use in their space.

Overall, the Company has a strong foundation of experience delivering this program, which enables it to meet program goals and to continue to develop and implement new products and services. As a result of the Company's increased move to vertical market

sectors to serve customers better, the following segments are no longer included in the small business segment:

- K-12 Schools
- National Chain Retail Locations
- Small Grocery Stores (not including convenience)
- National or Regional Chain Restaurants

The refrigerator/freezer recycling program offered to residential customers where old working refrigerators and freezers are picked up for $50 each is now open to small business customers. National Grid estimates that approximately XXX of these types of units will be recycled in the 2020 program year.

e. Small Business Heat Pump Demonstration

Overview

The company is currently exploring how to promote cold climate heat pumps for small business customers who heat using oil, propane and electric resistance heat The Company hopes to learn about incentives needed to move small business customers, technical assistance needed, market education, including barriers to adoption, the customer value proposition and non-energy benefits associated with installation and operation of cold climate heat pumps. The Company will include audits and weatherization for customer sites as part of this installation.

Changes in 2020

In 2020 the company will look to collate learnings, market findings, need for education and marketing to customers, contractors and other market enables to develop a scaled solution for heat pumps based on the learnings from the 2019 demonstration. The company will look to deploy an additional 20 heat pumps based on the solution development and possibly a scaled solution in the next Energy Efficiency three year plan for Rhode Island.

5. Finance as an Enabling Strategy

i. Overview

It is well documented that many customers face challenges in bringing energy efficiency projects to fruition. These may include structural limitations within a business, information overload, cultural resistance within companies, and access to capital. The Company's plan deals with first three barriers in various ways, but this section of the plan focuses on mechanisms that can help customers afford to carry out energy efficiency upgrades and/or perceive costs differently.

In 2020, the Company will be focused on four areas regarding finance and energy efficiency and electrification.

1. The Company will create an iPad based digital tool that allows customers to see the benefits of a using a particular mechanism(s) in real time and early in the sales process.
2. The Company will pursue a USDA RESP loan, through the programs or the Council, to expand the On-Bill Repayment mechanism without the need for future ratepayer injections.
3. National Grid will develop a 5-year financing plan and present it to the Council and The Working Group prior to filing the next three-year plan.
4. National Grid will develop a common reporting platform for the Efficient Buildings Fund (EBF) on which RIIB, OER, National Grid will be able to view and contribute information.

ii. Mechanisms offered

National Grid and its partners have developed 4 primary finance mechanisms over time to help customers afford to energy efficiency upgrades. Each one has unique attributes. Some may only be available or apply to certain customer, building, or ownership types.

i. On Bill Repayment (OBR) - Electric

Customer type	Commercial customers who consume more than 1,000 MWh per year

Loan size	$1,000 to ~$100,000 (may be larger for SEMPs)
Maximum Tenor	5 years for commercial accounts, 7-10 years for State facilities
Loan Volume	Variable, between $5MM to $10MM per year
Benefits to customer	No formal credit check/ rapid approval, on bill repayment, zero interest
Limitations	Maximum tenor too short for many comprehensive upgrades, cannot be used to support upgrades customers may desire such as windows and roofs as they have a B/C ratio less than 1.0

National Grid's revolving loan fund projections for 2019 are illustrated in Attachment 5, Table E-10 and Attachment 6, Table G-10.

Status of Financial Test 1: In the 2017 plan the Company hypothesized that it could use the attractiveness of the OBR mechanism to help reduce incentive costs. Over the past 18 months customers have been given the choice of a "normal incentive" (prescriptive incentive or $/MWh for custom) or a 15% reduction in the "normal incentive" amount with the ability to "finance the remaining project costs through OBR.

Describe participation and savings here – draft two
Overall, National Grid has found this test to be unsuccessful. While some customers were willing to make the trade-off between incentives and OBR funds we found that the amount of savings was small over the 18-month period, achieved savings from more vulnerable customers such as XXXX, and created ill will with customers. The Company plans to terminate this test at the end of 2019.

