Transforming Towns and Cities into Sustainable-Energy Communities

Diana McCarthy-Bercury, Eversource Energy
Sheri Borrelli, The United Illuminating Company

ABSTRACT

Imagine 169 towns and cities committing to reducing the energy consumption of their municipal and board of education buildings by 20 percent by 2018 where town selected baseline year ranges from 2008 - 2015. Although it may sound far-fetched, this is the reality in Connecticut. Connecticut's Clean Energy Communities program is gaining tremendous momentum, with 158 of the state's 169 municipalities pledging to meet this ambitious energy-reduction goal.

As Connecticut Energy Efficiency Fund (CEEF) administrators, Eversource and United Illuminating provide our municipalities the necessary tools to become sustainable-energy communities. These tools include: partnering on community engagement, gathering energy-usage data, utilizing the EPA ENERGY STAR® Portfolio Manager software to benchmark buildings' performance, and creating Municipal Action Plans (MAPs) to reduce energy consumption and optimize building performance. Once communities identify their "energy stars" and "energy hogs," their MAPs guide them toward cost-effective energy strategies to meet the reduction goal of 20 percent.

Additionally, program administrators have created a carrot called Bright Idea Grants (BIGs) to encourage communities to increase participation in residential and business energy-saving programs. Every home, business, or municipal building that redeems a rebate or participates in an energy-saving program earns points for the community. Every 100 points earns a BIG of $5,000 - $15,000, which is then used for energy-saving projects within the community. From paying for performance-grade energy audits for municipal buildings to hosting lightbulb exchanges, communities have flexibility in determining how to use the grants to align with their MAPs, thus saving energy and becoming sustainable-energy communities.

Introduction

The energy-efficiency movement in Connecticut is growing, and it's impacting municipalities, businesses, and residents alike. Driven by the legislative goal developed under Governor Dannel Malloy to reduce energy usage statewide, energy-efficiency programs and incentives have become more comprehensive (DEEP 2013). Harnessing community participation allows for the creation of a custom strategy that supports municipal customers and their sustainability goals through energy efficiency. As a result, the municipalities participating in Clean Energy Communities are reducing their overall energy usage.

Communities that embrace energy efficiency are more resource efficient. Energy efficiency leads to lower energy intensity, meaning that the natural resources used to generate energy are used more efficiently. This reduces a community's energy demand because fewer energy inputs (whether they be gallons of gasoline, short tons of coal, gallons of water, or cubic feet of natural gas) are needed to produce goods and services (Ribiero et al. 2015).

One notable community, shown below as Community A, is an example of success in the program. Since joining Clean Energy Communities on June 7, 2013, it has audited its municipal and board of education buildings, developed a MAP outlining energy-efficiency improvements

to achieve reduction goals, utilized a $10,000 BIG to subsidize heating-equipment upgrades (oil) and used energy-efficiency fund incentives for additional technology upgrades throughout its portfolio. As of January 2016, Community A has achieved a 20.94 percent reduction in energy consumption in its municipal-owned buildings, two years ahead of the Clean Energy Communities deadline (see Table 1).

Table 1. Community A Energy Usage Intensity (EUI) summary for municipal owned buildings

Facility	Sq. ft.	Electricity (kWh)	Gas (CCF)	Oil (Gal.)	EUI kBTU/SF	% Change
Animal Shelter	800	6,518	1,183		179.59	8.61%
Building 1, 2	9,941	64,480	3,372		56.99	6.90%
Building 5, 6, 7	17,194	129,360	3,687		47.74	25.88%
Building 3, 4 (Police)	9,627	309,866	9,699		213.48	8.18%
Building 8 (Gym)	1,675	38,891	808		128.92	-6.51%
Company 1	10,078	88,218	5,706		88.04	6.20%
Company 2	5,000	12,131		1,619	53.31	-6.73%
Company 3	5,425	33,097	3,412		85.40	-7.28%
Company 4	3,730	17,321		2,442	106.89	22.66%
Countryside Park	2,784	6,807		781	47.36	-10.16%
Public Works Facility	18,652	96,729	7,765		60.45	-29.86%
Recycling Center	780	11,423		289	101.60	-28.14%
Senior Center	8,400	85,080	1,243		49.83	-36.69%
Library	39,369	370,352			32.18	-60.77%
Total	133,455	1,270,273	36,875	5,131	66.26	-20.94%

Percent change is from June 2013 to January 2016. *Source*: TENE 2016.

