2017 Annual Update of the 2016-2018 Conservation & Load Management Plan

Connecticut General Statutes—Section 16-245m(d)

Submitted by:
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Connecticut General Statutes—Section 16-245m(d)

CHAPTER ONE: OVERVIEW (ELECTRIC and NATURAL GAS)

In accordance with Connecticut General Statutes § 16-245m and § 16-32f, The Connecticut Light and Power Company ("CL&P") doing business as Eversource Energy ("Eversource") and The United Illuminating Company ("United Illuminating") (collectively, the "Electric Companies"), and The Connecticut Natural Gas Corporation ("CNG"), The Southern Connecticut Gas Company ("SCG"), and Yankee Gas Services Company ("Yankee Gas") doing business as Eversource Energy, (collectively the "Natural Gas Companies") hereby submit the 2017 Plan Update ("2017 Plan Update") to the 2016-2018 Conservation & Load Management Plan ("2016-2018 Plan"). On December 31, 2015, the Department of Energy and Environmental Protection ("DEEP") issued its final Approval with Conditions of the 2016-2018 Plan and in March 2016, DEEP issued additional conditions for approval (collectively, the "Final DEEP Approval"[1]).

The 2017 Plan Update details programmatic changes that will help the Electric Companies and the Natural Gas Companies (collectively, the "Companies") address the Final DEEP Approval, previous compliance items, evaluation findings, public input comments, energy-efficiency programmatic trends and results, and current energy price forecasts. The 2017 Plan Update is a continuation (second year) of the current approved 2016-2018 Plan, and focuses on refining program designs, targeting specific market segments, and identifying emerging technologies capable of transforming energy-efficiency markets and programs. The 2017 Plan Update covers year 18 of electric conservation programs since the passage of the state's restructuring legislation (Public Act 98-28), and year 11 of the natural gas conservation programs since the passage of Connecticut's energy independence legislation (Public Act 05-01).

[1] Department of Energy & Environmental Protection. *Approval with Conditions of the Connecticut Energy Efficiency Fund's Electric and Natural Gas Conservation and Load Management Plan for 2016 through 2018*. December 31, 2015. Available at: http://www.ct.gov/deep/lib/deep/energy/conserloadmgmt/DEEP_Approval_with_Conditions_of_2016-2018_C&LM_Plan_with_Attachment_A_12-31-15.pdf.

The 2017 Plan Update includes changes designed to allow Connecticut to maintain its leading-edge status, and to demonstrate the Companies' commitment to the twelve 2016-2018 Plan priorities:

- Priority 1: Maintain continuity and momentum;
- Priority 2: Commitment to continuous improvement;
- Priority 3: Scale and broaden the reach of programs to provide services to new or underserved markets;
- Priority 4: Deliver comprehensive and deeper savings for all customer segments;
- Priority 5: Tailor program offerings to enhance customer engagement and increase program effectiveness;
- Priority 6: Maximize the impact of funds received from all customer segments;
- Priority 7: Make improvements and revisions to the Home Energy Solutions[SM] program;
- Priority 8: Integration of energy-efficiency and renewable offerings;
- Priority 9: Encourage innovative strategies such as upstream offerings, code initiatives, creative financing offerings, and expanding trade ally participation;
- Priority 10: Research new and emerging demand reduction, demand response, and energy-efficient technologies;
- Priority 11: Shift the market toward Zero Net Energy buildings; and
- Priority 12: Advance the capacity of the public, clean energy workforce, and students through training and education.

2016 Awards, Recognitions, and National Conferences

The Companies and the Energy Efficiency Board have long been recognized as national leaders in the design and delivery of cost-effective and innovative energy-efficiency programs. In September 2016, the state's energy policies and energy-efficiency programs were ranked fifth[2] in the nation by the American Council for an Energy Efficient Economy's ("ACEEE") State Energy Efficiency Scorecard ("Scorecard"). Connecticut has achieved a perennial top-ten ranking in the ten years the annual Scorecard has been published. The 2016 Scorecard notes that Connecticut earned its ranking due to a "notable increase in electricity savings as a percentage of sales,

[2] ACEEE. *2016 State Energy Efficiency Scorecard*. September 2016. Available at: http://aceee.org/research-report/u1606.

moves to update state building energy codes to more stringent model codes,"[3] and the state's Lead by Example Initiative.[4] Connecticut was previously ranked sixth in the 2015 Scorecard.

In April 2016, the U.S. Environmental Protection Agency ("EPA") recognized Energize Connecticut partners Eversource, United Illuminating, CNG, and SCG as a 2016 ENERGY STAR® Partner of the Year for Energy Efficiency Program Delivery. This prestigious award is one of the EPA's highest honors and recognizes states, utilities, and organizations which create and implement innovative and environmentally responsible energy-efficiency initiatives. The 2016 Partner of the Year award demonstrates Energize Connecticut's utility partners' hard work to maintain the state's national status as an energy-efficiency and market transformation leader, while protecting the environment, broadening the access to ENERGY STAR products and resources to all customers, and improving the efficiency of buildings, homes, and products within their community or territory.

During the 2016 program year, the Energy Efficiency Board and the Companies received additional awards and recognition, including the following:

- 2016 ENERGY STAR Certified Homes Market Leader Award. The EPA recognized the Energy Efficiency Board and Eversource for the Residential New Construction program's important contributions to energy-efficient construction and environmental protection by building or verifying an outstanding number of ENERGY STAR-certified homes, and for increasing builder, contractor, and homeowner awareness of the ENERGY STAR brand.

- 2016 EPA Environmental Merit Award. The EPA recognized United Illuminating for its innovative efforts to promote energy efficiency. Each year, the EPA New England district office recognizes individuals and organizations in New England who have worked to protect or improve the environment in distinct ways.

To maintain the state's status as a national leader in delivering high-efficiency programs and initiatives, the Companies publish papers and present at conferences regarding Energize Connecticut programs to national and regional audiences. In late 2015 and in 2016, the Companies presented at numerous energy and climate change forums, including:

- 2015 ACEEE's Behavior and Climate Change Conference. Panel presentations by Eversource and United Illuminating: *Business Sustainability Challenge: Not Your*

[3] ACCEE. *2016 State Energy Efficiency Scorecard*, p. 10.
[4] ACEEE. *2016 State Energy Efficiency Scorecard*, p. 105.

Grandma's Energy-Efficiency Program and *Updates from CT on Community Outreach in 169 Towns*. Baltimore, MD. October 2015.

- 2015 ACEEE's Intelligent Efficiency Conference. Panel presentation by Eversource: *Utility Grid Load Integration and Balancing*. Boston, MA. December 2015.
- 2016 ACEEE's Hot Water Forum. Panel Presentation by United Illuminating: *Upstream Hot Water Program at the Connecticut Utilities*. Portland, OR. February 2016.
- 2016 Energy, Utility & Environment Conference. Panel presentations by Eversource and United Illuminating: *Advancing to Sustainability Together*. San Diego, CA. February 2016.
- 2016 ACEEE's National Symposium on Market Transformation. Panel Presentation by Eversource: *Demand Response Gets Smarter: Realizing the Potential of Demand Response on the Distribution Grid*. Baltimore, MD. March 2016.
- 2016 ACEEE's Energy Efficiency Finance Forum. Panel Presentation by Eversource: *We Can't Go It Alone: Interagency Partnerships are Critical to Achieving Deeper Energy Improvements in Affordable Multi-Family Housing*. Newport, RI. May 2016.
- 2016 Smart Cities Innovation Summit. Panel Presentations by Eversource and United Illuminating: *Advancing to Sustainable Energy Communities*. Austin, TX. June 2016.
- 2016 ACEEE's Summer Study on Energy Efficiency in Buildings. Pacific Grove, CA. August 2016.
    - Paper/Presentation by Eversource: *Triangulation vs. Strangulation: Applying Multi-Method Impact Evaluation to Whole-House Retrofit Programs;*
    - Paper/Presentation by United Illuminating: *Swimming to Midstream: New Residential HVAC Program Models and Tools*;
    - Paper/Presentation by Eversource: *Zero Net Energy: Available and Scalable*;
    - Paper/Presentation by Eversource and United Illuminating: *Transforming Towns and Cities into Sustainable Energy Communities*; and
    - Paper/Presentation by Eversource: *Load Side Grid Management: Power Monitoring and Load Control Automation*.
- 2016 ENERGY STAR Partners Meeting. Presentation by United Illuminating. New Orleans, LA. October 2016.
- 2016 Behavior, Energy & Climate Change Conference. Panel presentations by Eversource and United Illuminating: *Transforming Towns and Cities into Sustainable Energy Communities*. Baltimore, MD. October 2016.
- 2016 Growing Sustainable Communities Conference. Panel presentations by Eversource and United Illuminating: *Advancing to Sustainable Communities Together*. Dubuque, IA. October 2016.

2016-2018 Priorities and Themes

In 2016, the Companies made significant efforts to deliver highly-innovative and cost-effective, energy-efficiency programs and to engage Connecticut customers in actively saving energy. These efforts were driven by the themes and priorities laid out in the 2016-2018 Plan. The 2017 Plan Update builds upon the momentum of the 2016-2018 Plan's goals while reflecting systematic analysis of program offerings to determine best practices and advancing/emerging technologies that could drive energy savings. The Companies have developed customized solutions for Commercial and Industrial ("C&I") target market segments previously identified in the 2016-2018 Plan, and made the programmatic changes necessary to address the Final DEEP Approval's conditions.

Advanced Lighting Strategies

The Companies continuously monitor the lighting marketplace to understand trends and impacts to program implementation, savings, and offered incentives. In 2016, the Companies began quickly shifting support toward light-emitting diode ("LED") lighting technologies for Connecticut's energy-efficiency programs. This move toward LEDs, an advancing technology, is mainly driven by the recent increase in LED product availability, the decrease in LED pricing, and for the Residential Program Portfolio—the EPA's new ENERGY STAR Lamps Specification Version 2.0, which will become effective on January 2, 2017. These new energy-efficiency specifications effectively eliminate CFLs from the ENERGY STAR Qualified Products List and require an immediate shift, rather than a gradual shift as laid out in the 2016-2018 Plan,[5] in how the Companies will cease support of CFL technologies in 2017 and 2018.

In 2017, the Companies' Residential Program Portfolio will implement a revised residential lighting strategy to address the new ENERGY STAR specifications, advancing and emerging lighting technologies, and other marketplace trends. The Companies will provide primary support for LED bulbs and fixtures through the Residential Retail Products program, and in their residential direct-install programs, including the Residential Retrofit programs, Home Energy Solutions ("HES") and HES-Income Eligible. In 2017, the Residential New Construction program will move toward requiring the installation of only LED technologies in screw-in applications, depending upon the market availability and pricing of ENERGY STAR V2.0 bulbs.

The shift toward supporting LED technologies also affects the C&I Program Portfolio. In 2017, the Companies will implement an advanced C&I lighting strategy to promote LED bulbs, fixtures, and

[5] 2016-2018 Plan, p. 263.

lighting controls to keep Connecticut ahead of evolving federal standards, C&I building codes, market trends, and the design control opportunities provided by the rapidly improving LED technology marketplace.

Continued Shift to Upstream Models

Connecticut's residential and C&I programs are national leaders in the transition to move rebate models upstream for efficient lighting, HVAC, and domestic hot water ("DHW") equipment. In an upstream model, incentives (rebates) are directed toward trade allies, such as contractors, distributors, and manufacturers (upstream), rather than directly given to customers as traditional rebates (downstream).

As noted in the 2016-2018 Plan,[6] the Companies began transitioning several rebates for residential HVAC and DHW equipment upstream in 2014. Since that time, year over year, the Companies have been realizing an increase in rebate activity for boilers, furnaces, and water heaters, effectively transforming the market to increase the stocking and sale of high-efficiency equipment options. Continuing with this trend, the Companies will explore moving residential rebates upstream for central air conditioners and ducted/ductless heat pumps in 2017.

In 2016, the Companies directed C&I Program Portfolio efforts toward moving rebates upstream for efficient lighting and high-efficiency HVAC systems. Upstream incentives are paid to C&I equipment distributors to stock and promote energy-efficient measures to commercial contractors at the point-of-purchase of materials. This eliminates the price barrier between standard and efficient equipment. As noted in the 2016-2018 Plan,[7] the C&I Program Portfolio will continue to move more C&I rebates upstream for high-efficiency HVAC systems and lighting in 2017.

Enhanced Coordination of Financing

Throughout 2016, the Companies saw continued customer interest and participation in energy-efficiency financing programs for the Residential and C&I Program Portfolios. The Companies also continued working with the Energy Efficiency Board and Connecticut Green Bank Joint Committee ("EEB CGB Joint Committee"), DEEP, and other stakeholders, to address the EEB CGB Joint Committee's goals for residential and C&I projects.

[6] 2016-2018 Plan, p. 281.
[7] 2016-2018 Plan, p. 394.

For the Residential Program Portfolio, in accordance with the Final DEEP Approval,[8] the Companies worked with the Connecticut Green Bank, the Connecticut Housing and Finance Authority ("CHFA"), and the Connecticut Department of Housing ("DOH") to identify and implement several modified processes for the Multi-Family Initiative's workflow to streamline coordination with financing stakeholders. The Companies have developed a Letter of Participation ("LOP") to formally communicate the incentives available for projects under development that are being proposed to the CHFA and DOH, but where the final designs and specifications are not yet complete.

The LOP will provide the developers, property owners of the project, and the CHFA and DOH with an estimated incentive amount based on the preliminary information. This incentive amount can be used for budgetary purposes as part of their financial application, and will be refined based upon final specifications and formally documented in a Letter of Agreement ("LOA") between the Companies and the property owner once the project design is complete. The CHFA has included the requirement of a utility LOA (if appropriate) on its financial application checklist and the DOH is in the process of doing the same. A CHFA/DOH rating and ranking points will be modified to prioritize projects with strong energy improvement components.

For the C&I Program Portfolio, efforts were made in 2016 to develop new capital sources for the Small Business Energy Advantage ("SBEA") program. The current financing sources for SBEA customer loans are a combination of both the Companies' funds and the Energy Efficiency Fund's. In 2016, the Companies worked with the Connecticut Green Bank and a third-party financing vendor to identify private sources of capital for these loans in order to increase the volume of non-utility capital available and to reduce ratepayer costs. As a result of this work, in 2016, the Companies worked with a third-party vendor to begin providing low-cost capital financing to municipal customers.

In 2017, the Companies will continue working with the Connecticut Green Bank and potential private vendors to find more low-priced alternative sources of capital to fund energy-saving projects for both SBEA and municipal loan customers. The Energy Efficiency Board's C&I Committee plans to review some options and potential paths forward, as well as key challenges, at an upcoming C&I Committee meeting. In addition, the Companies will work collaboratively with the Energy Efficiency Board consultants and Energy Efficiency Board during the

[8] Final DEEP Approval, Condition No. 13.

development of the process, and any new process will be reviewed and acted on by the Energy Efficiency Board.

The goals of the EEB CGB Joint Committee, including metrics and updates, and a summary regarding the Companies' 2016 efforts for the residential and C&I sectors, are detailed further in Appendix B: Financing.

Quality Assurance & Performance of Contractors

The Companies are committed to continuously delivering high-quality, energy-saving programs to Connecticut's residential and C&I customers. In 2016, the Companies maintained their commitment by making program delivery enhancements and improvements, tracking program performance, inspecting and providing Quality Assurance ("QA") of completed energy-efficiency services (e.g., installed equipment and weatherization), analyzing customer and vendor feedback, and maintaining Quality Control ("QC") of program implementation.

In 2016, Eversource commissioned a third-party study[9] to assess the QA and QC inspection policies for specific Energize Connecticut programs in the Residential Program Portfolio (i.e., HES, HES-Income Eligible, Residential New Construction, and Retail Products) and the C&I Program Portfolio (i.e., SBEA, Energy Opportunities, Energy Conscious Blueprint, and C&I rebates). The study documented existing QA and QC processes and identified potential enhancements that could result in better [or same] program savings, quality of services, and customer satisfaction, while achieving greater statistical validity and at lower cost. Opportunities for enhancing and optimizing procedures were also explored in the study. The Companies and the Energy Efficiency Board will review the study's findings to determine how to improve the QA and QC inspection policies in 2017.

In 2016, the Companies focused significant QA efforts on improving both the HES and HES-Income Eligible programs' performance. The Companies continued to enforce stringent HES and HES-Income Eligible contractor performance standards, including requiring contractors to meet minimum qualifications to participate. Contractor performance is tracked on a monthly basis to ensure continuity in the delivery of high-quality services for the HES and HES-Income Eligible programs. In the future, the Companies look forward to working with DEEP and other state agencies on establishing a weatherization worker's license or registration that could create a "standard" for weatherization contractors servicing the HES and HES-Income Eligible programs. The current QA and QC processes in place for the HES and HES-Income Eligible programs are a

[9] GDS Associates, Inc. Commissioned by Eversource. Quality Assurance and Quality Control Program-Specific Inspection Policies Review. June 16, 2016.

strong foundation for the state of Connecticut to formulate the necessary contractor qualifications for program participation and for continued licensure renewals.

Connecticut Building Code

On October 1, 2016, the Department of Administrative Services, the Office of the State Building Inspector, and the Codes and Standards Committee made the final Connecticut Supplement for the next State Building Code (called the "2016 Connecticut State Building Code") effective. The 2016 Connecticut State Building Code[10] adopts the 2012 family of codes developed by the International Code Council called the 2012 International Energy Conservation Code ("2012 IECC"), and will be coordinated with the State Fire Safety Code.

The Companies will continue to monitor new energy codes as they are adopted for both the Residential and C&I Program Portfolios, and will align their incentive structures accordingly. As part of the "code support strategy" for the C&I sectors, the strategic role of the Energy Conscious Blueprint program will be to: (1) maximize the market's participation levels in the program, and (2) move the market to the next level by promoting the path to Zero Net Energy design in new commercial construction and renovations.

In 2017, per the 2016-2018 Plan,[11] the Companies will conduct an analysis of code attribution models for both the Residential and C&I Program Portfolios and propose a model for implementation if warranted. A code attribution model policy determines how resulting energy savings are assigned (attributed) to energy-efficiency program portfolios for building code-related incentives, programmatic designs, energy policies, and trainings developed, supported, and implemented by the Companies.

Benefit-Cost Testing

The Companies' primary cost-effective methodology is the Utility Cost Test. The Utility Cost Test includes energy avoided costs from electric and natural gas energy-efficiency measures and programs, and all program costs associated with acquiring those benefits. The Utility Cost Test does not include customer out-of-pocket costs, or costs or benefits associated with oil or propane savings. Nor does the Utility Cost Test include the Non-Energy Impacts realized through energy efficiency, such as reductions in carbon emissions, improved comfort and safety, and water conservation.

[10] Connecticut Department of Administrative Services. 2016 Connecticut State Building Code. October 1, 2016. Available at: http://www.ct.gov/dcs/lib/dcs/2016_ct_state_building_code.pdf.
[11] 2016-2018 Plan, pp. 280; 326-327.

Though the Companies' primary cost-effective methodology is the Utility Cost Test, they also screen programs using a Modified Utility Cost Test, and the Total Resource Cost Test. The Modified Utility Cost Test, which is used only for the Residential Program Portfolio, includes all the benefits and costs used in the Utility Cost Test. Additionally, it includes oil and propane avoided costs, and the program costs associated with acquiring oil and propane savings. The Total Resource Cost Test includes all Energy and Non-Energy Impacts, and all costs associated with acquiring energy savings, including program costs and customer out-of-pocket costs.

Non-Energy Impacts

The Companies currently quantify and count a number of Non-Energy Impacts ("NEIs") in the Total Resource Cost Test, including water, non-embedded emissions, and non-resource (e.g. lower maintenance) savings. A growing body of evidence suggests that consumers consider NEIs in the choice to adopt energy-efficiency measures. NEIs have been estimated at 50 to 300 percent of annual U.S. household energy savings.[12] Many jurisdictions across the United States have quantified numerous NEIs and they include them in the Total Resource Cost Testing. For 2017, the Companies support improvements to their cost-effectiveness methodology to account for all benefits derived from energy-efficiency measures and programs. As such, the Companies will also begin to incorporate additional NEIs that were identified and quantified through an independent third-party evaluation of the HES and HES-Income Eligible programs.[13]

In 2017, additional NEIs that will be incorporated include: higher comfort, noise reduction, lower maintenance, increased safety, and increased home value. The NEIs will be incorporated into the Total Resource Cost Test for the HES, HES-Income Eligible, and HVAC and DHW programs. Going forward, the Companies will work to identify and quantify additional NEIs that can be included in other programs, including for the C&I Program Portfolio.

Modifications to Benefit-Cost Testing

Currently, the benefit-cost tests used by the Companies include only "lost opportunity" savings for heat pumps and other equipment that displace fossil fuel heat. Benefit cost tests do not account for possible customer savings from switching fuels, nor do they account for any associated environmental benefits. Therefore, the Companies are only partially accounting for

[12] Jennifer Thorne Amman. *Valuation of Non-Energy Benefits to Determine Cost-Effectiveness of Whole House Retrofit Programs: A Literature Review*. May 2006.

[13] NMR Group, Inc. Submitted to Connecticut Energy Efficiency Fund Board, Eversource, and United Illuminating. Project R4 HES/HES-IE Process Evaluation and R31 Real-Time Research. April 13, 2016. Available at: http://www.energizect.com/sites/default/files/R4_HES-HESIE%20Process%20Evaluation%2C%20Final%20Report_4.13.16.pdf.

the full benefits of many heat pump and fuel-conversion installations (e.g. only the savings between a baseline efficiency heat pump and a high-efficiency heat pump are captured in these situations).

Current benefit-cost testing does not fully align with the state's overarching commitment to clean energy because it does not fully reflect benefits from alternative technologies that can displace fossil fuels. In 2017, the Companies will work with DEEP to explore modifications to current benefit-cost testing methodology to better align it with the Connecticut Comprehensive Energy Strategy[14] by fully reflecting the value of fuel conversions that reduce customer costs and greenhouse gas emissions. This will better enable the state to meet its climate change goals.[15,16]

Implementing Demand Reduction Strategies

In 2016, the Companies further refined their demand reduction strategies by conducting market research and building simulation studies, issuing both Requests for Information and Requests for Proposals to demand response providers, and implementing residential demand reduction pilots for room A/C and central air customers. The Companies' strategies were also crafted by judicial decisions,[17] the Northeast's independent electric system planner and operator's ("ISO New England") subsequent changes (due to the judicial decisions) to its Forward Capacity Market rules, and Condition No. 2 of the Final DEEP Approval.

In 2016, as referenced in the 2016-2018 Plan,[18] the Companies launched two residential pilots to quantify the potential active demand reduction savings value of smart Wi-Fi thermostats and smart plug load controls. In the fall of 2016, Eversource customers enrolled in both the Smart Plug Load Control and Wi-Fi Thermostat pilot participants participated in a test event coinciding with ISO New England's summer seasonal month. For customers enrolled in United Illuminating's Smart Plug Load Control pilot, several test events and two demand reduction events (lasting four hours) were called during the summer of 2016. These four events coincided with ISO New England's summer seasonal peak hours.

[14] DEEP. 2013 Comprehensive Energy Strategy for Connecticut. February 19, 2013. Available at: http://www.ct.gov/deep/lib/deep/energy/cep/2013_ces_final.pdf.
[15] Governor's Steering Committee on Climate Change. Connecticut Climate Change Action Plan 2005. January 2005.
[16] Public Acts include: Public Act (P.A.) 04-252 (*An Act Concerning Climate Change*) and P.A. 08-98 (*An Act Concerning Global Warming Solutions*).
[17] *FERC v. Electric Power Supply Association.* 136 S. Ct. 760 (2016).
[18] 2016-2018 Plan, pp. 473-481.

In 2016, the Companies evaluated several approaches to helping various C&I market segments achieve active demand reductions, per their commitment in the 2016-2018 Plan.[19] This analysis resulted in the creation of several unique pilot designs to address the small business, mid-market, and large C&I facility market segments. Launching in 2017, these pilots will help the Companies determine if full-scale demand reduction and demand response technologies are economically viable, feasible, and reliable as demand resource strategies for C&I facilities. The Companies detail their demand reduction strategies and demand response pilots further in Chapter Three of the 2017 Plan Update.

Commercial & Industrial Market Segmentation

In the 2016-2018 Plan, the Companies described a new analytic approach to driving energy savings in the C&I sector—market segmentation. The Companies identified 10 target markets for particular focus, including: agriculture, commercial real estate, government facilities (local and state), grocery, health care, higher education, hospitality (lodging), manufacturing, restaurants and commercial kitchens, and waste and wastewater.[20] For each market segment, the Companies determined the barriers, market actions (trade ally or contractor organizations), and the end-uses, systems, and equipment.

In 2016, the Companies built upon their prior market segmentation analysis to craft a strategic plan for delivering more effective market-segmented approaches to the C&I target markets through the four core C&I Solutions: Business and Energy Sustainability, New Construction and Equipment, Retrofit Solutions, and SBEA. This master strategy is detailed in Table 1-1 on the next page.

[19] 2016-2018 Plan, p. 481.
[20] 2016-2018 Plan, pp. 346-376.

Table 1-1: Strategic C&I Market Segment Plan

C&I Solution	New Construction & Equipment			Retrofit Solutions (Existing Buildings & SBEA)			Business and Energy Sustainability (Industrial)			Market Solutions		
Market Segments	Design Assistance & Incentives	Performance Based Procurement	Sustain. Office Design	Retro-Commiss-ioning	Custom Incentives	Small Bus.	Energy Use Assess-ment	Business Sustainability Challenge	Lean Manuf. / Kaizen (PRIME)	High Performance Labs	Networked Lighting Controls	Upstream: Natural Gas Heating & Lighting
Agriculture											Q3 2016	
Commercial Real Estate											Q3 2016	
Government Facilities (State & Local)					Q1 2017						Q3 2016	
Grocery					Q4 2016						Q3 2016	
Healthcare											Q3 2016	
Higher Education (tech schools, community colleges, state universities)										Q1 2017	Q3 2016	
Hospitality (lodging)											Q3 2016	
Manufacturing										Q1 2017	Q3 2016	
Restaurants						Q1 2017					Q3 2016	
Water and Wastewater											Q3 2016	

Legend: Dark Blue = Complete; Light Blue with Implementation Dates = Underway.

During 2016, the Companies performed more granular research on two of the targeted market segments: manufacturing and state government facilities. This research, along with a detailed plan to deliver cost-effective C&I Solutions to these market segments, is further detailed in Chapter Two: 2017 Plan Updates.

Shifting the Market toward Zero Energy Buildings

A key 2016-2018 Plan priority was to move all buildings, both commercial and residential, toward becoming Zero Energy Buildings,[21] defined by the US Department of Energy ("US DOE") as "[a]n

[21] 2016-2018 Plan, p. 21.

energy-efficient building, where, on a source energy basis, the actual annual delivered energy is less than or equal to the on-site renewable exported energy."[22]

In 2016, the Companies worked closely with the Northeast Energy Efficiency Partnership and other regional energy utilities/organizations to develop: A Zero Energy Roadmap: Progress Report.[23] Connecticut showed considerable progress in two of the progress report's suggested steps toward Zero Energy Buildings: (1) prioritize measurement and public reporting of building energy performance; and (2) create a revolving loan fund or similar funding mechanism to provide capital for energy investments. The success of the EnergizeCT Zero Energy Challenge, run through the Residential New Construction program, was highlighted in its efforts to make the public and building community aware of Zero Energy Buildings. In 2017, as an effort to move the residential marketplace toward more Zero Energy Homes, the Companies will review and consider reinstating the Zero Energy Homes tier for the Residential New Construction program and develop a Zero Energy Homes pilot for existing homes.

Funding Sources (Current, Future & Potential)

For the 2017 Plan Update, the primary funding sources will continue to be the three-mill charge and the electric three-mill Conservation Adjustment Mechanism ("CAM") less the gross receipts tax assessed on customer electric bills, and the contributions from natural gas customers on firm rates through the natural gas CAM. Additional funding sources include the Regional Greenhouse Gas Initiative ("RGGI") and ISO New England's Forward Capacity Market. Tables 1-2, 1-3, 1-4, and 1-5 on the following two pages summarize the latest estimated statewide funding for the 2017-2018 Plan programs.

Since the March 1, 2016 filing, there have been several changes to the Companies' electric and natural gas revenues. Additionally, the Forward Capacity Market revenues include the latest clearing prices and Eversource commercialized early on some energy-efficiency capacity. Additionally, RGGI funding was reduced based on the latest round of auctions, Connecticut legislative reductions, and DEEP forecasts.

Eversource (natural gas) had originally assumed decoupling would begin in 2017. Eversource's new model now makes the assumption of decoupling beginning in 2018 for natural gas revenues. The CNG revenue model currently accounts for decoupling and SCG's model assumes decoupling

[22] U.S. Department of Energy. A Common Definition for Zero Energy Buildings. September 2015. Available at: http://energy.gov/sites/prod/files/2015/09/f26/bto_common_definition_zero_energy_buildings_093015.pdf.
[23] Northeast Energy Efficiency Partnerships. Roadmap to Zero Energy Public Buildings: A Progress Report. June 2016. Available at: http://www.neep.org/sites/default/files/resources/ZE%20Report%20June%202016.pdf.

starting in 2018. Updated revenue figures are based on a more recent kilowatt-hour sales forecast.

Table 1-2: Electric Program Funding Sources*

	2017			2018			2019		
	2017 ES (CT) Electric Revenues	2017 UI Revenues	2017 Combined Total	2018 ES (CT) Electric Revenues	2018 UI Revenues	2018 Combined Total	2019 ES (CT) Electric Revenues	2019 UI Revenues	2019 Combined Total
Collections (Mill Rate)	$66.2	$15.7	$81.8	$65.6	$15.5	$81.1	$65.0	$15.5	$80.5
ISO New England	$23.2	$5.3	$28.5	$31.4	$8.5	$39.9	$27.1	$8.1	$35.2
RGGI	$14.0	$3.5	$17.5	$14.3	$3.6	$17.9	$14.7	$3.7	$18.4
CAM (net of gross receipts tax)	$61.5	$14.6	$76.1	$61.0	$14.5	$75.5	$60.4	$14.5	$74.8
TOTAL (energy-efficiency revenues)	$164.9	$39.1	$204.0	$172.3	$42.2	$214.5	$167.2	$41.7	$208.9

** In millions.*

Table 1-3: Comparison to March 1, 2016 Filing (Electric Revenues)

Electric Energy Efficiency Revenues	2017 Eversource Revenues	2017 United Illuminating Revenues	2017 Total Electric Revenues	2018 Eversource Revenues	2018 United Illuminating Revenues	2018 Total Electric Revenues
Collections (Mill Rate)	$ (630,270)	$ -	$ (630,270)	$ (247,801)	$ -	$ (247,801)
ISO New England FCM Revenues	$ 3,021,495	$ 104,502	$3,125,997	$ 11,070,512	$ 4,014,230	$ 15,084,742
RGGI	$ (3,123,157)	$ (780,789)	$ (3,903,946)	$ (3,200,893)	$ (800,224)	$ (4,001,117)
CAM (Net of Gross Receipts Tax)	$ (585,769)	$ -	$ (585,769)	$ (230,304)	$ -	$ (230,304)
Prior Period Carry Over/(Under Recovery)	$ -	$ -	$ -	$ -	$ -	$ -
Estimated Interest Due to Company/Other Revenues	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL REVENUES	$ (1,317,701)	$ (676,287)	$ (1,993,988)	$ 7,391,513	$ 3,214,006	$ 10,605,519

Table 1-4: Natural Gas Program Funding Sources*

Natural Gas Energy Efficiency Revenues	2017 Conservation Adjustment Mechanism	2018 Conservation Adjustment Mechanism	2019 Conservation Adjustment Mechanism
Eversource (CT) Natural Gas Revenues	$23.2	$27.4	$29.0
Connecticut Natural Gas Revenues	$16.6	$17.3	$18.0
Southern Connecticut Gas Revenues	$11.8	$14.7	$15.4
TOTAL: (energy-efficiency revenues)	$51.6	$59.4	$62.4

**In millions.*

Table 1-5: Comparison to March 1, 2016 Filing (Natural Gas Revenues)

Natural Gas Energy Efficiency Revenues	2017 Eversource Revenues	2017 CNG Revenues	2017 SCG Revenues	2017 Total Revenues	2018 Eversource Revenues	2018 CNG Revenues	2018 SCG Revenues	2018 Total Revenues
Conservation Adjustment Mechanism ("CAM")	$ (974,674)	$ -	$ -	$ (974,674)	$ 469,547	$ -	$ -	$ 469,547
Total Revenues	**$ (974,674)**	**$ -**	**$ -**	**$ (974,674)**	**$ 469,547**	**$ -**	**$ -**	**$ 469,547**

CHAPTER TWO: 2017 PLAN UPDATES

The 2017 Plan Update's programmatic changes were developed in collaboration with the Energy Efficiency Board Consultants, the Energy Efficiency Board, and DEEP, and will help the Companies propel Energize Connecticut programs ahead of the latest building codes, emerging technologies, and trends, in order to affect changes in energy-efficiency markets and maintain Connecticut's leading-edge status. The 2017 Plan Update reflects the systematic analysis of individual program offerings to determine needed enhancements to build upon the momentum of the 2016-2018 Plan.

Chapter Two details the programmatic changes and updates for the Residential Program Portfolio, C&I Program Portfolio, and the Evaluation, Measurement, and Verification 2.0 pilot. Chapter Three details the programmatic updates for the Companies' Demand Reduction Strategies, and Chapter Four describes the Companies' Comprehensive Education Strategy and the Clean Energy Communities programmatic changes. Chapter Five provides a Budget Summary of the 2017, 2018 and 2019 Program Years based on both the latest revenue forecasts and proposed program changes as described in the 2017 Plan Update. Similar to prior Annual Plan updates, the final budgets and savings will be filed on or before March 1, 2017 to reflect the final year actual spending for 2016, and resulting carry over/carry under. The Companies request approval from DEEP to implement the changes referenced in Chapters Two, Three, Four, and Five for the 2017 program year with the understanding that the final budgets and savings reflecting year-end 2016 actual results will be filed on March 1, 2017.

2017 Residential Program Portfolio Changes

The Companies' 2016-2018 Residential Program Portfolio is focused on targeting all residential customer segments and fuels in an effort to provide energy-saving opportunities to all. For the past 20 years, Connecticut's residential energy-efficiency programs have delivered comprehensive energy savings and innovative cost-saving solutions to residential customers statewide.

Revised Residential Lighting Strategy

For the Residential Program Portfolio, the Companies have developed a revised lighting strategy that will move the programs more rapidly toward promoting and supporting only LED lighting. In 2017, the Retail Products, Residential New Construction, and the residential direct-install programs, HES and HES-Income Eligible, will primarily, if not exclusively, support LED products. The Companies will have phased out support for most CFLs by the fourth quarter of 2016. This

will have an impact on program delivery, budgets, energy savings, promotion, and marketing efforts, especially for the HES, HES-Income Eligible, Retail Products, and Residential New Construction programs.

The Companies may continue to promote CFLs in hard-to-reach markets where an absence of low-cost efficiency options, especially for high lumen (75 and 100 watt equivalent bulbs), could create increased demand for less-efficient incandescent bulbs. Depending on the market availability and pricing of the new ENERGY STAR V2.0 bulbs in 2017, the Residential New Construction program will move toward requiring the installation of only LED technologies. The Companies will monitor the retail lighting marketplace in 2017, and will adjust their strategy and tactics as market conditions warrant.

A main driver of the 2017 revised residential lighting strategy is the ENERGY STAR Lamps Specification Version 2.0 ("ENERGY STAR V2.0"), the EPA's new energy-efficiency specifications for lighting technologies. ENERGY STAR V2.0 will replace the Lamps Specification V.1 ("Version 1.1") specification, and will become effective on January 2, 2017. On the effective date, lighting models certified to be Version 1.1 (most notably CFLs) will be removed from the ENERGY STAR Qualifying Products List. Several new efficiency criteria for light bulbs and lamps will be in effect. The rated life of general service bulbs will decrease from 25,000 hours to 15,000 hours, and the new products entering the market are expected to be sold at a significantly lower cost than previous models. Additionally, ENERGY STAR V2.0 relaxes the lighting distribution requirements for omnidirectional bulbs, allowing more LEDs to become eligible for ENERGY STAR certification.

In June 2016, Connecticut retailers began stocking ENERGY STAR V2.0-qualified LEDs, with more becoming widely available in late 2016. The Companies are expecting to see significant price reductions in ENERGY STAR V2.0-qualified 40 and 60 watt equivalent LEDs due to the new energy-efficiency specifications, and incentives will be adjusted appropriately. The Companies are anticipating that these new, lower cost ENERGY STAR-certified LEDs will compete with lower cost, non-ENERGY STAR-certified versions which have been on the market. From 2018-2020, these highly-efficient models are projected to stabilize in price. The Companies anticipate that the Retail Products program will need to provide higher incentives for high lumen (e.g., 75 and 100 watt equivalent bulbs) and specialty LEDs (e.g., three-way and candelabras) to supplant higher retail prices for these efficient lighting products. As noted in the 2016-2018 Plan,[24] as the marketplace shifts toward LEDs, the Companies will need to continuously monitor both the pricing, as well as the impact on savings.

[24] 2016-2018 Plan, pp. 265-266.

In 2017, the Companies will also target increasing the market penetration for high lumen LEDs (general service)—typically 75 watt and 100 watt equivalents—as the majority of LED products on Connecticut retail shelves are low lumen LEDs (40 and 60 watt general service). The Companies will work to increase the market penetration (currently 6 percent) of these high lumen LEDs. The Companies will continue educating customers about how to pick the right efficient bulb for a lighting application, dimmable options, lumens vs. watts, lifetime hours of bulbs, and why ENERGY STAR V2.0-rated bulbs are better than non-qualified lighting.

HVAC and DHW Program

Per the DEEP Final Approval,[25] the Companies were required to review the incentive levels (rebates) for heat pumps and geothermal heat pumps to determine the need and merit of increasing incentives for these efficient equipment. During the review process, the Companies determined that the savings claimed for heat pumps needs to more accurately reflect total customer savings and environmental benefits.

As referenced in Chapter One, to more accurately reflect the cost-effectiveness of heat pump technologies which will in turn allow for larger incentives, the Companies will work with DEEP to explore modifications to current benefit-cost testing methodology to better align it with Connecticut's Comprehensive Energy Strategy by fully reflecting the value of energy choices that reduce customer costs and greenhouse gas emissions. The modifications would better align the Companies' benefit-cost modeling with the state's overarching commitment to clean energy by offering alternative technologies that can compete with fossil fuel alternatives.