Potential injection

The company is investigating a potential injection into this fund. In the budget this is listed as $2.0MM. Further analysis is needed to determine if this is a judicious action.

ii. On Bill Repayment (OBR) – Gas

Potential Injection

The company is investigating a potential injection into this fund. In the budget this is listed as $500,000. Further analysis is needed to determine if this is a judicious action.

iii. Efficient Buildings Fund (EBF)

Customer type	State agencies, quasi-state agencies, and municipalities
Max loan size	More than $5MM
Maximum Tenor	Up to 20 years
Loan Volume	Variable, ~$20MM loans outstanding -More detail in Table E-10
Benefits to customer	Below market rate interest, long tenor, loan amounts can be large enough to make comprehensive building wide improvements
Limitations	Appropriate customers must file applications and be ranked against other potential loan applicants

The Efficient Buildings Fund (EBF) is a long-term, low cost financing program for local governmental units, including cities, towns and quasi-state entities, to invest in clean energy projects. EBF is administered in partnership between the OER and the Rhode Island Infrastructure Bank (Infrastructure Bank or RIIB). OER is responsible for determining project eligibility, reviewing project applications and producing a project priority list (PPL). The Infrastructure Bank only finances projects that are listed on the PPL. OER, the Infrastructure Bank and the National Grid municipal sales representative work together to originate efficiency projects that meet the requirements of least cost procurement. EBF also provides financing for renewable energy projects and uses other sources of capital to finance those transactions. The Infrastructure Bank does not receive an annual allocation of capital from the State of Rhode Island to support the EBF program.

$X.X million will be provided to EBF for an additional round of EBF financing. This will support XXX therms and XXX MWh. (This will be finalized in the second draft after further analysis. Placeholder in the budget is $5.0MM) Based upon available resources and demand, the Infrastructure Bank expects to leverage the provided funds between two to three times. Additionally, to support the Infrastructure Bank's success, National Grid may fund up to $100,000 in technical assistance studies and OER will assist municipalities with

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automatically updating their Portfolio Manager accounts for EBF building benchmarking and reporting requirements. National Grid will also incentivize the cost-effective efficiency projects for electric and gas retrofits with direct incentives to EBF customers.

Funds allocated to the EBF, including interest earnings, will be used in accordance with least cost procurement law, the EBF enabling act (Chapter 46-12.2), and regulations filed by the Office of Energy Resources and Rhode Island Infrastructure Bank governing the administration of the program. The Bank administers the EBF as a revolving loan fund, making loans from time to time for eligible projects, and tracks the funds awarded under the Plan independently of other sources of funds which provide additional capital for the EBF program. The funds allocated to RIIB and EBF under prior and future Settlement Agreements have been or will be committed to financing energy efficiency projects. As those loans are repaid into the EBF, such repayments will be re-lent for other eligible energy efficiency projects on the OER PPL. To the extent that such repayments have not be re-lent for an eligible energy efficiency project, the repayments will be available to pay debt service in the unlikely event of a default on a RIIB issued EBF bond. Having these loan repayments available to pay debt service in the event of a default on an EBF bond provides significant interest savings for all borrowers of the EBF program.

In 2020, National Grid and RIIB will promote EBF through the use of case studies in addition to working with state and quasi state agencies such as the Rhode Island Department of Education (RIDE).

iii. Commercial Property Assessed Energy (C-PACE)

Customer type	Owners of non-residential property
Max loan size	Limited only by the financial health of the building
Maximum Tenor	Average measure life of all upgrades, can exceed 15 years
Loan Volume	Variable
Benefits to customer	Can be structured to be cash flow positive, no personal guarantees, financing can be used to finance a wide variety of improvements related to energy, may be considered an operating expense.
Limitations	Minimum transaction value of ~$50,000, preferred $100,000+

In 2020, National Grid will continue to work with the Rhode Island Infrastructure Bank (RIIB) and its partners to promote C-PACE. Specific examples include a marketing piece and a case study that will be included in packets of RI customers at future events and re-engaging Commerce RI to promote this mechanism to businesses seeking information about moving to or expanding in Rhode Island. There will also be a marketing effort for non-profits who own their space.

iv. Ascentium Rental Agreement

Customer type	Owners of non-residential property
Max loan size	No stated limit
Maximum Tenor	Variable
Loan Volume	Variable
Benefits to customer	Rapid preliminary approval, rental product is considered an operating cost
Limitations	Specific terms of the agreement may not work for all customer types

More details on 2020 activities in the second draft.

v. Other financing mechanisms

In 2020, National Grid will be investigating mechanisms and financing structures that allow tenants and landlords to work together towards building improvements including energy efficiency upgrades. This includes, but is not limited to, and investigation of Metered Energy Efficiency Transaction Structure (*MEETS*).