Just to the north of Connecticut, the city of Boston Massachusetts has set a specific target to reduce electricity demand by 200 megawatts by 2017 through energy efficiency and alternative energy installations. The city also has a greenhouse gas emissions reduction goal and has begun a public campaign to engage community members. Boston has devoted city staff to its campaign, with about 30 full time employees working on the Greenovate Boston campaign (Ribiero et al. 2015).

As a community-centric, interactive program Clean Energy Communities has taken a proactive approach to engage municipalities and boards of education in building a comprehensive outreach, education, and training effort. With energy efficiency becoming more prevalent both nationwide and specifically in Connecticut, Clean Energy Communities aims to continue to use this grasstops-and-grassroots style, Connecticut communities have come together to support energy efficiency and renewable energy. The program begins with a commitment by the municipal leader, who pledges support to make an energy reduction of 20 percent within two years in municipal-owned buildings, utilize renewable energy to provide 20 percent of the municipal electricity demand for these buildings, develop a MAP to lay out a strategy to achieve the reduction, benchmark building profiles in order to track progress, and promote energy-savings programs among community stakeholders.

Clean Energy Communities has had an impact on Connecticut municipalities as they strive to improve their focus on sustainable energy. To make it easier for this model to be replicated in other states, this paper features success stories from Connecticut. Municipalities should reference these when exploring approaches to political and educational efforts—such as training and collaborating with municipal leaders—to empower consumers to achieve greater energy savings through comprehensive energy-efficiency measures. For many cities, energy efficiency can create new economic opportunity. Investments in efficiency can drive cost savings for city residents, businesses, and the government itself while also creating new industries and jobs. These and other opportunities for saving energy are available in all cities (Ribeiro et al. 2015). Here in Connecticut, our education, training, and guidance are empowering municipal leaders with the knowledge of how energy systems operate, not only statewide but also within their municipally owned and operated building stock. Given the current financial and social environment of our state and communities, any failure to educate and train municipalities would have had a domino effect on long-term sustainable-energy practices and energy savings.

In June 2011, the Connecticut Department of Energy and Environmental Protection (DEEP) developed the state's first-ever Comprehensive Energy Strategy—an assessment and strategy for all residential, commercial, and industrial energy issues, including energy efficiency, industry, electricity, natural gas, and transportation. The Comprehensive Energy Strategy highlighted the value to local government of pursuing energy-efficiency improvements using comprehensive techniques.

Similarly, every three years the Connecticut utilities develop and implement an energy-efficiency investment plan for CEEF. This paper demonstrates the results of unprecedented collaboration between the two companies that continue to develop and administer CEEF programs: Eversource, the state's major electric transmission and distribution company, serving 1.2 million customers in 149 towns, and United Illuminating, serving 324,000 customers in the remaining 17 towns. Local governments can see multiple benefits from investments in energy efficiency. Such investments can improve the operational efficiency and economic performance of the city's assets, while at the same time demonstrating the city's commitment to energy efficiency. Some local governments pursue energy-saving initiatives because of cost considerations, using energy efficiency as a cost-saving mechanism, and to reduce their vulnerability to volatile energy prices (Ribeiro et al. 2015). Energy use can account for as much as 10 % of a local government's annual operating budget, and that proportion may increase as energy prices rise (EPA 2011).

Clean Energy Communities: Program Overview

Since 2011, Eversource and United Illuminating ("the Companies") have worked together closely to create Clean Energy Communities ("the Program"), with a focus on strong community outreach and collaboration with the 169 municipalities in Connecticut.

The Program was designed with two key objectives: (1) to engage municipalities in achieving lofty energy-efficiency goals by decreasing municipal-building energy consumption by 20 percent by 2018 from a baseline year of 2010 or later, and (2) to increase community-wide participation in energy savings programs to 20 percent of residents, including income-eligible households, and 15 percent of businesses. The Companies envisioned a robust outreach platform that would engage various community members—including businesses, clean-energy task forces, municipal officials, and environmental groups—to work together to make their communities more energy-efficient and reduce energy consumption statewide.

In 2012, the Companies officially launched the Program with the goal of attaining voluntarily pledges from 169 Connecticut municipalities to reduce municipal-building energy consumption and empower their community's stakeholders (municipal, commercial, nonprofit, educational, and residential) to participate in energy-saving programs. To date, 158 towns have committed to reducing their energy consumption.

Clean Energy Communities and many of its initiatives have been recognized as industry leaders by the United States Department of Energy, the United States Environmental Protection Agency, and the American Council for an Energy-Efficient Economy. Having proven its success in Connecticut, the program could now be replicated in other states.