Residential New Construction Program

Additions, Renovations & Retrofit Plan

Per the Final DEEP Approval,[26] the Companies were given a new performance metric for the Residential New Construction program. The Companies' charge was to develop a robust Additions, Renovations & Retrofit Plan to support the installation of energy-efficient equipment and high-efficiency construction methods in homes undergoing minor or major upgrades. This plan ensures that homeowners have several program tracts to pursue energy efficiency through; either programmatically through the Residential New Construction program for major and minor upgrades, or prescriptively, through rebates. These new tracts should drive increased

[25] Final DEEP Approval, Condition No. 22.
[26] Final DEEP Approval, Condition No. 22.

participation in the Residential New Construction program, and drive increased energy savings for the overall Residential Program Portfolio.

Zero Energy Homes

In 2017, as an effort to move the residential marketplace toward more Zero Energy Homes, the Companies will consider reinstating the Zero Energy Homes tier for the Residential New Construction program. Additionally, the Companies will continue to support the requirements for Solar PV Readiness for Home Energy Rating System ("HERS") Index Scores in Tier 2 or Tier 3 project applications.

Home Energy Solutions Program

After an extremely successful 2015, the HES program faced some difficult challenges in 2016. The Companies saw reduced demand in the single-family segment for the HES program's services due to the unusually warm winter, coupled with a decrease in heating fuel oil prices. A significant focus in 2016, and continuing into 2017, is the development and deployment of enhanced marketing strategies and tactics to educate the public about the value of HES services and increase demand for services.

Per the Final DEEP Approval, the HES program's co-pay amount increased from $99 to $124 on September 1, 2016.[27] This co-pay modification was made to increase the share of program participants' investments in order to advance a long-term goal of market transformation, and to increase the scalability of residential energy-efficiency programs. As HES participants assume a greater share of the program's costs, funding can be maximized to deliver weatherization services to more customers and to deeper energy-saving measures. During the 2017 program year, the HES co-pay is scheduled to increase from $124 to $149 on September 1, 2017.[28]

In 2017, the HES program will continue to enhance its marketing efforts through the deployment of myriad administrative, financing, and marketing mechanisms to encourage program participation and increase customer adoption of add-on measures that drive greater energy savings. Marketing mechanisms may include, but are not necessarily limited to, strategically-delivered promotions, enhanced rebates, and discounts. The messaging will emphasize the multiple aspects of value that the HES program provides to participating customers, including comfort, health, safety, and an increase in property value. These efforts will be designed to

[27] Final DEEP Approval, Condition No. 7.
[28] Final DEEP Approval, Condition No. 7.

condition the residential customer market for upcoming increases in the HES co-pay, by making them understand the intrinsic value of an efficient home, as well as the HES program's weatherization services and add-on measures.

The Companies will continue to coordinate efforts with the Connecticut Green Bank and leverage one another's industry partnerships in order to enhance the adoption of holistic energy efficiency and clean energy in Connecticut homes. This will include working closely to connect HES vendors and Residential Solar Incentive Program ("RSIP") contractors. In addition, the Companies will continue to recommend and request that the Connecticut Green Bank adjust their RSIP guidelines to include the Home Energy Score as a required pre-requisite for receiving a solar incentive.

In 2017, the Companies will work with DEEP and the Connecticut Green Bank to conduct an educational and outreach effort to Connecticut's real estate community regarding the value of an energy-efficient home and the US DOE's Home Energy Score.

Home Energy Solutions Contractor Support

In addition to the communications, outreach, and web development designed and deployed by the Companies to promote HES, the HES contractors themselves play a significant promotional role. Through the statewide campaigns detailed in the 2017 Marketing Plan[29] and via solution-specific campaigns, the Companies' role is to ensure optimum reach and frequency of messaging in order to fill the "wide end" of the sales acquisition funnel. The marketing efforts of the HES contractors add to that reach, but more importantly, they are critical in turning those inquiries into qualified leads and scheduled assessments, and then completed projects.

In 2016, the Companies initiated several marketing activities in support of HES contractors. A contractor "portal" on EnergizeCT.com was developed to facilitate easier communication and sharing of materials. Additionally, a new cloud-based software tool was launched in the fourth quarter that enabled HES contractors to create customized marketing collateral such as postcards and brochures.

In 2017, the Companies will continue to meet with the HES contractors to share results of market research, to learn from each other, and to ascertain what additional marketing resources will be most effective. The scope and budget for this additional support will be informed by the

[29] See Appendix B of the 2017 Plan Update.

HES contractor meetings in 2016 and early 2017; and will be reviewed and discussed by the Energy Efficiency Board Marketing Committee in 2017 prior to implementation.

Zero Energy Homes Pilot

In 2017, the Companies will work with industry partners to design and implement a Residential Zero Energy pilot designed to reduce the reliance on fossil fuels and offer a whole-building approach to achieving energy savings in existing Connecticut homes through a combination of weatherization and energy-efficiency upgrades, high-efficiency heating sources, renewable thermal technologies, and renewable energy options. The pilot is envisioned to target homes with a bundle of energy-efficiency and renewable technologies that achieve an overall energy use reduction and use of renewable energy that cost-effectively provides energy savings to the customer. The objective of this pilot is threefold: 1) to further the implementation of deeper energy-saving measures; 2) improve the integration of renewable technologies with energy-efficiency measures; and 3) to reduce carbon emissions from fossil fuel heating sources.

Commensurate with this pilot, the Companies will also investigate the feasibility and practicality of providing an energy savings guarantee to remove barriers to installing comprehensive projects with deep energy-saving measures. The Companies will investigate working with insurance providers and financing partners such as Capital for Change and the Connecticut Green Bank, in an effort to meld a savings guarantee with loan products that recognize the increased level of security associated with the guaranteed savings product.

While the delivery channel of this pilot program has not yet been designed, the Companies plan on ensuring the weatherization component is built upon the requirements associated with the HES program, and that the delivery will be consistent with services currently provided by the HES vendor network, while also leveraging and coordinating with solar and HVAC contractors.

HES-Income Eligible Program

Coordination with Community Action Agencies

In 2016, the Companies began working with the Connecticut Association for Community Action ("CAFCA") and DEEP to initiate a dialogue regarding the Companies' coordination with the state's 10 Community Action Agencies ("CAAs"). The HES-Income Eligible program currently provides compensation to CAAs that provide weatherization services ("Weatherization CAAs") to single-family homes through their own resources and/or subcontractors as part of the HES-Income Eligible program. The HES-Income Eligible program does not provide compensation to CAAs that

do not provide weatherization services through their own resources and/or subcontractors ("Non-Weatherization CAAs").

Per the DEEP Final Approval,[30] the Companies are working to provide compensation to Non-Weatherization CAAs for their referral of energy assistance-approved customers to the HES-Income Eligible program. Additionally, the Companies will extend this payment to Weatherization CAAs for the referral and coordination of energy assistance-approved customers who are beyond their capacity to serve. The Companies expect the HES-Income Eligible program to reach more energy assistance-approved customers with this referral process and increase program exposure throughout the limited-income community. The Companies will integrate the baseline payment into program implementation in 2017.

Clean Energy Healthy Homes Initiative ("CEHHI")

As noted in the 2016-2018 Plan, in late 2015, the Companies launched the CEHHI to address single-family, income-eligible properties where health and/or safety barriers to weatherization, such as asbestos or asbestos-like material ("ALM"), mold, and pests, had previously been identified. The CEHHI was launched with $1.5 million in funding allocated by DEEP from the Northeast Utilities-NSTAR merger settlement in 2014.

In 2016, the Companies contracted with consultants and general contractors to provide valuable health and safety services. The CEHHI currently serves income-eligible, owner-occupied, single-family homes with one to four units where health and/or safety barriers prevented blower door-guided air sealing during a previous HES-Income Eligible service. The Companies have identified several additional weatherization barriers, including: roof damage, water leakage, building dilapidation, and hoarding. In 2017, the Companies will analyze and review their data with DEEP and other stakeholders to determine how to best continue serving single-family, income-eligible buildings with health or safety barriers to weatherization.

Home Energy Reports Program (Eversource)

Since 2011, Eversource's Home Energy Reports program has provided residential electric customers with information regarding their electric consumption, and guided energy conservation through targeted energy-saving tips. During the 2016 program year, the program targeted approximately 347,000 electric customers. In the 2016-2018 Plan, Eversource had committed to evaluating the benefits of expanding the program to include natural gas

[30] Final DEEP Approval, Condition No. 14.

customers.[31] As a result of analysis performed in early 2016, Eversource will launch a natural gas Home Energy Reports program to 95,000 high-use natural gas households in the fourth quarter of 2016. These households represent slightly under 50 percent of Eversource's natural gas residential customer base and are the higher users. The launch will occur at the beginning of the 2016-2017 heating season, which will allow the natural gas Home Energy Reports program to reach full functionality during the 2017 program year.

Commercial & Industrial Program Portfolio Updates

Market Segmentation

In 2016, the Companies performed more granular market research to expand their knowledge regarding target market segments, specifically the manufacturing and state government facilities sectors. The sources of knowledge and market intelligence include: efficiency industry research (e.g., ACEEE, Consortium for Energy Efficiency ("CEE"), and E Source), industry experts and trade organizations, industry trade publications, national/regional/state databases, and regional/national peer programs. This market research aided the Companies and the Energy Efficiency Board in developing more and effective market-segmented C&I solutions to state government facilities and manufacturers in 2017.

Manufacturing

The manufacturing sector accounts for approximately one-third of energy consumed in the United States and as noted by the ACEEE, is "increasingly relied on to generate energy savings to meet efficiency targets set by states and energy utilities."[32] From the market segmentation analysis in the 2016-2018 Plan, the Companies note that Connecticut's manufacturers use the most energy of all the C&I market segments, accounting for approximately 25 percent of both C&I electric and natural gas usage statewide.[33]

The Connecticut manufacturing segment is made up of a number of industries, including aerospace, chemicals, computer and electronic products, electrical equipment, food and beverages, machinery, and plastics (injection molding), and directly employs over 161,000

[31] 2016-2018 Plan, p. 314.
[32] American Council for an Energy Efficient Economy. Research Report IE1401: One Small Step for Energy Efficiency: Targeting Small and Medium-Sized Businesses. Jan. 6, 2014. Available at: http://aceee.org/research-report/ie1401.
[33] See 2016-2018 Plan, pp. 340-343.

workers. [34] While each of these sub-segments share some commonalities, they are each uniquely different in their energy consumption, available capital and financing opportunities, equipment needed for efficiency improvements, economic viability, and available staff to support the implementation of behavior-based and equipment modifications.

A 2010 US DOE study,[35] reported the estimated number of manufacturing large energy users ("LEUs") in every state by manufacturing sector (data from 2005). The US DOE defines LEUs as manufacturing facilities with total site energy consumption greater than 0.2 TBtu (trillion British thermal units). The study estimates (using NAICS Codes) that there are an estimated 6-10 facilities in the state of Connecticut in the following two LEU manufacturing sectors: (1) wood product and paper manufacturing, and (2) primary metal manufacturing and fabricated metal product manufacturing. The US DOE notes that "energy consumption among manufacturing facilities is heavily weighted toward larger, more energy-intensive companies." In 2017, the Companies will continue to work with LEUs to identify energy-saving opportunities. They will also work with other energy intensive sub-segments of the manufacturing sector to determine the best C&I Solutions to drive energy efficiency.

There are a number of organizations and trade alliances that represent the diverse manufacturing economy of Connecticut. These include: CONNSTEP (Connecticut State Technical Extension Program), the American Society of Mechanical Engineers ("ASM International"), the Connecticut Business and Industry Association ("CBIA"), the Connecticut Tooling & Machining Association ("CTMA"), the New Haven Manufacturers Association ("NHMA"), the Smaller Manufacturers Association of CT ("SMA"), the Society of Manufacturing Engineers, and the Metal Manufacturers Education and Training Alliance ("METAL").

According to an ACEEE report in 2014,[36] energy utilities and efficiency program administrators are beginning to target small and medium-sized manufacturers ("SMM") which make up 90 percent of US manufacturing establishments and that use approximately 50 percent of the energy consumed by the US manufacturing sector. While SMMs typically pay higher energy costs and do not have onsite energy managers, they do have higher energy-saving opportunities.[37]

[34] Connecticut Business & Industry Association. 2014 Survey of Connecticut Manufacturing Workforce Needs. See: http://www.cbia.com/resources/economy/reports-surveys/2014-survey-of-connecticut-manufacturing-workforce-needs/.
[35] DOE. Number of Large Energy User Manufacturing Facilities by State and Sector. 2010. http://energy.gov/sites/prod/files/2015/07/f24/state_industrial_energy_use-LEUs_for_WEBSITE.PDF.
[36] American Council for an Energy Efficient Economy. Research Report IE1401: One Small Step for Energy Efficiency: Targeting Small and Medium-Sized Businesses. Jan. 6, 2014. Available at: http://aceee.org/research-report/ie1401.
[37] See 37id.

Barriers to this market segment include capital constraints, limited staff resources, and a lack of energy-efficiency program education. The SMMs will be a key sub-segment group targeted by the Companies throughout 2017 and 2018.

Market Actions

The Companies are fully committed to their ongoing outreach efforts and market actions targeting Connecticut's manufacturing sector. In 2016, the Companies established relationships with manufacturing trade alliances and organizations, including the Smaller Manufacturing Association of Connecticut, New Haven Manufacturer's Association, and the Aerospace Component Manufacturers. In 2017, the Companies will continue to leverage these, and other, trade ally partnerships to drive energy efficiency in the manufacturing sector.

C&I Solutions

In 2017, the Companies will continue to deliver customized C&I Solutions to the manufacturing sector that include: (1) the Business Sustainability Challenge, (2) the Process Reengineering for Increased Manufacturing Efficiency ("PRIME") program, and (3) Energy Usage Audits. The Companies anticipate that these three innovative approaches will allow them to deliver customized, energy-efficiency solutions for any industry (sub-segment) in the manufacturing sector.

The Business Sustainability Challenge is part of the Companies' Business and Energy Sustainability Solutions for C&I customers. The Business Sustainability Challenge is a customer-centric approach to delivering energy-efficiency solutions, and addresses other manufacturing community concerns, such as overall competitiveness, regulatory pressures, workforce development, and sales growth. In 2017 and 2018, the Companies will continue to deliver the following Business Sustainability Challenge solutions: energy management education, strategic energy planning, and helping establish an energy-efficiency plan for each participating manufacturing facility.

The PRIME program engages manufacturers in a systematic approach to evaluating and identifying inefficiencies and waste in their operations. The PRIME program trains businesses regarding "lean manufacturing" techniques, such as KAIZEN™, that helps eliminate or reduce waste, improve production efficiency, minimize environmental impact, and reduce electrical energy consumption. Throughout 2017 and 2018, the PRIME program will continue to help manufacturers continuously improve and streamline their business operations.

The Companies have developed a standardized, cost-sharing approach to facility audits—the Energy Usage Audits Initiative. This C&I offering provides cost-sharing energy audits of a manufacturer's facilities. From the data gathered through an Energy Usage Audit, the Companies can develop specific energy reduction measures to help the manufacturer improve the efficiency of their operations.

State Government Facilities

The State Government Facilities sector encompasses all state buildings across the state. This sector includes the Connecticut Technical High School System and the Connecticut Board of Regents system, including 12 community colleges and the four Connecticut State University System Campuses (Central, Eastern, Southern, and Western).

There are several challenges that arise when working with state buildings and facilities. The first challenge is that many state facilities have aging equipment, and have had to defer maintenance for long-term periods due to budget limitations. There is also limited expertise in addressing efficiency improvements across the state government facilities sector. Thirdly, due to the state of Connecticut's legislative and regulatory budget processes, state facilities have lengthy timelines preventing expedient and timely decisions regarding the replacement of failed equipment with high-efficiency units. Additionally, state government agencies do not have the flexible budgets needed to incur the additional costs of integrating sustainable building technologies into new construction or renovations. These four challenges listed above, along with limited capital and financing opportunities, limit the state government facilities sector in moving further along the path of energy efficiency.

Throughout the 2017 program year, the Companies will work closely with stakeholders in the state government facilities sector to address the above-referenced challenges. This includes working with state government facility staff to streamline the state's procurement processes for energy performance contracting, the hiring of energy consultants, and the purchase of high-efficiency equipment via the Companies' upstream rebates. Additionally, the Companies will continue to provide technical assistance and serve as an objective energy-efficiency advisor to state government facilities.

Throughout 2017, the Companies will promote comprehensive incentives and enable innovative financing to prevent the deferment of maintenance and/or replacement of aging equipment due to lack of capital. For the 2017 program year, the Companies have allocated a portion of the C&I budget to provide technical assistance and financial resources to support state buildings

engaged in energy-efficiency projects, particularly Energy Savings Performance Contracts ("ESPCs").

The Companies and the EEB CGB Joint Committee work to leverage customer funds with innovative financing mechanisms to promote more energy-saving projects across all market sectors. The EEB CGB Joint Committee's goals for the government sector include providing technical support and incentives for ESPCs. Continuing in 2017, the Companies will build on their work of establishing a streamlined process for state government facilities undertaking ESPCs. The Companies will also work with the Connecticut Green Bank and other capital providers to provide sufficient funding to remove funding constraints for small-sized projects and also to develop financing for mid-sized projects. For more information regarding this work, see Appendix B: Financing.

Combined Heat & Power

According to the EPA, nearly two-thirds of the energy used to generate electricity is wasted in the form of heat discharged to the atmosphere.[38] Combined Heat and Power ("CHP") is on-site electricity generation that captures the heat that typically would be wasted into *useful* thermal energy, such as hot water or steam, to be used for cooling, domestic hot water, industrial processes, and space heating. CHPs can achieve efficiencies of over 80 percent, compared to the 50 percent achieved through conventional technologies, such as on-site boilers and grid-supplied electricity.[39]

In 2017, the Companies are committed to assessing the C&I building market for remaining CHP system opportunities in Connecticut. This assessment will include a review of the US DOE's recent study: *Combined Heat & Power Technical Potential in the United States*.[40] The Companies will work with other energy stakeholders to help establish an incentive protocol of providing incentives for the installation of CHP systems after the implementation of energy-efficient measures and behavior changes. The Companies will coordinate with the Connecticut Green Bank and the Connecticut Public Utility Regulatory Authority to leverage their existing financing strategies to assist in the promotion of CHP systems in Connecticut.

This will help ensure that CHP systems (like other clean energy systems) are appropriately sized for highly-efficient buildings and manufacturing plants. The Companies' effort would be similar

[38] EPA. Combined Heat and Power Partnership. Available at: https://www.epa.gov/chp/what-chp.
[39] EPA. Combined Heat and Power Partnership. Available at: https://www.epa.gov/chp/what-chp.
[40] US DOE. Combined Heat & Power Technical Potential in the United States. March 2016. Available at: http://www.energy.gov/sites/prod/files/2016/04/f30/CHP%20Technical%20Potential%20Study%203-31-2016%20Final.pdf.

to their Solar Photovoltaic Readiness protocol to promote "efficiency first" and "renewables and on-site generation second." The Companies' efforts should help encourage the creation of a commercial building market that is "CHP Ready" for future C&LM plans and state energy policies.

Strategic Energy Management: 2030 Districts for High Performance Buildings

As described in the 2016-2018 Plan,[41] the Strategic Energy Management framework of the Business Sustainability Challenge establishes multi-year, executive-level (e.g., CEO, mayor, and town manager) commitments between the Companies and customers (e.g., towns, cities, and private building sector). In 2015, the Companies saw the City of Stamford become the sixth city in the nation to become a 2030 District. Led by the private sector, 2030 Districts are formed by local building industry leaders who unite around a shared sustainable and economic growth vision. These industry leaders align with local community groups and local government to achieve and establish significant emissions, energy, and water reductions within private, commercial building centers.

The Stamford 2030 District[42] is a public-private-nonprofit collaborative working to create a high-performance building district in downtown Stamford. The collaborative focuses on developing innovative strategies to assist building tenants, businesses, district property owners, and facility managers in meeting aggressive sustainability goals, such as reducing energy and water consumption, as well as emissions from the transportation sector by the year 2030 in the City of Stamford. In 2016, Eversource (the electric and natural gas utility serving Stamford) and the City of Stamford signed a Memorandum of Understanding committing the city to a multi-year, energy-efficiency plan. Eversource participated in Stamford 2030 District stakeholder workshops and trainings throughout 2016 to promote Energize Connecticut programs and incentives, and high-performance buildings. In 2017, Eversource will continue to be integral in helping the Stamford 2030 District meet its aggressive energy-efficiency goals through online support system integration, technical assistance, and guidance.

In 2017, the Companies will strengthen their commitment to enhance support for 2030 districts for high-performance buildings and other community-related initiatives. The Companies recognize that 2030 districts and similar high-performance community initiatives are valuable opportunities to promote Strategic Energy Management to the private building sector. In 2017, the Companies will conduct pilots to determine if energy savings can be claimed through the valuable behavior-based efforts of the Business Sustainability Challenge.

[41] 2016-2018 Plan, pp. 405-412.
[42] Stamford 2030 District Website: http://www.2030districts.org/stamford.

C&I Advanced Lighting Strategy

According to the 2012 Commercial Building Energy Consumption Survey, the amount of energy used for lighting in US commercial buildings accounts for 11 percent of overall energy usage.[43] The commercial lighting marketplace is shifting rapidly toward LEDs, and the technology's onset affects the C&I Program Portfolio's incentives and energy savings. The Companies continuously monitor the marketplace to stay ahead of advancing and emerging technologies, new federal standards, and market trends.

As a result of their monitoring, the Companies have crafted a proactive, advanced lighting strategy for the 2017 C&I Program Portfolio. This will allow Connecticut to maintain its leadership in energy efficiency, while staying ahead of building code changes and evolving federal standards. Advancing LED technologies also create more design control opportunities for the architectural and contractor community.

In 2017, the Companies will look toward opportunities in the linear lighting markets (that make up 68 percent of C&I lighting market share[44]) to support more LED technologies, including Tubular LEDs ("TLEDs"). The C&I advanced lighting strategy focuses on maximizing the potential of LEDs through integrated and exterior controls ("Advanced Lighting Controls") that allow more capabilities for LED technologies, including dimming or "tuning," daylighting, occupancy sensing, networking, demand response, and variable color temperatures. The Companies also recognize that more contractor trainings regarding LED technologies, Advanced Lighting Controls, and lighting design are necessary to shift the market toward primarily LEDs. Starting in 2017, the Companies will engage contractors and designers by holding several advanced trainings.

Comprehensive Initiative

For the 2016-2018 Plan, the Companies remain committed to encouraging C&I customers to implement comprehensive holistic projects where multiple energy-efficiency measures are simultaneously installed ("C&I Comprehensive Initiative"). Single energy-efficiency measure projects (i.e., solely lighting) limit the myriad benefits to customers, such as energy savings, comfort, and efficiencies in business processes (e.g., better lighting in warehouses) derived from the implementation of comprehensive projects. In 2017, the Companies will continue to collaborate with the Energy Efficiency Board's C&I Committee and other stakeholders to further develop the C&I Comprehensive Initiative.

[43] U.S. Energy Information Administration. 2012 Commercial Buildings Energy Consumption Survey. March 18, 2016. Available at: http://www.eia.gov/consumption/commercial/reports/2012/energyusage/.
[44] Massachusetts C&I On-Site Assessment Report. 2015.

The 2012 Commercial Building Energy Consumption Survey notes that space heating and ventilation account for 25 percent and 10 percent, respectively, of overall energy use in US commercial buildings. In 2017, the Companies will look to increase the number of comprehensive projects for the C&I Program Portfolio that include the installation of high-efficiency HVAC equipment and systems. The Companies will look to target the small business community to promote comprehensive and holistic approaches to energy efficiency in their facilities. This includes enhancing training efforts for the SBEA contractor community regarding high-efficiency HVAC system technologies.

The Companies will combine market segmentation efforts with comprehensive initiatives to provide specialized incentive offerings to specific segments which result in increased savings across lighting, and heating and cooling end-uses. The Companies will continue to coordinate efforts with the Connecticut Green Bank and leverage one another's industry partnerships in order to enhance the adoption of comprehensive energy efficiency and clean energy in Connecticut businesses.

Evaluation, Measurement & Verification 2.0 Pilot

Advancement of Evaluation, Measurement, and Verification

Advancement and innovation in information technologies ("IT") has led to the further advancement of the Energy Efficiency Evaluation, Measurement, and Verification ("EM&V") field. In particular, advanced data analytics and improved data collection tools are collectively leading to a new approach—called "EM&V 2.0"—in in analyzing energy usage and energy savings. These improved data collection tools are expanding the breadth and depth of energy usage data that are available to analyze.

EM&V 2.0 provides new opportunities for energy-efficiency program administrators and utilities to understand how their customers use energy and how to engage them. An increase in data availability (e.g., more frequent, disaggregated, and different types of data) paired with an increase in analytical capability not only supports the evaluation process, but also leads to the potential for:

1. Lower costs of EM&V by having more readily available data;
2. Improved precision of savings estimates;
3. Less customer disruption; and
4. Increased visibility and understanding of energy-efficiency behavior; resulting in more accurate customer segmentation and program targeting.

EM&V 2.0 has applications for both residential and C&I environments. In residential and commercial environments, there are relatively homogeneous populations of building and equipment where EM&V can lower costs by providing a streamlined approach to collect and analyze data that doesn't require myriad site-specific adjustments. For industrial environments, especially large facilities with custom energy-efficiency measures, this may reduce costs for collecting and analyzing complex facility-level and measure-specific data.

Challenges

Despite the ability of EM&V 2.0 to capture and analyze greater volumes of data, numerous challenges remain, including:

- Data Accessibility and Ownership. Program administrators and utilities continue to struggle with accessing customer data from smart device vendors. There are also privacy and security concerns from customers.
- Transparency. Most of the algorithms and methodologies of advanced data analytics are proprietary. Vendors will have to publish their equations and methodologies used to estimate energy savings if the results are going to have the same level of transparency as traditional M&V efforts.
- Accuracy. The reliability and accuracy of EM&V 2.0 methods depend on the technology, and some technologies are still being assessed. In some cases, these methods may not meet acceptable levels of rigor in a regulatory context.
- Independence. EM&V 2.0 must maintain independence and cannot be influenced by those involved in implementing programs or measuring their success. Data from EM&V 2.0 can be used to support evaluations; however, evaluation requires the existence of an independent third party to independently analyze the data, properly assess baselines, make non-routine adjustments, and determine energy savings.

EM&V 2.0 Pilot

In 2017, DEEP, the Companies, and the Energy Efficiency Board will collaborate with the Northeast Energy Efficiency Partnerships ("NEEP") on an EM&V 2.0 pilot. The pilot is funded through a grant awarded to NEEP by the US DOE and Lawrence Berkeley National Laboratory. The overall goals of the pilot are to explore and develop expertise and experience with advanced data collection and analytic tools, and to develop standardized EM&V software tool protocols. The EM&V 2.0 pilot will help determine how streamlined EM&V practices may help provide reliable, standardized, transparent, and cost-effective approaches to quantify energy-efficiency savings.

The objectives of the pilot include:

- Test the use of advanced data analytics and collection tools (EM&V 2.0) and compare to traditional EM&V practices in terms of savings certainty, timeframe, and other aspects;
- Assess how advanced capabilities of EM&V 2.0 tools are best integrated or coordinated with supplemental evaluation and analysis;
- Track use of advanced data analytics and collection tools, and transfer knowledge to build EM&V capabilities in the region;
- Develop and support transparency and adoption of acceptance criteria and standardized software testing protocols and reporting; and
- Inform and coordinate EM&V 2.0 learning and pilot results with other regional energy-efficiency organizations and national efforts.

The three-year pilot will begin in 2017, and will include both residential and C&I components. The details of the pilot are still being developed, but it is anticipated that the pilot will involve a side-by-side comparison of (1) "traditional" evaluations and (2) evaluation results using EM&V 2.0 tools. Initial plans for the pilot include the following tasks:

- The US DOE will work with DEEP, the Companies, and the Energy Efficiency Board to apply EM&V 2.0 methods in existing programs using either proprietary or open-source tools (based on utility interest) in combination with non-routine adjustment algorithms;
- For the C&I component of the pilot, the Companies will strategically select up to 35 buildings (total) within Eversource and United Illuminating service territories. The Companies will work collaboratively with DEEP and the Energy Efficiency Board regarding the C&I customer selection process;
- For the residential component of the pilot, the Companies anticipate it will involve the application of EM&V 2.0 tools on the Companies' Residential Retrofit programs—HES and HES-Income Eligible;
- Traditional approaches will also be used during the implementation of the EM&V 2.0 pilot;
- Quantify energy savings uncertainty at both the building and aggregated pilot levels;
- Compare costs and timing of EM&V 2.0 versus traditional methods; and
- Document results and incorporate into a resource guide for transferability and future replication.

Because the details of the EM&V 2.0 pilot are still under development, it is not clear what impact (if any) it will have on the 2016-2018 Plan budgets or for how long. Therefore, the EM&V 2.0

pilot is not budgeted in the 2016-2018 Plan at this time. Once the costs and funding sources of the EM&V 2.0 pilot are determined, the Companies will work with the Energy Efficiency Board and DEEP to update budget tables accordingly.

CHAPTER THREE: DEMAND REDUCTION STRATEGIES

Peak Demand and Demand Reduction Strategies

Electric utilities and electric system planners/operators must plan regional electric grids based upon their generation and transmission capacities, and the expected level of energy demand of all customers (residential and C&I). The Companies, other New England electric utilities, and New England's regional electric system planner and operator ("ISO New England") must build and operate the region's electric grid to serve the highest anticipated total customer usage (peak demand), create contingency plans, and maintain the appropriate distribution, generation, and transmission facilities needed to deliver energy to all customers.

The term "peak demand" refers to the time during the day when electric consumption is at its highest point. In Connecticut for instance, summer peak electricity demand typically occurs somewhere between mid to late afternoon. The exact time period varies and is dependent upon customer demand and the amount of available resources (i.e., generation, transmission, and demand reduction strategies that are being deployed) that are available for ISO New England to call upon to help it meet peak demand. New England's electric grid must be designed and maintained to meet customer demand for electricity across all the region's states (i.e., Connecticut, Massachusetts, New Hampshire, Rhode Island, Vermont, and most of Maine), and generation and transmission resources are finite.

Periods of peak demand conditions can impact the system in numerous ways, at multiple levels (customer, substation, and regional) and times (summer peak vs. winter peak). The implementation of demand resource strategies is necessary in order to reduce the amount of infrastructure required to meet peak demand, particularly during periods of extreme weather and/or equipment outages. Therefore, electric utilities must devise highly-targeted and immediate strategies to respond to peak demand scenarios. These demand resource strategies can provide load relief when and where it is needed. The Companies have a variety of demand resource strategies to help reduce building loads that contribute to peak demand, and these will be further explored in the following sections of Chapter Three. They include:

- Demand response to actively reduce peak demand during specific time periods (e.g., ISO New England Forward Capacity Market and state load/demand response programs);
- Time Varying Rates (e.g., Time-of-Use Rates, Critical Peak Pricing, Real Time Pricing, and Peak Time Rebates);

- Direct load control and demand management through Active Demand Reduction Controls (connected controls and systems);
- Demand reductions from energy-efficiency programs; and
- Integrated approaches to all the afore-mentioned demand resource strategies (e.g., integrated energy efficiency and demand response using controls and thermostats).

Forward Capacity Market & Demand Response Programs

ISO New England's Forward Capacity Market ("FCM") is designed to ensure that there are sufficient generation resources to meet the future demand for electricity in the region. Generators and electric utilities are allowed to bid in resources, on an annual basis, to supply capacity for the electrical grid three years in advance. In return, these entities receive a market-priced capacity payment for their performance during ISO New England dispatch events, which are called in advance of peak demand scenarios. ISO New England includes demand response as a "resource" in the FCM. This allowance to consider demand response (to the extent participants can respond) as a "generation" resource allows for a more efficient, reliable system.

The Companies have historically supplied demand side resources, including both active demand response and passive resources (i.e., energy efficiency), to the FCM to provide important supply side capability to meet peak demand conditions through mandatory load curtailment. Eversource plans to continue to manage its existing demand response resources registered with ISO New England's FCM and Energy Markets through May 31, 2018. These resources include large C&I facilities that have committed to provide load curtailment (minimum of 100 kilowatts) during an ISO New England system reliability event and seasonal audits (summer and winter).

Recently, ISO New England has made changes to its FCM rules[45] (effective June 1, 2018) requiring demand resource assets to respond rigorously, above and beyond their traditional role of being dispatched during emergency conditions. Under the new FCM rules, active demand resources can be called to respond, during scarcity conditions, at numerous times on or near seasonal peak days. For example, an ISO New England-called scarcity event could occur during a business's (enrolled as a FCM demand resource) operational or non-operational hours. Since scarcity hours are non-contiguous and occur at varied times on or near seasonal peak days, there could be several scarcity events called in any given year. If participants fail to perform during a scarcity event due to not being open at that time or due to other operational issues, ISO New

[45] *FERC v. Electric Power Supply Association.* 136 S. Ct. 760 (2016). Decision stated the Federal Energy Regulatory Commission ("FERC") has the authority to regulate demand response. As a result, ISO New England issued new market rules to comply with FERC Order 745.

England would rate those particular demand resources as underperforming and the manager of the portfolio would incur penalties. As a result of underperforming during scarcity events, the business's ability to qualify as a demand resource in subsequent years of the FCM could be hindered.

Another requirement of the new FCM rules is an assessment of the demand resource's ability to curtail based on energy prices. If qualified, an asset is required to curtail load when wholesale energy prices rise to a value equal to its opportunity cost. As with the existing rules, the new rules similarly require assets to also respond during emergency conditions. Demand resource strategies such as advanced controls, advanced communications networks, and monitoring systems have the potential to meet the challenge of these new rigorous rules. Additionally, increasing FCM prices for power years 2017 and 2018 will help Portfolio Managers hedge and build reserves to offset penalties they might encounter.

Due to the market rule changes, most customers are not interested in participating in the FCM. The long-term impact of these changes has yet to be determined, and Eversource's participation in the FCM will continue throughout the program year 2017 and cease on May 31, 2018. ISO New England has also recently notified Eversource that based on a recent EPA ruling, certain Real Time Emergency Generators are no longer permitted to perform during ISO New England OP-6 events. As such and based on the EPA ruling, Eversource is removing the Real Time Emergency Generator resources that do not qualify.

Demand reduction strategies targeting local system needs may also not be suitable for capacity market participation. Despite these hurdles, the Companies believe close cooperation with ISO New England's staff is important to maintain a mutual understanding of customer demands, demand reduction strategies, and how the strategies can impact infrastructure planning. The Companies will continue these interactions for the benefit of all customers throughout 2017 and 2018.

Time Varying Rates

Time Varying Rates are long-standing strategies used by electric utilities and regional electric system planners/operators to encourage customers to manage their demand. Most electric utility customers (especially residential) pay flat electric rates ($0.0X per kilowatt), meaning they are charged the same price for electricity regardless of when their consumption happens. By implementing a rate structure strategy, an electric utility can encourage customers to shift electrical consumption from on-peak demand hours (late morning through early evening) to off-

peak demand hours (nighttime or early morning hours). There are four general types of Time Varying Rates: Time-of-Use, Critical Peak Pricing, Real Time Pricing, and Peak Time Rebates.

Time-of-Use Rates (Static Rate Mechanism)

Time-of-Use rates are utilized to better align the price of electricity (paid by the customer) with the actual cost of electricity at the time it is generated (paid by the electric utility). During on-peak hours, electric utilities and system planners/operators incur significant costs to meet peak demand, particularly for supplementary resources (e.g., emergency generation) which operate only during peak demand scenarios. This demand resource strategy helps to reduce the strain on the regional electric grid's resources.

A Time-of-Use rate (summer and winter) typically has two prices for electricity which are predetermined and static—one for on-peak hours (e.g., 4-6 hours for summer weekday afternoons and 2 hours for winter weekday evenings) and another for off-peak hours (e.g., all other hours during the summer and/or winter). For customers who opt to sign up for Time-of-Use rates, the cost of electricity varies depending on the time of day and the season (summer or winter) in which they consume energy. Time-of-Use rates are designed to shift energy consumption away from on-peak hours to off-peak, thereby reducing the additional incurred costs of an electric utility or system planner/operator to provide the energy resources (e.g., generation and transmission).

Historically, this mechanism was used by electric utilities when they were vertically integrated, allowing an electrical utility to send both generation system and transmission/distribution system price signals to customers. In Connecticut, with utility restructuring and deregulation, generation price signals are set by electricity suppliers (not the Electric Companies), thereby greatly lessening the benefit and effect of Time-of-Use rates for the state's electric customers. Though customers have the opportunity to save money through this demand reduction strategy, Time-of-Use rates remain static, lack granularity in the signals they send to customers, often fail to convey real-time system constraints (e.g., weather and power plant failures), and need the right metering infrastructure in place to function properly.

Critical Peak Pricing and Real Time Pricing

As an attempt to solve some of the issues of static rate structures (Time-of-Use rates), electric utilities designed more dynamic pricing mechanisms, including Critical Peak Pricing and Real Time Pricing. These rates are considered dynamic as they are not pre-determined and can fluctuate considerably. Dynamic pricing programs are enabled by the investment in, and

installation of, smart meters or Advanced Metering Infrastructure ("AMI"). In Connecticut, United Illuminating has AMI technologies installed throughout their 17-town service territory, and also has Time Varying Rates. Eversource also has Time Varying Rates for customers; however, Eversource has not invested in system-wide AMI technologies. Eversource is focused on implementing and evaluating the residential and C&I pilots to see if demand reduction strategies are a more cost-effective mechanism to help customers reduce their energy demand.

Critical Peak Pricing is a dynamic rate mechanism that enables electric utilities to call critical demand reduction events when they foresee pending spikes in market electricity prices or extreme conditions on the electrical grid. These demand reduction events are either called for a predetermined time and duration (e.g., hot summer weekday from 3-5 pm) or can be variable depending upon the electric grid's conditions. During Critical Peak Pricing events, an electric utility's smart meters or AMI technologies record the amount of electricity used during the demand reduction event and customers are charged a considerably higher price for electricity ($/kilowatts) used during that time period.