6. Other Enabling Strategies for Customer Engagement

a. Improving Quality and Efficiency in Project Cycle Times

The Company is committed to providing customers with a more expedited project initiation and incentive application (transactional) experience. The Company continues to look for process improvement relative to processing applications, and the building Technical Assistance (TA) review process. Early in 2018, the Company began designing

and implementing a new web-based portal for customers to create and submit fully digital incentive applications replacing the PDF based forms that have been used for years. This new portal, Rhode Island Digital Application Portal, (RIDAP) will greatly improve the customer experience, accelerate application review and incentive payments, and potentially increase participation. RIDAP will be fully in place by the beginning of 2019.

b. Data Analytics

National Grid, like many other utilities and other companies around the globe, is focused on how data can improve its decisions, inform its strategic planning, and understand its customers more completely. The Company plans to use a non-customer facing intelligence software platform, that will help with customer insights and enhance customer satisfaction. The software platform enable sales, marketing, and account management teams to connect the right customer to the right offer at the right time, driving customer conversion. This platform will also allow the Company to drive higher awareness and participation in programs by allowing for more impactful interactions with customers that deepen the value of energy projects. The Company will continue to examine new pathways to obtain more detailed information on its large customers that will drive a more targeted approach to customers and hence higher participation.

c. Tools for Customers' Management of Energy Usage

The Company intends to help customers access their energy data to allow for greater awareness of energy consumption. The Company will seek to achieve this through the various methods described below:

d. Automated Benchmarking Systems

National Grid has developed a path towards automating data uploads into Energy Star's Portfolio Manager. The Company acknowledges automated usage data transfer to customers as an important tool in the future for building labeling intentions, supporting prior OER commitments to support state/municipal facilities improvements, and as a tool for helping customers better understand their energy usage. In 2020 customers can automatically upload aggregate, whole building energy usage data, both electric and gas onto the Portfolio Manager and will allow building owners and stakeholders to benchmark energy usage and performance and compare usage to similar buildings nationally. This process will also support the City of Providence's building energy reporting and disclosure ordinance that the City is planning to implement in 2020. The

ordinance will require building owners of large and medium sized buildings to report their annual energy use. The goal of this ordinance is to make building owners and operators more aware of their energy usage and help them improve energy efficiency of their buildings. The Company is currently supporting the City's stakeholder process for the co-creation of this ordinance.

The Company will support benchmarking with customer support on automating data uploads as well as provide access to EPA training on Portfolio Manager. Additionally, the Company will send marketing and informational emails to customers to inform them of the automated benchmarking process. The Company will provide a call-in number to support customer questions related to the automated benchmarking process.

e. Green Button

The Green Button initiative is an industry-led effort that responds to a White House call-to-action to provide utility customers with easy and secure access to their energy usage information in a consumer-friendly and computer-friendly format. Customers are able to securely download their own detailed energy usage with a simple click of a literal "Green Button" on electric utilities' websites.[9] In 2016-2017, more than 500 C&I and residential customers downloaded their energy use data with Green Button. This included both gas and electric customers. In 2020, National Grid plans to examine *Green Button Connect My Data*. *Green Button Connect My Data* is a new capability which allows utility customers to automate the secure transfer their own energy usage data to authorized third parties, based on affirmative (opt-in) customer consent and control.

f. Building Labeling

The Company will continue to work with the Office of Energy Resources (OER) and other stakeholders to identify strategies for building labeling in the commercial and multifamily real estate sectors in Rhode Island. The Company will continue to work closely with OER to support property owner and tenant access to usage data.

[9] https://energy.gov/data/green-button

7. Connected Solutions (Demand Response)

a. Overview

The Company implemented an active demand reduction program in 2019 based on demonstrations done in 2017 and 2018. Under this active demand reduction approach customers agree to reduce their electric use during the system peak.

Customers participating in the Demand Response Program are free to curtail their energy use by any means in this technology agnostic program. The customers performance is calculated using either the utilities electric meter for G-32 customers, or their vendors whole-building meter. Typical technologies or strategies used to curtail load include energy management systems, building management systems, software and controls, HVAC controls, lighting with controls (manual, networked system or integrated), process offsets, any Open ADR compliant technology, startup sequencing, among other customer facility specific approaches.

b. Goals

Year	# of Accounts Enrolled	# of Events Called	MW of peak reduction
2017	##	2	12 MW
2018	##	6	18 MW
2019	##	##	##

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c. Program Delivery

This initiative uses Curtailment Service Providers ("CSPs") to assess curtailment opportunities at a facility and deliver curtailment services to enrolled customers. CSPs identify curtailment opportunities for deployment under the Company's initiative, as well as demand charge and Installed Capacity ("ICAP") tag[10] management opportunities and

[10] Installed Capacity Tag is a capacity payment that is set for a customer by using their peak demand during the peak day/hour on the NEPOOL grid

present a complete curtailment proposal to the customer. The demand charge and ICAP tag management provide opportunities for direct bill savings to customers.