For some regional perspective, consider New York. At the New York State Energy Research and Development Authority (NYSERDA), the Cleaner, Greener Communities Program offers regionally based access to NYSERDA's energy-efficiency resources and development programs. It does this through Regional Outreach Contractors[1], who encourage sustainable economic growth through outreach to commercial, institutional, municipal, industrial, and residential customers. Although it is not issuing additional grants for energy-efficiency upgrades as incentives for program participation within communities, the Central New York Regional Planning and Development Board did use an EPA Climate Showcase Communities grant to develop the Climate Change Innovation Program[2], where communities earn grants to forward proposed projects and plans that reduce greenhouse gas (GHG) emissions (EPA 2016).

The Climate Change Innovation program and Clean Energy Communities program are similar in that both ultimately aim to achieve municipal energy reductions by implementing energy-efficiency projects. Unlike the example from our neighboring state, though, Clean Energy Communities is built on a three-year plan, and its funding is allocated from the CEEF. In addition, it supports program growth and evolution through a revolving rate-payer fund, is implemented consistently across the state, and engages all community stakeholders. Table 2 shows examples of regional community-engagement programs, including New York state's EDGE Program.

[1] http://www.nyserda.ny.gov/All-Programs/Programs/Cleaner-Greener-Communities
[2] https://www.epa.gov/statelocalclimate/central-new-york-climate-change-innovation-program

Table 2. Examples of regional community-engagement programs

Government	State	Target audience	Primary focus	Program details
City of Baltimore, Baltimore Non-profit GHG Reductions Program	MD	Non-profit Community	Efficiency-Commercial	During the three-year program, staff engaged local non-profit organizations to complete energy and sustainability assessments.
City of Springfield, Building a Municipal Energy Conservation	MA	Municipal	Efficiency-Public Buildings	The city of Springfield established a four-person crew to improve energy efficiency in the public schools to leverage existing knowledge to identify and fix mechanical and electrical inefficiencies.
City of Boston	MA	City-Wide	Efficiency-Public Buildings	Regularly updates Climate Plan and recently expanded the plan to include community-wide actions and climate preparedness strategies.
Massachusetts Green Communities	MA	State-Wide	Local Governments	To help communities find clean energy solutions to reduce long-term energy costs and strengthen local economies. Provides technical assistance and incentives to improve energy efficiency and increase renewable energy in public buildings, facilities and schools.
NYSERDA Economic Development Growth Extension (EDGE) Program	NY	Regions and Counties	Local Governments	The program offers regionally based access to NYSERDA's energy efficiency and research/development programs. Regional Outreach Contractors (ROCs) encourage economic growth through outreach to commercial, institutional, municipal, industrial and residential customers.

Source: EPA 2016; NYSERDA 2016; Municipal Engagement

Clean Energy Communities has entered its fifth year of community engagement, and its original visions have become a reality. The program administrators began recruiting municipal participation in April 2012, and had achieved a 20 percent participation rate statewide by the end of the first calendar year. From 2013 to 2015, the Companies continued to engage and educate municipal leaders, and program enrollment increased yearly to 43 percent, 71 percent, and 91 percent, respectively (see Figure 1). Today, 158 municipalities in Connecticut are participating in Clean Energy Communities—a success rate of 95 percent.

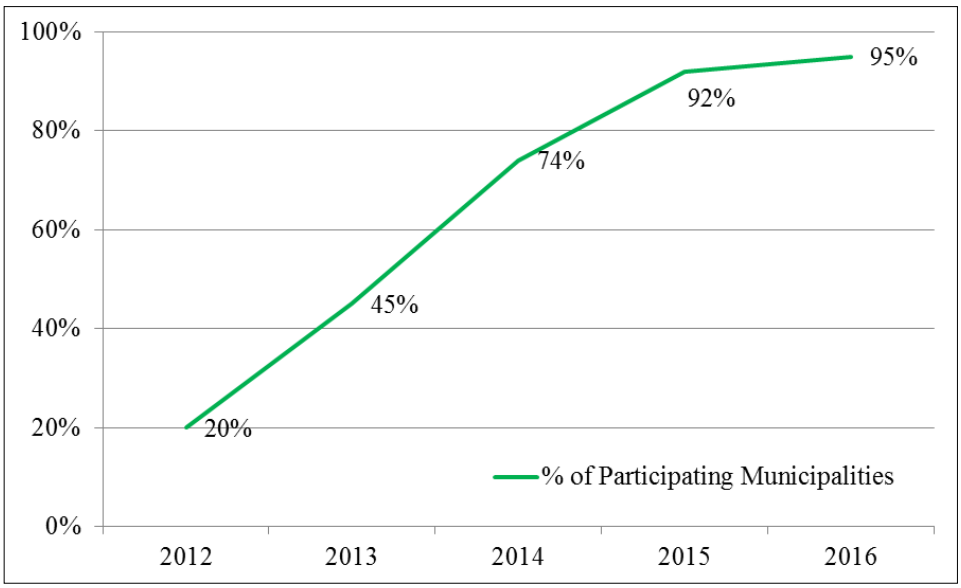


Figure 1. Percentage of Connecticut Clean Energy Communities municipal participants, 2012-2016. *Source*: EEB 2016.