This dynamic rate mechanism enables electric utilities and system planners/operators to transmit more granular price signals to the customer, informing them of weather or other factors driving peak demand. Though more effective than Time-of-Use rates, Critical Peak Pricing has an inherent weakness of being punitive rather than reinforcing. Critical Peak Pricing charges customers *more* during peak demand periods, essentially serving as a "stick" rather than a "carrot" approach. They can also have negative impacts on different customer market segments (e.g., the sick or elderly) that are more vulnerable to price fluctuations and who cannot adjust their electricity consumption to off-peak hours as they need medical assistance to help their quality of life (e.g., oxygen machines and dialysis equipment).

Real Time Pricing is the most variable of the dynamic rate structures. Under a Real Time Pricing mechanism, electric rates fluctuate hourly and are determined by real-time market prices. Customers who participate in Real Time Pricing rates typically receive nightly communications from their electric utility informing them of high-price time periods for electricity consumption during the following day. Customers can shift their electric consumption in advance to avoid high-price time periods, such as running their washing machines or dishwashers late at night rather than in the afternoon.

Discussion of Time Varying Rates

Due to the current electric rate structure in Connecticut, there are several issues that limit the effectiveness of promoting Time Varying Rates as an effective demand reduction tool for the

state's electric customers. First, the effectiveness of Time Varying Rates is directly linked to the differential between on-peak and off-peak prices. In Connecticut, this differential is limited by electric supplier rates that are either flat or non-time differentiated. Flat rates lack the critical signal required to motivate customers to change their energy usage habits and patterns. Any price-based rate must be developed with cost differentials between on-peak and off-peak hours that will truly incentivize customers to reduce their electric use in response to changes in electricity prices over time.

Time Varying Rates' price signals should also be paired with actionable insight and messaging to motivate customers to reduce their electric consumption. Behavioral messaging can reduce peak demand swiftly by empowering customers to save energy and earn rewards based on their reductions in electricity consumption. This type of messaging already exists and is known as Behavioral Demand Response. By converting smart meter or AMI data into real-time personalized energy insights, Behavioral Demand Response can produce reliable peak load reductions through the delivery of dynamic, personalized information that motivates customers to reduce their consumption during peak periods. The capability of bidding any Behavioral Demand Response savings in the FCM would have to be researched thoroughly.

A Behavioral Demand Response program that is properly structured holds the potential to serve as a more effective alternative to other Time Varying Rate mechanisms, in particular, providing greater energy savings for participants. As an alternative to Time Varying Rates, Behavioral Demand Response programs provides signals or "nudges" to customers in the form of energy-saving action tips (that are linked to reduction incentives) that have the potential to reduce electric demand within a targeted population. By providing targeted energy-saving messaging, Behavioral Demand Response programs can quickly reduce demand and empower customers to reduce and earn dollar rewards for each kilowatt reduced during a demand reduction event. In the next section, the Companies will describe a new pilot for 2017 that incorporates behavioral messaging with the fourth and final Time Varying Rate—Peak Time Rebates.

Peak Time Rebates

The fourth type of Time Varying Rates are Peak Time Rebates, and like Real Time Pricing and Critical Peak Pricing, are considered dynamic rate structures. Peak Time Rebates reward customers for responding to a price signal or demand reduction event called due to an anticipated spike in wholesale electricity prices or due to power system emergency conditions. However, unlike other Time Varying Rates, the price for electricity during peak demand time

periods remains stable and constant. Customers are not concerned about variable electric rates during on-peak and off-peak hours. Instead, customers participating in a Peak Time Rebate program receive a one-time, predetermined incentive for any reductions made to their average electrical consumption during a demand reduction event.

The Companies believe that Peak Time Rebates are the most viable Time Varying Rate structure option for Connecticut's electric customers. Instead of being punitive, Peak Demand Rebates merely incentivize customers to reduce their energy consumption, like all other programs in the Companies' Residential and C&I Program Portfolios. While programmatic in nature, there is no difference between the cost of giving customers an incentive for reducing demand (while other customers pay extra for that incentive) and a Time-of-Use rate customer who reduces their demand and is compensated for their demand reduction (while other customers pay a higher rate for not reducing their demand). Conducting a Peak Time Rebate pilot in Connecticut would help the Companies determine how to maximize the benefits of this Time Varying Rate, which has not previously been tested before in Connecticut. The next section describes a proposed Time Varying Rate pilot, testing Peak Time Rebates, for Connecticut customers in United Illuminating's service territory in 2018.

Peak Time Rebate Pilot (United Illuminating)

In 2017, United Illuminating will look to engage a third-party vendor to plan and deliver a residential Peak Time Rebate pilot by May 1, 2018. The pilot is expected to deliver annual residential peak reduction across United Illuminating's entire customer base. Peak Time Rebates will be combined with customized communications encouraging customers to reduce their electrical consumption during peak demand events.

For the pilot, United Illuminating will look to utilize the potential rate savings that a Time-of-Use customer could realize if they optimized their rate by shifting load from on-peak to off-peak. United Illuminating will then give the customer an incentive (Peak Time Rebate) for reducing load during a demand reduction event. Customers will react more favorably to being empowered to earn rewards for their efforts (based on event kilowatt reductions) as opposed to potentially earning incentives from shifting their usage to off-peak hours and a resulting bill reduction that customers do not understand or may struggle to change their habits.

The day before a forecasted peak event, customers will receive communications from United Illuminating alerting them to the peak event, encouraging them to reduce demand during the event, and giving customized advice regarding demand reduction actions to take. These

communications will be delivered via e-mail and phone calls. Customer participation is reinforced through personalized post-event communications. The day following an event, customers will receive insights from United Illuminating about how they performed during the peak event and tips to reduce their demand more during the next event. As a reward for event participation and energy reductions, customers will receive a dollar reward for each kilowatt reduced over a day's event.

United Illuminating will look to engage residential customers in the Peak Time Rebate pilot. Peak savings will be determined by a weather normalized baseline calculation of customer AMI data and a randomized control trial. United Illuminating is considering a peak time rebate incentive that would increase peak savings from 3 percent up to 15 percent based on prior vendor experience with similar pilots. A Peak Time Rebate pilot combined with Behavioral Demand Response messaging has many potential benefits beyond system utilization, which include improved customer sentiment and engagement, and an increased understanding of peak demand reduction events.

In order to evaluate the effectiveness of the Peak Time Rebate pilot, a vendor will be hired by United Illuminating to serve as a third-party reviewer of vendor-supplied, event-day data analytics. This vendor will be responsible for conducting an impact evaluation which will include a review and validation of the baseline approach and analysis methodology used to estimate demand savings (kW) associated with events. Beyond kilowatt reductions, the vendor will assess customer participation and opt-out rates in the Peak Time Rebate pilot. In addition to the impact evaluation, the vendor will conduct a process evaluation to assess customer engagement and satisfaction with the pilot. The vendor will be responsible for developing a final report, in collaboration with United Illuminating, which will include impact evaluation results, process evaluation findings, lessons learned, and recommended refinements to the Peak Time Rebate pilot. The current pilot budget includes the anticipated cost of hiring the third-party review vendor.

Active Demand Reduction Controls

Active Demand Reduction Controls, such as Wi-Fi thermostats and smart plugs, allow demand reductions to occur with minimal customer awareness of how these smart connected technologies are curbing their electric consumption. An Active Demand Reduction Control technology automates energy conservation behaviors, such as decreasing/increasing room temperature or turning appliances or electrical equipment on or off.

Active Demand Reduction Controls are a key component of the Companies' demand reduction strategies for the 2016-2018 Plan. The Companies are currently in the process of implementing two pilots designed to assess the capabilities of various smart and connected technologies to reduce customer demand. These pilots include: (1) a Wi-Fi Thermostat Pilot for central air conditioning systems, ground source heat pumps, and air source heat pumps (ducted), and (2) a Plug Load Control Pilot for room air conditioner units (and potentially dehumidifiers, water heaters, and pool pumps).

These pilots are designed to determine provider capabilities, industry best practices, customer acquisition barriers, customer performance, opt-out rates, and to assess and quantify the potential active demand reduction savings value associated with the use of Active Demand Reduction Controls. Currently, these pilots would not qualify for bidding into the FCM and Energy Markets, due to ISO New England's five-minute interval requirement. However, ISO New England has noted that it is open to discussing a "virtual meter" type methodology with electric utilities.

Wi-Fi Thermostat Pilots

The Companies' Wi-Fi Thermostat pilots are designed to harness the advancing technology of smart Wi-Fi thermostats which allow a wireless control of HVAC systems (central air conditioning, ground source heat pumps, and air source heat pumps), while helping decrease energy consumption and costs. Rather than being technology specific regarding Active Demand Reduction Controls, both of the Companies' Wi-Fi Thermostat pilots are designed as Bring Your Own Thermostat ("BYOT") initiatives, essentially meaning that a customer can purchase any qualified Wi-Fi thermostat from a retail shelf and bring it with them into the pilot. A BYOT initiative makes it the customer's responsibility to purchase a qualified thermostat, have it installed (either self-install or hire contractor of choice), and to enroll the thermostat into the pilot. The BYOT customer enrollment model results in lower program implementation costs and installation issues for the Companies.

A Wi-Fi thermostat transforms a central air conditioning, air source heat pump, or ground source heat pump into a smart networked device. It allows remote dispatch by the Companies to call an "event" to adjust a cooling/heating system and room temperatures via a cloud-based networking software. To be part of the pilot, all customers who have agreed to participate in a Wi-Fi Thermostat pilot have given their electric company (Eversource or United Illuminating) permission to make brief, limited adjustments to their central air conditioner, ground source

heat pump, and air source heat pump settings. Customers understand that they can override the settings at any time (e.g., opt-out and decrease/increase temperature settings).

The Companies will utilize several data sources to help them derive a dispatch plan, including ISO New England peak demand models, weather, pricing signals, and local electric grid issues. Reviewing available data, the Companies can determine when they need to trigger a "demand resource" event. In the case of the Wi-Fi Thermostat pilot, when the Companies call an "event," this would result in the third-party vendor making brief, limited adjustments (via the cloud-based networking software) to the temperature settings of enrolled customers' central air conditioners, ground source heat pumps, and air source heat pumps. Typically the duration of a demand resource event is a four-hour period.

In order to evaluate the effectiveness of the Wi-Fi Thermostat pilot, vendors will be hired by Eversource and United Illuminating, respectively, to serve as third-party reviewers of vendor-supplied, event-day data analytics. Each vendor will be responsible for conducting an impact evaluation which will include a review and validation of the baseline approach and analysis methodology used to estimate demand savings (kW) associated with events. Beyond kilowatt reductions, each vendor will assess customer participation and opt-out rates in their respective Wi-Fi Thermostat pilot. In addition to the impact evaluation, each vendor will conduct a process evaluation to assess customer engagement and satisfaction with each pilot.

The current pilot budgets for both Eversource and United Illuminating include the anticipated cost of hiring third-party review vendors. The Companies will work with the Energy Efficiency Board's Evaluation Committee to analyze the performance of the demand response pilots in an effort to determine the appropriate full-scale deployment.

Eversource

In 2016, Eversource issued a Request for Information ("RFI") to determine best practices and identify potential vendors for its demand reduction pilots. Information gleaned from the RFI helped formulate Eversource's Request for Proposal ("RFP") issued in mid-2016. After a competitive bid review, Eversource selected a vendor in August 2016 to provide implementation services. Residential customer acquisition was initiated in September 2016, and 2017 will be the first full program year of the pilot.

The goal of Eversource's Wi-Fi Thermostat pilot is to enroll 2,000 participants from September 2016 through July 2018. Eversource anticipates customer acquisition rates will peak between the

fall of 2016 through the spring of 2017 so that the majority of customers are enabled prior to May 1, 2017. The HES and HES-Income Eligible programs currently offer a Wi-Fi Enabled Thermostat rebate ($100 for HES and free for HES-Income Eligible. Eversource will encourage all Wi-Fi Thermostat pilot customers, if they have not previously done so, to participate in the HES or HES-Income Eligible programs.

Eversource's pilot incentive is not based on Time Varying Rates, and customers who enroll will receive a flat rate dispatch payment (incentive) of $25 per year of participation (and per qualified thermostat). A flat rate is a single fixed fee for program participation, regardless of a decrease (or increase) in energy consumption or performance. Customers will receive $5 of the flat rate incentive once they have successfully enrolled in the program and confirmed the installation of a qualifying Wi-Fi thermostat by registering/enrolling their device in the program. The additional $20 flat rate incentive will be disbursed at the end of each year the customer successfully participates in the pilot.

For the Wi-Fi Thermostat pilot, Eversource's Interruption Plan will include dispatch strategies associated with peak load relief and price mitigation. In 2016, Eversource conducted a small test demand reduction "event" where the third-party vendor made minor temperature adjustments (using the cloud-based networking system) to customer's Wi-Fi thermostats. This test event was conducted with a small pilot group. All program participants received a prior notification of an event and were given the ability to opt-out at any time. Eversource will use the data collected from this test event in the delivery of the full pilot in 2017.

In 2017, the pilot will continue to be marketed to current and previous participants in the HES or HES-Income Eligible programs. It will also be marketed to customers who have existing qualifying thermostats who will be encouraged to participate in the HES or HES-Income Eligible programs. Eversource will work closely with its implementation vendor to cross-market this program within the Residential Program Portfolio and the Clean Energy Communities program.

United Illuminating

In the late summer of 2016, United Illuminating contracted with a vendor to provide implementation services for its Wi-Fi Thermostat pilot. Program planning and design continued in late 2016 in preparation for a spring 2017 customer acquisition process and a May 1, 2017 pilot kick-off. United Illuminating residential customers with existing qualified Wi-Fi thermostats that control central air conditioning, ground source heat pumps, and air source heat pumps will

be targeted for pilot participation. The goal is to enroll approximately 2,000 thermostats in United Illuminating's service territory over the three-year pilot.

The incentive for United Illuminating's Wi-Fi Thermostat is not based on Time Varying Rates. United Illuminating offers a one-time flat $25 enrollment incentive and an annual $25 end of program season participation incentive. The incentive is not based on performance or energy savings, so it is considered a "flat rate." United Illuminating will work closely with its implementation vendor to cross-market this program within the Residential Program Portfolio.

Plug Load Control Pilots

The Plug Load Control pilots are designed to test the impacts of installing plug-based technologies to residential room air conditioner units, and potentially dehumidifiers and pool pumps. Room air conditioners are directly plugged into a home's electrical system, and unlike central air conditioning systems, these plug-in units cannot be controlled via a Wi-Fi thermostat. However, if a room air conditioner is plugged into a *smart outlet*, it can be remotely controlled, allowing for temperature setting and schedule modifications, and turning the units on and off. The same plug-based controls could potentially be used with dehumidifiers during the 2017 and 2018 program years.

In 2016, both of the Companies utilized similar pilot models: a smart outlet, a remote control unit, and a user-friendly, cloud-based networking platform, to aggregate, control, and analyze the power consumed by the load demand of room air conditioners. A smart plug transforms a simple room air conditioner into an Active Demand Reduction Control device. Through the pilot models, the Companies can call peak usage events and adjust multiple room air conditioner units' temperature settings through their respective cloud-based networking systems.

The Companies will utilize several data sources to help them derive a dispatch plan, including ISO New England peak demand models, weather, and local electric grid issues. Reviewing available data, the Companies can determine when they need to trigger a "demand resource" event. In the case of the Smart Plug Load Control pilots, when the Companies call an "event," this would result in their respective third-party vendors making brief, limited adjustments (via the cloud-based networking software) to the temperature settings of enrolled customers' room air conditioner units (and potentially dehumidifiers and pool pumps). Typically the duration of a demand resource event is a four-hour period.

As part of the pilot, all customers who have agreed to participate in a Plug Load Control pilot have given their electric company (Eversource or United Illuminating) permission to make brief,

limited adjustments to their room air conditioner settings and understand that they can override the settings at any time (e.g., opt-out and decrease/increase temperature settings).

Eversource

In August 2016, Eversource hired a third-party vendor, through its RFI/RFP process previously described in the Wi-Fi Thermostat pilot, to provide implementation services for its Plug Load Control pilot. Residential customer acquisition was initiated in September 2016, and 2017 will be the first full program year for the pilot. The goal of Eversource's Plug Load Control pilot is to enroll 1,250 air conditioning units from September 2016 through spring 2017 in time for the pilot to begin by May 1, 2017. Eversource anticipates that customer acquisition rates will peak during the fall of 2016 through the spring of 2017.

Eversource will ship out free, self-installed Smart Outlet kits to customers and perform follow-up to ensure the units were physically installed and operable. Customers who enroll in the program will receive a flat rate dispatch payment (incentive) of $20 per year of participation (and per qualified Smart Plug Load Control). Like the Wi-Fi Thermostat pilot, the Companies have designed a flat rate incentive that is not based on Time Varying Rates, performance, or energy savings.

Eversource will market the pilot to current and previous participants in the HES or HES-Income Eligible programs who have: (1) operable and working room air conditioners, (2) a home computer with Wi-Fi Internet connection, and (3) a smart phone. Eversource will work closely with its implementation vendor to further cross-market this program within the Residential Program Portfolio and the Clean Energy Communities program. Additionally Eversource is looking to include water heaters, dehumidifiers, and pool pumps.

For the Plug Load Control Pilot, Eversource's Interruption Plan will include dispatch strategies associated with peak load relief and price mitigation. In 2016, Eversource conducted a small test demand reduction "event" where the third-party vendor made minor temperature adjustments (using the cloud-based networking system) to room air conditioners. This test event was conducted with a small pilot group. All program participants received a prior notification of an event on their window A/C remote control and smart phone app and were given the ability to opt-out at any time. Eversource will use the data collected from this test event in the delivery of the full pilot in 2017.

In order to evaluate the effectiveness of the Plug Load Control pilot, a vendor will be hired by Eversource to serve as a third-party reviewer of vendor-supplied, event-day data analytics. This

vendor will be responsible for conducting an impact evaluation which will include a review and validation of the baseline approach and analysis methodology used to estimate demand savings (kW) associated with events. Beyond kilowatt reductions, the vendor will assess customer participation and opt-out rates in the Plug Load Control pilot. In addition to the impact evaluation, the vendor will conduct a process evaluation to assess customer engagement and satisfaction with the pilot. The vendor will be responsible for developing a final report, in collaboration with Eversource, which will include impact evaluation results, process evaluation findings, lessons learned, and recommended refinements to the Plug Load Control pilot. The current pilot budget includes the anticipated cost of hiring the third-party review vendor.

United Illuminating

In the summer of 2016, United Illuminating kicked off its Smart Plug Load Control pilot, targeting 1,250 room air conditioning units within its service territory. United Illuminating marketed the Smart Plug Load Control pilot to "My Account" (UIL's Customer Engagement Platform) customers who had identified they had room air conditioner(s) during online self-energy audits. The immediate response from customers was positive and the Smart Plug Load Control pilot was fully enrolled (all 1,250 goal units) in less than three weeks.

During the late spring and early summer of 2016, United Illuminating shipped out free, self-installed Smart Outlet kits to customers and performed follow-up to ensure the units were physically installed and operable. Customers enrolled in the program receive a flat rate dispatch payment (incentive) of $20 per year of participation (and per qualified Smart Plug Load Control). Participants received a $5 gift card once they had successfully enrolled in the program, and will receive an additional $15 gift card at the end of each cooling season if they stay connected and participate in the pilot. The incentive is not based on Time Varying Rates, and performance or energy savings, so it is considered a "flat rate."

For the summer of 2016, United Illuminating called several test events and two demand reduction events each coinciding with ISO New England's summer seasonal peak hours. Test events were called as a way to introduce participants to the pilot using shorter event windows and allowed United Illuminating to gather more information on participation and opt-out rates. During the test and demand reduction events to date, the third-party vendor made minor temperature adjustments (using a cloud-based networking system) to enrolled customers' room air conditioners. All program participants received a prior notification of an event on their room air conditioners' remote control and smart phone app, and were given the ability to opt-out at any time.

Demand reduction events were determined by a United Illuminating model that utilizes the ISO New England three-day system load forecast to predict summer seasonal peak hours ("ISO New England Seasonal Peak Prediction Model"). Real demand reduction events were called on days where United Illuminating's ISO New England Seasonal Peak Prediction Model anticipated ISO England's hourly loads to reach 90 percent of the 50/50 forecast.

Based on 2016 summer results, demand reductions have increased from event to event and can be attributed to the learning curve of pilot participants and increased customer engagement by the vendor. Other takeaways are that higher offsets and shorter event times lead to increased reductions and prolonged events that last up to four hours produce higher opt-out rates. Final results for pilot participants included an average reduction of 136 watts, an instantaneous reduction of 176 watts per device per event, and customer opt-outs in the 17 percent range. United Illuminating will continue to work with the pilot vendor to reduce opt-outs through the continual refining of customer engagement messages with each customer touch point.

Current pilot costs in Year 1 are $259 per customer, however, the annual cost drops to $107 per customer in subsequent years. These lower costs in future years represents the continual customer engagement required for year-over-year continued participation and maximizing the value of the investment made in the first year. Over the course of the pilot, United Illuminating will continually look for new and creative ways to increase program effectiveness and decrease costs. Potential areas to investigate will include: incorporating the value of the efficiency savings associated with the control and scheduling functions of the product, adding new controlled products under the pilot such as dehumidifiers, and the effects of transitioning from a small-scale pilot to a full-scale program.

The evaluation of the effectiveness of the Plug Load Control pilot is a straight-forward calculated average of all pilot participants and will be performed by the Plug Load Control pilot vendor. The pilot vendor's smart plug technology captures 5 minute interval load data on each window A/C unit which in turn is used to determine load reduction per each event. Beyond kilowatt reductions, the vendor will assess customer participation and opt-out rates in the Plug Load Control pilot. In addition to the impact evaluation, the vendor will conduct a customer satisfaction survey with all customers to assess customer engagement and satisfaction with the pilot. The vendor will be responsible for developing a final report, in collaboration with United Illuminating, which will include impact evaluation results, process evaluation findings, lessons learned, and recommended refinements to the Plug Load Control pilot. The current pilot budget includes the anticipated cost of hiring the third-party review vendor.

Integrated Demand Reduction Controls

For the 2016-2018 Plan, the Companies are focused on offering integrated energy-efficiency and demand response strategies ("Integrated Demand Reduction Controls") through several demand reduction pilot designs for C&I customers. In 2017, the Companies will begin acquiring customers for their respective C&I pilots. The Companies will also initiate testing the demand reduction capabilities of several types of Integrated Demand Reduction Controls across various C&I Market segments—small business, mid-market, and large C&I facilities. The Integrated Demand Reduction Controls explored will include: (1) advanced thermostat controls for HVAC systems and (2) advanced/smart energy management systems that sense, provide feedback, and use algorithms to monitor demand and provide *persistent* peak demand reductions. These C&I pilots should provide the Companies with enough data to determine if the deployment of full-scale integrated demand reduction and demand response technologies are feasible, economically viable, and reliable as resources to reduce energy demand.

Opportunities for Demand Reductions in C&I Buildings

In addition to helping ease the stress on New England's electric grid, the Companies' C&I pilots are designed to also help meet local electric system needs in Connecticut, both at the local substation/feeder level and for individual customers. A critical component in creating a demand management strategy is to understand how various customers use energy, and how their energy consumption can be modified without negatively impacting business operations or reducing customer comfort.

To understand the energy consumption of C&I customers, Eversource co-commissioned a study[46] in 2015, as part of its research analysis for the 2016-2018 Plan. The study examined how selected demand reduction measures, implemented at the building level, could affect building (average building kW and percent load reductions), feeder, and electric grid demand on a 2015 peak summer day in New England. Using a primarily simulation-based approach, the study explored the impact of several kinds of selected energy efficiency, demand response, load control, and on-site generation technologies.

The study focused on the following demand reduction strategies: automated demand response ("ADR"), automated load control ("ALC"), active and passive energy conservation measures ("ECMs"), and on-site generation. The study also evaluated the impact of these demand

[46] Demand Reduction Strategies: Potential Impact for Residential and Office Buildings on a 2015 ISO New England Peak Day. Study conducted by Fraunhofer USA Center for Sustainable Energy Systems for Eversource and National Grid. March 2016.

resource tools at different time intervals. Each of the study's demand resource tools had an impact on peak demand conditions on the electric grid; however, their demand reduction effects varied widely.

The study's commercial building simulations identified that lighting loads, cooling loads, and internal gains make up most of a commercial building's peak electric loads.[47] The study also found that some building's energy demands are not coincident with ISO New England's peak demand. From the simulations, several demand strategy opportunities for commercial office buildings were identified, including:

(1) Lighting retrofit and control strategies (8-26 percent average reduction of building load during ISO New England peak);
(2) Thermostat-based demand response, including Remote Terminal Unit cycling (8-12 percent of building load); and
(3) On-site generation (Combined Heat & Power = 42 percent of building load) or rooftop PV (19 percent of building load).

The Companies will focus on addressing some of these Integrated Demand Reduction Control strategies, particularly thermostat-based and Energy Management Systems, in the C&I pilots described in the following sections.

Small Business Pilots

Small businesses (typically 10 kW-200 kW demand) have many commonalities in the way they use energy. The Companies understand that for example, a chain restaurant has many similarities to other franchises regarding its energy consumption and demand. These similar energy demands allow the Companies to create a "restaurant persona" regarding what the best demand strategy opportunities are for the common building systems, operations, and resources throughout the restaurant market segment. Additional personas for other market segments can be derived, such as for craft stores, furniture stores and pharmacies. From this data, the Companies can design scalable demand resource strategies that address the energy demand traits common through a particular market segment.

[47] Demand Reduction Strategies: Potential Impact for Residential and Office Buildings on a 2015 ISO New England Peak Day, p. 6.

Eversource

In 2017, Eversource's Small Business pilot will work with up to five small businesses which have approximately 150 kW to 200 kW demand. The pilot will enroll customers willing to install inexpensive computerized thermostatic controllers on their rooftop HVAC and A/C systems. These advanced thermostat controls for HVAC systems will be connected to a cloud-based networking system, an Automated Demand Response technology, to reduce peak demand. The Automated Demand Response technology will allow Eversource's third-party vendor to view the status of all HVAC units, to remotely turn on/off the HVAC systems, set room temperatures, and to establish set points (e.g., setting range of thermostat temperatures for office hours/non-office hours). In 2017, Eversource will partner with individual technology providers to implement the Small Business pilot.

Eversource's Small Business pilot includes active load control (which is inherently not dispatch-able) and responsive demand (Demand Response) which does require dispatch. An Interruption Plan will be created for the responsive demand portion of the Small Business pilot. This Interruption Plan will include the current ISO New England dispatch requirements and an experimental component for assessing the dynamics of the more rigorous dispatch requirements that will take effect June 1, 2018.

Eversource may enroll additional customers that have existing infrastructure (e.g., software, controls, etc.) compatible with the Small Business pilot's design. This will allow Eversource to manage within the pilot's budget; while allowing more customers to participate. Eversource anticipates the enrollment of pilot customers and installation of Integrated Demand Reduction Controls prior to the 2017 summer event season.

United Illuminating

For the Small Business pilot, in 2017, United Illuminating will expand one of its existing Active Demand Reduction Control pilot platforms (the Wi-Fi Thermostat pilot) into the small C&I market segment. This expansion will include the use of the residential platform's existing software, thereby limiting the additional incurred costs to customer incentives. Participation requirements will be the same as the residential Wi-Fi Thermostat pilot.

In order to evaluate the effectiveness of the United Illuminating Wi-Fi Thermostat Small Business pilot, the same vendor utilized for United Illuminating's residential Wi-Fi Thermostat pilot will perform the third-party review of vendor-supplied, event-day data analytics. This vendor will be

responsible for conducting an impact evaluation which will include a review and validation of the baseline approach and analysis methodology used to estimate demand savings (kW) associated with events. Beyond kilowatt reductions, the vendor will assess customer participation and opt-out rates in the Wi-Fi Thermostat pilot. In addition to the impact evaluation, the vendor will conduct a process evaluation to assess customer engagement and satisfaction with the pilot. The vendor will be responsible for developing a final report, in collaboration with United Illuminating, which will include impact evaluation results, process evaluation findings, lessons learned, and recommended refinements to the Wi-Fi Thermostat pilot. The current pilot budget includes the anticipated cost of hiring the third-party review vendor.

Mid-Market Pilot (Eversource)

Eversource's 2017 Mid-Market pilot will investigate the unique demand resource needs of the C&I market segment—manufacturers. The manufacturing community, among individual customers, is unique regarding their energy demands, and it is impossible to address this market segment holistically with a sole demand resource strategy. The manufacturing sector is made up of multiple sub-segments which each use energy in very different manners and have varying demand strategy opportunities. Eversource's Mid-Market demand reduction pilot will be a nice complement to the C&I Program Portfolio's focused efforts in 2017 to reduce energy demand for the manufacturing sector.[48]

In 2017, Eversource's pilot will work with up to five mid-size manufacturers. The pilot will feature demand monitoring, an energy audit of each manufacturing facility, and an evaluation to determine which individual load (e.g., A/C load, HVAC load, and air drying equipment load), piece of equipment, or process can be "converted" to responsive demand. Demand monitoring allows the Companies and the manufacturer to truly capture which piece of equipment or process is causing spikes in energy demand. Once the source(s) of energy demand is determined, the Companies can focus on delivering a customized responsive demand solution to the manufacturer.

Eversource's Mid-Market demand reduction pilot includes active load control (which is inherently not dispatch-able) and response demand (Demand Response) which does require dispatch. An Interruption Plan will be created for the response demand portion of the Mid-Market demand reduction pilot. This Interruption Plan will include the current ISO New England

[48] 2017 Plan Update, pp. 22-24.

dispatch requirements and an experimental component for assessing the dynamics of the more rigorous dispatch requirements that will take effect June 1, 2018.

Eversource may enroll additional customers that have existing infrastructure (e.g., software, controls, etc.) compatible with the Mid-Market pilot's design. This will allow Eversource to manage within the pilot's budget; while allowing more customers to participate. Eversource anticipates the enrollment of Mid-Market pilot customers and installation of Integrated Demand Reduction Controls prior to the 2017 summer event season.

Large C&I Facilities

For these pilots, the Companies will consider geo-targeting areas across Connecticut that have been identified by ISO New England and other energy stakeholders as critical peak demand reduction areas. However, the demand reduction needs of Eversource and United Illuminating are typically at the distribution level, in contrast to ISO New England's demand response methodologies. The Companies will consider geo-targeting areas where distribution lines from the same substation have trouble meeting the local distribution system's peak demand (called "distressed feeders"). The Companies may also simulate "distressed feeder" conditions on non-congested circuits depending on customer acquisition issues. The Companies have determined that the C&I pilots' demand reduction efforts should focus on individual facilities (building level) rather than ISO New England demand response-targeted areas. Once the pilots' results have been analyzed, the Companies can determine how their demand reduction pilots can work with ISO New England demand response programs.

Large Facilities Pilot (Eversource)

Like its other C&I pilots, Eversource's Large Facilities pilot will employ significant automation, remote dispatch, and improved network management. In 2017, Eversource will focus on acquiring up to three large C&I facility customers who have existing controls and EMS controls in place. By engaging these customers in new demand reduction efforts, the Companies hope to augment existing controls for load duration curve mitigation to reduce billed demand. Additionally, the Large Facilities pilot should help Eversource identify ways to implement behavior-based load reduction strategies.

For example for a large hospital, Eversource would consider implementing advanced/smart energy management controls that sense, provide feedback, and use algorithms to monitor demand and provide *persistent* demand reduction control and *reliable* responsive demand controls for peak demand reduction. The integration of automated demand controls will provide

the hospital facility's operators with an understanding of the demand control concept, while facilitating their adoption of ECMs and behavior measures that further reduce peak load.

Eversource's Large Facilities pilot includes active load control (which is inherently not dispatch-able) and responsive demand (Demand Response) which does require dispatch. An Interruption Plan will be created for the response demand portion of the Large Facilities pilot. This Interruption Plan will include the current ISO New England dispatch requirements and an experimental component for assessing the dynamics of the more rigorous dispatch requirements that will take effect June 1, 2018.

Eversource may enroll additional customers that have existing infrastructure (e.g., software, controls, etc.) compatible with the Large Facilities pilot's design. This will allow Eversource to manage within the pilot's budget; while allowing more customers to participate. Eversource anticipates the enrollment of Large Facilities pilot customers and installation of Integrated Demand Reduction Controls prior to the 2017 summer event season.

Large Facilities Pilot (United Illuminating)

Additionally, geo-targeting could include identified distressed feeders (distribution lines out of a substation that have reached capacity) on local electrical circuits. United Illuminating is exploring an automated Demand Response Management System application for a distressed feeder (the Woodmont Substation) in Milford, Conn. The Demand Response Management System pilot will look to enhance distribution grid reliability while addressing a major customer acquisition barrier: IT data security. Since Demand Response Management System applications are integrated into a customer's Energy Management System, customers are wary of participating in demand reduction programs which could potentially expose their building and computer systems to IT security risks.

United Illuminating will address this customer acquisition barrier through customer education regarding IT security protocols associated with the Demand Response Management System and Energy Management System designs and data paths. Once the IT data security barrier has been resolved and several customers recruited to the pilot, United Illuminating will look to contract with a third-party provider for a turnkey pilot that is scalable for future growth and has the configuration capabilities to support multiple types of demand reduction events, such as emergency dispatch, economic dispatch, and rate-driven Time-of-Use rate features.

For demand reduction events initiated by United Illuminating, the Demand Response Management System would send an event signal over a secure private network and/or OpenADR Gateway to geo-targeted customers. This signal would initiate a sequence of demand reduction events or strategies (e.g., lower HVAC temperatures) to reduce energy consumption (kilowatts) at the customer's facility. Customers can determine at what levels they are willing to load shed and a web portal will allow them to view their own demand reductions and performance. Verifying demand reductions is straight forward and is accomplished with real-time information through the Demand Response Management System server to view aggregate and/or individual site reductions during demand reduction events.

Periodic Evaluation of Active and Integrated Demand Reduction Control Pilots

The Active Integrated Demand Reduction Control (Residential) and Integrated Demand Reduction Control (C&I) pilots will require a variety of evaluation and analytical support (e.g., customer enrollment, event dispatch, event performance, customer surveys, and program modifications) during their initial implementation periods in 2017 to best guide full-scale program design in the future and to respond to opportunities for adjustments during the pilot period in a timely manner. As such, the analytical and evaluation support costs are included in each pilot's budget and not in the Evaluation budget. The Companies will consult with the Energy Efficiency Board's Evaluation Committee and the Evaluation Administrator regarding the review of research questions, the scope/focus of evaluation activity on the front end, and the reporting and review of draft analytical and evaluation results on the performance of each pilot.

CHAPTER FOUR: EDUCATION, ENGAGEMENT, AND OUTREACH PROGRAM UPDATES

For the 2016-2018 Plan, the Companies realigned their educational and community programs into a comprehensive platform addressing three priority objectives: (1) educating children and students, (2) educating and developing the workforce, and (3) empowering the community through innovative and targeted outreach. For the purposes of the 2017 Plan Update, Chapter Four will review updates for only two of the three priority objectives—Number One and Number Three.

Tables 4-1 and 4-2, on the following two pages, detail the revised budgets for the Education, Engagement, and Outreach programs for 2017 and 2018.

Table 4-1: 2017 Educate CT Platform Annual Budget

Educate & Engage the Public	Total
Educate the Public	
Clean Energy Communities Programming	$ 1,475,653
Energize Connecticut Center Operations	$ 921,456
Other Museum Partnerships	$ 147,714
System Approach to Sustainable Energy Management**	$ 116,250
SEM for CT State University System; Sustainability & Climate Action**	$ 150,000
Total: Educate the Public	**$ 2,811,072**
Engage the Public	
Total: Customer Engagement	**$ 3,025,000**
TOTAL: EDUCATE & ENGAGE THE PUBLIC	$5,836,072
Educate the Students	**Total**
eesmarts Programming (Professional Development)*	$ 637,462
Project Learning Tree MOU (CT Forest & Park Association)	$ 6,257
eesmarts Student Contest*	$ 14,425
SEM and Coordination for K-12 Green LEAF Schools**[49]	$ 120,000
TOTAL: EDUCATE THE STUDENTS	$ 778,143
Educate the Workforce	**Total**
CT Clean Career Tech Program – Program Management (CBIA)[50]	$ 88,829
CT Clean Career Tech Program – Workshops, Trainings & Events[51]	$ 49,786
CT Clean Career Tech Program – CT Science & Engineering Fair[52]	$ 13,385
E-House Openings[53]	$ 15,344
E-House Upgrades[54]	$ 83,513
Higher Education Initiatives and Trainings[55]	$ 142,651
Innovation and Best Practices**	$ 71,250
TOTAL: EDUCATE THE WORKFORCE	$ 464,758
TOTAL EDUCATION, ENGAGEMENT & OUTREACH BUDGETS	**$ 7,078,973**

**These items will be included as services procured through a Competitive Procurement Process (RFP).*

*** These funds are part of the Institute of Sustainable Energy's 2017 budget. Some services are direct support of the programs and some are indirect (see Appendix E).*

[49] For the 2016-2018 Plan, this $120,000 was filed with the Educate the Workforce budget. For the 2017 Plan Update, the Companies have moved the $120,000 into the Educate the Students budget.
[50] Approved in the 2016-2018 Plan, pp. 439-443.
[51] Approved in the 2016-2018 Plan, pp. 439-443.
[52] Originally part of Educate the Students budget in the 2016-2018 Plan, p. 437. Now part of CCCTP for 2017/2018.
[53] Approved in the 2016-2018 Plan, pp. 438-439.
[54] Approved in the 2016-2018 Plan, pp. 438-439.
[55] Approved in the 2016-2018 Plan, pp. 444-448.