Customers and CSPs respond to dispatch signals or criteria specified by the Company. Events will be called the day before curtailment is needed. The core model remains focused on reducing demand during summer peak events typically targeting fewer than twenty hours per summer. The program is structured to avoid interfering with the ISO-NE programs or penalizing customers for participating in both programs.

This Plan is being coordinated with the SRP Plan to ensure that the customer offerings are cohesive, and a comprehensive marketing plan is being implemented. The proposed SRP Marketing and Engagement Plan would promote the Portal described in the SRP plan and promote incentives already available through existing Company and State programs. Please refer to the SRP Plan, SRP Marketing Engagement with NWA's section, for details.

i. Energy Storage Initiative

Overview

In the 2019 Energy Efficiency Plan the Company Proposed a "Daily Dispatch" option that would incentivize customers for curtailing more often than the traditional demand program. This is analogous to the residential battery demand response program, and the Company expected that mostly commercial sized battery storage would participate in this option. Adoption of the C&I storage incentive initiative was limited in 2020 due to cost barriers. Energy storage systems are only cost-effective at the current incentive rates when coupled with solar, as this allows the asset owner to earn the Federal Investment Tax Credit for the energy storage system, however the RI Net Metering and Renewable Energy (RE) Growth programs do not currently allow for paired solar + storage facilities greater than 25 kW. The Company is actively working to improve adoption rates for the C&I energy storage incentive program and is evaluating if and how the Net Metering and RE Growth programs could be adapted to allow paired solar + storage facilities greater than 25 kW.

Initiative delivery

The Company will incent the performance of customers adopting innovative and emerging demand reduction technologies, like battery storage in the following way, if the

changes in Net Metering and RE Growth programs are adapted to allow for Solar + Storage in the future.

Performance and Incentive structure:

- A performance-based incentive will be paid out for a period of 5 years. The rate will be guaranteed to be fixed at $300 per kW/year for 5 years and will be subject to revision after the 5 year period, based on updated avoided cost estimates at the time of the revision. The funding and performance incentive rate guarantee are required to address market barriers to customer financing of energy storage assets and provide a guaranteed stream of revenue until the customer achieves system payback, which is estimated at 5 years under the proposed incentive levels.

- Load reduction performance will be based on actual measured load reduction across all National Grid demand response dispatch events each year.

  Performance based incentives will be subject to budget limitations and, in all cases, will be subject to the 70% total project cost cap applicable to all battery storage projects.

Changes in 2020

Adoption of the C&I storage incentive initiative was limited in 2020 due to cost barriers. Energy storage systems are only cost-effective at the current incentive rates when coupled with solar, as this allows the asset owner to earn the Federal Investment Tax Credit for the energy storage system, however the RI Net Metering and Renewable Energy (RE) Growth programs do not currently allow for paired solar + storage facilities greater than 25 kW. The Company is actively working to improve adoption rates for the C&I energy storage incentive program and is evaluating if and how the Net Metering and RE Growth programs could be adapted to allow paired solar + storage facilities greater than 25 kW.

Interaction with Other Company Energy Storage Initiatives:

The Company is developing two Energy Storage Initiatives, as detailed in Docket Nos. 4770/4780 Amended Settlement Agreement:

- One behind-the-meter (BTM) system co-located with a DCFC site, which will consist of an approximate 250 kW two hour energy storage system, supporting approximately two to six DCFC ports.
- One front-of-the-meter (FTM) storage system, which will consist of an approximate 500 kW three hour energy storage system for the primary purpose of realizing distribution system value, with the exact storage size and capacity to be determined by system need and location.

The Docket Nos. 4770/4780 demonstrations primarily focused on testing grid-connected systems or to mitigate the load impact associated with EV charging. Whereas, the Energy Storage Initiative in the 2019 Plan is a storage-enabled Demand Response (DR) program that is focused on incentivizing the use of customer-owned behind-the-meter (BTM) storage to shift peak load at traditional end-use customer facilities. The energy efficiency Storage Initiative is specifically targeted to facilitating BTM storage to be used for DR and is separate from these other efforts.

The Company's intent is to test storage use cases in both FTM and BTM in order to identify all applications that are beneficial to customers and to the grid as a whole. A secondary benefit of testing both categories of storage applications is that it will help spur the development of a robust storage market in Rhode Island, where the contributing parties may differ between large grid connected applications and smaller BTM applications.