Data Collection: Painting the Picture

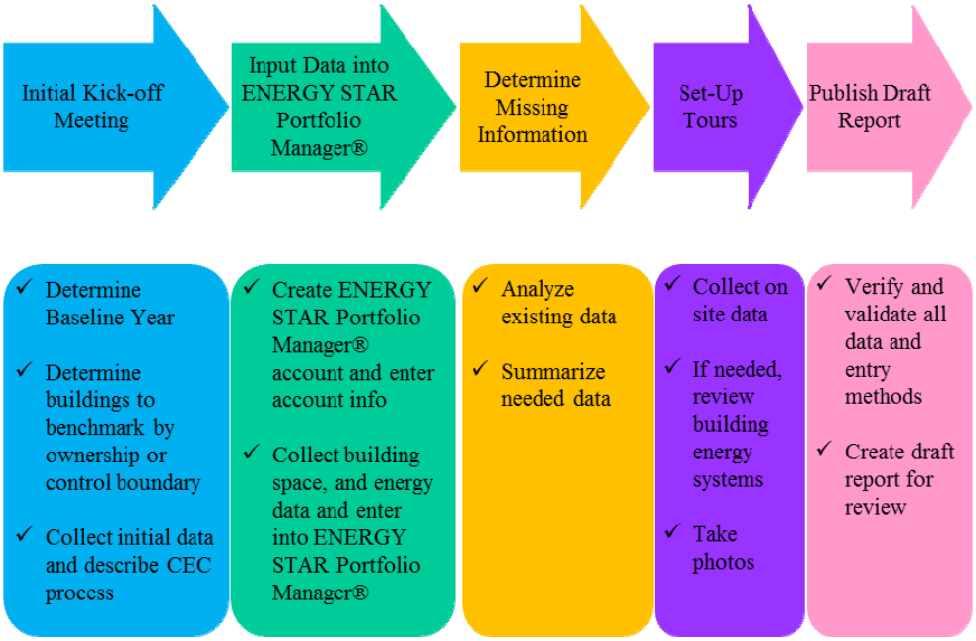
Toward this end, administrators have developed a Municipal Technical Assistance program for the EPA ENERGY STAR Portfolio Manager benchmarking training program in order to support and educate municipal participants.

The benchmarking initiative is about more than creating just a one-time building-energy-usage portfolio for municipal customers. It's also about educating municipalities and schools on how to develop a long-term sustainable-energy benchmarking *process* that helps customers monitor and maintain their energy-usage portfolios for the future (see Figure 2). Each municipality or school differs in how it approaches building-energy efficiency. Some energy-efficiency efforts are driven by mayors and selectman, town councils and boards at the highest level; some efforts are driven by midlevel managers in public works, facilities, building, purchasing, or finance departments. Other towns rely entirely on local energy-task-force volunteers to drive building improvements through energy policy.

To address these diverse audiences, our program offers support for creating comprehensive portfolios that provide *useful information to all community stakeholders* to help municipal representatives and K-12 school staff and educators collaborate further on energy-efficiency efforts. The EPA ENERGY STAR Portfolio Manager's standard and custom reporting tools allow us to establish a custom reporting template that serves the needs of all users. Our work using the EPA ENERGY STAR Portfolio Manager provides municipalities and schools with a single-source building-energy database to drive improved decision-making on energy purchasing, building energy systems, building operations and maintenance, community outreach programs, energy education, and community engagement.

Figure 2. Clean Energy Communities municipal and K-12 building-energy benchmarking process. *Source*: Paguridae LLC 2015.