Table 4-2: 2018 Educate CT Platform Annual Budget

Educate & Engage the Public	Total
Educate the Public	
Clean Energy Communities Programming	$ 1,604,705
Energize Connecticut Center Operations	$ 876,186
Other Museum Partnerships	$ 146,429
System Approach to Sustainable Energy Management**	$ 77,500
SEM for CT State University System; Sustainability & Climate Action**	$ 100,000
Total: Educate the Public	**$ 2,804,820**
Engage the Public	
Total: Customer Engagement	**$ 3,025,000**
TOTAL: EDUCATE & ENGAGE THE PUBLIC	$5,829,820
Educate the Students	**Total**
eesmarts Programming (Professional Development)*	$ 637,560
Project Learning Tree MOU (CT Forest & Park Association)	$ 5,689
eesmarts Student Contest*	$ 14,357
SEM and Coordination for K-12 Green LEAF Schools**[56]	$ 80,000
TOTAL: EDUCATE THE STUDENTS	$ 737,606
Educate the Workforce	**Total**
CT Clean Career Tech Program – Program Management (CBIA)[57]	$ 100,563
CT Clean Career Tech Program – Workshops, Trainings & Events[58]	$ 104,821
CT Clean Career Tech Program – CT Science & Engineering Fair[59]	$ 8,590
E-House Openings[60]	$ 15,868
E-House Upgrades[61]	$ 86,641
Higher Education Initiatives and Trainings[62]	$ 147,564
Innovation and Best Practices**	$ 47,500
TOTAL: EDUCATE THE WORKFORCE	$ 511,547
TOTAL EDUCATION, ENGAGEMENT & OUTREACH BUDGETS	$ 7,078,973

**These items will be included as services procured through a Competitive Procurement Process (RFP).*

*** These funds are part of the Institute of Sustainable Energy's 2018 budget. Some services are direct support of the programs and some are indirect (see Appendix E).*

[56] For the 2016-2018 Plan, this $80,000 was filed with the Educate the Workforce budget. For the 2017 Plan Update, the Companies have moved the $80,000 into the Educate the Students budget.
[57] Approved in the 2016-2018 Plan, pp. 439-443.
[58] Approved in the 2016-2018 Plan, pp. 439-443.
[59] Originally part of Educate the Students budget in the 2016-2018 Plan, p. 437. Now part of CCCTP for 2017/2018.
[60] Approved in the 2016-2018 Plan, pp. 438-439.
[61] Approved in the 2016-2018 Plan, pp. 438-439.
[62] Approved in the 2016-2018 Plan, pp. 444-448.

Educate the Public: Community Engagement

Clean Energy Communities

Clean Energy Communities is a resilient, sustainable energy initiative focused on protecting the environment through community-centric, integrated solutions that promote energy efficiency and the conservation of natural resources. Like all sustainable development initiatives, the program helps Connecticut communities "meet the needs of the present without compromising the ability of future generations to meet their own needs."[63]

The Clean Energy Communities program works with a community in a holistic comprehensive manner to drive energy efficiency. Outreach is widespread across the community, and includes the grassroots (e.g., community residents, environmental organizations, and local energy task forces), midlevel managers (e.g., building, facilities, finance, purchasing, and public works departments), and the grasstops (e.g., mayor, first selectman, and city/town officials). Clean Energy Communities are efficient communities. Communities that embrace energy efficiency are more resource efficient as their reduced energy consumption demands less sources of energy—electricity, natural gas, petroleum, and propane—and other natural resources, such as water. The Clean Energy Communities program is a robust outreach platform designed by the Companies to engage community members at every level to make their town's or city's buildings—commercial, industrial, residential, and municipal—more energy efficient.

Municipal Outreach and Technical Support

The Companies are well-suited to guide Connecticut's communities to meet their energy-efficiency goals. Once the Clean Energy Communities pledge has been signed, the Companies' support engine kicks into full gear with administrators introducing the community to the Municipal Technical Assistance initiative. This critical component of the Clean Energy Communities program provides free EPA ENERGY STAR Portfolio Manager benchmarking, training, and education to municipal participants. The Portfolio Manager software enables municipalities to create a building-energy-use-portfolio for their municipal buildings (e.g., libraries, police stations, and town halls) and board of education buildings.

Community education is fundamental to the Municipal Technical Assistance initiative. The initiative is designed to be self-sustaining in order for municipalities and schools to maintain and monitor their own energy portfolios in the long term. In 2016, to streamline the benchmarking

[63] World Commission on Environment and Development. *Our Common Future*. 1987.

process, the Companies established an automated electronic transfer of monthly energy consumption data (electric and natural gas only) to the EPA ENERGY STAR Portfolio Manager account for each Clean Energy Community. Instead of devoting resources to energy consumption data entry, clean energy task forces and municipal staff can now focus on analyzing their energy consumption across their building portfolios and establishing next steps to improve energy efficiency.

The building performance data collected is useful for all community stakeholders; assisting them in collaborating together to determine their energy-saving actions. The Portfolio Manager software provides standard and custom reporting tools to drive well-informed and improved decision-making regarding energy purchasing, building operations and maintenance, on-site energy systems, and building systems.

Energy-Efficiency Expertise

Building energy consumption analysis helps a community determine which buildings are energy efficient and which ones may need technical assistance. The next programmatic step is to help a municipality and other community members craft a Municipal Action Plan ("MAP") charting the town's or city's course to reducing their energy consumption. The MAP identifies the actions needed to drive increased energy reductions across a community's building stock. The robust Clean Energy Communities platform supports a municipality's next steps, as the Companies seamlessly integrate the program with their C&I Solutions, initiatives, incentives and technical engineering support. Administrators connect a municipality to the Companies' C&I engineers and technical staff to provide the energy-efficiency expertise and guidance needed for a community to achieve their energy reduction goals.

Community Outreach Platform

The outreach of the Clean Energy Communities program typically begins at the grasstops level with the municipality's CEO (i.e., mayor, first selectman, or town manager). The reach of the program's administrators extends to all community levels, as a municipality's grassroots stakeholders are very often the true champions of energy efficiency in a community. The Clean Energy Communities team works with a diverse group of communities, from large urban municipalities whose midlevel managers hold the key to making a community efficient, to rural towns whose local energy task forces are a key ally of the communities' sustainable efforts.

From their extensive outreach conducted since 2011, the Companies recognize the variances needed in the delivery of the Clean Energy Communities program to individual communities.

Each community is unique. Some communities have long ago committed themselves to energy efficiency while others have just started down the path. From their extensive work with municipal officials, community stakeholders, businesses, and local energy task forces, the Companies have recognized that energy efficiency is not the sole sustainable issue facing Clean Energy Communities. While energy efficiency still plays an integral part of a community's sustainable endeavors, it may not be their current sustainable priority. These other sustainable issues being tackled by communities across Connecticut include: water conservation, sustainable agricultural practices, (e.g., organic and pesticide-free crops), land use development and conservation, electrification of transportation, recycling, walkable cities, and creating entire "no idling" communities.

The Clean Energy Communities model is successful in delivering the Companies' energy-efficiency expertise to municipalities across the state. Though the program was created to support energy reductions, the Companies recognize that this award-winning platform easily serves as a useful conduit to connect Clean Energy Communities to other sustainability stakeholders. The Companies understand that providing this connection will engage and empower Clean Energy Communities to achieve other sustainable goals through the expertise of related-field stakeholders and organizations. Thus, Clean Energy Communities will continue to receive the expertise and technical support from the Companies to drive energy efficiency, while also benefiting from third-party support for other sustainable endeavors in the community.

Progression to a Sustainable-Energy Community

In the 2016-2018 Plan,[64] the Companies launched their Community Levels concept; which categorizes and guides communities toward becoming energy-efficient and sustainable communities. A community can progress across four Community Levels: Bronze, Silver, Gold, and Sustainable-Energy. Progress is tracked by a community meeting specific program metrics, such as high levels of participation in energy-saving programs, community-wide energy-saving campaigns, energy benchmarking and reporting, energy reduction achievements, and ENERGY STAR rating qualifications. Communities who participate in other sustainable initiatives, such as greenhouse gas accounting and promoting carbon-friendly transportation, can also earn qualifications for their sustainable efforts and progress across the Community Levels.

[64] 2016-2018 Plan, pp. 420-421. Approved in the Final DEEP Approval.

Ongoing Collaborative Efforts

In mid-2016, the Companies, in coordination with DEEP, began hosting several stakeholder forums and meetings across the state. Their purpose was to identify collaborative efforts that could help improve the delivery of the Clean Energy Communities program and to help determine how stakeholders and Companies can engage in ongoing communication.

The Companies are committed to a process of continuous improvement for all energy-efficiency programs. Hence, throughout the remainder of 2016 and into 2017, the Companies will work with DEEP and other stakeholders to improve the Clean Energy Communities platform model to assist other sustainable initiatives. These collaborative efforts will include coordinating with other stakeholders to communicate other sustainable accomplishments and initiatives in a city or town. In 2017, in a continued spirit of partnership and collaboration, the Companies will hold regional workshops, forums, and presentations to promote energy efficiency and invite other stakeholders to speak on other environmental issues to create an ongoing sustainable dialogue amongst Clean Energy Communities.

Clean Energy Communities Dashboard

The Clean Energy Communities dashboard is a vital tool for the Companies to communicate with Clean Energy Communities, energy task forces, individuals, businesses, municipal leaders, policymakers, and environmental organizations regarding the most up-to-date program information. Viewers can access information regarding program points earned, status of Bright Idea Grants received, and energy task force information, etc. This communication tool has proven to be very popular, with more than 1,700 new visitors and 1,500 returning visitors viewing the Clean Energy Communities Dashboard homepage and town pages between January 1, 2016 and May 30, 2016.

Throughout 2016, the Companies continued to make updates to the Clean Energy Communities Dashboard, pending budget approval. In 2016, the Companies worked with a third-party vendor to implement Phase One of an update to the Clean Energy Communities Dashboard. This update included the addition of more user-friendly features, made updates to high-traffic (web) areas, and now includes more energy-efficiency-related data, including aggregated program participation levels, municipal and school energy reductions, MAPs, and carbon dioxide emission reductions.

Phase Two of the Clean Energy Communities Dashboard update was also launched in 2016. This phase focused on updating the individual town and city pages for all of Connecticut's 169

municipalities. The town pages are now more user-friendly and focus on participation percentage data for residential, business, and municipal customers rather than community-earned points. The tally of total Bright Idea Grant points earned for energy-efficiency program participation can still be found on each town page.

Each town page now features an Achievements Tab; a snapshot of the municipality's accomplishments in the Clean Energy Communities program including: the executed Clean Energy Communities pledge, redeemed Bright Idea Grants (descriptions of how the grants were used), the percentage of municipal buildings benchmarked, whether the community has created a Municipal Action Plan ("MAP"), and participation in a renewable/solarize campaign. Communities can even compare their energy-efficiency and renewable program participation levels with other towns and cities (up to three municipalities in side-by-side comparisons). Additional future work on the Clean Energy Communities Dashboard includes the development of public reports that aggregate energy consumption information on a municipality-wide basis.

The updated Clean Energy Communities Dashboard serves as an invaluable resource for Connecticut's resilient, sustainable communities. The new features allow the Companies to be flexible and to coordinate with DEEP's ongoing sustainability and climate change efforts. The Clean Energy Communities Dashboard also allows the Companies to work with other stakeholder groups to add new website tabs, features, communications, and program updates regarding other energy-related or sustainable initiatives. The Companies plan to continue to make necessary improvements and updates to the Clean Energy Communities Dashboard, pending budget approvals, in 2017 and 2018.

Educate Children and Students: Education Plan

Vision

The general public does not intentionally waste energy and harm the environment. Yet every day our natural resources are squandered, money is wasted, and our environment is harmed due to in-efficient utilization of energy. In order to create a world in which we wisely use our resources, we need to provide information to Connecticut's residents on the importance of using energy wisely, and build an energy-efficiency ethic. Creating a world of wise energy users is no small task, and requires a multi-faceted effort to reach energy users with an energy-efficiency message and reinforce that message over time. It is vitally important that building this ethic begins at a young age.

The three pillars of our educational efforts are to educate Connecticut's students, educate our work force, and educate the public through a variety of targeted strategies. The 2017 Plan Update refines that strategy as it relates to educating Connecticut's students on energy efficiency as well as how we engage communities in becoming wise energy users.

In order to build a life-long appreciation of the importance of energy in our daily lives, and the environmental impact associated with its use, it is important for us to engage Connecticut's school children at an early age. By building an understanding, and reinforcing that message throughout the educational process, our school children will have an awareness of energy issues not found in the general public. This educational effort will create informed consumers in the future who will view energy and environmental issues as second nature, and who will drive demand for energy-efficient products and services for decades to come.

The youth of our community are also an important messenger for delivering energy-efficiency information to their parents. They can be the best advocates for their family to take action regarding energy and environmental issues, and in that way drive energy-saving activities even in their early years. Through carefully crafted materials, the Companies can integrate these messages into the educational process and enhance that experience, rather than creating an additional burden to place on our educational community.

The information age has changed how we live and work. Consumer information is easily found in just a few clicks on the internet. Despite this ready access to information, Connecticut is still made up of 169 individual cities and towns, and each of them contains one or more communities of residents that look to their neighbors and community leaders for advice on a multitude of topics. Penetrating these communities with an energy-efficiency message is a critical tool for driving demand for energy-efficient products and services at the grassroots level in Connecticut. Driving program demand through "word of mouth" has been, and will continue to be a critical component of successful program implementation. There is no better messenger than a community leader, whoever that may be, to deliver information about energy-saving tactics to their neighbor.

Background

In response to Condition No. 4 of DEEP's Final Approval of the 2016-2018 Plan, the Companies, in consultation with the Energy Efficiency Board and DEEP, initiated a review process to clarify the roles and responsibilities of the Connecticut Energy Efficiency Fund, DEEP, and other stakeholders in providing energy education services for the public and for students. Two stakeholder forums were held in March and May 2016 to allow various organizations the opportunity to describe their entity's energy educational services, target markets, and prior

endeavors with the Companies' K-12 Education programs, and to gather recommendations and feedback from educators.

As part of the review process, the Companies have identified ways to tighten the focus of the K-12 education program on science, technology, engineering, arts and mathematics (STEAM)–based energy conservation, renewable energy, and energy-efficiency education, while leveraging existing open source and partner curricula regarding sustainability and climate change. Additionally, the Companies will ensure that the CT Green LEAF Schools program becomes integrated across all the Companies' energy-efficiency programs to help schools achieve the program's three sustainability pillars.

In early 2017, the Companies will issue an open, competitive process, a RFP for 2017-2018 educational services. In subsequent years, the RFP for educational services will follow the timing of the Conservation and Load Management Plan Cycle. The Companies will develop a vendor criteria matrix to determine the winning bid(s). The winning vendor(s) will work with the Companies to develop and administer the Companies' K-12 Education programs and services, including: (1) administrating and developing Strategic Energy Management and coordination for municipalities and school districts, (2) developing and conducting professional development for educators, including train-the-trainer workshops, (3) delivering targeted in-classroom lessons and outreach, (4) supporting the annual student contest, and (5) modernizing and updating lessons and materials.

The following is the Comprehensive K-12 Energy Education Plan in response to Condition No. 4 of DEEP's Final Approval of the 2016-2018 Plan.

Goals

The strategic objectives of the Connecticut Energy Efficiency Fund's K-12 Energy Education programs are: (1) to empower educators across Connecticut to teach energy, energy efficiency, alternative and renewable energy, and sustainability in their classrooms by providing relevant, standard aligned, STEAM-based curriculum, materials and training, (2) to support municipalities and school districts in becoming more sustainable, and (3) to engrain responsible energy behavior in future consumers at an early age through interactive and engaging hands-on lessons and activities. These objectives will be accomplished by achieving the goals outlined below:

To engage municipal officials, educators, administrators, and facilities personnel to work toward a more energy-efficient, sustainable schools.

- To provide relevant, modern, and valuable curriculum and training on energy, energy efficiency, climate change, and other related topics to educators that not only bring information and inquiry about these important topics into their classrooms, but help them meet statewide standards.
- To expand the reach and ensure the equitable distribution of program resources statewide, including to urban, distressed and hard-to-reach communities.
- To increase access to energy curriculum resources for high school (Grades 9-12) educators.
- To facilitate collaboration and connections among educators and organizations committed and dedicated to energy education.
- To provide educators with lessons and resources for school wide investigations through a partnership with Project Learning Tree™ Connecticut that empowers teachers and students to develop their own energy-saving and conservation plans/practices.
- To inspire K-12 students to be agents of change in their schools and communities and promote energy efficiency and alternative, renewable energy through healthy competition through an annual student contest.

Educate the Children and Students (K-12 Education)

Curriculum and Materials

The EnergizeCT energy-efficiency curriculum—*eesmarts™*—has provided educators across Connecticut with resources and knowledge to teach energy concepts in their classrooms for over a decade. The program provides educators with relevant materials that align with state educational standards and goals, and training to successfully implement inquiry based learning in their classrooms. In 2017 and 2018, the Companies will work with the educational community to enhance the curriculum by making updates and improvements identified through internal and external review and feedback.

Updates identified include: (a) modernizing and refreshing experiments, lessons, and material lists, (b) featuring new efficient technologies and specifications (e.g., replace CFLs with LEDs in lesson plans and explain lumens vs. watts), and (c) expanding the alignment with Next Generation Science Standards to fully meet their three dimensional learning model. A key element of the curriculum updates will be engaging educators in a collaborative approach to ensure updates meet real educator needs and perspectives. In 2017 and 2018, the Companies will focus on updating the lessons regarding renewable energy, energy efficiency and energy conservation, and will continue to partner with other educational organizations, like Project

Learning Tree, in order to deliver other sustainability topics, such as water conservation, air quality, and climate change to students and educators.

The Companies will make more of its lessons available for today's classroom environment. This includes making curriculum available online for download and making adjustments that will allow educators to use the materials on SmartBoards. The Companies will also utilize the existing *eesmarts* website platform, www.eesmarts.com, to promote videos that model lessons for educators, and to run a blog which will encourage continuous cross-collaboration among educators. The program will continue to provide educators with the material kits necessary to complete the curriculum inquires in their classroom.

The Companies will explore updating take-home elements of the curriculum to be bilingual—Spanish and English—and require the third-party vendor to be trained in culturally responsive teaching techniques. The Companies will pursue creating advanced coursework that will meet the needs of gifted and talented classes or honors courses through a competitive mini-grant process that would invite educators to submit proposals to develop inquiry-based curriculum on energy-related topics. The selected proposal(s) would receive a mini-grant to develop and pilot the curriculum in their classroom, which would then be shared with the Companies for use in the K-12 Education program.

Professional Development

A core competency of the K-12 Education program is its professional development ("PD") workshops for K-12 educators. These workshops are interactive and empower educators to take the lessons and inquiries directly into their classrooms with background knowledge and expertise. The majority of PD workshops have been held annually in July and August during the "Summer Institute," which offers multiple workshops in different regions of Connecticut. In 2017, the program will pilot workshops during the school year in a "Saturday Series" to allow more opportunities for educators to participate.

Additionally, the Companies will host train-the-trainer workshops for STEAM leads, department heads, and lead educators. These educators and/or administrators would be trained to provide PD on the *eesmarts* curriculum to educators in their schools and districts. Participants in "train the trainer" workshops would have to submit an application, and would receive a larger stipend than a normal PD workshop that would allow them to provide materials and train the teachers in their school or district. Trained facilitators would be required to report back on their completed workshops in their school/district. By implementing a "train-the-trainer" model, the K-12

program will be able to broaden its reach through a grass roots effort by leveraging the expertise of certified and experience classroom educators and fostering relationships with schools.

The Companies will continue to provide custom workshops for schools and districts that request it based on budget availability.

In-Class Lesson Delivery and Program Outreach

The K-12 Education program will continue to provide in-class lessons to K-12 classrooms in Connecticut using *eesmarts* and partner curriculums. In-class lessons are conducted by experienced educators and provide participants with the convenience of integrating energy-efficiency education into their classroom without having to plan lessons and collect materials. Administrators and educators can request an in-class lesson for their classroom/grade through the Companies, who work with educators to determine the best inquiry-based *eesmarts* and/or partner curriculums lessons. In-class lessons will be offered based on demand and budget, and will also target urban, distressed and hard-to-reach districts in an effort to increase the program's reach.

Program outreach will focus on the target market of educators and administrators with the goal of reaching more and more classrooms with energy efficiency lessons. Outreach may also include but is not limited to attending environmental or energy events, presenting lessons at educational conferences, meeting with curriculum coordinators, administrators, and science councils, attending STEAM Nights, and Scouting events, and collaborating with other Energize Connecticut programs.

Reaching Distressed Communities

Since 2013, the K-12 professional development workshops have been attended by educators who teach in 19 of the 25 municipalities classified as distressed communities by the State Department of Economic and Community Development. While the current program has reached a broad range of educators and students across various demographics, the Companies recognize the need for more targeted outreach to engage educators in hard-to-reach communities and make the K-12 education services more accessible and applicable to hard-to-reach populations. In the Comprehensive Education Plan, the Companies plan to require the third-party vendor to take the following steps to increase the penetration of distressed communities:

- Report on K-12 reach and statistics based on state demographics and identify opportunities for new schools, municipalities, and districts to approach with services, and conduct direct, targeted outreach to these areas.

- Employ at least one professional development facilitator and/or program classroom educator with bilingual capabilities.
- Provide training to professional development facilitators and program classroom educators on "culturally responsive" teaching techniques that will be integrated into professional development workshops to allow educators to bring these techniques back to their classrooms (see below for definition).
- Offer professional development workshops directly in hard-to-reach communities to make travel and transportation easier for participants.
- Evaluate current curriculum and develop bilingual elements where appropriate, for example, especially with take-home items.

For Reference: Culturally Responsive Teaching

Culture is central to learning. It plays a role not only in communicating and receiving information, but also in shaping the thinking process of groups and individuals. Culturally Responsive Teaching is a pedagogy that acknowledges, responds to, and celebrates fundamental cultures and offers full, equitable access to education for students from all cultures. It also recognizes the importance of including students' cultural references in all aspects of learning.[65] Some of the characteristics of culturally responsive teaching are:

1. Positive perspectives on parents and families;
2. Communication of high expectations;
3. Learning within the context of culture;
4. Student-centered instruction;
5. Culturally-mediated instruction;
6. Reshaping the curriculum; and
7. Teacher as facilitator.

Energy Education Roundtable

In 2017 and 2018, the Companies will continue the dialogue initiated through the 2016 discernment process. They will host an annual roundtable where other environmental education groups and organizations can share best practices, new curriculum, and outreach efforts with the Companies, DEEP, and other environmental education stakeholders.

[65] G. Ladson-Billings. The Dreamkeepers. San Francisco: Jossey-Bass Publishing Co., 1994.

Project Learning Tree Connecticut Partnership

The K-12 Education program will continue its partnership with Project Learning Tree ("PLT") to provide PD workshop opportunities to educators in Connecticut. PLT's GreenSchools! Investigations is a national environmental service-learning program that inspires students to take personal responsibility for improving the environment at their school, at home, and in their community. Students, educators, and school staff receive tools, training, and resources for student-led Green Teams to create healthier schools and save money.

PLT's GreenSchools! goals parallel the K-12 Education program's objectives for K-12 students, including: (1) the improvement of academic performance in STEAM-related fields, (2) the development of critical thinking skills, and (3) the growth of student leaders. The K-12 Education program uses three GreenSchools! Investigations: Energy, Waste and Recycling, and Water. The Energy Investigation combines foundational information from the eesmarts curriculum and challenges students to complete a school-wide energy assessment. The K-12 Education program also uses the Water and Waste and Recycling Investigations to teach students how to conduct sustainable audits of their school buildings. The partnership includes but is not limited to: (1) the Companies offering relevant PLT GreenSchools! Investigations workshops as a part of the PD workshop series, (2) K-12 Education Program PD facilitators receiving training on PLT curriculum, (3) cross promotion of the PLT and the Companies' education programs, and (4) a Company representative on the PLT Connecticut Steering Committee.

Connecticut Green LEAF Schools

Connecticut Green LEAF Schools is a collaborative partnership of four state agencies, Connecticut's Education, Energy and Environmental, Public Health, and Administrative Services agencies, and more than 30 education and environmental interest groups. The Connecticut program started in 2011, framed by the U.S. Department of Education's goals for their Green Ribbon initiative. The Green LEAF School program goals follow a broad view of sustainability, and encourage environmental and sustainability education, supporting health and wellness, and helping schools to measure and manage their facility's resource use. Connecticut Green LEAF Schools brings together all of the state's organizations who provide resources and programs on these sustainability issues.

The Connecticut Green LEAF Schools Steering Committee ("Steering Committee") will continue to be co-chaired by staff from the Connecticut Department of Education and from the Institute for Sustainable Energy at Eastern Connecticut State University. The Steering Committee has had up to 20 active members, representing the agencies, as well as representatives from more than

30 environmental- or education-focused organizations. Each member has both a personal interest in sustainability in Connecticut's schools, as well as sharing their professional services and programs. Representatives of the Companies' education programs will continue to serve as part of the Steering Committee.

In 2017 and 2018, the Institute for Sustainable Energy will continue to co-lead the Steering Committee with funding support from the Energy Efficiency Fund, as outlined in their 2017 and 2018 work plans and budgets.[66] The Steering Committee will continue to operate as a collaboration. The Companies will continue to integrate the sharing of the Connecticut Green LEAF Schools program information into their K-12 Education programs, expanding this networking opportunity with their participating schools.

The Steering Committee will continue to coordinate the applications for Connecticut schools for recognition as U.S. Department of Education Green Ribbon Schools, which recognizes schools, school districts, and institutions of higher education that meet these three pillars of sustainability:

- Pillar 1: Reduce environmental impact and costs;
- Pillar 2: Improve the health and wellness of schools, students, and staff; and
- Pillar 3: Provide environmental education.

The Steering Committee will make sure the over 100 currently committed schools, and any future schools, receive administrative support and guidance in meeting their commitment to the three sustainability pillars.

The Companies will coordinate benchmarking efforts and new construction/building renovations with the Companies' C&I programs, as well as the Clean Energy Communities program. Under its 2017 and 2018 Work Plans, the Institute of Sustainable Energy will coordinate with the Companies to provide benchmarking services to any Connecticut Green LEAF Schools not currently benchmarked through the Companies' Clean Energy Communities program. Funding for the Institute of Sustainable Energy will be tapered in 2017 and 2018, in anticipation of transitioning the Connecticut Green LEAF Schools budget support to other funding sources.

As with all other Connecticut Green LEAF Schools partner programs, schools will continue to be encouraged to incorporate *eesmarts* and Project Learning Tree (partner education program) lessons into the schools' curriculum to help them achieve the goals of Pillar Three.

[66] See Appendix E in the 2017 Plan Update.

The Companies recognize that connecting with educators through curriculum, professional development, and outreach is an essential "foot in the door" into schools that can benefit from energy-efficiency measures. Close coordination between the Connecticut Green LEAF Schools program, *eesmarts*, and other energy-efficiency programs is critical to the success of schools moving towards a greener education and facilities management model. Support of the Connecticut Green LEAF Schools program is a component of this comprehensive energy education plan that will ensure the broadest reach of all program components and resources

Annual Student Contest

The Companies plan to continue the annual Energize CT Student Contest in 2016-2018 and invite students to showcase their skills in science, arts, energy, mathematics, writing, and technology. The contest provides educators with STEAM curriculum topics on energy, the environment, sustainability, and climate change to integrate into their yearly lesson plans with a fun, competitive twist. The annual student contest encourages students to inspire their peers and communities to make changes and partake in energy saving, sustainable behaviors.

From K-2 creating posters on energy conservation, to Grades 9-11 creating a service learning project, each grade level prompt is standard aligned, and encourages action and creativity. In 2016 the contest had over 1,100 entries. Students are asked to answer grade-level prompts regarding efficient and renewable topics and technologies in a variety of formats, including: posters depicting energy-saving ideas and Wait 'til 8, presidential speeches, plays, song lyric rewrites, limericks regarding the 3 R's (Reduce, Reuse & Recycle), formal plans for service-learning projects or energy improvements to students' high school buildings. The contest is open to all Connecticut students, all prompts are aligned with state curriculum standards and can be easily integrated into teacher's lesson plans, and encourages action and creativity.

In 2013, the Companies streamlined the Student Contest entry process though an online portal. The Companies will continue to take entries online only for Grades 3-12 and College, and to receive Grades K-2 entries (posters) via US mail. Finalists are honored at a special awards ceremony held at the Connecticut State Capitol.

Connecticut Science & Engineering Fair

In 2017 and 2018, Energize Connecticut will continue its seven-year partnership with the annual Connecticut Science & Engineering Fair. This partnership will be integrated with the Connecticut Clean Career Tech Program ("CCTP"), a workforce development partnership between the

Companies, Energize Connecticut, Connecticut Technical High School System ("CTHSS"), Connecticut Business & Industry Association, and other industry stakeholders. The CCTP was approved as part of the 2016-2018 Plan's *Educate the Workforce* goals.[67] Grade 11 and Grade 12 CTHSS students participating in the CCTP will submit original sustainable solutions projects to a special CTHSS-designated category (applied sustainable technologies).

[67] 2016-2018 Plan, pp. 439-443

CHAPTER FIVE: BUDGET SUMMARY of the 2017, 2018 and 2019 PROGRAM YEARS

Consistent with prior years, the Companies will file updated Budget, Savings, and Performance Management Exhibits on or before March 1, 2017 that will include the 2016 actual year-end results, 2016 carry-over/(carry-under) funding into 2017, updated revenue forecasts, and budgets and goals for 2017 and 2018.

The Companies note that there are several changes to the 2017, 2018, and 2019 budgets. The Companies have shifted budgets dollars to support the implementation of its Demand Resource Strategies Portfolio (described in Chapter Three) for residential and C&I customers. A new line item has been added to reflect this budget allocation. For the Companies' Residential Program Portfolio, Eversource's (Natural Gas) budgets have been shifted to support the addition of a Home Energy Reports program for natural gas customers beginning in 2017. Eversource has also adjusted and reallocated its residential program budgets between the HES and HVAC and Domestic Hot Water programs.

Other budget changes include increasing Eversource's IT budget for Measurement & Verification 2.0, and to support the Clean Energy Communities program in providing an automated electronic transfer of monthly energy consumption data (electric and natural gas only) to the EPA ENERGY STAR Portfolio Manager account of each Connecticut municipality. For the 2016-2018 Plan, United Illuminating had already budgeted for Portfolio Manager and IT support. In compliance with DEEP's May 2016 Resolution, the Companies have reduced the Institute for Sustainable Energy budgets for 2017 and 2018, and reallocated those funds to other Education programs (see Chapter Four[68]). The Companies have also prorated program budgets based on parity. All budgets and savings changes will be incorporated into the Performance Management Incentive ("PMI") exhibits that will be filed on March 1, 2017.

[68] 2017 Plan Update, pp. 48-49.

2017 Combined Budget Tables

Statewide EE BUDGET	2017 Eversource CT Electric Proposed Budget 10/01/16	2017 UI Proposed Budget 10/01/16	2017 Eversource CT Gas Proposed Budget 10/01/16	2017 CNG Proposed Budget 10/01/16	2017 SCG Proposed Budget 10/01/16	2017 Statewide Combined Total 10/01/16
RESIDENTIAL						
Residential Retail Products	$ 14,131,204	$ 3,382,320	$ -	$ -	$ -	$ 17,513,524
Total - Consumer Products	**$ 14,131,204**	**$ 3,382,320**	**$ -**	**$ -**	**$ -**	**$ 17,513,524**
Residential New Construction	$ 2,384,823	$ 799,535	$ 1,175,038	$ 785,798	$ 846,192	$ 5,991,386
Home Energy Solutions - Core Services	$ 19,175,131	$ 3,654,576	$ 3,347,161	$ 3,311,343	$ 1,834,793	$ 31,323,004
Home Energy Solutions - HVAC, Water Heaters	$ 2,816,221	$ 891,176	$ 1,794,640	$ 1,683,791	$ 1,243,505	$ 8,429,333
HES Income Eligible	$ 18,281,621	$ 4,052,220	$ 6,150,227	$ 3,990,865	$ 2,727,862	$ 35,202,794
Residential Behavior	$ 2,861,027	$ 484,354	$ 601,000	$ 157,486	$ 123,518	$ 4,227,385
Subtotal Residential	**$ 59,650,026**	**$ 13,264,181**	**$ 13,068,066**	**$ 9,929,283**	**$ 6,775,870**	**$ 102,687,427**
COMMERCIAL & INDUSTRIAL						
C&I LOST OPPORTUNITY						
Energy Conscious Blueprint	$ 14,463,652	$ 4,739,364	$ 4,102,989	$ 2,307,606	$ 1,525,410	$ 27,139,021
Total - Lost Opportunity	**$ 14,463,652**	**$ 4,739,364**	**$ 4,102,989**	**$ 2,307,606**	**$ 1,525,410**	**$ 27,139,021**
C&I LARGE RETROFIT						
Energy Opportunities	$ 38,014,176	$ 7,752,127	$ 2,653,214	$ 1,317,458	$ 999,469	$ 50,736,444
Business & Energy Sustainability (O&M, RetroCx, BSC, PRIME)	$ 5,712,712	$ 1,804,431	$ 583,773	$ 689,130	$ 259,097	$ 9,049,143
Total - C&I Large Retrofit	**$ 43,726,888**	**$ 9,556,558**	**$ 3,236,986**	**$ 2,006,588**	**$ 1,258,566**	**$ 59,785,587**
Small Business	$ 17,081,555	$ 4,792,909	$ 333,142	$ 222,743	$ 225,542	$ 22,655,890
Subtotal C&I	**$ 75,272,095**	**$ 19,088,831**	**$ 7,673,117**	**$ 4,536,937**	**$ 3,009,518**	**$ 109,580,498**
OTHER - EDUCATION & ENGAGEMENT						
Educate the Public	$ 1,835,878	$ 411,872	$ 191,167	$ 186,077	$ 186,077	$ 2,811,071
Customer Engagement	$ 1,968,000	$ 475,000	$ 282,000	$ 150,000	$ 150,000	$ 3,025,000
Educate the Students	$ 459,069	$ 160,823	$ 47,830	$ 55,211	$ 55,211	$ 778,143
Educate the Workforce	$ 299,597	$ 75,941	$ 31,267	$ 28,977	$ 28,977	$ 464,758
Subtotal Education & Engagement	**$ 4,562,544**	**$ 1,123,637**	**$ 552,264**	**$ 420,264**	**$ 420,264**	**$ 7,078,973**
OTHER - PROGRAMS/REQUIREMENTS						
Residential Loan Program (Includes ECLF and OBR)*	$ 1,453,121	$ 390,602	$ 145,083	$ 186,292	$ 186,292	$ 2,361,390
C&I Financing Support	$ 4,000,000	$ 74,234	$ 126,084	$ 75,000	$ 75,000	$ 4,350,318
Research, Development & Demonstration	$ 442,000	$ 232,692	$ 50,000	$ 50,000	$ 50,000	$ 824,692
Subtotal Programs/Requirements	**$ 5,895,121**	**$ 697,528**	**$ 321,167**	**$ 311,292**	**$ 311,292**	**$ 7,536,400**
OTHER - LOAD MANAGEMENT						
ISO Load Response Program	$ 4,357,000	$ -	$ -	$ -	$ -	$ 4,357,000
Residential Demand Response	$ 1,200,000	$ 887,880	$ -	$ -	$ -	$ 2,087,880
C&I Demand Response	$ 500,000	$ 139,630	$ -	$ -	$ -	$ 639,630
Subtotal Load Management	**$ 6,057,000**	**$ 1,027,510**	**$ -**	**$ -**	**$ -**	**$ 7,084,510**
OTHER - ADMINISTRATIVE & PLANNING						
Administration	$ 907,271	$ 589,824	$ 119,220	$ 142,626	$ 142,626	$ 1,901,567
Marketing Plan	$ 778,154	$ 194,538	$ 81,058	$ 81,058	$ 81,058	$ 1,215,866
Planning	$ 703,170	$ 302,913	$ 80,000	$ 123,720	$ 123,720	$ 1,333,523
Evaluation Measurement and Verification	$ 1,920,000	$ 480,000	$ 200,000	$ 200,000	$ 200,000	$ 3,000,000
Evaluation Administrator	$ 192,000	$ 48,000	$ 20,000	$ 20,000	$ 20,000	$ 300,000
Information Technology	$ 1,838,112	$ 461,938	$ 133,333	$ 139,291	$ 139,291	$ 2,711,966
Energy Efficiency Board Consultants	$ 312,001	$ 208,000	$ 43,333	$ 43,333	$ 43,333	$ 650,000
Audits - Financial and Operational	$ 98,000	$ 24,000	$ 10,000	$ 10,000	$ 10,000	$ 152,000
Performance Management Incentive (PMI)	$ 6,697,298	$ 1,582,313	$ 944,700	$ 675,090	$ 476,155	$ 10,375,556
Admin/Planning Expenditures	**$ 13,446,006**	**$ 3,891,526**	**$ 1,631,644**	**$ 1,435,118**	**$ 1,236,183**	**$ 21,640,477**
TOTAL	**$ 164,882,792**	**$ 39,093,213**	**$ 23,246,258**	**$ 16,632,894**	**$ 11,753,127**	**$ 255,608,285**