8. Marketing to Commercial and Industrial Customers

a. Overview

In 2019, the Company continued to educate customers about energy efficiency and increase participation in, its energy saving offerings for Rhode Island's business customers. The Company added to its previously attained customer survey research insights by developing customer personas for the business customer through interviews and surveys to improve understanding of the concerns and priorities of its commercial and industrial customers. The Company aims to represent that voice of the customer in campaign planning beginning late 2019/early 2020 and beyond. Based on the research commercial customer segments are broken out into Lean and green customers, Small and seamless, Seeking solutions, No frills and Big business. We will dive into the characteristics

of each segment and adjust messaging and targeting where appropriate. The goal is to enhance targeting and messaging not to eliminate any commercial customer targets.

b. Delivery

In 2019 the Company is implementing a new campaign theme focused on getting business customers to see more of what energy efficiency upgrades and incentives can do for their business. The "See the possibilities" campaign was developed to serve as an overarching campaign that provides a unified message for Large commercial customers, small business customers and the multifamily customers. This fully integrated strategy leverages digital marketing, paid search and social media marketing, print advertising, email campaigns as well as Public Relations.

The primary campaign message for the "See the possibilities" campaign encourages customers to experience more of what energy efficiency can offer your business by seeing the possibilities of how an energy efficiency upgrade to lead to improved security, customer retention, comfort etc. or how the money you save can enable the business owner to focus on other improvements and growth opportunities for the business. Working with National Grid will help achieve business goals because we will work with you every step of the way for an energy efficiency project and help turn your business dreams into a reality.

In 2019 we began leveraging PR / earned media as a truly integrated part of our marketing campaign. This will include media relations, influencer engagement, event management and partnerships with trade associations.

Earned Media/PR Strategy

NEW FOR ALL: Implement a News Bureau Program which allows us to proactively build awareness of National Grid's incentives to all the key stakeholders in each market and across al business segments & verticals through:

- Media Relations - ongoing, proactive pitching of trade and business media
- Influencer Engagement
- Event Management
  - Speaking opportunities for National Grid SMEs (subject matter experts) at strategic events
  - Focus on trade events for outreach to plumbers, electrician associations, etc.
  - Press kit generation to development background information, fact sheets, press releases, images, etc.
  - Considering over 14 events for NYS 2019
- Partnerships with Trade Associations
- Content development and editorial calendar for social media, case studies and more
  - Tie into seasonal and relevant engagements (i.e. small business week social blitz)
  - Promote key topics like new construction, manufacturing, green building in NYS, etc.
    - Allows us to really dig deeper and provide more relevant content to key focal areas
      - Ex: Specifically for UNY property managers, developing content that drives home ways National Grid can help mitigating risk and tenant complaints, provide financial solutions, and improve tenant retention.
  - Business segment specific research studies (i.e. multi-family landlord/tenant research) to build out additional case studies and renter email campaign

The commercial product marketing team will evaluate the marketing strategy which was implemented in 2019 and use those learnings to inform the 2020 marketing plan.

In addition to these initiatives, the Company's annual Customer & Partner Energy Efficiency Summit (EE Summit) has helped cement its relationships with its largest customers. The EE Summit has been held at Gillette Stadium in Foxboro, MA since 2014. The EE Summit exemplifies the Company's customer focused philosophy, providing solutions that break through its customers' pain points and roadblocks. The summit's goal is to make the energy solutions the Company offers more accessible and easier to implement for customers. It's also an opportunity for the Company to build personal relationships with customers, sales teams and vendors. The Summit includes vendor partners and acclaimed speakers on teamwork, problem solving, sustainability, and innovative energy approaches. The Company's 2019 EE Summit will be held on October 17, 2019. The next Summit will be held in October 2020. This event is promoted to business customers via email blasts, LinkedIn posts, and digital advertising

While National Grid's paid media primarily targets people directly involved in the decision-making process for capital budgets and facility improvements/projects, C-Suite & Facility Managers, Small Business owners, the Company does have some advertising/communications dedicated to its secondary audience of key influencers. These are the people/firms that influence energy project go-forward decisions. They may

have an existing relationship with the customer. Distributors, Project Expeditors, Engineers, Architects, etc.

Appendix

a. Commercial Retrofit Program: Gas Technologies

The following technologies are being deployed or are currently being explored for the commercial retrofit program for various market sectors, like lodging, manufacturing, restaurants etc.

Heat Exchanger Cleaning

During 2016, a demonstration project on heat exchanger cleaning was completed in Boston. It was also tested in Rhode Island but costs for this measure were high and it did not screen well.

Xeros Polymer Laundry Solutions

There is a new technology on the market for commercial laundry operations which uses 80% less water, 50% less energy (natural gas) and 50% less detergent than more traditional equipment. The market sector for this equipment crosses over the Company's traditional market sectors – it includes commercial laundry facilities, laundromats, universities, and hotels. In addition to the obvious energy saving benefits, there are other benefits associated with this technology including requiring a lower temperature to operate, ability to get out stains other cleaning cannot do, ability to complete a cycle in less time, and ability to clean some materials that were previously unable to be cleaned. In 2019, National Grid plans to target the on premise laundry customer segment as part of the Company's lodging and hospitality initiate as well as, commercial laundries and laundromats.