Clean Energy Communities has improved Connecticut's commercial buildings from the U.S. national average of 40 percent of commercial building space utilizing the EPA ENERGY



STAR Portfolio Manager to 50 percent of municipal and board of education buildings benchmarked. As of December 2015, the Companies and their community partners have benchmarked well over 1,500 municipal and board of education buildings in the state. Municipal and community stakeholders frequently utilize these data to monitor building-energy usage and to track reductions in energy usage in accordance with Clean Energy Communities' goals.
In a few towns that have been monitored for energy reductions status using source energy use intensity (EUI) (kBtu/sq.ft.), there was an average 3 percent decrease for all buildings: 142.2 kBtu/sq. ft. (baseline year) to 138 kBtu/sq. ft. (current year). The test group was also monitored for impact on the reduction of GHG emissions. There was an annual 1 percent reduction in GHG emissions from each building's baseline year to its current year: 94,445 metric tons of carbon dioxide equivalent (MTCDE) reduced to 93,518 MTCDE. Finally, the test group was evaluated for impact on energy cost reduction for building accounts. Results showed a 4.6 percent annual decrease in energy costs from each building's baseline year to its current year: $28.9 million to

$27.6 million. As an example, energy-efficient buildings can produce lifetime cost savings in the millions of dollars over conventional buildings (EEB 2016). Municipalities have great opportunities to lead by example.

Creating a Road "MAP" to Sustainability

Once the building data has been collected and the Portfolio Manager accounts have been established, Clean Energy Communities municipal participants can run up-to-date reports to monitor each municipal building's energy performance across the entire town portfolio. The benchmarking results provide insight into how each building consumes energy and categorize which buildings are consuming more compared with the others. This allows the program administrators, in collaboration with the municipal leaders and facilities staff, to prioritize energy-saving projects in a comprehensive energy strategy—the foundation needed when creating a road map to achieve program energy-reduction goals.

After communities have identified their "energy stars" (buildings eligible for ENERGY STAR ratings) and their "energy hogs", their MAPs can guide them toward cost-effective energy measures to meet the 20-percent-reduction-by-2018 goal. The communities are provided with additional energy engineering support and technical project evaluation by the Companies' energy-efficiency engineers. Energy engineers also provide an overview of energy-efficiency incentives and on-bill financing tools to help make municipal-energy-improvement projects affordable and turnkey.

The utility partners are working with the municipalities and their respective boards of education to assist them in applying for the ENERGY STAR label. As of the first quarter of 2016, more than 100 buildings are eligible to apply for the certification.

Results: Hard Work Translates into "BIG" Rewards

The Bright Idea Grants Reward System. The Companies designed a reward-and-recognition mechanism called BIGs as positive reinforcement among Clean Energy Communities municipal participants. BIGs motivate communities to increase participation not only in municipal energy-saving programs, but also in residential and business energy-saving programs. Every time a resident, business, or municipal building redeems a rebate or participates in an energy-saving program, they earn reward points for the community. Once a community reaches 100 reward points, it earns a BIG ranging from $5,000 to $15,000 (based on the size of the community). The grants can be used for a variety of energy-saving local projects, which allows communities to be flexible in determining how the grant expenditures align with their MAPs.

The program administrators monitor overall program participation and effectiveness by tracking the reward points accrued each year by municipal participants. Points are awarded for energy-efficiency program participation by program segment within each municipality. There is also a Special Project Points allocation, which is a bonus track for communities that wish to increase their reward points by being recognized for their outreach efforts within their community. Some examples of special projects include the installation of electric-vehicle charging stations, district- wide school-energy-conservation challenges, and town energy fairs and other grassroots outreach efforts. Special projects are advertised within the community to engage various stakeholders and encourage participation. Results for special projects vary by

community but on average free, family-friendly events typically see greater turnout. BIGs earned by Clean Energy Communities municipal participants can be used as an indicator of the impact of the program (see Figure 3).

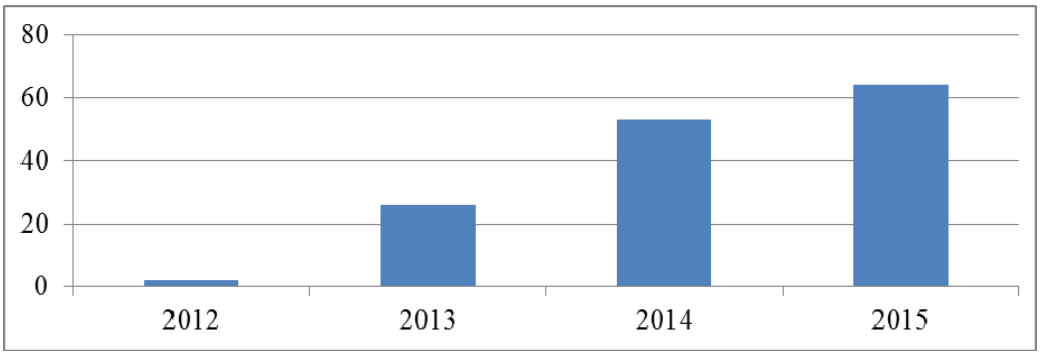


Figure 3. Bright Idea Grants earned by year. *Source:* EEB 2016.