2017 Combined Budget Tables - Delta

Statewide EE BUDGET	2017 Eversource CT Electric Proposed Budget 10/01/16	2017 UI Proposed Budget 10/01/16	2017 Eversource CT Gas Proposed Budget 10/01/16	2017 CNG Proposed Budget 10/01/16	2017 SCG Proposed Budget 10/01/16	2017 Statewide Combined Total 10/01/16
RESIDENTIAL						
Residential Retail Products	$ (855,637)	$ (334,024)	$ -	$ -	$ -	$ (1,189,661)
Total - Consumer Products	**$ (855,637)**	**$ (334,024)**	**$ -**	**$ -**	**$ -**	**$ (1,189,661)**
Residential New Construction	$ (144,400)	$ 299,535	$ (69,962)	$ 187,355	$ 95,402	$ 367,930
Home Energy Solutions - Core Services	$ (820,081)	$ (159,465)	$ (536,075)	$ (288,014)	$ (91,003)	$ (1,894,637)
Home Energy Solutions - HVAC, Water Heaters	$ 293,380	$ (24,641)	$ (106,854)	$ 26,378	$ (120,277)	$ 67,987
HES Income Eligible	$ (188,868)	$ (185,455)	$ (366,187)	$ 74,860	$ (34,827)	$ (700,477)
Residential Behavior	$ (173,234)	$ (577)	$ 601,000	$ 16,920	$ 16,920	$ 461,029
Subtotal Residential	**$ (1,888,839)**	**$ (404,626)**	**$ (478,078)**	**$ 17,499**	**$ (133,785)**	**$ (2,887,829)**
COMMERCIAL & INDUSTRIAL						
C&I LOST OPPORTUNITY						
Energy Conscious Blueprint	$ (265,167)	$ 35,660	$ (244,294)	$ (92,650)	$ 37,628	$ (528,823)
Total - Lost Opportunity	**$ (265,167)**	**$ 35,660**	**$ (244,294)**	**$ (92,650)**	**$ 37,628**	**$ (528,823)**
C&I LARGE RETROFIT						
Energy Opportunities	$ (1,905,848)	$ (108,583)	$ (210,950)	$ 46,314	$ 38,053	$ (2,141,015)
Business & Energy Sustainability (O&M, RetroCx, BSC, PRIME)	$ (104,733)	$ (608,200)	$ (34,758)	$ (22,170)	$ 8,097	$ (761,764)
Total - C&I Large Retrofit	**$ (2,010,581)**	**$ (716,783)**	**$ (245,709)**	**$ 24,144**	**$ 46,150**	**$ (2,902,779)**
Small Business	$ (313,162)	$ (173,258)	$ 33,142	$ (19,966)	$ (20,968)	$ (494,215)
Subtotal C&I	**$ (2,588,911)**	**$ (854,381)**	**$ (456,861)**	**$ (88,474)**	**$ 62,810**	**$ (3,925,817)**
OTHER - EDUCATION & ENGAGEMENT						
Educate the Public	$ 11,232	$ (44,290)	$ 1,100	$ (3,990)	$ (3,990)	$ (39,938)
Customer Engagement	$ -	$ -	$ -	$ -	$ -	$ -
Educate the Students	$ 46,833	$ 57,764	$ 4,889	$ 12,270	$ 12,270	$ 134,026
Educate the Workforce	$ (58,065)	$ (13,475)	$ (5,989)	$ (8,279)	$ (8,279)	$ (94,088)
Subtotal Education & Engagement	**$ (0)**	**$ (0)**	**$ 0**	**$ 0**	**$ 0**	**$ 0**
OTHER - PROGRAMS/REQUIREMENTS						
Residential Loan Program (Includes ECLF and OBR)*	$ -	$ 8,042	$ -	$ -	$ -	$ 8,042
C&I Financing Support	$ 126,519	$ -	$ -	$ -	$ -	$ 126,519
Research, Development & Demonstration	$ -	$ -	$ -	$ -	$ -	$ -
Subtotal Programs/Requirements	**$ 126,519**	**$ 8,042**	**$ -**	**$ -**	**$ -**	**$ 134,561**
OTHER - LOAD MANAGEMENT						
ISO Load Response Program	$ 887,250	$ (532,866)	$ -	$ -	$ -	$ 354,384
Residential Demand Response	$ 1,200,000	$ 887,880	$ -	$ -	$ -	$ 2,087,880
C&I Demand Response	$ 500,000	$ 139,630	$ -	$ -	$ -	$ 639,630
Subtotal Load Management	**$ 2,587,250**	**$ 494,644**	**$ -**	**$ -**	**$ -**	**$ 3,081,894**
OTHER - ADMINISTRATIVE & PLANNING						
Administration	$ -	$ 49,583	$ -	$ 21,297	$ 21,297	$ 92,177
Marketing Plan	$ -	$ -	$ -	$ -	$ -	$ -
Planning	$ -	$ 46,083	$ -	$ 43,720	$ 43,720	$ 133,523
Evaluation Measurement and Verification	$ -	$ -	$ -	$ -	$ -	$ -
Evaluation Administrator	$ -	$ -	$ -	$ -	$ -	$ -
Information Technology	$ 500,000	$ 11,938	$ -	$ 5,958	$ 5,958	$ 523,854
Energy Efficiency Board Consultants	$ -	$ -	$ -	$ -	$ -	$ -
Audits - Financial and Operational	$ -	$ -	$ -	$ -	$ -	$ -
Performance Management Incentive (PMI)	$ (53,720)	$ (27,571)	$ (39,735)	$ -	$ -	$ (121,026)
Admin/Planning Expenditures	**$ 446,280**	**$ 80,033**	**$ (39,735)**	**$ 70,975**	**$ 70,975**	**$ 628,528**
TOTAL	**$ (1,317,701)**	**$ (676,289)**	**$ (974,674)**	**$ 0**	**$ 0**	**$ (2,968,663)**

2018 Combined Budget Tables

Statewide EE BUDGET	2018 Eversource CT Electric Proposed Budget 10/01/16	2018 UI Proposed Budget 10/01/16	2018 Eversource CT Gas Proposed Budget 10/01/16	2018 CNG Proposed Budget 10/01/16	2018 SCG Proposed Budget 10/01/16	2018 Statewide Combined Total 10/01/16
RESIDENTIAL						
Residential Retail Products	$ 15,531,579	$ 3,700,334	$ -	$ -	$ -	$ 19,231,913
Total - Consumer Products	**$ 15,531,579**	**$ 3,700,334**	**$ -**	**$ -**	**$ -**	**$ 19,231,913**
Residential New Construction	$ 2,584,941	$ 799,535	$ 1,241,858	$ 785,798	$ 846,192	$ 6,258,324
Home Energy Solutions - Core Services	$ 18,366,515	$ 4,097,124	$ 3,875,399	$ 3,432,207	$ 2,108,535	$ 31,879,780
Home Energy Solutions - HVAC, Water Heaters	$ 3,116,733	$ 980,414	$ 1,902,351	$ 1,733,628	$ 1,867,877	$ 9,601,002
HES Income Eligible	$ 19,086,189	$ 4,501,652	$ 6,867,996	$ 4,121,337	$ 3,614,504	$ 38,191,678
Residential Behavior	$ 3,161,326	$ 333,157	$ 512,000	$ 258,413	$ 258,414	$ 4,523,311
Subtotal Residential	**$ 61,847,283**	**$ 14,412,216**	**$ 14,399,604**	**$ 10,331,383**	**$ 8,695,522**	**$ 109,686,008**
COMMERCIAL & INDUSTRIAL						
C&I LOST OPPORTUNITY						
Energy Conscious Blueprint	$ 15,382,982	$ 5,084,247	$ 5,692,034	$ 2,430,508	$ 2,109,520	$ 30,699,291
Total - Lost Opportunity	**$ 15,382,982**	**$ 5,084,247**	**$ 5,692,034**	**$ 2,430,508**	**$ 2,109,520**	**$ 30,699,291**
C&I LARGE RETROFIT						
Energy Opportunities	$ 42,056,891	$ 8,437,440	$ 3,447,032	$ 1,382,879	$ 1,086,820	$ 56,411,062
Business & Energy Sustainability (O&M, RetroCx, BSC, PRIME)	$ 6,128,775	$ 2,085,292	$ 672,603	$ 724,967	$ 414,654	$ 10,026,292
Total - C&I Large Retrofit	**$ 48,185,666**	**$ 10,522,732**	**$ 4,119,635**	**$ 2,107,846**	**$ 1,501,474**	**$ 66,437,353**
Small Business	$ 18,199,302	$ 5,183,390	$ 452,741	$ 234,303	$ 274,218	$ 24,343,954
Subtotal C&I	**$ 81,767,950**	**$ 20,790,369**	**$ 10,264,411**	**$ 4,772,657**	**$ 3,885,212**	**$ 121,480,599**
OTHER - EDUCATION & ENGAGEMENT						
Educate the Public	$ 1,818,361	$ 418,287	$ 190,066	$ 189,115	$ 188,990	$ 2,804,820
Customer Engagement	$ 1,968,000	$ 475,000	$ 282,000	$ 150,000	$ 150,000	$ 3,025,000
Educate the Students	$ 433,469	$ 154,423	$ 45,164	$ 52,275	$ 52,275	$ 737,606
Educate the Workforce	$ 342,713	$ 75,926	$ 35,034	$ 28,874	$ 28,999	$ 511,547
Subtotal Education & Engagement	**$ 4,562,544**	**$ 1,123,637**	**$ 552,264**	**$ 420,264**	**$ 420,264**	**$ 7,078,973**
OTHER - PROGRAMS/REQUIREMENTS						
Residential Loan Program (Includes ECLF and OBR)*	$ 1,453,121	$ 390,602	$ 145,083	$ 186,292	$ 186,292	$ 2,361,390
C&I Financing Support	$ 4,000,000	$ 74,234	$ 111,346	$ 75,000	$ 75,000	$ 4,335,580
Research, Development & Demonstration	$ 442,000	$ 232,692	$ 50,000	$ 50,000	$ 50,000	$ 824,692
Subtotal Programs/Requirements	**$ 5,895,121**	**$ 697,528**	**$ 306,429**	**$ 311,292**	**$ 311,292**	**$ 7,521,662**
OTHER - LOAD MANAGEMENT						
ISO Load Response Program	$ 2,307,000	$ -	$ -	$ -	$ -	$ 2,307,000
Residential Demand Response	$ 1,200,000	$ 887,880	$ -	$ -	$ -	$ 2,087,880
C&I Demand Response	$ 597,690	$ 139,630	$ -	$ -	$ -	$ 737,320
Subtotal Load Management	**$ 4,104,690**	**$ 1,027,510**	**$ -**	**$ -**	**$ -**	**$ 5,132,200**
OTHER - ADMINISTRATIVE & PLANNING						
Administration	$ 907,271	$ 589,822	$ 119,220	$ 142,627	$ 142,626	$ 1,901,566
Marketing Plan	$ 778,154	$ 194,538	$ 81,058	$ 81,058	$ 81,058	$ 1,215,866
Planning	$ 703,170	$ 302,913	$ 80,000	$ 123,720	$ 123,720	$ 1,333,523
Evaluation Measurement and Verification	$ 1,920,000	$ 480,000	$ 200,000	$ 200,000	$ 200,000	$ 3,000,000
Evaluation Administrator	$ 192,000	$ 48,000	$ 20,000	$ 20,000	$ 20,000	$ 300,000
Information Technology	$ 1,838,112	$ 461,938	$ 133,333	$ 139,291	$ 139,291	$ 2,711,966
Energy Efficiency Board Consultants	$ 312,001	$ 208,000	$ 43,333	$ 43,333	$ 43,333	$ 650,000
Audits - Financial and Operational	$ 98,000	$ 24,000	$ 10,000	$ 10,000	$ 10,000	$ 152,000
Performance Management Incentive (PMI)	$ 7,394,593	$ 1,803,621	$ 1,176,134	$ 743,503	$ 629,954	$ 11,747,805
Admin/Planning Expenditures	**$ 14,143,301**	**$ 4,112,832**	**$ 1,863,079**	**$ 1,503,532**	**$ 1,389,982**	**$ 23,012,725**
TOTAL	**$ 172,320,889**	**$ 42,164,092**	**$ 27,385,786**	**$ 17,339,128**	**$ 14,702,272**	**$ 273,912,167**

2018 Combined Budget Tables – Delta

Statewide EE BUDGET	2018 Eversource CT Electric Proposed Budget 10/01/16	2018 UI Proposed Budget 10/01/16	2018 Eversource CT Gas Proposed Budget 10/01/16	2018 CNG Proposed Budget 10/01/16	2018 SCG Proposed Budget 10/01/16	2018 Statewide Combined Total 10/01/16
RESIDENTIAL						
Residential Retail Products	$ 647,780	$ 86,595	$ -	$ -	$ -	$ 734,375
Total - Consumer Products	**$ 647,780**	**$ 86,595**	**$ -**	**$ -**	**$ -**	**$ 734,375**
Residential New Construction	$ 107,811	$ 299,535	$ 7,519	$ 187,355	$ 95,402	$ 697,622
Home Energy Solutions - Core Services	$ (1,433,982)	$ 294,088	$ (185,437)	$ (288,014)	$ (91,003)	$ (1,704,348)
Home Energy Solutions - HVAC, Water Heaters	$ 597,081	$ 82,445	$ 11,518	$ 27,473	$ (120,277)	$ 598,240
HES Income Eligible	$ 702,418	$ 325,771	$ 41,582	$ 67,921	$ (34,827)	$ 1,102,865
Residential Behavior	$ 131,850	$ (577)	$ 512,000	$ 16,920	$ 16,920	$ 677,114
Subtotal Residential	**$ 752,958**	**$ 1,087,857**	**$ 387,182**	**$ 11,655**	**$ (133,785)**	**$ 2,105,867**
COMMERCIAL & INDUSTRIAL						
C&I LOST OPPORTUNITY						
Energy Conscious Blueprint	$ 641,583	$ 561,084	$ 34,462	$ (89,432)	$ 37,628	$ 1,185,325
Total - Lost Opportunity	**$ 641,583**	**$ 561,084**	**$ 34,462**	**$ (89,432)**	**$ 37,628**	**$ 1,185,325**
C&I LARGE RETROFIT						
Energy Opportunities	$ 1,754,079	$ 792,332	$ 20,870	$ 48,008	$ 38,053	$ 2,653,342
Business & Energy Sustainability (O&M, RetroCx, BSC, PRIME)	$ 255,615	$ (375,549)	$ 4,072	$ (21,239)	$ 8,097	$ (129,004)
Total - C&I Large Retrofit	**$ 2,009,694**	**$ 416,783**	**$ 24,942**	**$ 26,769**	**$ 46,150**	**$ 2,524,338**
Small Business	$ 759,044	$ 344,339	$ 2,741	$ (19,968)	$ (20,968)	$ 1,065,188
Subtotal C&I	**$ 3,410,320**	**$ 1,322,207**	**$ 62,146**	**$ (82,631)**	**$ 62,810**	**$ 4,774,851**
OTHER - EDUCATION & ENGAGEMENT						
Educate the Public	$ (6,285)	$ (37,875)	$ (1)	$ (952)	$ (1,077)	$ (46,189)
Customer Engagement	$ -	$ -	$ -	$ -	$ -	$ -
Educate the Students	$ 21,233	$ 51,364	$ 2,223	$ 9,334	$ 9,334	$ 93,488
Educate the Workforce	$ (14,949)	$ (13,490)	$ (2,222)	$ (8,382)	$ (8,257)	$ (47,299)
Subtotal Education & Engagement	**$ (0)**	**$ (0)**	**$ 0**	**$ 0**	**$ 0**	**$ 1**
OTHER - PROGRAMS/REQUIREMENTS						
Residential Loan Program (Includes ECLF and OBR)*	$ -	$ 8,042	$ -	$ -	$ -	$ 8,042
C&I Financing Support	$ 300,000	$ -	$ -	$ -	$ -	$ 300,000
Research, Development & Demonstration	$ -	$ -	$ -	$ -	$ -	$ -
Subtotal Programs/Requirements	**$ 300,000**	**$ 8,042**	**$ -**	**$ -**	**$ -**	**$ 308,042**
OTHER - LOAD MANAGEMENT						
ISO Load Response Program	$ 312,250	$ (477,613)	$ -	$ -	$ -	$ (165,363)
Residential Demand Response	$ 1,200,000	$ 887,880	$ -	$ -	$ -	$ 2,087,880
C&I Demand Response	$ 597,690	$ 139,630	$ -	$ -	$ -	$ 737,320
Subtotal Load Management	**$ 2,109,940**	**$ 549,897**	**$ -**	**$ -**	**$ -**	**$ 2,659,837**
OTHER - ADMINISTRATIVE & PLANNING						
Administration	$ -	$ 49,581	$ -	$ 21,298	$ 21,297	$ 92,176
Marketing Plan	$ -	$ -	$ -	$ -	$ -	$ -
Planning	$ -	$ 46,083	$ -	$ 43,720	$ 43,720	$ 133,523
Evaluation Measurement and Verification	$ -	$ -	$ -	$ -	$ -	$ -
Evaluation Administrator	$ -	$ -	$ -	$ -	$ -	$ -
Information Technology	$ 500,000	$ 11,938	$ -	$ 5,958	$ 5,958	$ 523,854
Energy Efficiency Board Consultants	$ -	$ -	$ -	$ -	$ -	$ -
Audits - Financial and Operational	$ -	$ -	$ -	$ -	$ -	$ -
Performance Management Incentive (PMI)	$ 318,295	$ 138,402	$ 20,219	$ -	$ -	$ 476,916
Admin/Planning Expenditures	**$ 818,295**	**$ 246,004**	**$ 20,219**	**$ 70,976**	**$ 70,975**	**$ 1,226,469**
TOTAL	**$ 7,391,513**	**$ 3,214,007**	**$ 469,547**	**$ 0**	**$ 0**	**$ 11,075,067**

2019 Combined Budget Tables

Statewide EE BUDGET	2019 Eversource CT Electric Proposed Budget 10/01/16	2019 UI Proposed Budget 10/01/16	2019 Eversource CT Gas Proposed Budget 10/01/16	2019 CNG Proposed Budget 10/01/16	2019 SCG Proposed Budget 10/01/16	2019 Statewide Combined Total 10/01/16
RESIDENTIAL						
Residential Retail Products	$ 15,248,520	$ 3,648,053	$ -	$ -	$ -	$ 18,896,573
Total - Consumer Products	**$ 15,248,520**	**$ 3,648,053**	**$ -**	**$ -**	**$ -**	**$ 18,896,573**
Residential New Construction	$ 2,537,831	$ 799,535	$ 1,318,220	$ 785,798	$ 846,192	$ 6,287,576
Home Energy Solutions - Core Services	$ 18,031,790	$ 4,043,578	$ 4,145,182	$ 3,601,996	$ 2,226,033	$ 32,048,580
Home Energy Solutions - HVAC, Water Heaters	$ 3,059,931	$ 967,601	$ 2,019,327	$ 1,814,667	$ 1,977,723	$ 9,839,249
HES Income Eligible	$ 18,736,568	$ 4,443,108	$ 7,290,312	$ 4,313,824	$ 3,816,264	$ 38,600,075
Residential Behavior	$ 3,103,712	$ 333,157	$ 512,000	$ 258,413	$ 258,414	$ 4,465,696
Subtotal Residential	**$ 60,718,352**	**$ 14,235,031**	**$ 15,285,042**	**$ 10,774,698**	**$ 9,124,626**	**$ 110,137,748**
COMMERCIAL & INDUSTRIAL						
C&I LOST OPPORTUNITY						
Energy Conscious Blueprint	$ 15,102,631	$ 5,017,800	$ 6,042,040	$ 2,544,123	$ 2,227,273	$ 30,933,867
Total - Lost Opportunity	**$ 15,102,631**	**$ 5,017,800**	**$ 6,042,040**	**$ 2,544,123**	**$ 2,227,273**	**$ 30,933,867**
C&I LARGE RETROFIT						
Energy Opportunities	$ 41,290,415	$ 8,327,169	$ 3,658,991	$ 1,447,522	$ 1,147,486	$ 55,871,584
Business & Energy Sustainability (O&M, RetroCx, BSC, PRIME)	$ 6,017,080	$ 2,051,504	$ 713,962	$ 758,856	$ 437,800	$ 9,979,202
Total - C&I Large Retrofit	**$ 47,307,495**	**$ 10,378,673**	**$ 4,372,953**	**$ 2,206,378**	**$ 1,585,286**	**$ 65,850,786**
Small Business	$ 17,867,625	$ 5,115,647	$ 480,580	$ 245,256	$ 289,525	$ 23,998,633
Subtotal C&I	**$ 80,277,751**	**$ 20,512,120**	**$ 10,895,573**	**$ 4,995,757**	**$ 4,102,084**	**$ 120,783,286**
OTHER - EDUCATION & ENGAGEMENT						
Educate the Public	$ 1,818,361	$ 418,287	$ 190,066	$ 189,115	$ 188,990	$ 2,804,820
Customer Engagement	$ 1,968,000	$ 475,000	$ 282,000	$ 150,000	$ 150,000	$ 3,025,000
Educate the Students	$ 433,469	$ 154,423	$ 45,164	$ 52,275	$ 52,275	$ 737,606
Educate the Workforce	$ 342,713	$ 75,926	$ 35,034	$ 28,874	$ 28,999	$ 511,547
Subtotal Education & Engagement	**$ 4,562,544**	**$ 1,123,637**	**$ 552,264**	**$ 420,264**	**$ 420,264**	**$ 7,078,973**
OTHER - PROGRAMS/REQUIREMENTS						
Residential Loan Program (Includes ECLF and OBR)*	$ 1,453,121	$ 390,602	$ 145,083	$ 186,292	$ 186,292	$ 2,361,390
C&I Financing Support	$ 4,000,000	$ 74,234	$ 111,346	$ 75,000	$ 75,000	$ 4,335,580
Research, Development & Demonstration	$ 442,000	$ 232,692	$ 50,000	$ 50,000	$ 50,000	$ 824,692
Subtotal Programs/Requirements	**$ 5,895,121**	**$ 697,528**	**$ 306,429**	**$ 311,292**	**$ 311,292**	**$ 7,521,662**
OTHER - LOAD MANAGEMENT						
ISO Load Response Program	$ -	$ -	$ -	$ -	$ -	$ -
Residential Demand Response	$ 1,200,000	$ 887,880	$ -	$ -	$ -	$ 2,087,880
C&I Demand Response	$ 597,690	$ 139,630	$ -	$ -	$ -	$ 737,320
Subtotal Load Management	**$ 1,797,690**	**$ 1,027,510**	**$ -**	**$ -**	**$ -**	**$ 2,825,200**
OTHER - ADMINISTRATIVE & PLANNING						
Administration	$ 907,271	$ 589,822	$ 119,220	$ 142,627	$ 142,626	$ 1,901,566
Marketing Plan	$ 778,154	$ 194,538	$ 81,058	$ 81,058	$ 81,058	$ 1,215,866
Planning	$ 703,170	$ 302,913	$ 80,000	$ 123,720	$ 123,720	$ 1,333,523
Evaluation Measurement and Verification	$ 1,920,000	$ 480,000	$ 200,000	$ 200,000	$ 200,000	$ 3,000,000
Evaluation Administrator	$ 192,000	$ 48,000	$ 20,000	$ 20,000	$ 20,000	$ 300,000
Information Technology	$ 1,838,112	$ 461,938	$ 133,333	$ 139,291	$ 139,291	$ 2,711,966
Energy Efficiency Board Consultants	$ 312,001	$ 208,000	$ 43,333	$ 43,333	$ 43,333	$ 650,000
Audits - Financial and Operational	$ 98,000	$ 24,000	$ 10,000	$ 10,000	$ 10,000	$ 152,000
Performance Management Incentive (PMI)	$ 7,172,917	$ 1,783,127	$ 1,244,381	$ 773,492	$ 659,023	$ 11,632,940
Admin/Planning Expenditures	**$ 13,921,625**	**$ 4,092,339**	**$ 1,931,325**	**$ 1,533,521**	**$ 1,419,051**	**$ 22,897,861**
TOTAL	**$ 167,173,083**	**$ 41,688,165**	**$ 28,970,633**	**$ 18,035,532**	**$ 15,377,317**	**$ 271,244,731**

CHAPTER SIX: EVALUATION

Table 6-1 details the recommendations issued in 2016 through the Energy Efficiency Board's evaluation process, and how the Companies plan to incorporate them into the 2017 and 2018 programs. The Companies have carefully considered and responded to all the evaluations' recommendations.

Table 6-1: 2016 Energy Efficiency Board Evaluation Recommendations

Study	Recommendation	Response
R154 CT LED Lighting Study	The Companies should continue with existing plans to educate consumers about, and provide incentives for, LED bulbs in future program cycles.	The Companies agree with this recommendation and have addressed consumer education (see Residential Retail Products program section in the 2016-2018 Plan).
	The Companies should carefully observe and assimilate information coming from ongoing and planned saturation studies in the Northeast.	The Companies agree with this recommendation and will continue to observe and assimilate information coming from ongoing and planned studies in the Northeast and beyond.
	When updating the Program Savings Document ("PSD"), the Companies should consider this study's findings regarding in-service rates. Based on bulbs found in storage and installed, the Companies should calculate a first-year in-service rate of 95% for LEDs and 76% for CFLs.	The changes for in-service rates for both CFLs and LEDs are being updated in the 2017 PSD.
	The Companies should consider plans for future primary residential lighting research in Connecticut to supplement and supplant information gathered in other areas in the Northeast. Specifically, the Companies should consider a limited-income-specific study that investigates trends among limited-income households. In addition, the Companies should consider the benefits of a panel study, which could directly observe changes taking place in Connecticut. The R154 sample could serve as a starting point. At a minimum, the Companies should consider fielding a larger saturation study in 2016-2017, as the market is currently experiencing rapid change. In addition, it may be possible to coordinate future research efforts with the efforts of others in the region to expand the scope of studies or leverage allocated resources.	The Companies generally agree with this recommendation. However, the Companies are cognizant of the cost of additional studies and the need to prioritize studies in order to adhere to the current evaluation budget. Currently, the Companies are participating in a LED net-to-gross study. Additionally, the Companies keep abreast of other regional studies and will leverage those if deemed appropriate.

Study	Recommendation	Response
R154 CT LED Lighting Study (continued)	The Companies should carefully consider future support for standard CFLs. While CFL saturation growth appears to have slowed or plateaued, avoiding backsliding is an important consideration. Any changes in program support for CFLs should be well coordinated with changes or adjustments to program support for LEDs.	The Companies agree with this and have reflected a cautious phase-out of CFLs in the 2016-2018 Plan. The Companies are continuously monitoring the market and believe that LED adoption appears to be accelerating as the price of LEDs continues to decline and the availability of LEDs continues to increase. At this point, the Companies believe that a risk of a CFL back-slide is decreasing, but they will continue to monitor the market and adjust program offerings as needed.
	The PAs should carefully consider whether or not they should use delta watt findings from this study when updating the program savings document or instead explore the possibility of updating delta watts through a market adoption model approach.	The Companies agree with this recommendation and used the recommended delta-watt findings from this study to update the watt ratios in the PSD.
R33 Observations & Recommendations from CT Residential Program Database Interviews	We recommend that the Evaluation Team work with the Energy Efficiency Board Evaluation Consultants and appropriate staff of both Companies to develop lists and descriptions of the information that are most commonly requested for: (1) process evaluations and (2) impact evaluations.	The Companies support efforts that will help streamline the evaluation process. The data dictionary Eversource provided in 2013 was developed expressly at the request of evaluators for evaluation purposes, and Eversource is willing to share this dictionary with other relevant parties. The Companies recognize that the current data request process can bottleneck the completion of evaluation studies. The Companies fully support a three-pronged approach to opening the lines of communication between evaluators and the Companies' database staff: 1) Clearly defining data needs as part of the development of an evaluation study. This will give the Companies an opportunity to schedule resources in advance and/or get a jump on providing complex data requests (e.g. project specific work papers that may not be easily be extracted from systems). 2) Scheduling meetings between evaluators and the Companies' staff to clearly communicate data requests and understand data terminology. 3) As needed, allowing evaluators and the Companies' staff to ask each other data-specific questions and provide data-related clarification. The current EEB Evaluation Road Map can be overly cumbersome because it often requires coordination between many parties, including EEB Evaluation Consultant(s), the Companies' staff, and the Evaluation Team. Eversource recommends that the EEB Evaluation Roadmap be changed to allow direct communication (without the involvement of the EEB Evaluation Consultant) between the Companies' staff and evaluators as long the communication is limited solely to data requests for specific evaluations, whether these evaluations are in development or in progress. Any such communications would be documented and reported to the EEB Evaluation Consultant(s).

Study	Recommendation	Response
R33 Observations & Recommendations from CT Residential Program Database Interviews (continued)	The EEB and Companies may wish to explore establishing a statewide residential electric and gas customer billing and participation database similar to California's, to be managed by a third-party firm. This database would contain customer electric and gas use and program participation information.	Eversource is currently in the process of purchasing and implementing a new database that will house customer and energy-efficiency program data for its electric and natural gas customers. Eversource believes that this new system will continue to enhance the availability of quality data that can be used to evaluate energy-efficiency programs. Therefore, Eversource does not support the need to develop a statewide database. The Companies continue to work to increase the functionality of tying together C&LM databases with billing data including across electric and natural gas.
R157 Multi-Family Initiative Process Evaluation	Explore strategies for addressing health and safety issues.	The Companies require that vendors provide documentation of any health and safety issues for each proposed measure. The Companies rarely see health and safety issues in multi-family projects. However, in these rare cases, the Companies would work with the customer to determine if a remediation plan can be formulated.
	Continue to work with vendors to promote installations of add-on measures. These efforts could involve trainings that emphasize the importance of consistently offering recommendations for add-on measures through a comprehensive discussion following the audit. This review should also focus on approaches for informing participants about the opportunities for program financing and incentives.	The Companies currently offer an incentive structure that encourages comprehensiveness. Additionally, when projects are submitted, the Companies will talk to the vendor and/or customer to discuss how additional measures can be incorporated into the project. The project submission form requests the vendor to provide justification for measures that are not addressed as part of the project to ensure that the building has been looked at comprehensively. Lastly, the Companies created a financing document which explains all the various financing options that are available.
	Provide consistent QA/QC. The initiative currently undertakes great efforts to conduct rigorous QA/QC to ensure quality measure installation and there does not appear to be any major issues with the process. The initiative may nevertheless benefit from implementing a higher level of QA/QC with non-initiative-approved contractors.	The Companies have implemented a consistent pre- and post-inspection process that is used across all Multi-Family Initiative projects. The Companies have developed requirements to document that any vendor performing weatherization work has the necessary Building Performance Institute ("BPI") certifications for multi-family.
	Clarify Multi-Family Initiative guidelines and procedures. Currently, the guidelines for Multi-Family Initiative projects are included the HES/HES-Income Eligible Implementation Manuals. While this document provides a general overview, it does not get into the particulars of the Initiative's requirements for vendors.	The Companies have created consistent documents (outside of the HES/HES-Income Eligible Implementation Manuals) for vendors. These documents include an initial application and a project submission form which includes instruction and requirements for the Multi-Family Initiative.

Study	Recommendation	Response
R157 Multi-Family Initiative Process Evaluation (Continued)	Increase transparency in the Companies' staff's roles and responsibilities. Since vendors voiced confusion regarding appropriate program staff contacts to answer questions or clarify issues, they would likely benefit from an explanation of staffing structures, including whom to contact for which issues.	The Companies have a single point of contact for each project. The single point of contact is assigned at the application stage of the process and remains with the project through completion. The single point of contact will also seamlessly coordinate across sectors for projects that may include residential and C&I measures.
	The program should be commended for the quality and relevance of its offerings and services for their energy impacts and should continue offering and promoting audits, core services, and program rebates and incentives. While marketing and outreach materials should underscore energy savings, they should highlight non-energy benefits that will appeal to property managers.	The Companies have created a marketing piece that highlights non-energy benefits, such as safety and comfort. Additionally, these are topics that are consistently discussed with building owners to ensure that these benefits are recognized by building owners and tenants.
	Provide greater clarity regarding vendors' marketing responsibilities, including program processes for approving co-branded materials. A number of vendors voiced frustration with the process for obtaining approval for branded marketing materials and expressed a desire to have more latitude with marketing the program on their own. Their concerns regarding this process indicate that vendors would benefit from greater clarity regarding marketing requirements and expectations.	All energy-efficiency program vendors are held to consistent standards when marketing the Companies' energy-efficiency programs. Additionally, vendors can utilize existing marketing collateral including: case studies, financing brochures, and the program application.
R151 HES Air Sealing, Duct Sealing, and Insulation Practices	Although the current program is not permitted to fund remediation for health and safety issues directly (financing a portion of these costs is allowed), the Energy Efficiency Board and the Companies should carefully consider whether or not the HES program can be amended to include additional incentives or other possible strategies to aid customers in addressing health and safety issues.	The Companies agree that there should be more funding for health and safety issues. However, absent this funding, health and safety measures can be financed (along with energy-efficiency measures). To facilitate this process, HES vendors are required to be able to refer customers to contractors or companies that perform remediation.
	The HES program should reinforce proper blower door protocols with HES vendors. Specifically, the HES Implementation Manual should state that finished or fully heated basements should be treated as conditioned space and included in the building envelope for testing purposes, in accordance with BPI and RESNET guidelines. To ensure consistency and comparability of results between vendors, the HES program could also require vendors to report on the physical characteristics of basement areas, including level of finish, insulation, and type of heating system present.	The Companies agree and have added clarifying language to the HES Implementation Manual. Vendors who do not adhere to this practice will be marked down during the inspection process.

Study	Recommendation	Response
R151 HES Air Sealing, Duct Sealing, and Insulation Practices (continued)	The HES program should strongly encourage the use of mastic, rather than foil tape, for proper duct sealing, and ensure that any tape is firmly adhered to clean surfaces. United Illuminating reported that as of 2015 (after the period covered in this evaluation), the HES program now requires the use of mastic. This is an area that should be carefully monitored during future QA/QC inspections.	The Companies agree with this recommendation and already require the proper use of mastic with mesh tape if needed, or UL 181-rated tape (tape rated specifically for use on ducts) for duct sealing. In addition, inspectors use this manual as a guideline when rating vendor field performance.
	The HES program should promote the use of two-part spray foam to fully cover rim joists in basements, particularly in heated basements, rather than targeted air sealing of penetrations. The program could also consider minor incentives for HES vendors for this measure because it can also serve as insulation, though the insulation benefit for most homes may often be less than the air sealing benefit.	The Companies encourage the use of spray foam insulation where appropriate. However, the Companies note that spray foam insulation is expensive and may not be cost-effective in all situations.
	The HES program should consider incentivizing blown or spray-applied insulation materials (e.g., cellulose, fiberglass, spray foam) rather than fiberglass batts. In addition, if homeowners choose spray-foam attic encapsulation or other add-on measures that would result in decreased air leakage, the program should also consider including additional incentives for any additional air leakage reductions that result, such that vendors can be compensated for air sealing as a part of add-on measures, not just for air leakage reductions obtained during the core services visit.	The Companies encourage the use of alternative forms of insulation where appropriate. In situations where the customer chooses other forms of (more expensive) insulation, they will likely qualify for a higher incentive based on the rebate structure that is in place.
	The program should carefully consider if the amount of air sealing opportunities being left on the table, as shown in this evaluation, are acceptable. If not, the program should consider working with HES vendors and coordinate with both QA/QC vendors to ensure that more air sealing opportunities are captured.	Vendors are already rated by the savings that they achieve, including air sealing. In addition, QA/QC inspectors are vigilant about requiring vendors to reasonably seal all accessible locations. Lastly, note that many homes cannot be air sealed or have limited air sealing potential based on health and safety issues or minimum ventilation guidelines.
	The program should carefully consider if the amount of duct sealing opportunities being left on the table, as shown in this evaluation, are acceptable. If not, the program should consider working with HES vendors and coordinate with both QA/QC vendors to ensure that more duct sealing opportunities are captured.	Vendors are already rated by the savings that they achieve including duct sealing. In addition, QA/QC inspectors are vigilant about requiring vendors to reasonably seal all accessible duct locations. Lastly, many homes do not have ducts that are accessible or it would take an inordinate amount of work to seal those ducts (e.g. if insulation had to removed and re-applied). Lastly, many duct systems cannot be sealed because the air flow within those ducts is below acceptable levels; sealing those ducts could exasperate that problem.

Study	Recommendation	Response
R151 HES Air Sealing, Duct Sealing, and Insulation Practices (continued)	The program should improve its aggregated program records such that evaluators and program staff can more easily assess and report on trends in vendor behavior. Evaluators and QA/QC vendors may be able to provide assistance on useful information.	The Companies continuously look to improve the depth and quality of the data that is collected. This data is used to report on vendor performance, update the HES vendor scorecard, and the Energize CT Dashboard.
	Consideration 1: The program staff should clarify to HES vendors that they should implement a two-stage audit approach, where technicians perform an initial walkthrough to identify any issues (including health and safety) that might prevent them from performing core services, along with potentially installing direct install measures, such as light bulbs and water conservation measures. Under this approach, during the initial walkthrough, vendors could assess what specific resources may be needed to achieve the greatest savings in the home, and assign the appropriate resources to return to the home and complete all core services. The program could aid in this effort by making clear to HES vendors that such an approach is allowed and encouraged—perhaps by adding it to the HES implementation manual as a recommended best practice.	The Companies have considered this option as an official program design change and have determined that it would be more costly than the current model of a single visit. However, this does not preclude vendors from using a pre-assessment review of the home to determine opportunities and the extent of work that needs to be completed. The Companies currently allow flexibility for vendors to have the option of performing a pre-assessment.
	Consideration 2: Incorporating the feedback of the Companies' QA/QC vendors, the program should consider adjusting the QA/QC scoring criteria such that the quality of the weatherization services is categorized via more than one metric, allowing the QA/QC vendor to more fully describe and judge the vendor's work. For example, the program could score vendors separately for following the proper air sealing sequence (attic, basement, then conditioned space), and for the quality and thoroughness of air sealing performed in each of those spaces, providing a greater level of detail regarding the thoroughness of the vendor's work.	The QA/QC vendors already rate vendors based on the quality of air sealing. The vendors are required to follow the "A, B, C" priorities (attic, basement, conditioned space).
	Consideration 3: Understanding that program staff are in regular contact with HES vendors, evaluators believe that the program may benefit from convening a panel of the program's most active vendors to provide regular feedback on the program. This may be important given the upcoming changes planned for the program since it will provide a feedback loop to determine how programmatic changes are affecting vendors and the program.	The Companies currently collaborate with vendors through the Energy Efficiency Board Residential Sub-Committee. In addition, the Companies have an "open door" policy with vendors and encourage constructive two-way communication with all vendors. The Companies plan on developing a best practices group to establish an enhanced communication feedback loop.