On-Premise Laundry (OPL)

There are some on premise laundry solutions to reduce natural gas energy usage including ozone, condensing equipment and a retrofit for dryers. National Grid has experience offering incentives to customers installing this equipment. In 2018, webinars will be provided to further encourage customers to embrace these technologies. The Company

has successfully incentivized new commercial washers and dryers in hotels in Massachusetts and would like to gain more traction in Rhode Island. There is an Energy Star rating for commercial OPL Washers but none for dryers; however the custom path can be used to calculate savings. This typically screens as an end of useful life measure by comparing the incremental cost of the energy efficient machine to the machine being replaced.

Dry Smart

New in 2019: Dry Smart RMC™ (Residual Moisture Control) Due to the high costs associated with replacing commercial dryers, many times the units are repaired rather than replaced. This technology allows installation and monitoring of a moisture sensor retrofit at lower costs than replacement with a new energy efficient commercial dryer. The moisture sensor senses the level of dryness and stops the machine when a load is dry. This reduces gas that would otherwise be wasted. It has received good test results.

Steam Trap Smart Tags

In conjunction with doing a steam trap survey, smart tags can be added to each steam trap being reviewed. The steam trap vendor hangs the tag on each trap and provides National Grid and the customer with a spreadsheet providing information on the status of each steam trap including date of service. There will be a National Grid logo and an app that a new facilities manager can use to quickly get up-to-speed in learning about the condition of steam traps in their new building. Infrared images are also available. This will also provide the new facilities manager with instantaneous information about National Grid's energy efficiency programs. No incentive is available at this time but may be considered in the future. These tags have been provided to National Grid's steam trap vendors to use on work done in the Company's energy efficiency programs. By the end of 2018, more data will be available. Once the data is entered into the system, it will take a couple of years before the savings can be measured. At that time, the bar codes will be scanned and the condition of the steam traps will be noted and savings from repairs can be determined.

Greenheck Grease Filters

This is an emerging technology that incorporates an air to water heat exchanger into grease filters which fit into commercial kitchen exhaust hoods. In addition to exceeding UL grease collection requirements by 3.5 times, they also serve to pre-heat hot water. This also saves natural gas and electricity and the system captures and reuses waste heat that would otherwise be wasted to the outside. In 2016, EcoThermal, a manufacturer, partnered with the Company's vendors to perform demonstration projects in Rhode Island, Massachusetts and New York. As a result of this demo project, customers can expect energy savings and reduced cleaning costs to exceed $4,000 per year. The average restaurant can save 2,000-3,500 therms per year in gas as a result of the pre-heating of hot water. This results in an average CO_2 reduction of 18.6 metric tons per site. That manufacturer has since gone out of business but the same technology is available with Greenheck. This is an HVAC manufacturer. Additional testing is being conducted in RI and MA. This will be a custom measure available for restaurants and colleges in 2019.

EcoThermal Filter's™ website mentions that National Grid incentives are available for Rhode Island commercial customers. Filters fit into standard commercial kitchen hoods, making installation easy. Regular maintenance can be done by the restaurant's team and a deeper cleaning requires filters to be disconnected. Some restaurants hire a hood cleaning company for this work.

Sales efforts of this product have stalled due to the manufacturer pulling sales back to its headquarters in Michigan. This measure can succeed again if a local installer and sales force can be found in Rhode Island. The Company is inquiring with the manufacturer about their plans. National Grid is developing a relationship with new players to this market in New England and will provide trainings and presentations to the RI Hospitality Association Members to highlight this measure as well as other viable gas measures.

Removable Insulated Jackets for Big Steam Plants

For some of National Grid's largest customers, steam turbine insulation jackets improve both efficiency as well as safety in the plant. They are easily removed and replaced by any staff member. Both standard and custom sized jackets are available. One single turbine can save $9,500 in energy in a year. A heat loss reduction of 135 BTUs per square foot per hour can result from using the jackets. Touch temperature can be reduced from

750^0 F to 145^0 F, improving safety. This product also has a five year guarantee. This is a custom express gas measure that can save customers tens of thousands of therms annually. The measure will be aggressively implemented by the Company's energy efficiency sales teams in RI to all medium to large C&I customers who use steam and high temperature hot water for processes and space heating. It can also be used on all valves, fittings, steam traps, condensate tanks and uninsulated hot water tanks. The jacket has excellent synergies with general mechanical insulation on piping systems, steam system assessments and steam trap surveys. National Grid is providing training for these measures with targeted webinars on gas measures and Steam System Assessments.