In 2015, of the 64 Bright Idea Grants earned 37 BIGs, totaling $293,000, were redeemed by 35 communities. The grants were used to pay for energy-saving projects selected collaboratively by the local governments, facility managers, and local energy committees to support the Clean Energy Communities energy-reduction goals. These projects included 15 high-efficiency-lighting upgrades, one ASHRAE audit, three heating-system upgrades, 13 municipal-hosted LED swaps, the commissioning of one EV charging station, one solar-gain reduction project, three ENERGY STAR window/door-replacement projects, and three municipal lead-outreach engagement projects. The combined energy savings from all BIG projects in 2015 (which are detailed in Figure 4) totaled 2,134,518 kWh, 1,498 ccf, and 157 gallons of fuel oil.

With their BIG projects, Clean Energy Communities municipal participants are demonstrating that they are broadening the scope of their energy-saving initiatives and applying the data uncovered during the benchmarking initiative, as well as the project recommendations in their MAP. Municipalities have moved away from single-measure upgrades such as lighting retrofits, and are now utilizing grants to pay for more comprehensive measures. All of this will achieve deeper and broader energy savings in their buildings.

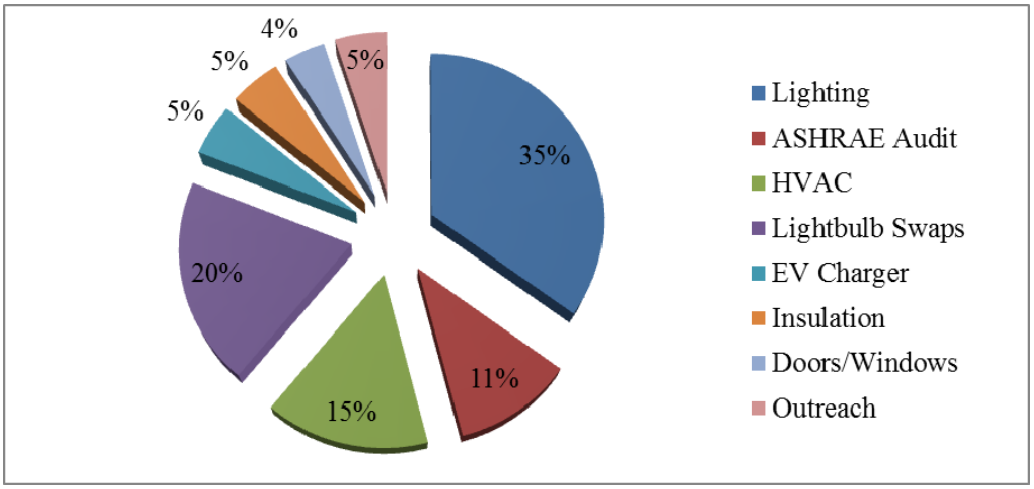


Figure 4. 2015 Bright Idea Grant projects. *Source*: Eversource 2015.

Clean Energy Communities Advances

Introduction of a Sustainable-Energy Community. According to the United Nations Foundation, "Energy efficiency is the cheapest, fastest, and smartest strategy available for saving money and resources and reducing greenhouse gas emissions around the world."[3] Here in Connecticut, Clean Energy Communities helps the DEEP, the CEEF board, and the Companies meet or exceed statewide energy-efficiency goals by achieving large reductions in the annual consumption of electricity, natural gas, and fuel on a community-wide basis. The program was designed to form strong partnerships between like-minded organizations, town officials, and various stakeholders within a municipal community. These partners collaborate on common energy goals of energy-use reductions, natural-gas conversions, and the adoption of clean, renewable energy sources.

Clean Energy Communities is uniquely positioned to help Connecticut's municipalities face the extraordinary, complex challenges that arise in attempting to become resilient energy-efficient communities. In 2016, with a majority of the state's municipalities and stakeholders participating, Clean Energy Communities evolved and expanded its goals to include a pathway to creating these kinds of communities. It introduced a new concept called "Community Levels" to help categorize communities based on their progress toward the energy-reduction goal as well as on their achievements in boosting program participation throughout their community.

Community Levels represent four levels of energy achievements, with various milestones that can be tracked by the program administrators as well as by the participating communities. The four levels are: Bronze Community, Silver Community, Gold Community, and Sustainable-Energy Community. Clean Energy Communities municipal participants are sorted by their progress in the following areas: CEEF program participation and promotion; energy benchmarking and reporting; energy reductions; regular implementation of ***eesmarts*** energy education throughout school districts; and ENERGY STAR rating qualifications and labeling for qualified buildings.