Study	Recommendation	Response
R91 Impact Evaluation Best Practices	Update simulation models for air and duct sealing. Revise models to use an hourly-iterative simulation software and draw upon participant home characteristics, differentiating between different building, customer, and HVAC types to award the most appropriate savings. Calibrate model prototypes to participant data to ensure that typical consumption patterns of Connecticut customers are reflected in savings computations. In future evaluations, ensure evaluators and PSD developers use an hourly-iterative software package that uses default assumptions and load shapes that are appropriate for residential applications.	The Companies considered this recommendation when updating the PSD. However, the Companies believe that it is important to strike a balance between accuracy of savings calculations and complexity of savings calculations. To this point, the PSD is used to estimate savings across the program. Developing savings estimates that are tailored to specific variables in certain homes may not be necessary when estimating average (typical) savings. The Companies are actively exploring alternative methods to estimate savings. In the meantime, realization rates are being used to "true-up" savings estimates.
	Differentiate savings values based on population segment. Certain population segments may not be reflected accurately by the savings developed for an average participant home in the PSD, such as multi-family customers and the lower-income participants in the HES-Income Eligible program. Although the air infiltration measure does adapt savings for multi-family customers, the other measures reviewed do not contain a similar adjustment. By adjusting simulation or algorithm inputs and permitting appropriate savings to be awarded specific to these population segments, accuracy of the program-wide ex ante savings calculation may be improved.	The Companies agree with this recommendation and already adjust multi-family blower door results based on utility bill calibrations. However, the Companies are mindful that there is a lack of appropriate data that can be used to make additional adjustments based on population segment.
	Account for interactivity between HVAC and envelope measures. Individual measure savings are lowered if installed concurrently; for example, performing duct sealing increases distribution efficiency so that if attic insulation is then installed, heating load drops by a much smaller amount than it would if ducts remained leaky. To account for this interactivity, make an adjustment to reduce savings when multiple shell- or duct-improvement measures are implemented through the program.	The Companies have added lighting interactive effects into savings calculations. Beyond that, the Companies do not agree with this recommendation because it would add a great deal of complexity with very little perceived benefit.
	Consider whether additional weather and location assumptions can improve savings estimates. The PSD currently uses only a single weather profile to estimate weather patterns that influence savings, which may not reflect the geographic distribution of participants across the state. Areas where a large number of participants are identified (e.g., Bridgeport) have notably lower HDDs than reflected by the statewide average or Hartford weather profiles.	The Companies considered this recommendation, but determined that such a change would impact other realization rates. Currently, there is an HVAC impact evaluation underway. Based on the results of that (anticipated in 2017), the Companies will make additional refinements to savings methods where appropriate.

Study	Recommendation	Response
R91 Impact Evaluation Best Practices (continued)	Verify that heating HVAC efficiency assumptions remain valid. Current HVAC system efficiency assumptions rely on estimates that should be validated, given the sensitivity of savings to efficiency values. If system efficiency assumption are found to be low for the participating population, savings may be overestimated. Lower furnace efficiencies require greater HVAC energy consumption to meet winter set point temperatures; therefore, measures such as insulation, air sealing, and duct sealing, which reduce heating load, have an amplified effect. Furnace efficiency assumptions influence savings calculated both through building simulation and through the algorithmic approach applied for insulation measures.	The Companies reviewed the HVAC assumptions as part of the PSD review process. Note that currently there is an HVAC impact evaluation underway which should provide additional useful data that may be used to make adjustments to the PSD.
	Assess whether the HDD adjustment factor for insulation measures should be updated. For attic and wall insulation savings, the current HDD correction factor, which draws from ASHRAE's 1989 handbook, could not be validated with a more current source. An updated value is not provided in more recent versions of this handbook. Provide transparency in what this value seeks to represent.	The Companies agree with this recommendation. However, the Companies will need to consider that the insulation savings has already been evaluated, so degree day adjustments are already inherently included in the realization rates.
R32 Eversource Persistence for Year 2 Home Energy Report Program Average Users	Eversource should consider revising the PSD to reflect the findings from this study.	The PSD and Eversource's screening methodology allow for persistence savings in behavioral programs. Current savings from the Eversource Home Energy Reports programs includes estimates of persistence.
	Until we have sufficient data to revise the estimate, Eversource should retain a realization rate of 100% for the treatment period. The evaluators did not have access to updated estimates of energy savings as provided by Opower, so the study could not provide realization rates. However, it is our experience that most Opower estimates of savings during the treatment period tend to align with those estimated from third-party evaluations. Thus, the study recommends a treatment period realization rate of 100%. To calculate realization rates for post-treatment periods, Eversource will need to compare the savings estimates presented in this report with those provided by Opower.	Eversource agrees with this recommendation and is using a 100% realization rate.

Study	Recommendation	Response
R32 Eversource Persistence for Year 2 Home Energy Report Program Average Users (continued)	Eversource should consider the most appropriate length of treatment—and possible downtimes between treatment—given that savings persist for at least two years post treatment, yielding savings that rival continued treatment but at a lower cost to the program. The analyses suggest that program designs that involve cycling—that is, an "on/off" treatment design involving rotating groups of HERs recipients—likely yield greater savings at lower costs than sending reports repeatedly. Eversource, the Energy Efficiency Board, and Opower would need to weigh various factors of costs, savings, and equity (e.g., inclusion or exclusion of average-use households) as part of this consideration.	Eversource agrees with this recommendation and has worked with Opower to optimize program designs.
	Do not adjust the HERs program savings to avoid double counting with other CEEF programs. Although a few HES-installed deeper measures do result in statistically significant savings in treatment households, their effect does not diminish the estimated savings from the HERs program. Eversource should monitor savings in both the HERs program and the HES program. If savings increase substantially in either, then Eversource may need to take actions to avoid double-counting.	Eversource agrees with this recommendation and has not adjusted savings for other programs to account for possible double-counting. However, Eversource is poised to make adjustments in the future if it is deemed appropriate.
C19 New Construction Baseline & Code Compliance Study	The Companies should consider raising baselines for energy-efficiency measures supported by the program based on their review of these findings and where appropriate	The Companies increased the baselines in the PSD for measures in 2017 consistent with anticipated changes in the Connecticut building code.
	There is substantial opportunity for LED lighting among the sample that we note are already supported by the programs.	The Companies agree with this recommendation. To this point, the Companies are currently working on a Lighting Alliance to help better serve the C&I lighting market (see the 2016-2018 Plan). In addition, additional LED products have been incorporated into the upstream lighting program as they become available.

Study	Recommendation	Response
C19 New Construction Baseline & Code Compliance Study (Continued)	There is substantial opportunity for automated lighting control measures among the sample that we note are already supported by the programs.	The Companies agree with this recommendation. Incentives are currently available to promote lighting control. The Companies' will continue to develop the promotion of lighting controls. To this point, the Companies are currently working on a Lighting Alliance to help better serve the C&I lighting market (see the 2016-2018 Plan).
	The application of instantaneous gas-fired boilers for dual purposes (domestic hot water and space heat) be examined and considered for inclusion in the PSD.	It is important to understand that a number of the projects in this study were multi-family residential buildings. Dual purpose boilers are currently accounted for in the Residential section of the PSD. Domestic hot water use in C&I buildings can be very different than in residential applications and is dependent on type of business. The Companies are examining the use of dual purpose gas fired boilers in commercial buildings, for both space and water heating and they will likely be included in the 2017 PSD.
R4 HES/HES-IE Process Evaluation and R31 Real-Time Research	The evaluation recommends that the Companies work closely with the program implementers and vendors to ensure that program data are entered into the tracking database correctly.	The Companies work to continuously improve the quality of its data collection and routinely conducts internal QA/QC review of data for accuracy.
	It is critical for tracking databases to be developed/organized to account for evaluation aims as well as program implementation. Specifically, if CEEF-funded and non-CEEF-funded measures are installed in program units, it is important to impact evaluations that the total number and type of measures installed through any funded source be listed.	The Companies agree with this recommendation. Note that Eversource is in the process of developing an updated tracking system and will consider this recommendation in the design of the new system.
	Satisfaction is high among end-user and landlord and property manager participants. End-users were highly satisfied with the program overall, in particular with core services and add-on measures. HES-IE landlord and property manager participants were also highly satisfied with add-on measures, but one of their suggestions—despite their high level of satisfaction with their vendors—was for the program to improve the quality of core services because they had received complaints from tenants about safety concerns stemming from the perception that the efficient lighting was too dim and quality concerns when it came to the air sealing. Some persistence issues among end-users were also linked to product quality. Given this information, and the information discussed in the short-term persistence and EUL findings, it may be beneficial to reevaluate the quality of the actual materials that vendors are installing.	The Companies agree with this recommendation and are currently transitioning to LED lighting. LED lighting, besides its superior energy savings attributes, is generally found to be more acceptable because of its higher quality of light and its reliability.

Study	Recommendation	Response
R4 HES/HES-IE Process Evaluation and R31 Real-Time Research (continued)	Any new advertising should emphasize the value of the program. In particular, continue emphasizing the proven energy and energy cost savings that the program improvements will create for participants. The messaging could focus on addressing customers' skepticism that there is not a need to make improvements or on their "haven't gotten around to it" attitudes by emphasizing bill and energy savings of acting now rather than putting off improvements. It would also be beneficial if the messaging stressed how little the assessments themselves cost, especially when compared to the value of the services provided.	In the 2016-2018 Plan, a key priority is to deliver, demonstrate, and communicate to customers the value of the HES program (both energy and non-energy benefits). To improve the delivery of the program and deliver more comprehensive measures, the Companies will focus on educating customers about the value of home performance.
	The property managers and landlords had insightful suggestions for improving communications that the study considers worthwhile. They suggested creating a single contact for all program-related communications, communicating more clearly about timelines upfront, carrying out more direct communication as opposed to relying on third-party contractors, and clearly conveying what to expect from the technicians. The study suggests that the program address the timing issue by focusing on increasing the speed of rebate processing and communication response time with landlords. This recommendation appears to support and complement the Companies' current efforts to streamline the application and review process.	The Companies have a single point of contact for each project. The single point of contact is assigned at the application stage of the process and remains with the project through completion. The single point of contact will also seamlessly coordinate across sectors for projects that may include residential and commercial measures.
	Vendors are currently provided with resources to help them understand and explain the program to customers, including language to use when discussing the program offerings. Providing vendors with additional or more detailed talking points and materials to encourage customers to consider add-on improvements may help overcome some of the challenges some end-users have expressed with the quality of information.	The HES and HES-Income Eligible field Implementation Manual has been updated to provide better quality of customer-facing information and additional talking points to encourage participants to move forward with add-on measures and financing. The Implementation Manual is updated on an annual basis to fine tune messaging based on vendor and customer feedback.
	The program does a good job of providing both print and online materials to support customers. (The website is well-designed and informative, for example.) However, clarifying or offering additional details about program offerings in customer-facing materials and marketing efforts may also help to address customer concerns over information quality.	Marketing materials are updated on an annual basis with feedback from vendors, customers, and other stakeholders incorporated to enhance program messaging and marketing.
	Continue offering substantial rebates and financing for insulation because free ridership is low and participants respond positively to them.	The Companies agree with this recommendation and continue to offer substantial rebates and financing for insulation.
	If cost-effective, consider increases to incentives for other measures, given the success proven with 50% insulation allowance.	The Companies agree with this recommendation. However, for many measures (e.g. HVAC in particular), it's very difficult to go beyond the existing incentive amounts and still have the measure remain cost-effective.

Study	Recommendation	Response
R4 HES/HES-IE Process Evaluation and R31 Real-Time Research (continued)	Provide an "everyday language" version of the loan application to accompany "legalese" documents through working with loan providers. Given that a greater percentage of Massachusetts households rated their loan application for the Massachusetts HEAT Loan program (the state has one overarching residential loan program) as easy to fill out (97% versus 43%), the Energy Efficiency Board, the Companies, and funding agencies may want to review the Massachusetts' application materials for potential ideas on how to improve applications in Connecticut.	We will work with the Connecticut Green Bank to improve the financing options for customers in Connecticut.
	Continue expanding and updating existing materials that provide financing information, such as the vendor-focused Implementation Manual, or the customer-focused POD Booklet used during the wrap-up after the assessment. These documents already include some information and language about financing options that vendors can use, but it may be useful to provide more details or to clarify the messaging. In particular, the Implementation Manual could encourage vendors to explain the options in detail to better ensure that that the customer understands the options and how best to take advantage of them. Additionally, the POD Booklet could provide a clearer explanation of the relationship between the table of offerings and the Energy Conservation Loan Program described on the following page.	The Print on Demand ("POD") booklet and Implementation Manual are revised on annual basis. The Companies collaborate with financing agencies on an ongoing basis to align messaging and provide better guidance to vendors in order to encourage customers to utilize the loan products so that they can move forward with addition add-on measures. Capital for Change (formerly CHIF) and Connecticut Green Bank are invited to present at all HES vendor quarterly meetings to educate vendors on the available financing options.
	Provide vendors with talking points and materials on sales methods to use when customers are initially opposed to the idea of applying for a program loan.	The new implementation manual along with ongoing vendor training is focused on reducing opposition to proceeding with financing products.
	Provide guidance to vendors, website developers, and funding agencies about preferred language to use when referring to financing. Make certain that all websites and materials—vendor, program, and funding agency—use consistent nomenclature. Keep financing option name changes to a minimum, but when changes are necessary update all program materials and websites simultaneous with rolling out the name change.	Changes to these materials and the website have been made and will be made going forward using a continuous improvement process.
	The study finds no evidence to justify downwardly adjusting persistence rates or measure lives for CFLs, LEDs, faucet aerators, showerheads, or refrigerators in HES-Income Eligible multi-family units. The Companies should continue to use current assumptions as listed in the 2015 PSD in Appendix 4 at this time.	The Companies will take this recommendation into consideration when updating the PSD for 2017.

Study	Recommendation	Response
R4 HES/HES-IE Process Evaluation and R31 Real-Time Research (continued)	Given the increased marginal savings achieved by LEDs over CFLs, the greater tendency for participants to keep program LEDs installed compared to CFLs, and the longer measure life for LEDs, the program should continue its efforts in the 2016 to 2018 program cycle to shift resources from CFLs to LEDs, eventually making LEDs the default standard socket lighting measure for the program. Note that, although the specification is technology neutral, no CFLs currently on the market will qualify for the ENERGY STAR label as of January 2, 2017 based on the recent Lamp 2.0 specification released by ENERGY STAR. Thus, it is likely that the switchover to LEDs will happen somewhat rapidly.	The Companies agree with this recommendation and are currently in the process of shifting resources from CFLs to LEDs.
	The evaluation team suggests that the Companies consider the findings of this study when revising overall program free ridership, spillover, and realization rates in the PSD for the HES Program. For some HES measures, the confidence intervals are small enough and sample sizes large enough to serve as measure-specific free ridership values that the evaluation team suggests using for the PSD: insulation (0.06), water saving measures (0.20), and water pipe wrap (0.28). Two measures with adequate sample size require special attention. First, while the HES light bulb confidence interval was small and the sample size was large, the evaluation team suggests using the upstream lighting NTG ratios of 51% for CFLs and 82% for LEDs (as reported in the R86 Lighting NTG and LED Market Assessment study). Had households obtained these bulbs on their own, many would have obtained upstream bulbs. Second, as reviewers have pointed out, the type of air sealing customers perform on their own most likely would not be blower door guided; therefore, a free ridership rate of zero should be assumed for this HES measure. All other HES measures with larger confidence intervals or too small sample sizes should not be used to update the PSD, but they do provide information that could inform future revisions and studies. The evaluation team suggests not using the overall HES-IE and rebate-only NTG ratios formally because HES-IE programs generally assume a NTG ratio of 1.0, and sample sizes are small among rebate-only respondents to adjust PDF assumptions.	The Companies agree with this recommendation and will update the PSD accordingly. These changes will take effect beginning in 2017 and be reflected in the 2017 Plan Update.
	Considering the low free ridership rate and also the enthusiasm among customers for the insulation rebate opportunity that vendors observe, the program will benefit from continuing to offer its generous incentive for this cost-effective measure.	The Companies have recently removed the insulation incentive cap for the remainder of 2016 and will consider the extending this into 2017 based on the 2016 results and available budgets in 2017.

Study	Recommendation	Response
R4 HES/HES-IE Process Evaluation and R31 Real-Time Research (continued)	Given the relatively low free ridership rates and higher adoption rates for insulation coupled with the claim by participants that would adopt more measures with deeper incentives, free ridership rates for some measures may actually decrease if the Companies increase incentives. That is, free ridership may be higher at lower incentive amounts, but higher incentive amounts really move people to adopt a measure that they otherwise would not have adopted. This would have the net effect of increasing the cost-effectiveness of higher incentives.	The Companies agree with this and have recently increased insulation incentives.
	The evaluation suggests that the program consider structuring future evaluation efforts to estimate how NEI values such as these could be added to program BCRs to increase program total resource benefits. Because the current study was not structured to provide fuel or measure-specific NEIs, the evaluation does not recommend revising the current BCRs but the results of this study should be taken into consideration during future revisions.	The Companies agree with this recommendation and have added NEI benefits (based on this evaluation study) into program screening beginning in 2017.
	While the program should continue prioritizing energy savings as a central marketing message, the divergence between nonparticipants' lower expectations for NEIs and participants' actual experiences with NEIs suggests that increasing the emphasis on NEIs in program marketing materials may also be warranted. Leveraging the benefits of NEIs will help to convey the value of the program to customers. Specifically, NEI messaging should focus on the positive impacts on comfort, property value, and safety, perhaps through end-user testimonials. This may help bring nonparticipants' expectations of NEIs to values closer to those of participants, which could potentially increase participation rates from the same expenditures on outreach, thus reducing program cost per customer sign-up and increasing program-induced energy savings.	In the 2016-2018 Plan, a key priority is to deliver, demonstrate, and communicate to customers the value of the HES program (both energy and non-energy benefits). To improve the delivery of the program and deliver more comprehensive measures, the Companies will focus on educating customers about the value of home performance.
	This is a challenging barrier to address. Continuing to provide clear and effective health and safety-oriented messaging and support to end-users, landlords, and vendors may help to address these issues over the long term. Additionally, the program should continue its efforts in improving the tracking of the prevalence of these barriers and working with health and safety partners throughout the state to refer homes with identified health and safety barriers to these organizations for assistance.	The Companies continue to work closely with partners throughout the state that provide funding for the remediation of health and safety barriers to weatherization. Vendors are provided with information on a regular basis about resources available to assist customers with barriers identified in their home. The Companies incorporated health and safety data tracking mechanisms into the field audit tool and tracking systems. Data collected will be utilized to better inform program decisions and address long term customer needs.

Study	Recommendation	Response
R4 HES/HES-IE Process Evaluation and R31 Real-Time Research (continued)	For both HES and HES-IE end-user participants and landlords/property managers, provide more information on the financing options— including some external to the program— that cover at least part of the costs of remediating health and safety issues. Continue encouraging financing partners to improve options for financing or assisting with remediation.	The Companies require that vendors provide documentation of any health and safety issues for each proposed measure in single-family homes. The Companies rarely see health and safety issues in multi-family projects. However, in these cases, the Companies would work with the customer to determine if a remediation plan be formulated.
	When replacing light bulbs, make certain that the lumens duplicate or exceed the lumens of the bulb being replaced, unless doing so creates additional safety concerns (e.g., the wattage of the new bulb would be too great to use safely in the fixture). This applies to the interior and exterior of all single-family homes and multi-family buildings as well as common areas in multi-family buildings.	The Companies agree with this recommendation and provide guidance to vendors to ensure that adequate lighting levels are met during lighting replacements.
	Given these positive indicators that the program has had a positive effect on the development of contractors in the state from the perspective of vendors, the EEB may wish to conduct a larger study to quantify the extent of program market effects. A study along these lines would generally involve interviews or surveys with product distributors/suppliers and participating and nonparticipating installation contractors.	The Companies agree with this recommendation and will support efforts to quantify market effects. However, the Companies are mindful that evaluation studies must be prioritized and should adhere to the existing evaluation budget.
	While the Companies cannot mandate the way that towns organize their own activities, they could suggest that towns formalize CEC positions within the town municipal structure so that if a key person leaves, someone new steps into that role.	The Companies work closely with cities and towns to encourage and support activities leading to participation in CEC. In some cases these actives may be undertaken by private organizations or committees that are not officially tied the local government
	Weighing all of this information, the study recommends that the EEB and Companies strongly consider fielding one more short-term survey using an instrument very similar to R31 within three to six months of program participation. This survey should provide enough information to allow for a definitive recommendation of whether a continuous short-term survey effort is justified for Connecticut HES, HES-IE, and downstream residential rebate programs.	The Companies agree with this recommendation and will work with the Energy Efficiency Board evaluation consultants to discuss such a survey going forward.
	Given vendors' reliance on the program and the program's implicit reliance on vendors to have an impact on the market (and support program participation), it is pivotal to get vendor input before deciding to make structural program changes to foster a sustainable relationship between the program and its vendors. Additionally, any changes that are made should ideally be accompanied by clear communications to the vendors regarding the reasons for the changes and the mechanics or implications of the changes.	The Companies currently collaborate with vendors through the Energy Efficiency Board's Residential Sub-Committee. In addition, the Companies have an "open door" policy with vendors and encourage constructive two-way communication with all vendors. The Companies plan on developing a best practices group to establish an enhanced communication feedback loop.

Study	Recommendation	Response
R4 HES/HES-IE Process Evaluation and R31 Real-Time Research (continued)	For future studies that reach out to HES-Income Eligible participants, the Energy Efficiency Board and Energy Efficiency Board Evaluation Consultants should attempt whenever possible to ensure that the studies be planned and adequately funded to ensure inclusion of non-English-speaking (primarily Spanish-speaking) customers. Providing adequate resources would allow future evaluations to hire trained bilingual technicians and interviewers, which would improve the exploration and characterization of the substantial non-English-speaking portion of the eligible population.	The Companies agree with this recommendation and will recommend this option where appropriate.
C20 Energy Conscious Blueprint Program Process and Impact Evaluation	In order to streamline project qualification for the Companies and to facilitate ongoing evaluations, program participants should be required to submit program documentation in electronic form. In addition, as a condition for incentive payment, participants should be required to provide copies of all calculations in forms readily checked using computer-based tools without manual transcription.	The Companies agree with this recommendation.
	Final building simulation files were excluded from the documentation provided for review for all five of the High Performance Building Design (HPBD) projects evaluated. In the absence of having the final simulation model for each site, the evaluation team was forced to develop its own building energy simulation model. This model was based upon project documentation and what information could be collected from the program participant as well as design architects and engineers involved on the project. The research team recommends that the program require participants to provide the final building simulation files that were used to calculate reported energy savings as a condition of payment for all future HPBD projects/measures.	The Companies agree with this recommendation and have included a model submission requirement as part of the updated Whole Building Performance component of the Energy Conscious Blueprint program.
	Future Energy Conscious Blueprint impact evaluations should use error ratios (e.r.) found in this study for all measure groups to ensure meeting the desired precision for electric energy and demand savings, as well as natural gas energy savings. The evaluation team found that the realization rates for projects in this program were highly variable. The evaluated e.r. values for the Compressed Air, HVAC, HPBD/Other, and Process measure groups were much higher than the a priori estimates of 0.5. The evaluation team recommends for future studies adjusting these e.r. values to those found in this evaluation. Such an adjustment will result in a greater emphasis on non-lighting project sites, which have higher variability.	The Companies agree with this recommendation. Note that though the Companies can offer input into evaluation and sample designs, they are non-voting members of the Energy Efficiency Board's Evaluation Sub-Committee.

Study	Recommendation	Response
C20 Energy Conscious Blueprint Program Process and Impact Evaluation (continued)	In general, 2012-2013 ECB electric measures are performing well. However, costly calculation errors in reported savings analyses on some of the largest measures (in particular compressed air and HVAC measures) resulted in substantial downward adjustments to evaluated savings; ultimately driving down the measure group-level and overall program-level electric energy and demand savings realization rates. These errors ranged from simple math errors to failure to use prescriptive methodologies and assumptions from the Connecticut PSD. Documentation adjustments accounted for approximately 62.8% of all downward electric energy savings adjustments made. Documentation adjustments also accounted for approximately 50.6% of all downward electric demand savings adjustments and 39% of all downward gas energy savings adjustments. The combined effects of all downward documentation adjustments resulted in gross savings reductions of 10,590,853 kWh and 216,022 therms. Given the magnitude of these potentially avoidable adjustments, it is recommended that the program-administrator-engineering-review-process be adjusted in order to improve the accuracy and consistency of claimed savings estimates.	The Companies agree with this recommendation and have added additional QA/QC oversight to projects. In the meantime, the Companies will adjust savings based on the realization rates that were estimated in this study.
	The natural gas realization rates for energy were 78%.This difference is primarily driven by downward documentation and operational adjustments assessed on non-boiler projects (Gas-Other) resulting from baseline estimates that did not reflect previous site operations, simple mathematical errors in claimed savings estimates, and one project for which the amount of available process cooling was vastly overstated. The overall realization rate for Gas-Boiler energy was 96.2%; however, substantial off-setting documentation and operational adjustments were assessed on the projects evaluated and several recommendations have been made to improve upon the accuracy of claimed savings for the condensing boiler. These recommendations include a revision to the 2015 PSD assumptions used to estimate operating efficiency and enhancements to the existing program application form.	The Companies have updated the PSD to reflect the realization rates from this study.

APPENDIX A: 2017 STATEWIDE MARKETING TACTICAL PLAN

Introduction

The 2017 Energize Connecticut ("Energize CT") statewide marketing efforts ("2017 Marketing Plan") will include website operations, enhancements and technical support for EnergizeCT.com, as well as marketing research and dedicated communications campaigns (brand awareness/value and seasonal messaging).

While the 2017 overall division of tasks (i.e., website, research and communications) remains the same as in previous years, the relative focus of each area is changing to reflect situational challenges – particularly associated with the HES program. A mild 2015-2016 winter, falling fuel oil and gasoline pricing, and a growing economy created "disincentives" for participation in HES. While Energize CT's primary market research shows a steady increase in brand and program familiarity over time, participation in the HES program was depressed for the entire 2015-2016 heating season and well into the spring of 2016.

In response to these challenges, the Companies implemented important modifications to statewide marketing in 2016. The 2016 Spring Energize CT brand campaign's new television advertisement with a HES-friendly focus along with increased advertising, outreach, and direct response efforts funded through the program's dedicated marketing budget resulted in increased participation leading up to the co-pay price increase that took effect September 1, 2016. The fall 2016 Energize CT advertising campaign was shifted from the planned "Winterize" campaign to a HES-specific campaign featuring new radio advertisements. The messaging strategy for those new ads incorporated feedback from the HES contractor community and insights revealed through recent customer surveys, as did the enhanced program advertising, outreach and public relations activities that were also deployed in the fall of 2016—all resulting in greater traffic to EnergizeCT.com and higher call volume to the WISE USE call center.

An overview of the 2016 statewide marketing activities is found on the next page in Table A-1.

Table A-1: 2016 Statewide Marketing Review

Communications	EnergizeCT.com	Research
• April-June: "Energizing Me" media campaign • June-August: "Wait 'til 8" digital campaign • Late August – Early October: "HES" • Ongoing: paid search for branding terms • Ongoing: Public Relations	• Responsive web design rolled out in early January • Additional usability enhancements rolled out: Q1 • Educational tips component expanded: Q2 • Personalized homepage content developed: Q2	• March phone survey • June phone survey • September Residential Focus Groups for HES • October online message testing • December phone survey

In 2017, Energize CT's statewide marketing efforts will continue to support and promote the brand and the programs, services, and solutions associated with it – including those administered by the Connecticut Green Bank. As in 2016 and previous years, the Connecticut Green Bank will provide funding, planning, and implementation support to EnergizeCT.com, several of the planned market research studies, and the spring 2017 advertising campaign.

The increased promotional efforts for HES noted above (both from the statewide brand budget and from the program marketing budgets) are driving customers to the WISE USE call center, but most "first contact" is with EnergizeCT.com. In 2017, the Marketing Services Committee ("MSC") Website Committee will work on a series of initiatives designed to improve the overall website experience and foster engagement through refreshed program descriptions, interactive tools, and overall improved usability.

In order for the Energize CT brand stakeholders to have a clear understanding of all the marketing undertaken in 2017—both from the 2017 Marketing Plan budget *and* from the Companies' individual program marketing budgets—the Companies and the Connecticut Green Bank will provide marketing calendars on a quarterly basis to the MSC.

The estimated costs for the 2017 Marketing Plan, including joint activities co-funded with the Connecticut Green Bank, are shown in Table A-2. Please note that the budget allocations between each of the marketing tasks are estimates and subject to re-allocation, pending final, negotiated costs with outside vendors and/or as needed to support program participation goals.

Table A-2: 2017 Statewide Marketing Plan Estimated Costs

Statewide Marketing Plan Task	Eversource	United Illuminating, CNG, and SCG	Connecticut Green Bank	Total
Research	$47,500	$23,750	$23,750	$95,000
Website Maintenance & Enhancements	$160,000	$80,000	$80,000	$320,000
Marketing Communications	$651,712	$252,904	$181,538	$1,086,154
TOTAL	$859,212	$356,654	$285,288	$1,501,154

Metrics and Goals

Goals are measured via professional, independent third-party research surveys and via Google Analytics. Because end-of-year results are not available at the time of the 2017 Plan Update filing, the following Table A-3 reflects final 2015 goals and results, and 2016 goals. In 2017, campaign metrics and goals will be set and approved by the Energy Efficiency Board Marketing Committee. Goals will be established (and adjusted as necessary) for 2017 after 2016 research is completed and reviewed so that the Companies can provide metrics and goals based on customer engagement and market demand anticipated for 2017. The Companies will present proposed metrics and goals to the Energy Efficiency Board Marketing Committee at least one month prior to any statewide campaign launch.

Table A-3: 2015-2017 Metrics and Goals

Metric	2015 Goals/Results	2016 Goals	2017 Goals
Brand Familiarity	Goal: 27.3-27.8% Result: 29.8%	Goal: 32.8%-33.7% End-of-year result: Not yet available	To be determined
Brand Awareness	N/A	New questions added to telephone survey to establish baseline	To be determined
Web Traffic (non-supplier choice) *Percentages use rolling 3-month average*	Goal: 25% increase in sessions Result: 28% increase	Goal: 15% increase in sessions End-of-year result: Not yet available	To be determined
Wait 'til 8	N/A	New questions added to telephone survey to establish baseline	To be determined

Market Research

In 2017, the Companies will build on the professional, independent third-party research studies completed in 2016. Working with the Energy Efficiency Board Marketing Committee and the MSC, the Companies will continue to measure the level of Energize CT brand awareness, brand familiarity, and smart energy resource awareness, to examine the effectiveness of marketing campaigns, and to better understand customers' motivational factors. All members of the MSC (Eversource, the Connecticut Green Bank, United Illuminating, CNG, SCG, and DEEP) will strive to coordinate their research projects to better leverage all efforts.

2017 Market Research Activities

Budget: $95,000

i. Messaging Survey. Building on the online panel message testing and focus groups conducted in 2016, the Companies will continue formal message testing through additional online panel studies. Conducting this study at the very start of the year will allow the Companies an opportunity to test concepts being considered for statewide

campaigns and adjust as necessary. This first messaging survey will focus on residential retrofit topics. (January/February)

ii. Pre-Campaign Brand Awareness Survey. Telephone surveys will continue to be used to measure increases in brand awareness and familiarity. This pre-brand campaign telephone survey will measure awareness prior to launching any large, statewide marketing campaign and will provide the baseline for 2017. (March)

iii. Mid-Year Brand Awareness Survey. A mid-year telephone survey will be conducted to determine progress toward agreed upon goals and objectives. Results will allow the Companies to adjust efforts as needed. (June)

iv. Messaging Survey. This second round of message testing will be used for one of two purposes, depending on the results of the mid-year brand awareness survey. If the survey reveals adjustments are needed, this test will focus on residential retrofit messages currently in the field and seek ways to improve those messages and their delivery. Otherwise, the Companies may test messages for the business community. (July/August)

v. Year-End Survey. To measure results from the baseline survey (pre-campaign brand awareness survey), a year-end telephone survey will be conducted. (Nov/Dec)

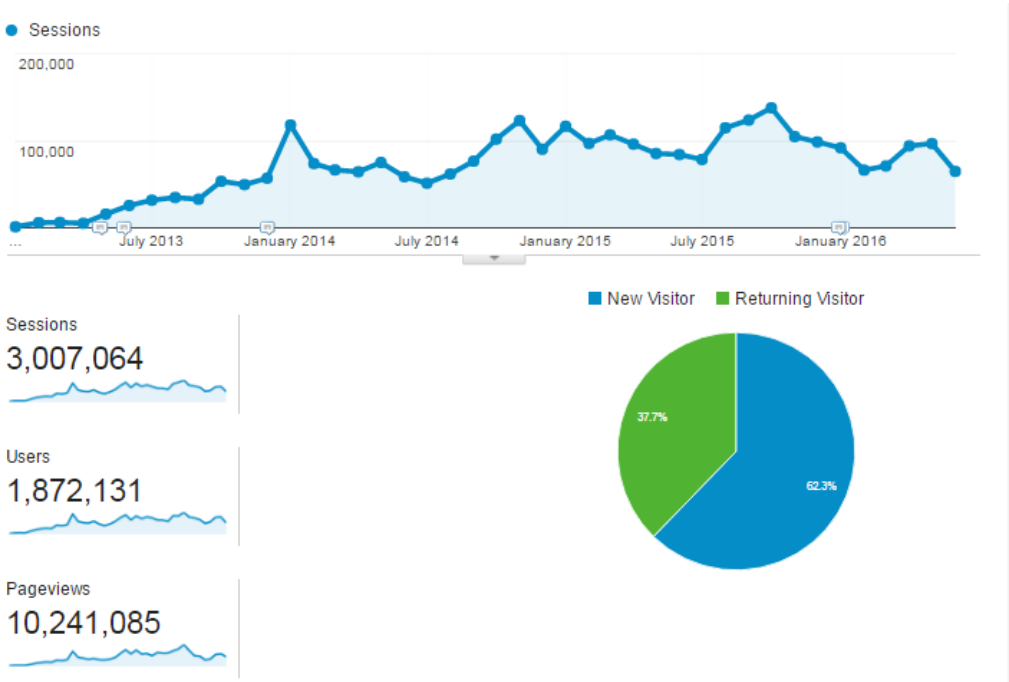
Website Operations, Enhancements, and Technical Support: EnergizeCT.com

Overview

Through the brand's mobile-friendly website, EnergizeCT.com, Connecticut consumers, businesses, and municipalities frequently access energy-efficiency and renewable energy program information, RSVP for Energize CT events, and locate local contractors and lenders. In addition, the website provides a secure platform to disseminate key programmatic information to partner vendors and trade allies.

Since its launch in January of 2013, the site has seen over 3 million sessions with over 10 million page views. During the first half of 2016, activity leveled off, but remained high with average monthly use of 81,000 sessions. Figure A-1 shows the website traffic since its launch (2013) to April 2016.

Figure A-1: 2016 EnergizeCT.com Website Activity



2016 Key Activities

Major changes implemented in January 2016, to facilitate mobile use and streamline the website's hierarchy, were well received by consumers. The implementation of the 2015 Usability Study findings to reduce menu options had the desired result of reducing the number of pages visits (17 percent reduction)—a key indicator that consumers can now more easily navigate the website.

In 2016, efforts focused on continuing to maintain the site as a best-in-class website. Consumers are afforded a personalized experience with suggested solutions based on their prior visits, tips are more readily available and actionable, and cross marketing to Supplier Choice visitors—who have a higher return rate—was actively pursued. Over a dozen modules to facilitate Search Engine Optimization were implemented. Given the overall global increase in cyber-attacks, the website's security and Emergency Action Plan were a high priority.

Planned 2017 Activities

Budget: $320,000

i. Site Maintenance. Ongoing management of site maintenance and readiness is required to ensure that this well-visited, best-in-class energy efficiency and renewable energy website is available 24 hours a day, 7 days a week as a trusted resource for Connecticut consumers and businesses.

ii. Site Security and Performance. Routine monitoring for security issues focused on the platform, server and content will ensure threats are avoided and issues are resolved quickly. Implementation of image optimization modules and the better utilization of tiny Cascading Style Sheets ("CSS") animation will improve site search functions, overall site speed, and performance.

iii. Search Engine Optimization ("SEO") Friendly Content Development. Not only does web content need to be relevant and compelling to consumers, but it also needs to be optimized for search engines. Developing content that meets both needs is an art. To better engage consumers and optimize content, a firm specializing in Content Optimization will be employed to develop a content strategy, edit key pages using our existing SEO analytics tools, and produce SEO quarterly reports.

iv. Mobile App Investigation and Preparatory Work. Industry research shows that the average mobile user checks his or her phone between 110 and 150 times per day. It is no surprise that these "Mobile Moments" are a hot topic in the web industry. With 90 percent of consumers' mobile time spent on Apps, and most accessing almost 30 Apps per month, it has become increasingly more important to explore Apps—along with App digital marketing—opportunities. In 2017, investigation and preparatory work will begin on a mobile app for possible implementation in 2017.

v. Enhance Engagement with a Focus on Consumer Education. Consumers now simply expect more bells and whistles from a website. Clunky search forms are being replaced with animation or search sentences. Quick quizzes or polls are utilized to grab user attention. Graphs bubble and pop. 2017 will include a strong focus on enhancing user engagement with the addition of animation in forms, graphs, banner images, and fun interactive tools/guides/info graphs.

vi. Facilitate Action Features. Upstream incentives require more focus on facilitating trade allies' abilities to take action and sell energy efficiency to their clients and customers. Enhanced map features planned for 2017, along with a new section focused on Real Estate partners, will facilitate their efforts.

vii. Continued Focus on Usability. Ongoing work to ensure users can access relevant content will include projects such as: additional personalization elements, search tools refinements, age responsive design, and localization (language).

viii. Content Management Efficiency Improvements. With over 200 webpages, 1,000 contractors listed in the Energize CT database, and 50 weekly rate updates, maximizing the efficiency of the day-to-day management of the site's content is critical. 2017 efforts will include enhancements to the Content Management System to ensure easy and efficient updating and creation of content and data.

ix. Site Intercept Surveys. Used to inform enhancements and garner consumer engagement, Site Intercept Surveys will continue throughout 2017.

Marketing Communications

Overview

While the Companies and the Connecticut Green Bank primarily employ targeted, solution-based messaging, the statewide communications strategy has traditionally focused on brand awareness and seasonal messaging that needs to reach the broad, relatively undifferentiated mass market in Connecticut. However, as noted in the introduction to this 2017 Marketing Plan, challenges meeting HES goals in late 2015 and continuing throughout 2016 required modification to both the spring and fall 2016 campaigns.

In 2016, the spring campaign was still essentially a branding campaign, but the new 30-second TV commercials (for both residential and small businesses) included much more measure and resource-specific imagery and scripting than the 15-scond advertisements used in 2014 and 2015. Brand attributes were paired with concrete examples to create a high-energy persona for the brand that was more obviously aligned to the HES and SBEA programs. The content strategy for the advertisements was influenced by the 2015 market research studies and the subsequent ad concepts were message tested via professional in-person interviews with residential and business customers.

The fall 2016 campaign was changed from the "Winterize with Energize" theme to a HES-specific campaign with new radio advertisements created in response to lagging participation and the co-pay increase that went into effect on Sept 1, 2016; at the start of the campaign. The advertisements were made longer and more of the key values associated with HES were articulated.

In 2017, a similar approach will be taken, with the understanding that the campaign timing, marketing mix allocations, and creative assets may need to be adjusted in response to market conditions and customer participation levels.