b. New Gas Measures Being Developed

i. Heat Watch

New in 2019: The Company is also facilitating "Heat Watch" for Multifamily, small business and C&I programs. This service includes running boilers in conjunction with controlling and managing the whole boiler and heating systems for a facility. National Grid is currently working on a custom savings tool and new measure development approval processes. This service will save 5-8% of energy on steam systems by preventing overheating and improving temperature control of spaces, especially during spring and fall. Test results will not be available until Q1 2019 due to seasonal heat usage.

ii. Cozy™ Radiator Covers

New in 2019: The Cozy ™ Radiator covers are insulated enclosures with a room temperature sensor controlling a fan that introduces heat to the space when needed. It virtually makes each steam radiator its own controllable HVAC zone. One NY University was able to reduce boiler run times by 41%.[11] Non energy benefits include increased asset value, improved tenant/occupant comfort, reduced emissions, and improved safety. One college in RI has had good results. This measure is available as a custom project.

iii. Aeroseal

New in 2019: Aeroseal is for both heating and cooling. It provides duct sealing to seal up old leaks by blowing in atomized polymers. Before and after testing is being conducted.

[11] https://www.radiatorlabs.com/wp-content/uploads/2016/08/CaseStudy-ColumbiaUniversity.pdf

Success of the new measures depends on multiple factors including energy savings, customer satisfaction, ease of use, and value to customers. If successful, testing results will be shared with the Strategic Sales team so they can in turn share the information with customers.

g. Commercial and Industrial Measures and Incentives

Electric Programs					
Program	**Subprogram**	**Net Annual kWh Tracker by Subprogram**	**Incentive / Net Annual kwh**	**Total Incentives**	**Shared Costs**
Large Commercial New Construction	C&I Codes	289,000	$0.00	$0	
	D2 CAIR	517,300	$0.24	$126,000	
	Upstream HVAC Air Conditioners	386,316	$0.39	$149,322	
	Upstream HVAC Controls	14,041	$0.16	$2,250	
	Upstream HVAC ECM Pump	6,429	$0.46	$2,952	
	Upstream HVAC VRF	387,450	$0.49	$191,479	
	Upstream Heat Pump - Ductless	30,870	$1.24	$38,406	
	Upstream Heat Pump - Packaged	4,860	$1.85	$9,000	
	Upstream Heat Pump - Split	54	$1.85	$100	
	D2 HVAC Prescriptive	237,219	$0.21	$50,000	
	D2 Custom	4,662,400	$0.43	$2,000,000	
	D2 Lights	2,592,116	$0.17	$444,000	
	D2 Upstream Food Service	56,903	$0.67	$38,406	
	Motors and VFD	208,398	$0.26	$54,000	
	Upstream HVAC Refrigeration	9,980	$1.00	$10,000	
	Commercial Demonstrations & Assessments	-	-	-	
	Program Planning & Administration				$188,488
	Marketing				$316,935
	Sales, Technical Assistance & Training				$1,195,004
	Evaluation & Market Research				$438,915
Large Commercial Retrofit	CHP	2,549,576	$0.19	$481,500	
	Custom: SEM	973,352	$0.05	$51,138	
	Custom: General	13,755,291	$0.34	$4,700,000	
	EI HVAC	1,859,274	$0.34	$630,000	
	EI Light: Prescriptive	31,522,828	$0.25	$7,820,000	
	Motors and VFD	2,251,488	$0.23	$528,000	
	Custom: Street Lighting	2,989,100	$0.28	$843,618	
	EI Light: Upstream Linear Luminaires	1,728,339	$0.38	$656,880	
	EI Light: Upstream TLEDs	2,250,525	$0.09	$203,328	
	EI Light: Upstream Retrofit Kits	1,752,049	$0.18	$321,709	
	EI Light: Upstream A-lines and Decoratives	1,319,082	$0.10	$132,980	
	EI Light: Upstream G24, G23, MR Lamps, P/	865,933	$0.20	$175,498	
	EI Light: Upstream Stairwell	20,085	$0.93	$18,709	
	EI Light: Upstream Exterior	1,756,113	$0.04	$62,553	
	EI Light: Upstream High/Low Bay	5,519,761	$0.20	$1,102,298	
	EI Light: Upstream Linear Fixture w/ Controls	2,796	$0.84	$2,356	
	EI Refrigeration and Hot Water	-	-		
	Program Planning & Administration				$731,576
	Marketing				$242,096
	Sales, Technical Assistance & Training				$4,099,423
	Evaluation & Market Research				$727,465
Small Business Direct Install	Lighting	10,029,653	$0.54	$5,400,000	
	Lighting controls	214,397	$1.40	$300,000	
	Non-Lighting	558,519	$1.07	$600,000	
	Heat Pumps	-	-		
	Commercial Demonstrations & Assessments			$2,036	
	Program Planning & Administration				$242,931
	Marketing				$276,531
	Sales, Technical Assistance & Training				$416,735
	Evaluation & Market Research				$98,514