The program administrators have assisted municipalities as they transition through the Community Levels, with the ultimate aim of empowering all Clean Energy Communities municipal participants to achieve the program goals by the end of 2018, in accordance with the Connecticut 2016–2018 Conservation and Load Management Plan.

[3] http://www.unfoundation.org/what-we-do/issues/energy-and-climate/improving-energy-efficiency.html

Program Results and Next Phases

Sustainable-Energy Communities

Sustainable-energy communities are defined by program administrators as communities that are providing access to enough energy to serve the whole community indefinitely. In Connecticut, communities will be eligible to earn a Sustainable-Energy Community Level once they have developed a MAP; have completed auditing 100 percent of their municipal and board of education buildings with an energy-efficiency consultant and engineer; have achieved their goal of reducing municipal energy use by 20 percent; continuously engage in outreach and energy-efficiency campaigns with their residents, community organizations, and businesses; are integrating or have integrated ***eesmarts™*** *curriculums,* "an energy efficiency and clean, renewable energy learning initiative funded by the Connecticut Energy Efficiency Fund",[4] in their school; have implemented energy improvements as recommended in the MAP in order to reduce the energy usage per building; have earned and redeemed their second BIG; and have achieved 30 percent residential-program participation as well as 20 percent commercial-program participation. The milestone accomplishments stated above are clear indicators that municipal leaders are working collaboratively with internal and external parties to reduce the energy consumption per capita throughout the community, thereby ensuring that energy resources can be available for increasing stakeholder utilization.

Clean Energy Communities Results

As of 2015, Clean Energy Communities has helped a majority of municipalities in Connecticut overcome many challenges to accomplish program goals. Through the guidance of and tracking by the program, these communities have achieved the following: municipal energy benchmarking, implementation of energy-saving projects, and increasing program participation statewide. As of 2016, there are over 90 municipalities that have completed benchmarking on the EPA ENERGY STAR Portfolio Manager through the Municipal Technical Assistance program, and over 1,500 municipal and board of education buildings that have been benchmarked in the EPA ENERGY STAR Portfolio Manager.

Additionally, as a result of 35 local outreach campaigns, more than 9,500 households in Connecticut (including income-eligible households) participated in Home Energy Solutions, a home-energy assessment and service featuring on-the-spot energy improvements, an energy report to help customers plan future energy upgrades, and access to incentives and financing to make larger energy upgrades more enticing. Municipalities participating in Clean Energy Communities have seen an uptick in residential energy-efficiency program participation of between 15 and 24 percent, compared with the few remaining communities that have not yet opted into the program (see Figure 5).

[4] https://eesmarts.com/index

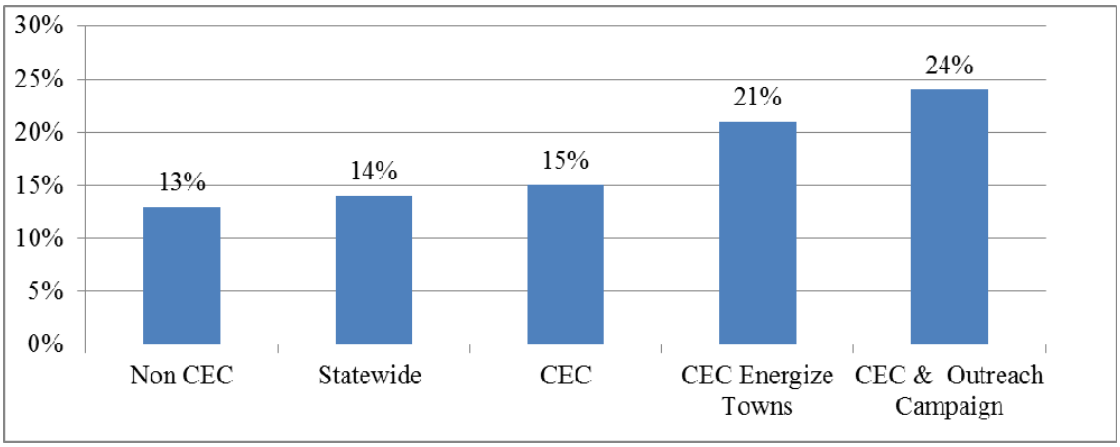


Figure 5. Average total increase in residential energy-efficiency program participation by level of community engagement (2012–2015). *Source*: EEB 2016.

Program Results: Value-Added Benefits Overcoming Obstacles

Clean Energy Communities has succeeded in municipal engagement and program participation, and it is important to note that the program has aided community efforts in overcoming local obstacles as well. In addition to making great strides toward energy-efficiency goals, the program has assisted local governments by providing training and guidance to address any lack of municipal personnel and resources, component knowledge, and technical expertise that otherwise would have made accomplishing program goals more challenging.