Marketing Communications Strategy and Associated Tactics

The statewide communication campaigns should be considered in the context of the overall communications activities deployed by Eversource, United Illuminating, CNG, SCG, and the Connecticut Green Bank. Together with solution-specific campaigns, customers will be exposed to smart energy messaging consistently throughout the year.

Please note that all campaign tactics outlined in Tables A-4, A-5, and A-6 are subject to change based market conditions and actual need. Costs are budgetary only.

I. Spring Campaign: April-June

As in 2016, broadcast and cable television will be the primary mediums for the 2017 spring campaign. The residential television advertisement created in 2016 will be modified, as needed, based on the results of the market research studies and HES participation levels. No changes to the business television advertisement are proposed.

Additionally, as in previous years, digital advertisements will run on the broadcast affiliate web sites, with extra impressions in Fairfield County to compensate for residents who view New York TV channels.

Table A-4: Spring Campaign (April-June 2017)

Tactic	Primary Message or Objective	Supporting Message	Audience
Revise 30-second Residential TV ad with companion web ads	Energize CT Brand Awareness (personified by the website)	• HES and deeper measures • Financing • Renewable opportunities	Mass market
Existing 30-second Business TV ad with companion web ads	Energize CT Brand Awareness (personified by the website)	• Business solutions including rebates and incentives • Financing	Small and mid-size businesses
Broadcast media buy	• Optimize Reach & Frequency • Leverage value-added opportunities for longer segments, promos, etc.	(See above)	• Mass Market • Small and mid-size businesses
Cable Vision Media Buy	Supplement reach into Fairfield County	(Same as above)	• Mass Market • Small and mid-size
Pandora Radio and HULU TV	• Supplement reach into Fairfield County • Capture streaming audience	(Same as above)	Mass market
Google Search (year-long effort)	Energize CT Brand Awareness	Energize CT general branding keywords	Mass market
Public Relations (year-long effort)	• Energize CT Brand awareness • Statewide event support, Energize CT Center support • Legislative outreach	Varies by opportunity	• Mass market • Associations • Legislative
			Total Estimated Budget: $679,754

ii. Summer Campaign: June-August

Table A-5: Summer Campaign (June-August 2017)

Tactic	Primary Message or Objective	Supporting Message	Audience
Display Ads on Top CT Sites	Wait 'til 8	Energy efficiency	Mass market residential
Google Search (year-long effort)	Energize CT brand awareness	Energize CT general branding keywords	Mass market
Public Relations (year-long effort)	• Energize CT Brand awareness • Statewide event support • Energize CT Center support • Legislative outreach	Varies by opportunity	• Mass market • Associations • Legislative
			Total Estimated Budget:$80,000

iii. Fall Campaign: September-October

Table A-6: Fall Campaign (September-October 2017)

Tactic	Primary Message or Objective	Supporting Message	Audience
Radio	Weatherization and/or HES	Specific values: • Solutions • Save money • Comfort • $1,000 worth of services • Quality of energy-efficiency services	Mass market residential
Out-of-Home	N/A	N/A	Mass market residential
Google Search (year-long effort)	Energize CT Brand Awareness	Energize CT general branding keywords	Mass market
Public Relations (year-long effort)	• Energize CT Brand awareness • Statewide event support • Energize CT Center support • Legislative outreach	Varies by opportunity	• Mass market • Associations • Legislative
		Total Estimated Budget: $326,400	

APPENDIX B: FINANCING

Coordination on Updated Goals and Priorities

Coordination on Updated Goals and Priorities
July 20, 2016 (Update)

Joint Committee of
the Connecticut Energy Efficiency Fund Board and
the Connecticut Green Bank Board

The Energy Efficiency Board and the Connecticut Green Bank have a shared goal to implement state energy policy throughout all sectors and populations of Connecticut with continuous innovation toward greater leveraging of customer funds and a uniformly positive customer experience. The following key priorities, organized by areas of focus, are intended to ensure that principles of leveraging ratepayer funds and continuously improving the customer experience are built into their respective board's goals:

C&I Sector: Government

1) Improve the Customer Experience. Ensure seamless service delivery that is responsive to State and local governmental and institutional needs, including:
    - Integration of appropriate Connecticut Green Bank and other related services, especially for those who aren't currently served by Lead by Example ("LBE")-Energy Savings Performance Contracts ("ESPCs"); and
    - Providing technical support and incentives from the Connecticut Energy Efficiency Fund and the Connecticut Green Bank's capability to finance ESPC projects at scale. Establish and communicate a process for customers undertaking ESPCs to receive technical support through internal utility resources and contracted "owner's representative" services.

2) Establish Sustainable and Cost-Effective Financing Mechanisms. Develop sustainable and cost-effective funding mechanisms for both the preparatory and permanent project financing needs of government sector energy-saving projects.

3) Develop New Products to Fill Market Gaps. For example, develop a financing vehicle for aggregation of small-scale, comprehensive energy-saving projects at municipal or other institutional facilities that are, individually, too big for the Small Business Energy Advantage ("SBEA") financing program, but too small to be standalone ESPC projects.

C&I Sector: Small Business

1) Improve the Customer Experience. Ensure seamless service delivery between services of the Connecticut Energy Efficiency Fund and the Connecticut Green Bank that is responsive to customers' needs, including integration of appropriate Connecticut Green Bank and other allied small business services, especially for those that aren't currently served by the SBEA financing program.

2) Identify and Engage Alternative Capital Sources to Lower the Cost of and Increase Opportunities for Project Financing.

3) Examine Ways to Couple SBEA and C-PACE (or other Financing Offerings). Promote more comprehensive projects (especially among higher energy usage customers) and longer-term payback measures.

C&I Sector: Medium/Large Businesses

1) Improve Understanding of Opportunities Within this Market for Deep Energy-Efficiency Improvements. Build on available knowledge and analysis to develop effective and sustainable incentive and financing strategies for stimulating deeper energy investments and that meet all cost-effective energy-efficiency goals.

2) Increase Customer Savings and Benefits from the C&I Programs. Drive more projects with deeper energy savings, supported with increased financing options (including C-PACE) to help ensure comprehensive investment and closure of financing gaps.

3) Cross-Leverage Connecticut Energy Efficiency Fund and Connecticut Green Bank Programs. Develop and implement communication and marketing strategies to ensure maximum cross-leveraging of these opportunities to help achieve the state goals of acquiring all cost-effective energy efficiency and expanded renewable deployment through highly effective leveraging of customer funds.

Residential Sector: Single-Family

1) Identify Coordinated Strategies for Expanding Comprehensive Loans for the 2016-2018 Period. Calibrate incentive and buy-down levels to achieve more comprehensive projects while reducing program costs.

2) Pursue all Cost-Effective Energy Efficiency in the Residential Sector Using Financing, and increasing the amount of private sector capital where effective (and a simplified approval process where possible and appropriate), to leverage up ratepayer funds and achieve more and deeper savings.

3) Increase Financing in the HES/HPwES Channel to meet needs and drive deeper energy savings and more projects.
    - Increase HES projects with completed follow-ons per the 2016-2018 Plan, using financing as one of the tools to increase completed follow-ons; and
    - Increase the adoption of the Smart-E bundle and CHIF comprehensive loans.

Residential Sector: Multi-Family

1) Reduce Energy Consumption and Costs in Multi-Family Properties consistent with goals in the Connecticut Green Bank's Plan and the 2016-2018 Plan. [MMBTUs per unit].

2) Establish, Align, and Fund Financing Programs to Fill Current Unmet Needs and Gaps, including projects driven by energy-efficiency improvements where capital improvements are a subcomponent. This includes completing the tasks from the May 2015 Lean event.

3) Fund and Complete a Market Analysis of Certain Sectors to Quantify and Qualify this Segment and Identify Gaps, Opportunities, and Best Ways to Serve by the End of 2016. Hard-to-reach sectors include rural areas and non-subsidized, non-rent restricted multi-family housing that is privately owned and serving limited-income tenants (also referred to as naturally-occurring affordable properties).

Residential Financial Metrics (Single-Family and Multi-Family)

Table B-1: Residential Metrics for Single-Family

Action Item	Measurement of Success	Challenges	Target Completion Date	Status	Goals Met
Single Family					
Fully Integrate CHIF into the Smart-E lending program	CHIF is a Smart-E approved lender. CHIF will have been trained/integrated by the Connecticut Green Bank. CHIF will provide loans for both non- credit and credit-challenged customers statewide and will be offering the Bundle. CHIF will be included in the dashboard, website, and all marketing materials	Additional requirements of Webster Bank to provide $6M line of credit (i.e., Connecticut Green Bank Loan Guarantee, ES Utility Inter creditor Agreement required DEEP/PURA approval).	Original Target: Q1-2016; Estimated Target: May 2, 2016	Launched: July 2, 2016	1,2
Track loan activity vs. goals monthly (All loans, comprehensive loans, measures, etc.)	Utilizing the monthly financing cost comparison report data and the energy-efficiency dashboard; graphically show an increase in Smart-E loan activity (quantity) for single measure and comprehensive loans		Ongoing monthly	Ongoing/ monthly review	2,3
Track component costs on a monthly basis (average incentives, buy-down costs, financing costs, program costs, etc.)	Utilizing the monthly financing cost comparison report data; graphically show a decrease in overall financing costs for single measure and comprehensive loans		Ongoing monthly spreadsheet	Ongoing/ monthly review	1,2, 3
Track add-on measures monthly, including which ones receive financing	Utilizing the energy-efficiency dashboard data, graphically show an increase in add-on measures and comprehensive jobs		Ongoing monthly	Ongoing/ monthly review	2,3
Secure Green Loan Guaranty Fund ("GLGF") bond proceeds for Smart-E lending program	Connecticut Green Bank has successfully secured GLGF bond proceeds to provide further support for Bundle/comprehensive loan buy downs		Original Target: Q2-2016; Estimated Target: unknown, due to current budget environment	Did not make Bond Commission Agenda so far in 2016; will continue to pursue	3

Table B-2: Residential Metrics for Multi-Family

Action Item	Measurement of Success	Challenges	Target Completion Date	Status	Goals Met
Multi-Family					
Develop a Tracking Matrix for multi-family (similar to residential) to include all methods being utilized to finance energy improvements to multi-family housing. This includes HES and HES-Income Eligible incentives for multi-family and Connecticut Green Bank, CHFA, DOH financing, etc.	Develop a matrix depicting multi-family financing from Energy Efficiency Fund, Connecticut Green Bank sources, others as available (i.e., LIME, C-PACE, CHFA, DOH, HUD, others). Track activity ongoing once developed		Q1-2016 for development, ongoing for tracking and reporting	Revised template was created and circulated for review	1
Track savings per property financed on a monthly basis (energy savings per unit)	Utilizing company tracking system data – graphically show an increase in the savings per unit (i.e., MMBTU/unit, MMBTU/Square Foot-where possible) for financed multi-family projects		Ongoing, beginning Q2-2016	Companies and Connecticut Green Bank met and are working to establish a joint tracking matrix	1
Create a matrix that aligns funding programs and gaps and develop solutions to fill in the gaps (for example; earlier involvement in CHFA projects, SBEA vendors perform some multi-family services, financing alternatives to CPACE, which doesn't work well below $100K or for FHA financed or HUD insured properties, a large portion of the MFH market)	Completed matrix of gaps and solutions, and action plan to close the gaps		End of Q1- 2016 for the Matrix of gaps End of Q2-2016 for the action plan to close the gaps	Ongoing and complete	2
Fund and complete a market analysis of certain sectors to quantify and qualify the multi-family segment in a meaningful way. For example (small multi-family, condominiums, other building structures and property types, etc., tenant paid vs. owner paid, and affordable vs. market rate)	RFP is issued by Q1-2016; vendor selected Q2-2016 and study completed Q3-2016. Use the analysis to update the solutions to the gaps identified above		Develop and issue an RFP by the end of Q4-2016 Complete study by Q1-2017		2,3

C&I Financial Metrics

Table B-3: C&I Metrics for Government

Action Item	Measurement of Success	Challenges	Target Completion Date	Status	Goals Met
C&I Government					
Companies allocate spending for technical support and incentives to develop ESPC projects. Ensure CEEF support for ESPC owner's representative via internal or contracted support	Sufficient funding available		Q3	Ongoing Companies refiled budget March 1, 2016	1,2
Identify low-cost capital sources (non-utility capital) for municipal loans. Similar Goal for SBEA Any other products contemplating for future for this sector? Example: pre-development loans.	Pool of low cost capital available for municipal and state projects The cost of Connecticut Green Bank sourced capital is lower than the utility cost of capital	Unsecured loans based on utility bill credit history; Process is consistent with SBEA Loan Process/Payment Plan	Q3	Both Companies have faced capital constraints and have adopted interim solutions. Eversource is piloting use of third party capital (M-CORE) to finance Municipal and State Loans. Third-party Muni Market rate capital at 5-6% (or lower) is being bought down to 0% which costs less than buying down utility cost of capital One completed project (New Fairfield) and 3 in the works (Weston, Vernon, and Region 10 School District). Eversource has also increased self-funding for financing SBEA and Municipal loans United Illuminating is currently rationing the capital for municipal and state customers The Companies have also utilized a PURA distributed generation/EE loan product with Bank of America on projects larger than $1M and reduce kW demand. The subsidized rate is 1% below prime or customers lowest interest rate and subsidized through Federally Mandated Congestion Charges Both Electric Companies have jointly met with Connecticut Green Bank to pursue a longer term, sustainable, and cost-effective option for the Green Bank to source more and lower cost capital. The Electric Companies and Green Bank together have reviewed the existing SBEA/Muni loan process. They are developing a proposal in which the Connecticut Green Bank would source and manage capital for small business, municipal, and state customers, including the on-bill repayment option	2,3

Table B-3: C&I Metrics for Government (Continued)

Action Item	Measurement of Success	Challenges	Target Completion Date	Status	Goals Met
C&I Government (continued)					
Update the Master Agreement between CEEF and state for state agencies to provide improved flexibility	Master Agreement in place for both Eversource and United Illuminating	Financing cap imposed; resolution tied to low-cost capital sources action item	Q1	Complete; though cap imposed, highlighting need for items above and below	2,3
Develop new products to fill market gaps: Example 1: develop financing for projects too large for SBEA and too small for ESPC Example 2: Develop a financing vehicle for aggregating smaller, long-term, comprehensive energy-saving projects for multiple municipalities that don't fit the SBEA financing mechanism that ensures that energy savings from one town do not offset financing measures for another town	Products in place for pre-development financing, for mid-sized projects, and for aggregated projects	Connecticut Green Bank researching potential solutions	Q4	Connecticut Green Bank's role is to close financing gaps that private investors and banks will not address Next steps are to have Connecticut Green Bank take on the role of financing a mid-sized program for small business customers and municipal and state customers. Additionally, develop a timeline For municipalities and state facilities – current Connecticut Green Bank strategy is to use the modified SBEA program (under development per the above) to act as an aggregation facility for smaller long-term comprehensive energy-saving projects and roll these into a term facility for the relevant municipalities.	2,3
Issue Green Bond [revenue bonds] for LBE ESPC project for Department of Correction District 1	Indenture document drafted; Green Bond issued	Financing constraint	Q4	Department of Correction ESPC project waiting for financing ($40-$50M). Connecticut Green Bank is awaiting further direction from Office of the Treasurer (OTT) regarding bonding capacity for State	2

Table B-3: C&I Metrics for Government (Continued)

Action Item	Measurement of Success	Challenges	Target Completion Date	Status	Goals Met
C&I Government (continued)					
Connecticut Green Bank will continue to identify other financing vehicles for large projects [including ESPC] that do not involve bonding, both for municipal projects and state projects [might be different vehicles]	Development of financing tools/products	A question from the Attorney General's office is whether a security interest in state projects' equipment is permissible. The Connecticut Green Bank does not see an issue (barrier) for municipal projects	Q4	Connecticut Green Bank is having preliminary discussions with DEEP on this issue	2
Execute on the PURA Distributed Generation/EE Loan with the Bank of America that provides an interest rate buy-down for this sector [usually for municipal performance contracts]	Execution	Execution dependent on projects completing technical studies/scope	Q3 ongoing	Connecticut Green Bank assessing viability for using for other performance contracts by using with Clean Renewable Energy Bonds for a project that will benefit the City of Meriden. [*currently electric only projects with demand savings qualify for the interest rate buy down portion*]	2

Table B-4: C&I Metrics for Small Business

Action Item	Measurement of Success	Challenges	Target Completion Date	Status	Goals Met
Small Business					
Coordinate with Connecticut Green Bank to finance projects with longer term (i.e., greater than 4 year paybacks) and more comprehensive projects that are too large for SBEA as currently structured	Development and implementation of a financing mechanism to facilitate projects with longer than 4-year paybacks and more comprehensive projects that are too large for SBEA	Identification of optimal strategy to finance these types of projects; identification of projects	Q2	Continued communication and dialogue on the process, with various options being considered, including current development of a "product extension" SBEA financing, as well as a joint SBEA/C-PACE coordinated strategy For regular C&I/non-municipalities – current Connecticut Green Bank strategy is to develop a "product extension" of the modified SBEA program (under development per the above). This will follow by some period of time after the modified program is launched (might not complete by 6/30/17)	1,2
Identify low-cost capital sources (non-utility capital) for SBEA loans. Similar goal for municipal loans	Pool of low cost funds available for SBEA Loans. The cost of funds is lower than the utility cost of capital	Unsecured loans based on utility bill credit history; Process is simple and sold by contractors	Q3	Companies and Connecticut Green Bank are pursuing solution that applies to municipal, state, and small business customers. See update in government sector section	2,3

Table B-5: C&I Metrics for Medium/Large Business

Action Item	Measurement of Success	Challenges	Target Completion Date	Status	Goals Met
Medium/Large Business					
Target Segments (e.g., Nursing Homes and Manufacturing) to identify and develop a comprehensive project with financing options	Completion of a joint Nursing Home Project which combines utility incentives plus C-PACE project financing		Q3	Joint collaborative projects are being evaluated to maximize the potential for deep energy retrofits (i.e., Stamford Town Center, Bridgeport Diocese, etc.) Had a successful workshop with Connecticut Green Bank, the Companies, DEEP, and Nursing Homes Association	1,2
Develop a tool/cut-sheet for a comprehensive project offering with financing options	Simple and unified comprehensive /financing offer		Q3	Companies have begun pulling together existing tools/cut-sheets to share to develop a comprehensive project offering that includes financing options	2, 3
Develop an enhanced process flow model	Simple and unified process flow model		Q2-Q3	Connecticut Green Bank has developed a model which will be shared with the Companies Companies will share their current process models also	1,2,3
Identify other cost effective segment and other project opportunities	Identify segment, projects and complete a joint project in alignment with the findings from above. Create a summary report on Joint Projects		Q3	Companies and Connecticut Green Bank are pulling together their studies, segment efforts and will share with the intent of identifying other cost effective segment and project opportunities	2,3

APPENDIX C: PUBLIC INPUT COMMENTS

2017 Update to 2016-2018 C&LM Plan - Public Input Comments
Company and Energy Efficiency Board Positions

October 13, 2016

Note: All submitted written comments, and a list of all stakeholders who participated in the public input process, may be accessed at Box.net:
https://app.box.com/s/t8jgs8r5ssdo4ggd1zu30bezf1hi6lh9

Also note that several of the public input comments addressed the increase in the HES co-pay. As noted in the Companies' responses, the HES co-pay was increased per the Final DEEP Approval of the 2016-2018 Plan, and therefore the co-pay increase has been implemented by the Companies.

PUBLIC COMMENT NO. 1: NICK ADAMS

Representing: Comverge
Date Input Received: June 8, 2016
Input Method(s): Written comments, and verbal comments at Public Input Session

Requests/Comments:

Mr. Adams said that Comverge is a demand response provider with 6 million devices installed and 2 million customers recruited into programs nationally. He said that Connecticut should provide more robust demand response programs. See written comments for more detail on Comverge's projects and recommendations for CT's programs: https://app.box.com/s/efnwxrcoxv3eqlaeub5zkj0a96j7wn4i.

Companies' Position(s):

- The Companies detail their demand reduction strategies and demand response pilots further in Chapter Three of the 2017 Plan Update. The 2017 Plan Update includes demand reduction strategies for both the residential and C&I markets.

- In 2016 the Companies launched two residential pilots to quantify the potential active demand reduction savings value of smart Wi-Fi thermostats and smart plug load controls. In the fall of 2016, Eversource customers enrolled in both the Smart Plug Load Control and Wi-Fi Thermostat pilot participants participated in a test event coinciding with ISO New England's summer seasonal month. For customers enrolled in United Illuminating's Smart Plug Load Control pilot, several test events and two demand reduction events (lasting four hours) were called during the summer of 2016. These four events coincided with ISO New England's summer seasonal peak hours.
- In 2016, the Companies evaluated several approaches to helping various C&I market segments achieve active demand reductions, per their commitment in the 2016-2018 Plan. This analysis resulted in the creation of several unique pilot designs to address the small business, mid-market, and large C&I facility market segments. Launching in 2017, these pilots will help the Companies determine if full-scale demand reduction and demand response technologies are economically viable, feasible, and reliable as demand resource strategies for C&I facilities.

Energy Efficiency Board Position:

- The Energy Efficiency Board will continue to work with the Companies to identify and pursue innovative demand reduction activities to be implemented on a timely basis, including some efforts that may be in addition to those demand response pilots already identified in the 2016-2018 Plan and the 2017 Plan Update. The Energy Efficiency Board will also review the results of proposed evaluation efforts of the Companies' demand response pilots and the experiences of other efforts, and will work with the Companies to ensure the performance of the pilots and programs as they are rolled out statewide.
- In its letter of support on the 2017 Plan Update, the Energy Efficiency Board communicated the following regarding the scope, level of effort, and timing of the residential and C&I demand reduction pilots: The Companies should ensure that an adequate number of pilot sites across the key targeted customer segments covering the demand reduction strategies to be tested are installed and fully operational before the summer of 2017, considering the importance of the demand reduction pilots as a crucial step in addressing peak demand issues in Connecticut. The Energy Efficiency Board understands there is limited budget available for the pilots in 2017 and the Energy Efficiency Board is not recommending an increase in the pilot budgets. As one approach for stretching the available funding, the Energy Efficiency Board recommends that the Companies enroll additional customers that have existing infrastructure (i.e., controls,

software, etc.) compatible with the design and focus of each pilot so that more customers can participate in the pilots and more results from the pilots are available. The Energy Efficiency Board also encourages the Companies to identify and pursue other opportunities for expanding the number of sites in the pilots, including through adding some recent participants in the energy-efficiency programs to the pilots, where appropriate. All of the pilot sites focusing on summer peak demand should be fully installed in the field by mid-May 2017, in time for testing during the summer of 2017. This timing is critical, so that the Companies, the Energy Efficiency Board, DEEP, and others can review the results of the summer 2017 pilots in September-October 2017, and then the Companies and Energy Efficiency Board can complete the planning for demand reduction activities for 2018 as part of the 2018 Plan Update process.

PUBLIC COMMENT NO. 2: LETICIA COLON
Representing: Self
Date Input Received: June 8, 2016
Input Method(s): Verbal Comments at Public Input Session

Requests/Comments:

Ms. Colon commented on the HES co-pay. She said that raising the co-pay would not help Connecticut reach its environmental goals as stated in statute. She said that the programs have not been successful in educating consumers on the value of energy efficiency. She said the programs should focus on actions that remove barriers to energy efficiency, not on actions that would introduce new barriers.

Companies' Position(s):

- The Companies raised the co-pay per the Final DEEP Approval of the 2016-2018 Plan. This co-pay modification was made to increase the share of program participants' investments in order to advance a long-term goal of market transformation, and to increase the scalability of residential energy-efficiency programs.
- The Companies believe that consumer do recognize the value of energy efficiency. A recent third-party study[69] reported that customers were motivated by a desire to save energy and energy costs. In addition to energy savings, customers placed a high value on non-energy impacts ("NEIs").

[69] Project R4 HES/HES-IE Process and R31 Real Time Research, NMR Group, Inc. April 13, 2016. Available at: http://www.energizect.com.

Energy Efficiency Board Position:

- The Energy Efficiency Board continues to emphasize the importance of increasing the customer perception of value and communicating the multiple aspects of value that HES provides. While the "value of energy efficiency" has been an area of focus under the last three statewide marketing plans (with specific dedicated campaigns for promoting the value of energy efficiency) and under programmatic marketing; it has taken on renewed importance this year and next. For example, new HES radio advertisements introduced in fall 2016 are longer form (60 seconds) in order to describe the many values that HES provides. Additionally, message testing this year and next is exploring how best to communicate value to Connecticut consumers. The results from this research will be used to enhance marketing messages and tactics moving forward.

PUBLIC COMMENT NO. 3: TIM FABUIEN

Representing: Aiello Home Services
Date Input Received: June 8, 2016
Input Method(s): Verbal Comments at Public Input Session

Requests/Comments:

He said he understands the need to raise the HES co-pay at some time in the future, but now is not the right time to do so, due to the reduced demand for HES services this year.

Companies' Position(s):

- The Companies raised the co-pay per the Final DEEP Approval of the 2016-2018 Plan. This co-pay modification was made to increase the share of program participants' investments in order to advance a long-term goal of market transformation, and to increase the scalability of residential energy-efficiency programs.

Energy Efficiency Board Position:

- As noted in the Companies' response, the co-pay increase was ordered by DEEP and has been implemented by the Companies. The Energy Efficiency Board is aware of the challenges that an increased co-pay presents to individual HES vendors and to the HES program as a whole. The Energy Efficiency Board has been working closely with the Companies, and will continue to do so, on enhanced marketing activities that we believe will help mitigate the impacts of the higher co-pay. As needed, the Energy Efficiency Board will also recommend that the Companies implement other efforts (e.g., rebating

some or all of the co-pay when follow-on measures are installed), to increase HES participation and to achieve deeper per participant energy savings.

PUBLIC COMMENT NO. 4: MIKE GIONFRIDDO

Representing: Victory Energy Solutions
Date Input Received: June 8, 2016
Input Method(s): Verbal Comments at Public Input Session

Requests/Comments:

Mr. Gionfriddo said that the HES co-pay should not be increased. He said that if the HES co-pay is increased, Victory Energy Solutions and other HES vendors would need to raise their marketing costs. He said that that even the current $99 co-pay is a barrier, and also noted that there is no co-pay in Massachusetts. He recommended that the programs reduce the co-pay to stimulate demand for HES services.

Companies' Position(s):

- The Companies raised the co-pay per the Final DEEP Approval of the 2016-2018 Plan. This co-pay modification was made to increase the share of program participants' investments in order to advance a long-term goal of market transformation, and to increase the scalability of residential energy-efficiency programs.

Energy Efficiency Board Position:

- The Energy Efficiency Board agrees on the importance of conditioning and preparing the market. In its July 2016 memo on enhancements to HES marketing, the Energy Efficiency Board underscored this point and made several recommendations to enhance HES marketing activities. These recommendations are being explored and implemented by the Companies in 2016 and 2017. In particular, several marketing initiatives to provide enhanced support to HES contractors are being pursued. The Companies are meeting regularly with the vendor community to share results of market research, to learn from each other, and to determine what additional marketing resources are needed. Additionally, a contractor "portal" on EnergizeCT.com will be launched in late 2016 to improve information sharing with the HES contractor community; as well as a new cloud-based software tool to enable HES contractors to create customized marketing collateral. Finally, the 2017 Plan Update includes a new area for "Support for HES Contractors" that

will result in increased marketing support for contractors next year informed by feedback and input from the contractor community.

PUBLIC COMMENT NO. 5: SCOTT HASTIE

Representing: Community Renewal Team
Date Input Received: June 8, 2016
Input Method(s): Verbal Comments at Public Input Session

Requests/Comments:

Mr. Hastie questioned the goal of increasing the HES co-pay. He said that he views energy efficiency as a referral-based business, so the programs should place more emphasis on referral-based marketing. He also said that the programs need to work on the issue of landlord approval for income-eligible customers.

Companies' Position(s):

- The Companies raised the co-pay per the Final DEEP Approval of the 2016-2018 Plan. This co-pay modification was made to increase the share of program participants' investments in order to advance a long-term goal of market transformation, and to increase the scalability of residential energy-efficiency programs.
- In response to the DEEP Decision on the 2016-2018 Plan, and consistent with the R157 Multi-Family process evaluation findings, the Companies have worked to identify and implement several enhanced processes for the Multi-Family Initiative workflow.

Energy Efficiency Board Position:

- The Energy Efficiency Board agrees on the importance of referral-based marketing. In its July 2016 memo on enhancements to HES marketing, the Energy Efficiency Board highlighted opportunities to expand word of mouth marketing strategies and opportunities to automatically refer customers to HES. These recommendations are being explored and implemented by the Companies in 2016 and 2017.
- The Energy Efficiency Board is aware of the challenges of providing efficiency services to the income eligible multifamily sector. The Energy Efficiency Board will work with the Companies to review and revise, as appropriate, HES-Income Eligible approval procedures in multifamily buildings

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PUBLIC COMMENT NO. 6: RAQUEL KENNEDY

Representing: Victory Energy Solutions
Date Input Received: June 8, 2016
Input Method(s): Written Comments, and Verbal Comments at Public Input Session

Requests/Comments:

Ms. Kennedy said that Victory Energy Solutions is strongly opposed to raising the HES co-pay, particularly at this time when what is needed is a reduction in the HES co-pay to stimulate demand for HES services. She said that HES is the first step for customers to implement energy efficiency measures, and therefore the barriers to HES should be minimized. She said that the programs' focus on promoting the Energize CT brand has not increased demand for HES services. She said that the programs should be focused on helping consumers understand the value of energy efficiency, not on raising the HES co-pay. She also said the raising the HES co-pay would decrease participation in the Clean Energy Communities program, have a negative economic impact on HES providers, and be in conflict with the goal of weatherizing 80% of Connecticut homes by 2030.

Companies' Position(s):

- The Companies raised the co-pay per the Final DEEP Approval of the 2016-2018 Plan. This co-pay modification was made to increase the share of program participants' investments in order to advance a long-term goal of market transformation, and to increase the scalability of residential energy-efficiency programs. The Companies agree that the program should be focused on helping customers understand the value of energy savings, but also believe that consumers may be motivated by other factors such as higher comfort or a desire to save the environment. As such, the Companies utilize multi-pronged marketing messages designed to resonate with all customers.

Energy Efficiency Board Position:

- The Energize CT brand was created to alleviate confusion in the market place and establish a "one-stop shop" and core information and facilitation resource for diverse Connecticut audiences to access and share information on energy efficiency and renewable energy. In 2016, more than half of Connecticut respondents reported awareness of the Energize CT brand; and more than 20 percent of program participants indicated that they participated in a program after exposure to the brand. In 2016, statewide marketing materials and tactics have placed special emphasis on the connection between the Energize CT brand and HES. For instance, the 2016 spring brand

campaign featured a television advertisement with a HES-friendly focus, and the fall brand campaign was an HES-specific campaign that featured new HES radio. The Statewide Marketing Plan will continue this emphasis in 2017. For example, the television advertisement used for spring brand campaign will be re-edited to tell an even stronger HES story.

PUBLIC COMMENT NO. 7: RYAN KISCADEN

Representing: Thermostat Recycling Corporation

Date Input Received: July 13, 2016

Input Method(s): Written Comments

Requests/Comments:

Mr. Kiscaden said that Thermostat Recycling Corporation ("TRC") is a non-profit organization established in 1998 which has recycled more than two million mercury thermostats nationally. He said that Connecticut's energy-efficiency programs should have in place a program to recycle mercury-containing thermostats. He said that is consistent with Connecticut legislative requirements in Public Act 12-54. See TRC's written comments for more detail: https://app.box.com/s/gffd57wb7hznb7d5u1xi33k93kaixrrd.

Companies' Position(s):

- The Companies agree that the proper disposal of mercury thermostats is a critical issue. However, the Companies believe that an energy-efficiency program to recycle mercury thermostats would create redundancy with Public Act 12-54 (Connecticut's Thermostat Stewardship Law) which provides strict guidelines for the disposal of mercury thermostats to manufacturers, wholesalers, installers, contractors, residents, and municipalities.

Energy Efficiency Board Position:

- As program efforts to promote Wi-Fi and smart thermostats increase, the Energy Efficiency Board will work with the Companies to ensure that program vendors and participants are informed of requirements for the proper recycling of mercury thermostats.

PUBLIC COMMENT NO. 8: HENRY LINK

Representing: Enviro Energy Connections
Date Input Received: July 13, 2016
Input Method(s): Written Comments, and Verbal Comments at Public Input Session

Requests/Comments:

Mr. Link said that he strongly opposes an increase in the HES co-pay. He said that it should stay at the current $99 level. He also said that thinks the TV ads for the program are effective, and that customer testimonials are an effective way to market the programs.

Companies' Position(s):

- The Companies raised the co-pay per the Final DEEP Approval of the 2016-2018 Plan. This co-pay modification was made to increase the share of program participants' investments in order to advance a long-term goal of market transformation, and to increase the scalability of residential energy-efficiency programs.

Energy Efficiency Board Position:

- The effectiveness of marketing tactics and messages are regularly researched as part of marketing implementation. Research from the last two years shows strong recall for television advertisements and television segments. In addition, the Companies are able to deliver millions of impressions via this medium (~21 million impressions were delivered through subscription and broadcast television under the spring brand campaign). Due to its effectiveness, television will again be leveraged as a medium under the 2017 Statewide Tactical Marketing Plan.

PUBLIC COMMENT NO. 9: BOB NEAL

Representing: Home Performance Alliance of CT (HPACT) and the Energy Store
Date Input Received: June 8, 2016
Input Method(s): Written Comments, and Verbal Comments at Public Input Session

Requests/Comments:

Mr. Neal said he was providing comments as Chair of HPACT. He said that HPACT does not support raising the HES co-pay at this time. He said that HPACT would support a decrease in the HES co-pay at this time. He said that HPACT fully supports market transformation, but raising the co-pay should be done when the timing is right for an increase, which is not now given the

current adverse factors of slow demand in the summer, warmer than normal winter temperatures, and low oil prices. He said that increasing the co-pay will deter new HES providers from entering the market, at a time when the market has been opened up to all qualified HES vendors for the first time beginning in 2016. He also said that consumers need to be educated on the value of energy efficiency.

Mr. Neal also provided brief comments as President of The Energy Store. He said that CT's energy efficiency programs were among the best.

Companies' Position(s):

- The Companies raised the co-pay per the Final DEEP Approval of the 2016-2018 Plan. This co-pay modification was made to increase the share of program participants' investments in order to advance a long-term goal of market transformation, and to increase the scalability of residential energy-efficiency programs.

Energy Efficiency Board Position:

- As noted in the Companies' response, the co-pay increase was ordered by DEEP and has been implemented by the Companies. The Energy Efficiency Board is aware of the challenges that an increased co-pay presents to individual HES vendors and to the HES program as a whole. The Energy Efficiency Board has been working closely with the Companies, and will continue to do so, on enhanced marketing activities that we believe will help mitigate the impacts of the higher co-pay. As needed, the Energy Efficiency Board will also recommend that the Companies implement other efforts (e.g., rebating some or all of the co-pay when follow-on measures are installed) to increase HES participation and to achieve deeper per participant energy savings.

PUBLIC COMMENT NO. 10: RICK OLISKY

Representing: Uplands Construction

Date Input Received: June 8, 2016

Input Method(s): Verbal comments at Public Input Session

Requests/Comments:

Mr. Olisky recommended that that the programs consider developing a new "pre-assessment" program, in which a non-technical individual (e.g., salesperson) from a HES vendor would have the first contact with customers, rather than a technician. He said that customers can get too

overwhelmed with all of the activities happening at the HES visit. He said that his company had used this approach in Rhode Island, and said that it had resulted in deeper savings than in Connecticut. He said that he had suggested this idea to the Companies' Program Administrators, and said that the Administrators' response was that such an approach would be too costly.

Companies' Position(s):

- The HES vendors conduct a telephone screening of all HES participants. As part of this process, customers are briefed on the program and what to expect during the HES visit. The Companies believe that this process is more cost effective and more convenient for customers compared to having a sales representative visit the home.
- The Companies have also conducted a number of several HES vendor roundtable events.

Energy Efficiency Board Position:

- The Energy Efficiency Board has been aware of similar recommendations that have arisen in past HES Vendor Roundtables. While there may be value to the proposed pre-assessment visit for some customers, the Energy Efficiency Board shares the Companies' concerns regarding the cost implications of such an additional visit. The Energy Efficiency Board also notes that the Companies have provided HES technicians with sales training to increase the likelihood of follow-on measure implementation and deeper savings.

PUBLIC COMMENT NO. 11: JAKE OSTER

Representing: Energy Saavy
Date Input Received: June 8, 2016
Input Method(s): Verbal comments at Public Input Session

Requests/Comments:

Mr. Oster said that Energy Saavy provides energy tracking software for utilities. He said that Energy Saavy was implementing the "EM&V 2.0" concept, and said that Connecticut was a leading state in working on "EM&V 2.0."

Companies' Position(s):

- The Companies are very aware of Energy Savvy and have been actively communicating with the company regarding the possibility of incorporating the "EM&V 2.0" concept within the Companies' energy-efficiency programs.

Energy Efficiency Board Position:

- The Energy Efficiency Board concurs with the Companies' position and notes planned EM&V 2.0 activities that will be pursued in Connecticut in 2017 with federal funding. These activities are described in more detail in the 2017 Plan Update.

PUBLIC COMMENT NO. 12: BERNIE PELLETIER

Representing: Self
Date Input Received: June 3, 2016
Input Method(s): Written Comments

Requests/Comments:

Mr. Pelletier said that he does not support an increase in the HES co-pay because increasing the barrier in an already slow market would further exacerbate the reduced demand for HES services. He also said that the people who need energy-efficiency services the most are ones who least can afford them, so increasing the co-pay would make it more difficult for such families to obtain energy efficiency services. Mr. Pelletier also suggested that the programs set a goal for providing HES services to all accounts within a five-year timeframe. Such a goal might be impossible to achieve, but it would better focus the utilities on increasing the demand for HES services.

Companies' Position(s):

- The Companies raised the co-pay per the Final DEEP Approval of the 2016-2018 Plan. This co-pay modification was made to increase the share of program participants' investments in order to advance a long-term goal of market transformation, and to increase the scalability of residential energy-efficiency programs.
- The Companies believe that providing HES services to accounts within a five-year time frame is unfeasible. This would result in a five-fold increase in current participation levels, and would not be consistent with developing a long-term market transformation strategy.