Program	Subprogram	Demand Response kW Goal	Incentive / Net Annual kW	Total Incentives	Shared Costs
Commercial Connected Solutions	Daily DR Resources	0	-	0	
	Peak Shaving DR (MW)	49,000	$35.00	1,715,000	
	Program Planning & Administration				$37,910
	Marketing				$1,917
	Sales, Technical Assistance & Training				$329,128
	Evaluation & Market Research				$0

Gas Programs					
Program	Measure Groups	Net Annual MMBtu Tracker by Subprogram	Incentive / Net Annual MMBtu	Total Incentives	Shared Costs
Large Commercial New Construction	Boilers	5,399	$46	$250,000	
	Codes And Standards	358	$0	$0	
	Combo Boiler/DHW	1,593	$88	$140,000	
	Non Boiler Heating	266	$47	$12,500	
	Cond Water Heater 94% Min 75-300 And	346	$139	$47,924	
	Cooking-Combo Oven 1	198	$10	$2,000	
	Cooking-Convection Oven 1	46	$109	$5,000	
	Cooking-Conveyor Oven 1	78	$13	$1,000	
	Cooking-Fryer-1000	90	$22	$2,000	
	Cooking-Griddle 1				
	Cooking-Rack Oven 1				
	Cooking-Steamer-1000				
	Cooking-Combo Oven 1 - Upstream	476	$11	$5,280	
	Cooking-Convection Oven 1- Upstream	1,288	$96	$124,080	
	Cooking-Conveyor Oven 1- Upstream	89	$11	$1,000	
	Cooking-Fryer-1000- Upstream	9,495	$24	$232,320	
	Cooking-Griddle 1- Upstream	89	$11	$1,000	
	Cooking-Rack Oven 1- Upstream	89	$11	$1,000	
	Cooking-Steamer-1000- Upstream	89	$11	$1,000	
	Water Heater - Indirect Upstream	325	$70	$22,800	
	Water Heaters 94 And Above	534	$74	$39,610	
	Water Heating Boiler - 94% TE	4,761	$14	$67,817	
	Custom	17,200	Up to 75% of Total Resource Cost	$333,250	
	Program Planning & Administration				$21,804
	Marketing				$161,512
	Sales, Technical Assistance & Training				$754,332
	Evaluation & Market Research				$294,437
Large Commercial Retrofit	Controls	6,487	$12	$80,000	
	Custom: RCx	2,845	$21	$60,000	
	Behavior / Training	2,495	$20	$50,000	
	DHW	599	$16	$9,500	
	HVAC	15,469	$19	$290,000	
	Prescriptive Steam Traps	79,840	$11	$840,000	
	Custom: General	48,362	$23	$1,100,000	
	Custom: SEM	385	$42	$16,238	
	Program Planning & Administration				$249,155
	Marketing				$268,514
	Sales, Technical Assistance & Training				$1,841,120
	Evaluation & Market Research				$229,237
Small Business Direct Install	Hot Water	2,523	$20	$50,000	
	Program Planning & Administration				$3,472
	Marketing				$37,907
	Sales, Technical Assistance & Training				$30,692
	Evaluation & Market Research				$2,389

Gas Programs					
Program	**Measure**	**Net Annual MMBtu Tracker by Subprogram**	**Incentive / Net Annual MMBtu**	**Total Incentives**	**Shared Costs**
	Air Sealing	304	Average Incentive based on measure mix		
	CUST NON-LGT	5,065			
	Demand Circulator				
	Duct Sealing				
	Faucet Aerator	184			
	Insulation	7			
	Low-Flow Showerhead	82			
	Pipe Wrap (Heating)				
	Pipe Wrap (Water Heating)	3,420			
	Programmable Thermostat	796			
	Thermostatic Shut-off Valve				
	TSV Showerhead	406			
	WiFi thermostat gas	940			
	Participants	1,500	$504	$756,000	
	Program Planning & Administration				$26,870
	Marketing				$23,137
	Sales, Technical Assistance & Training				$108,332
	Evaluation & Market Research				$36,047