Below are three examples of obstacles faced by Clean Energy Communities municipal participants and the assistance that it provided to overcome them.

- *Municipalities lack personnel, funding, and time available to maintain and update town-owned building accounts in the EPA ENERGY STAR Portfolio Manager.* The benchmarking initiative overcame this challenge by providing assistance in creating a Portfolio Manager account, including providing access to historical data to complete the profile, and training municipal staff in best practices using the ENERGY STAR Portfolio Manager tool and other resources.
- *Municipalities are limited in their ability to act on energy-efficiency improvements due to a lack of understanding of resources, support, and incentives, resulting in low prioritization within the municipal government.* Program administrators work directly with municipal leaders and staff to help them understand the benefits of implementing energy improvements based on cost, incentives, future operating costs, and building environmental improvement and progress towards achieving program reduction goals.
- *Municipal leaders lack the technical expertise and proficiency needed to make meaningful decisions on energy efficiency. Without a comprehensive understanding of the value and benefits of energy efficiency, municipal governments are missing a collaborative approach to improving town-wide building performance and achieving energy savings.* Utility energy efficiency engineers work directly with municipal leaders and facilities staff to prioritize energy-related improvements based on current operating costs versus savings, incentives structures and available financing, annual municipal budget inclusion, installation time, and available technology.

Conclusion

Since it launched in April 2012, Clean Energy Communities has assisted numerous Connecticut cities and towns in positioning themselves to become sustainable-energy communities. Through such actions as developing MAPs, energy benchmarking for municipal and board of education buildings, and engaging the community through outreach campaigns to increase energy efficiency and the use of clean energy, we are developing resilient sustainable-energy communities.

Throughout the next few years, Clean Energy Communities will continue to provide both financial and technical support for Connecticut's 169 municipalities, thereby positioning the state to exceed its goals for energy efficiency and sustainability by the end of the program in 2018.

References

DEEP (Department of Energy and Environmental Protection). 2013. *2013 Comprehensive Energy Strategy for Connecticut.* February 19. Hartford, CT: Connecticut Department of Energy and Environmental Protection. http://www.ct.gov/deep/lib/deep/energy/cep/2013_ces_final.pdf

EEB (Energy Efficiency Board). 2016. *Energy Efficiency Board 2015 Programs and Operations Report.* New Britain, CT: Connecticut Public Utilities Regulatory Authority. http://www.energizect.com/sites/default/files/Final-ALR-2015-Full-030316.pdf

EPA (Environmental Protection Agency). 2011. *Assessing the Multiple Benefits of Clean Energy: A Resource for States.* Washington, D.C.: U.S. Environmental Protection Agency. https://www.epa.gov/sites/production/files/2015-08/documents/epa_assessing_benefits_ch1.pdf

———. 2016. "Central New York Climate Change Innovation Program" Accessed June 6, 2016. https://www.epa.gov/statelocalclimate/central-new-york-climate-change-innovation-program

Eversource Energy, United Illuminating Company, Connecticut Natural Gas Corporation, and Southern Connecticut Gas Company. 2015. *2016-2018 Conservation and Load Management Plan.* Submitted pursuant to Connecticut General Statutes § 16-245m(d).

NYSERDA (New York State Energy Research and Development Authority). "Cleaner, Greener Communities Program" Accessed March 10, 2016. http://www.nyserda.ny.gov/All-Programs/Programs/Cleaner-Greener-Communities

Paguridae LLC. 2015. *CEC Municipal Benchmarking Process.* July 6. East Haven, CT: United Illuminating.

Ribeiro, D., V. Hewitt, E. Mackres, R. Cluett, L. Ross, S. Vaidyanathan, and S. Zerbonne. 2015. *The 2015 City Energy Efficiency Scorecard*. Washington, D.C.: American Council for an Energy-Efficient Economy. http://aceee.org/research-report/u1502

Ribeiro, D., E. Mackres, B. Baatz, R. Cluett, M. Jarrett, M. Kelly, and S. Vaidyanathan. 2015. *Enhancing Community Resilience through Energy Efficiency.* Washington, D.C.: American Council for an Energy-Efficient Economy. http://aceee.org/research-report/u1508

TENE (Titan Energy New England) 2016. *ACEC Performance Analysis and Future Recommendations.* Rocky Hill, CT: Titan Energy New England. http://www.avonct.gov/sites/avonct/files/file/file/avon-titan_cec_performance_review_5-12-16.pdf