Energy Efficiency Board Position:

- As noted in the Companies' response, the co-pay increase was ordered by DEEP and has been implemented by the Companies. The Energy Efficiency Board is aware of the challenges that an increased co-pay presents to individual HES vendors and to the HES program as a whole. The Energy Efficiency Board has been working closely with the Companies, and will continue to do so, on enhanced marketing activities that we believe will help mitigate the impacts of the higher co-pay. As needed, the Energy Efficiency

Board will also recommend that the Companies implement other efforts (e.g., rebating some or all of the co-pay when follow-on measures are installed), to increase HES participation and to achieve deeper per participant energy savings.

- The Energy Efficiency Board is also aware of the additional challenges that a co-pay increase places on moderate income customers. The Energy Efficiency Board will monitor HES participation across income demographics to ensure equitable levels of participation.
- The Energy Efficiency Board also largely concurs with the Companies' response on the proposed five-year timeframe to provide HES services to all accounts. Under the current HES model there are not sufficient funds to provide this level of service, nor is there likely to be sufficient customer demand to achieve this level of program participation. Even if one assumes a more market-based program less reliant on ratepayer funding, the proposed level of program participation is not realistic.

PUBLIC COMMENT NO. 13: VIVIAN PEREZ
Representing: HE Energy Solutions

Date Input Received: June 8, 2016

Input Method(s): Verbal Comments at Public Input Session

Requests/Comments:

Ms. Perez said that raising the HES co-pay would damage the HES program and confuse HES customers. She said that the HES vendors should have the ability to market HES services on their own, outside of the Energize CT "umbrella." She said that customers need to be better educated on the value of energy efficiency.

Companies' Position(s):

- The Companies raised the co-pay per the Final DEEP Approval of the 2016-2018 Plan. This co-pay modification was made to increase the share of program participants' investments in order to advance a long-term goal of market transformation, and to increase the scalability of residential energy-efficiency programs.
- The Companies support HES vendors' marketing efforts but believe that the Energize CT umbrella is necessary to avoid market confusion.

Energy Efficiency Board Position:

- The HES contractors play a critical role in marketing HES by expanding the reach of the Companies' marketing efforts and turning inquiries into qualified leads and projects. To

that end, as described above, a primary focus in 2016 and 2017 is to provide enhanced marketing support to HES contractors.

- As described above, the Energize CT brand was created to alleviate confusion in the market place and establish a "one-stop shop" and core information and facilitation resource for diverse Connecticut audiences to access and share information on energy efficiency and renewable energy. Research results demonstrate that the brand has been effective. Indeed, in 2016 more than half of Connecticut respondents reported awareness of the Energize CT brand; and brand familiarity continued to grow.

PUBLIC COMMENT NO. 14: NATALIE TREAT

Representing: Northeast Energy Efficiency Partnerships ("NEEP")

Date Input Received: June 8, 2016

Input Method(s): Written Comments and Verbal Comments at Public Input Session

Requests/Comments:

Ms. Treat referred Energy Efficiency Board members to her written comments, which contain several recommendations from various NEEP staff members. The written comments can be accessed here: https://app.box.com/s/x96ahoa0nbboyt8y0q6j0khiqkhvk4tx. Ms. Treat also added that she believed the HES co-pay should not be raised at this time, due to reduced demand. She said that NEEP does not want to see further barriers to HES services introduced.

Companies' Position(s):

- The Companies largely agree with the submitted NEEP comments and will continue to collaborate with NEEP.

Energy Efficiency Board Position:

- The Energy Efficiency Board thanks NEEP for its continued interest and engagement on Connecticut's energy-efficiency activities. The Energy Efficiency Board is aware of the opportunities that NEEP has identified that may enhance current program offerings, e.g., Home Energy Management Systems ("HEMS"), EPA's Retail Products Platform, Home Energy Scores, LED street lighting, industrial efficiency, etc. As recognized by NEEP, the Companies are already actively pursuing many of these opportunities and, as NEEP acknowledges, Connecticut is a regional leader, e.g., Home Energy Scores and up/midstream promotion of HVAC equipment. The Energy Efficiency Board acknowledges

and concurs with many of the points and recommendations made in both NEEP's original comments for the 2016-2018 Plan and subsequently for this 2017 Plan Update. The Energy Efficiency Board and its Consultants have also been monitoring other identified activities and have been in discussions with the Companies as to their possible inclusion. Also these and the other recommendations have or are being addressed through the Energy Efficiency Board's respective Residential, C&I, Marketing and Evaluation committees. For example:

- The Companies will consider participation in the EPA's Retail Products Platform.
- Similarly, the Companies and the Energy Efficiency Board will be considering the addition of non-energy impacts in program screening, as well as the more completed quantification of all fuel savings when technologies like heat pumps are employed to displace fuels other than electricity. Both of these opportunities are addressed in the 2017 Plan Update.
- Connecticut's programs are pursuing many of the next generation efficiency items listed by NEEP (controls, comprehensive savings, O&M, and productivity improvement savings).
- The Companies' C&I Program Administrators, in collaboration with the Energy Efficiency Board's C&I Committee, are working on a comprehensive advanced lighting strategy in anticipation of changes in lighting standards and to maximize savings from advances in screw-in and linear LEDs.
- Connecticut is engaged in a comprehensive effort to change over all streetlights to LED in the next three years. The Energy Efficiency Board continues to support the effective use of advanced LED technologies and is referencing the solutions offered within NEEP's recent study to examine how a rapid conversion to LED technologies might cost-effectively advance energy-efficiency programs within the state.
- The Companies have segmented the C&I market and are both developing and implementing customized approaches to the various segments. This includes large manufacturers, who the Companies are addressing with specialized sub-segments. The C&I programs also offer Strategic Energy Management programs that continue to evolve.

PUBLIC COMMENT NO. 15: GUY WEST

Representing: Clean Water Action/Clean Water Fund
Date Input Received: June 8, 2016
Input Method(s): Written Comments, and Verbal Comments at Public Input Session

Requests/Comments:

Mr. West said that the increase in the HES co-pay should be deferred to a different time. He said that low oil prices and the mild winter have resulted in decreased demand for HES services, and that an increase in the HES co-pay would exacerbate the reduction in demand. He said that it is very important to promote the value of HES to customers through outreach and marketing.

Companies' Position(s):

- The Companies raised the co-pay per the Final DEEP Approval of the 2016-2018 Plan. This co-pay modification was made to increase the share of program participants' investments in order to advance a long-term goal of market transformation, and to increase the scalability of residential energy-efficiency programs.

Energy Efficiency Board Position:

- As noted in the Companies' response, the co-pay increase was ordered by DEEP and has been implemented by the Companies. The Energy Efficiency Board is aware of the challenges that an increased co-pay presents to individual HES vendors and to the HES program as a whole. The Energy Efficiency Board has been working closely with the Companies, and will continue to do so, on enhanced marketing activities that we believe will help mitigate the impacts of the higher co-pay. As needed, the Energy Efficiency Board will also recommend that the Companies implement other efforts (e.g., rebating some or all of the co-pay when follow-on measures are installed) to increase HES participation and to achieve deeper per participant energy savings.

APPENDIX D: COMPLIANCE ORDERS

Item #	Topic or Program	Condition of Approval	Due Date	Status
1	**District Heating Loops**	The Companies shall submit to DEEP's Bureau of Energy and Technology Policy (BETP) for DEEP's records the status of implementation of the new statutory authorization that allows energy savings resulting from connection to district heating loops that use waste heat to be eligible for incentives. The funding of such incentives is incremental to the Conservation and Load Management budget, pursuant to Section 242 of Public Act 15-5 (June Special Session). The Companies describe on page 400 of the Plan how they intend to implement this provision. The report would be used to educate others and inform action in this sector.	09-01-16	Filed 09/01/16
2	**Demand Response**	The Companies shall submit to BETP for DEEP's review and approval a report that documents progress developing implementation strategies to advance the deployment of Demand Response technology, particularly in the Commercial and Industrial sector, including a timeline for action. DEEP is pleased to see that Demand Response pilots are included in the Plan, with specific plans noted for the residential sector, and a note that a pilot will occur for the Commercial and Industrial sector. DEEP is interested in an increased focus on the Commercial and Industrial sector. Such report on the status of demand response shall identify the locational and durational nature of demand issues and identifying opportunities that are related to geography and peak demand. Such report will help inform state planning and design of future actions, regardless of the outcome of current pending litigation on certain demand reduction programs. The Companies shall provide recommendations on the timeline for developing permanent programs and on the funding mechanism for such programs. These recommendations will be especially important in the Commercial and Industrial Sector if regional independent system operator demand response programs are not supported by court decisions.	04-01-16 and include in Annual updates for 2017 and 2018	Initial report separately filed 04/01/16 See Chapter 3 of the 2017 Plan Update

Item #	Topic or Program	Condition of Approval	Due Date	Status
		Additionally, such report shall include a summary of the state of Time Varying Rates or Time-of-Use Rates in Connecticut. Such report shall include a summary of all customer participation and the energy savings associated with Time Varying Rates or Time-of-Use Rates in each electric utility's service territory; the potential to achieve additional cost-effective energy savings through optimization of Time Varying Rates or Time-of-Use Rates and other regulatory and incentive mechanisms in Connecticut. The Companies should include implementation recommendations for integrating information about Time Varying Rates or Time-of-Use Rates with the customer engagement platforms to better allow customers to receive economic signals and to encourage greater participation in the United Illuminating territory. Such report shall include an update on Eversource's progress in deploying advanced metering systems consistent with CGS 16-243w and provide an update on efforts to provide two-way communication using equipment other than meters to increase the ability of customers to participate in Time- of-Use Rates and demand response programs. For the 2016 report, United Illuminating shall describe how they are encouraging participation and use of Time Varying Rates currently and how they will develop a plan for implementing critical peak pricing and additional dynamic pricing options. In 2017, United Illuminating shall summarize the effectiveness of Time Varying Rates or Time-of-Use Rates and any new dynamic pricing structures in United Illuminating territory. In 2018, Eversource shall assess how Eversource can apply the results of the information provided by United Illuminating to enable customers to use Time Varying Rates or Time-of-Use Rates and other dynamic pricing options.		
3	**Street Lighting**	The Companies shall submit to BETP for DEEP's records a report that summarizes the state of street lighting in Connecticut. Specifically, the Companies shall provide best estimates of the numbers of street lighting fixtures owned by the utilities, municipalities, and the State of Connecticut. To the extent such information is available to	09-01-16	Filed 08/09/16 (Eversource) Filed 09/01/16

Item #	Topic or Program	Condition of Approval	Due Date	Status
		the Companies, the report shall quantify how many street lights in each category have been upgraded to LED technology and/or with advanced lighting controls. The Companies will provide recommendations on the timeline for upgrading street lights in each of these categories, and the recommended funding mechanism for such upgrades.		(United Illuminating)
4	**Comprehensive coordinated plan for public education and the education of students**	DEEP does not concur with the Board's response to DEEP's question which noted that the Board "does not feel an additional 'overall plan for education in the future' is needed at this time" (*Energy Efficiency Board Responses to DEEP Requests for Information*, November 16, 2015). DEEP only approves the "Educate the Public" and "Educate the Students" portions of the budget for the first three quarters of calendar year 2016. The remainder of 2016 and years 2017 and 2018 are not approved and a proposed budget shall be provided in the 2017 Annual Update, not to exceed the currently proposed 2017 and 2018 budget levels, that is reflective of planning conducted through the following process: In the first half of calendar year 2016, the Companies, in consultation with the Board and DEEP, shall initiate a discernment process to clarify the roles and responsibilities of the Connecticut Energy Efficiency Fund, DEEP, and other stakeholders in providing energy education for the public and for students. Such discernment process shall provide for stakeholder engagement to discern the key elements of the plan and the roles of various entities in planning and implementing energy education services for the public and students. Given the scale of this ratepayer investment in education for the general public and students DEEP believes it is critical for a comprehensive proactive plan to accompany the budget. For example, a comprehensive plan would ensure that duplication of effort does not occur between eesmarts and Green Leaf activities. The Companies shall submit a comprehensive education plan for DEEP's review and approval by July 1, 2016 that describes a scope of services for the education of the	*07-01-16 Submittal of comprehensive education plan (*moved for inclusion in the 2017 Plan Update) 10-01-16 Initiation of procurement process for education services	See Chapter 4 of the 2017 Plan Update

Item #	Topic or Program	Condition of Approval	Due Date	Status
		public and the education of students regarding sustainable resource and energy conservation. The comprehensive education plan shall ensure that services are demographically and geographically inclusive. Based on the stakeholder engagement and discernment process conducted, the comprehensive education plan shall describe the roles of various entities planning and implementing energy education services for the public and students. Funding from the Connecticut Energy Efficiency Fund should be exclusively focused on supporting efficiency and conservation education themes, but may deployed as part of education programs and channels (funded in part by other sources) that touch on a broader range of themes. The plan must identify how funding from the Connecticut Energy Efficiency Fund will be integrated with other energy education services and funding sources to ensure energy conservation education is conducted statewide. Such comprehensive education plan shall include a description of the scope of services that will be acquired through professional services and describe a competitive process to initiate by October 1, 2016 an open, competitive process to procure those services.		
5	**Transition to grant process for services delivered by colleges and universities**	*DEEP is pleased to approve the budget for ISE's work [which is spread across different elements of the Plan budget and summarized in the Plan's Appendix F) for calendar year 2016. DEEP believes that some additional time is needed for DEEP to consider and discuss with stakeholders the comments received on DEEP's proposed condition of approval relating to "transition to grant process for services delivered by colleges and universities". To allow for that additional time without delaying a decision on the remaining Plan budget for 2016-2018, in the coming weeks, DEEP will issue a supplemental conditional approval related to whether to retain this condition of approval regarding the items in the 2017 and 2018 budgets that relate to the work performed by ISE.*		Informational only See Appendix E of the 2017 Plan Update
6	**Residential weatherization barriers**	The Companies shall submit an annual report on residential weatherization barriers for customers of each Company to BETP for DEEP's records which DEEP would share with the Department of Housing, Department of	3-01-17 and annually on March 1st of each year	Future filing

Item #	Topic or Program	Condition of Approval	Due Date	Status
		Public Health, and make available to other interested parties. Pre-weatherization barriers include, but are not limited to: asbestos, knob and tube wiring, mold, and unvented appliances. Such an annual report should include charts and the information contained in the Plan's summary of the issue. The report should summarize the data that Eversource collected from Home Energy Solutions contractors for visits performed since January 2014. The report should include charts that depict the results of the Home Energy Solutions contractor barrier reporting and assist with quantifying the level of funding and financing that may be needed to remediate health and safety barriers, as this is an important ongoing step needed to achieve the 80 percent weatherization goal by 2030.		
7	**Home Energy Solutions Co-Pay**	The HES co-pay shall be increased by at least $25.00 on an annual basis as follows: no later than September 1, 2016, the co-pay shall be raised to at least $124; no later than September 1, 2017 the co-pay shall be raised to at least $149; and no later than September 1, 2018, the co-pay shall be raised to at least $174. The purpose of this modification is to increase the share of participants' investments to advance a long-term goal of market transformation, and increasing the scalability of residential efficiency programs – a priority that was emphasized in the 2013 Comprehensive Energy Strategy. As participants provide a greater share of the program cost, the ratepayer-funded incentives will be able to reach more customers. DEEP is setting out the required schedule in this decision in order to ensure that vendors can prepare for the co-pay increases well in advance and to incent the Companies and vendors to focus on strategic marketing to promote the value of home performance to customers. These numbers are based on data collected in a price elasticity study conducted by the Companies in August 2015 and reported to the Board on November 12, 2015. That study documented that respondents indicated an increased willingness to pay a higher price for the co-pay, once they are informed of the benefits of improving their homes' performance. DEEP considers it essential that	By September 1 of each year, notify vendors of annual co-pay increase 04-01-16 Review of HES Co-Pay rebate for insulation and HVAC	Filed 04/01/16 See Chapter Two of the 2017 Plan Update

Item #	Topic or Program	Condition of Approval	Due Date	Status
		the Companies continue to provide education to residential property owners on the economic value of improving the energy performance of homes. DEEP appreciates the role of the Board in providing careful, regular oversight of customer participation, equitable distribution, and budget expenditure for the residential program. In the event that, despite demonstrated substantial effort and investment in strategic marketing by the Companies and vendors to promote the value of home performance, customer demand is insufficient to expend annual budgets (including demand among customers for particular income levels), DEEP will consider a request from the Companies and the Board to amend the schedule of co-pay increases. Such request should be informed by compelling documentation of need, such as discussion with representatives from the home energy performance services industry, elasticity studies, market conditions, education efforts, and customer and vendor feedback.		
8	Modification of C&LM Budget Tables (A,A-1,B,C,D)	Modify Tables A, A-1,B, C, and D for all Companies by reallocating the program subtotals presently at the bottom of each table back into the respective customer classes for Residential, Commercial and Industrial, and Other. This reallocation dollar amount should be displayed as a new line item for each customer class. The purpose of such modification is to clarify how much of a total investment is made in each of the residential and the commercial and industrial classes. The net result will be that the sum of the individual customer classes in the main portion of the table will equal the grand totals at the bottom of the table. This methodology should be employed with other tables in the Plan where a similar discrepancy exists between subtotals of investment dollars. All budget tables for all companies should show no program subtotals at the bottom of the table as currently displayed. Also, the table submitted by the Companies showing the percentage allocations of Residential and Commercial and Industrial from the Other customer class should be included with these revised budget tables, along with the associated investment dollars by customer class for each year of the Plan.	03-01-16	Filed 03/01/16

Item #	Topic or Program	Condition of Approval	Due Date	Status
9	**Refinement of consultant services**	The Board must collaborate with the Companies to develop, by no later than March 14, 2016, a work plan that describes a comprehensive list of specific tasks that Board consultants will perform in 2016,2017,and 2018 to fulfill the Board's statutory responsibilities. The Board shall submit such work plan to DEEP by March 14, 2016. Such work plan shall provide for a Consultant Compensation Budget for 2016 not to exceed $650,000 and shall propose a budget for 2017 and 2018 not to exceed the 2016 level. DEEP believes that this level of funding is sufficient to provide the level of consultant services required to ensure the Board's ability to fulfill its statutory assignments. The goal of reducing this budget item from last year is to shift these investments into direct energy savings for the Residential and the Commercial & Industrial sectors. The work plan for consultant services need to be carefully and continually reviewed by the Board to determine whether the work effort coincides with the budget proposed. A reduction in labor hours and/or labor rates may be required, in addition to a focusing of the work plans for the services the Board seeks. The budgets for each year of the three-year Plan are expected to vary with the tasks needed in those years. The Board may subsequently request an expansion in the scope of the work plan and/or an increase in the budget if the need for additional services arises. Such request for DEEP's review and approval of an increased budget shall include sufficient documentation of specific priority tasks requiring additional work. DEEP recognizes that the Board is a voluntary board and its members generously donate their time to advance the Board's mission. Thus, it makes sense to contract with consultants to assist the Board in fulfilling its duties, particularly given that such consultants bring expertise with a national perspective. DEEP commends the Board on conducting a competitive RFP for consultant services. DEEP encourages the Board to carefully consider the roles and responsibilities of each Consultant as the EEB reviews	03-14-16 Board to submit Budget not to exceed $650,000 and work plan for task-driven consultant services	Filed 03/01/16

Item #	Topic or Program	Condition of Approval	Due Date	Status
		responses to its most recent request for proposals for technical services and to move to a more task-driven model of acquiring the services of technical experts. It is important to ensure that work is assigned and performed in an efficient manner, and that work plans are sufficiently detailed and planned to ensure that available resources from the Companies, DEEP, and the Connecticut Green Bank are utilized as appropriate prior to initiating additional tasks for the Board consultants. Over the past several years the Conservation and Load Management staffing levels at the Companies have increased, and a new Connecticut Green Bank and DEEP Bureau of Energy and Technology Policy have been established. Additional resources are now available to support the Board in its mission and this should be reflected in the scope of contracting for the Board's consultant services. The Board should ensure that the scope of work for any technical services contracts supporting the Board prevents redundancies and maximizes the use of each technical consultant's expertise. To further illustrate this evolution, we note that the Connecticut Green Bank, in its comments to DEEP regarding DEEP's tentative determination to approve with conditions the Plan, has offered to the Board and the Companies "to provide expertise on financing." The Connecticut Green Bank noted in their comments that they have "a team of finance experts" working to attract "more affordable investment in clean energy in Connecticut for residential, commercial, industrial, institutional, multi-family, non-profit, and infrastructure sectors." The Connecticut Green Bank also has offered its expertise to identify financing solutions that can address both pre-weatherization health and safety upgrades as well as energy efficiency upgrades. [Connecticut Green Bank comments to DEEP, dated December 21, 2015, page 2] In response to its publication of its tentative determination to approve with conditions the Plan, DEEP received comments expressing concern about reductions to the Board consultants' budget, and noting that the level		

Item #	Topic or Program	Condition of Approval	Due Date	Status
		of investment needed must be sufficient to ensure the maintenance of energy efficiency planning in Connecticut at "deep strategic, programmatic, and technical levels well before any final regulatory decision is made" [Comment from Acadia Center, dated December 22, 2015, page 2]. The Office of Consumer Counsel expressed concerns in its comments [p. 2] submitted in response to DEEP's tentative determination to approve with conditions the Plan about the sufficiency of the budget to cover the workload of the consultants. The Office of Consumer Counsel noted in its comments [p. 2] that "there is only a very small amount of work that would qualify to be moved from a consultant... [because the Board] is an independent Board." DEEP has carefully considered these concerns and has concluded that a sufficient level of expertise may be obtained for the $650,000 budget approved for Energy Efficiency Board consultant services in 2016.		
10	**Evaluation, Measurement, and Verification**	By no later than March 1, 2016, the Companies and the EEB shall revise the "2016-2018 Evaluation Plan Recommended Project List." Projects should be classified as either "Fundamental" or "Discretionary" with priority given to fundamental projects to be completed. Evaluation studies that are essential for complying with ISO specifications should be considered fundamental. The importance, timing, and data quality objective required must be articulated for each proposed study. While the evaluations are important to ensure program cost-effectiveness, it is critical that the timing of the evaluations be synchronized to enable incorporation of program design recommendations into the program planning process. Additionally, the number and scheduling of the evaluations must be monitored to ensure that sufficient capacity exists on the part of the EEB members, EEB Committees, the Companies, the technical consultants, and the Evaluation Administrator to adequately review the results and respond timely to recommendations. The update should focus on process and impact evaluations as required by Connecticut General Statute's section 16-245m, while continuing to transfer market	03-01-16	Filed 03/01/16

Item #	Topic or Program	Condition of Approval	Due Date	Status
		assessment and other sector-based research studies to sector-based budgets. Based on a review of Table 8, DEEP believes that this budget provides sufficient capacity to conduct impact and process studies to evaluate program cost-effectiveness at the level of precision needed to quantify and verify savings and continually improve program design. The balance of funds in the proposed Evaluation Budget above $3,000,000 may be reallocated to provide for initiation and development of direct measurement and verification capabilities. Such funds may be coordinated with and support Demand Response technology implementation.		
11	**Evaluation Administrator/ Consultant Budget**	The Companies and the Board shall modify the Evaluation Administrator/Consultant budget downward to a level not to exceed $300,000, to reflect the modified "2016-2018 Evaluation Plan Recommended Project List." An inventory of administrative or consultant tasks and projects for each year may reveal cost saving opportunities in projects that are reviews or routine for now matured programs. The Evaluation Administrator budget must reflect an increased focus on ensuring quality and effective timing of Evaluation, Measurement, and Verification activities. The Board may propose a modification of this budget in the 2017 Update if sufficient documentation is provided. Despite comments from the Evaluation Administrator to the contrary, DEEP notes that DEEP did not vote to approve the Evaluation Projects, Evaluation Budget, and Evaluation Administrator/Consultant Budgets at either the EEB meeting or Evaluation Committee meetings. Since we have the responsibility of reviewing, analyzing, and approving these items, it is DEEP's practice to abstain from voting on any plan or budget proposed by the Evaluation Committee or the full Board. After a September 2015 Evaluation Committee meeting staff members from the Office of Consumer Counsel and DEEP reviewed the evaluation projects proposed by the Evaluation Administrator and raised questions with each project in order to determine whether these projects were necessary to be funded. These questions were sent to the Evaluation Administrator requesting a response back to	03-01-16	Filed 03/01/16

Item #	Topic or Program	Condition of Approval	Due Date	Status
		both DEEP and OCC with the answers to them so that DEEP could determine whether the proposed studies were fundamentally necessary to be completed by a third-party Evaluation Administrator on in the timeframe of the Plan. The Evaluation Administrator declined to address those questions specifically and published the project list almost entirely similar to the initially proposed list. In a November 8, 2015 response to DEEP's request for information [BETP-52] from the Board regarding the proposed Plan, the Evaluation Administrator did provide an especially useful table [Figure 8] to illustrate criteria for consideration of Evaluation Studies. This summary of criteria provided for prioritization in a meaningful way. In DEEP's review of this table it was evident that no more than $3 million is needed to complete the statutorily required task of evaluating, measuring, and verifying the savings from the Plan's investments.		
12	**Consistency in Company Reporting**	Eversource and UI should utilize the same tables in reporting their data. As an example, Eversource currently uses Table B-1 and UI uses Table B for reporting benefit/cost ratios, and do not use common data reporting fields. This makes it unnecessarily difficult to compare and consolidate information between the Companies. The Companies should revise these tables to be consistent.	03-01-16	Filed 03/01/16
13	**Increase effectiveness of incentives in multi-family property energy efficiency retrofits and new construction**	As noted in the public comment from CHFA, DOH, and the Connecticut Green Bank, ongoing efforts to improve the coordination of financing with multi-family housing project development is important. As part of the overall process improvements underway that are described in the Plan, the Companies shall implement modified processes to increase the effectiveness of the coordination of financing with multi-family workflow process improvement. Specifically, assess the feasibility of issuing letters of agreement to the Connecticut Housing Finance Authority rather than developers to prevent energy efficiency improvements from being either engineered out of multi-family projects or used to increase the pricing of developers.	03-01-16	Filed 03/01/16

Item #	Topic or Program	Condition of Approval	Due Date	Status
14	HES-Income Eligible	The Companies shall modify the Home Energy Solutions-Income Eligible program to provide a baseline payment to Community Action Agencies to compensate such agencies' for their intake services and provide a focus on the Agencies' core strengths. The Companies shall develop such modification with a focus on streamlining and harmonizing the HES-IE program with other weatherization programs in cooperation with the Connecticut Association for Community Action (CAFCA) and DEEP.	07-01-16	See Chapter Two of the 2017 Plan Update
15	Clean Energy Communities	The Companies shall, In cooperation with DEEP, municipalities, and stakeholders, modify the Clean Energy Communities model to better incorporate the sustainability work of municipalities, and the sustainability and climate change work of DEEP and to ensure a community driven process to continuously improve the Clean Energy Communities program. Through the Companies' participation in stakeholder consultations led by DEEP, such modification should reflect the input from municipalities and various stakeholders The Companies shall cooperate with DEEP to support DEEP's identification of the steps that can be taken to integrate the work of municipalities, other advocacy organizations, and DEEP. The Companies shall develop the capacity to generate public reports that aggregate energy consumption information on a municipality-wide basis to support the work of municipalities. The Companies shall review the effectiveness of the Clean Energy Communities dashboard in consultation with DEEP and municipalities.	09-01-16	See Chapter 4 of the 2016-2018 Plan
16	Data Management	The Companies shall develop the capacity to efficiently provide information electronically to the EPA Portfolio Manager. While current law requires the Companies to provide data to the EPA Portfolio Manager, a direct correlation between buildings and accounts does not currently exist, which prevents the Companies from directly uploading this information. This condition of approval is to specifically require the Companies to develop the technology or staff resource capacity to correlate the data between buildings and companies so that it is ultimately possible for data to be migrated	03-01-16	Filed 03/01/16

Item #	Topic or Program	Condition of Approval	Due Date	Status
		directly to the EPA Portfolio Manager platform.		
17	Budget modification	The Companies shall propose a plan to reallocate unexpended 2015 revenue or any additional revenue, into 2016, to necessary investments that will ensure high priority work is completed.	03-01-16	Filed 03/01/16
18	Budget table presentation	The Companies shall provide a statewide budget table that totals each of the companies into a consolidated column when submitting a revised Plan.	03-01-16	Filed 03/01/16
19	Support for Municipalities	The Companies shall propose an allocation of the Commercial and Industrial budgets to ensure sufficient support is available to provide support to municipalities engaged in energy efficiency, particularly those municipalities pursuing Energy Savings Performance Contracts.	03-01-16	Filed 03/01/16
20	Performance Management Incentive	The Companies shall revise the budget for the performance management incentive to reflect a scale of 4.25% payment when 100% of goals are achieved for 2016 and 2017. Given the increasing difficulty in achieving savings as progress in mainstreaming energy efficiency is accomplished, the Companies may revise the 2018 payment to the originally proposed 4.5% scale if 100% of goals are achieved for 2018.	03-01-16	Filed 03/01/16
21	Energy efficiency coincidence with natural gas conversion	Propose a plan and submit a report on a semi-annual basis to BETP for DEEP's records to provide information on the instances of the installation of high efficiency equipment installed coincident with the conversion to natural gas supply at residential and commercial and industrial properties. Additionally, include reporting of insulation installed in such properties from January 2012 onward. Propose a plan to annually survey customers that determines motivators for converting to natural gas, determines motivators and barriers to installing energy-efficient natural gas equipment at the time of conversion, and determines awareness of energy-efficient natural gas equipment incentives and opportunities. Propose a plan to annually survey natural gas conversion contractors that may include assessment of the contractor's awareness of available energy-efficient heating and cooling equipment incentives and financing products, determine how contractors are presenting the energy-efficient equipment information to customers, and assessment of a	03-01-16 for Plan 09-01-16 for Annual Report	Initial response filed 03/01/16 (Eversource) Semi-Annual Report filed 09/01/16 (United Illuminating)

Item #	Topic or Program	Condition of Approval	Due Date	Status
		contractor's willingness to promote energy efficient equipment as part of the value proposition of the conversion to the use of natural gas at the· property.		
22	Heat Pumps [Geothermal and other]	The Companies shall review the rebate program for geothermal heat pumps and other heat pumps and determine the merits of increasing incentives for this equipment for the purpose of increasing participation in investment of this technology, with the incentives tied to properly installed performance. The Companies shall also consult with the Connecticut Green Bank to ensure the availability of adequate financing products for this equipment to customers. The Companies shall summarize the status of financing products provided by the Connecticut Green Bank and the Companies. The Companies shall submit a report summarizing its review by July 1, 2016. In their report the Companies shall review the specifications and incentives used for heat pumps in other northeastern states, and recommend whether to align specifications and incentives with those of other northeastern states, to leverage regional action to lower the cost of such equipment.	07-01-16	Filed 07/01/16

APPENDIX E: INSTITUTE FOR SUSTAINABLE ENERGY (Revised 2017 Plan)

The Institute for Sustainable Energy ("ISE") at Eastern Connecticut State University ("ECSU") is uniquely positioned and qualified to understand the needs of Connecticut's municipalities, colleges and universities, and state agencies and provides strong energy support services to this sector.

- As part of the state university system, ISE has an insider perspective on public sector entities and operates within this system;
- ISE has years of experience and has built strong relationships within the government sector; and
- As a facility under the Connecticut State University System and as a state entity, we connect with state agencies and colleges/universities as peers.

Most agencies, K-12 schools, and community colleges do not have the time or staff with expertise to search out and understand their energy use, needs, opportunities, and resources. In addition, many building managers have no access to or knowledge of energy use because bills are paid off-site by a central office. ISE is a cost-effective means to perform the time-consuming "front-end" work of understanding the customer, building relationships with customers, and performing energy benchmarking. Such work can be difficult, costly, and time consuming for the Companies.

- ISE has the time, capacity, and cultural understanding to build long-term relationships and trust with public sector entities; and
- We employ ECSU students—highly capable, cost-effective labor—to assist with tedious tasks such as energy benchmarking. In addition, employing students to do this work provides hands-on energy training and prepares students for Connecticut's clean energy workforce.

By performing the "front-end" work (understanding the customer, energy benchmarking, relationship building), ISE enables the Companies to direct their expertise more effectively and efficiently to the "back-end" work of technical support and installing energy-saving measures ("ESMs"). As such, the Companies can move faster, more cost-effectively, and more successfully to achieve energy savings.

- ISE acts as a concierge, building energy awareness and connecting customers in this sector with the Companies and Energize Connecticut offerings and energy savings.

- ISE and the Companies will continue to work in a highly-collaborative manner (as in the Connecticut Technical High School model), focusing on the core strengths of each to serve customers successfully and in the most cost-effective manner.

ISE will continue to work collaboratively with the Companies in this manner to support Energize Connecticut programs, focusing on the following work in 2017.

Table E-1: Institute for Sustainable Energy (Revised 2017 Budget)

Strategic Focus 2017	CEEF Funding
Systems Approach to Sustainable Energy Management: Connecticut Technical High Schools ("CTHSS")	$ 116,250
a. Ensure the CTHSS Portfolio Manager accounts are maintained with current energy data. Create and share, on a regular basis, energy data use and trends in actionable form with Building Maintenance Supervisors and CTHSS central office administrators.	
b. Based on existing strong relationships, work with CTHSS and the Companies to identify and implement additional Small Business Energy Advantage ("SBEA") projects that will result in significant savings without jeopardizing larger, more comprehensive projects.	
c. If Energy Saving Performance Contracts ("ESPCs") remain on hold, work collaboratively with the Companies and the Connecticut Green Bank on the development of new products to finance deep comprehensive energy measures that will meet CTHSS school needs (aligned with the Joint Working Group's priorities for the government sector). Then ISE will work with CTHSS leadership to foster understanding of new program offerings and will coordinate with the Companies and the Connecticut Green Bank on the implementation of new offerings to achieve deep, comprehensive energy and cost savings at the CTHSS schools.	
d. Work with CTHSS, Connecticut Department of Administrative Services' ("DAS") Division of Construction Services, and the State Department of Education to explore use of Performance-Based Procurement for new school construction (e.g., Vinal Tech, Windham Tech). Focus on building performance metrics, with potential savings of 50% energy savings beyond building code or net zero energy school buildings.	
e. Work with CTHSS system office and vendors to integrate energy retrofits into hands-on learning opportunities for CTHSS students.	
f. Transfer the success of the systems approach to Sustainable Energy Management, as developed by ISE for CTHSS, for use as a model for other state agencies: strong customer understanding and relationships, system-wide approach to reach all buildings in portfolio – renovation and new construction, energy benchmarking to help customer understand energy use, O&M training for building managers, site walkthroughs to identify opportunities, facility reports and recommendations, strategy meetings with system office and building managers, ongoing tech support, and collaboration with the Companies to implement ESMs through Energize Connecticut offerings.	

Sustainable Energy Management for CT State University System; Sustainability and Climate Action for Higher Education	$ 150,000
a. Based on energy benchmarking completed for 12 community colleges in 2016, provide information on energy use trends in actionable format to facilitate implementation of Board of Regents ("BOR") Energy Management plans and initiatives on individual campuses.	
b. Assist BOR, community colleges, and Connecticut State Universities ("CSUs") with the implementation of the BOR Energy Management Plan and sustainable energy management approach for the BOR system.	
c. Co-chair and coordinate the CT Alliance for Campus Sustainability, facilitating peer learning and collaboration on energy, climate, and sustainability action that helps further state energy and climate goals (through listserv, annual conference, roundtable events, and informal peer exchange).	
Sustainable Energy Management and Coordination for K-12 Green LEAF Schools	$ 120,000
a. Supplement the Companies' municipal benchmarking efforts and work collaboratively to benchmark additional (approximately 20 more) Connecticut Green LEAF Schools and connect them with Companies and Energize Connecticut resources to achieve energy and cost savings.	
b. Co-chair and coordinate CT Green LEAF Schools program, increasing sustainability and energy action in K-12 sector. Work with the CT Green LEAF Schools Steering Committee to develop strategic goals for 2017 that include continued support, vetting, and submission of Connecticut school nominations for federal Green Ribbon recognition.	
c. Integrate sessions on improving energy performance of school buildings and understanding of Energize CT resources (including CT school case studies) into annual Best Practices workshop.	
Innovation and Best Practices	$ 71,250
a. Implement Innovative National Best Practices in CT: Continue to identify and support Performance Based Procurement demonstration projects in Connecticut in strong partnership with the Companies and other partners (National Renewable Energy Lab, Seventhwave), thereby leveraging DOE funding support.	
2017 TOTAL	$ 457,500

Table E-2: Institute for Sustainable Energy (2018 Budget)

Strategic Focus for 2018	CEEF Funding
Systems Approach to Sustainable Energy Management: CT Technical High Schools (CTHSS)	$77,500
Continue work with CTHSS to ensure maintenance of Portfolio Management accounts and energy use feedback to Building Maintenance Supervisors and CTHSS central office administrators; coordination with Companies on implementation of additional, deep, comprehensive energy efficiency opportunities; coordination with Green Bank on renewable energy opportunities; integration of energy retrofits into hands-on learning opportunities for tech school students; and assistance on new school construction to maximize energy efficiency. Continue collaboration on opportunities to transfer the success of the systems approach to Sustainable Energy Management as developed by ISE for CTHSS for use as a model for other state agencies.	
Sustainable Energy Management for CT State University System; Sustainability and Climate Action for Higher Education	$100,000
Assist CT State University System central office, community colleges, and state universities with implementation of BOR Energy Management Plan and sustainable energy management approach for the BOR system. Continue to co-chair and coordinate CT Alliance for Campus Sustainability, facilitating peer learning and collaboration on energy, climate, and sustainability action that helps further state energy and climate goals.	
Sustainable Energy Management and Coordination for K-12 Green LEAF Schools	$80,000
Continue to co-chair and coordinate CT Green LEAF Schools program, including recommendation on of CT schools for federal Green Ribbon designation. Continue benchmarking work with CT Green LEAF Schools and coordination with Companies to engage schools in Energize CT programs and implement energy efficiency measures at schools.	
Innovation and Best Practices	$47,500
Continue to identify and support Performance Based Procurement demonstration projects in CT in strong partnership with the Companies and other partners (National Renewable Energy Lab, Seventhwave), thereby leveraging US DOE funding support.	
2018 TOTAL	$305,000