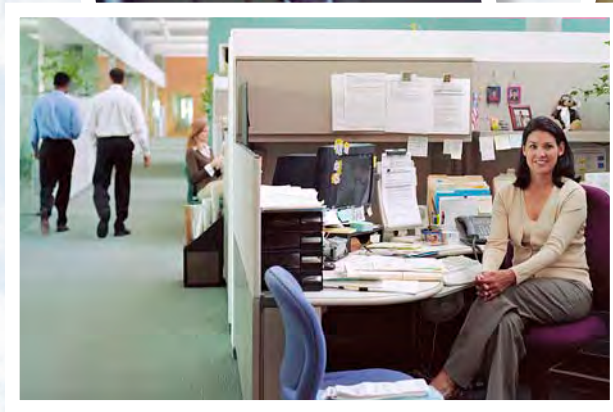


An Investment in Connecticut

# Energy Efficiency

Report of  
the Energy  
Conservation  
Management  
Board  
Year 2008  
Programs  
and Operations  
March 1, 2009



Prepared for:  
the Connecticut Legislature  
■ Energy & Technology Committee  
■ Environment Committee

Connecticut Energy Efficiency Programs are funded  
by a charge on customer energy bills.

# Results in Energy Efficiency

## Year Summary from the Chair and Vice-Chair

Television, newspapers, radio, and local group gatherings. Everywhere you turn, look and listen, energy efficiency is touted as the solution to today's leading issues—global warming, energy independence, rising energy costs and unemployment. These statements are accurate. **Energy efficiency is the easiest, most cost-effective way to save money, create jobs, reduce greenhouse gas emissions, enhance energy security, and reduce the need for additional generation plant construction.**

Pressing policy issues are not exclusive to Connecticut. However, the state has an effective public policy toolbox with *existing*, award-winning energy efficiency programs to address these issues. Since 2000, Connecticut has ranked as one of the top three states for energy efficiency. This leadership position is due to the foresight of Connecticut's legislature in 1998 in creating the Energy Conservation Management Board (ECMB) and the Connecticut Energy Efficiency Fund (CEEF), funded exclusively by utility ratepayers.<sup>1</sup>

As the ECMB's Chair and Vice-Chair, we proudly deliver the ECMB's Year 2008 Programs and Operations Report to the Connecticut legislature. This fulfills the ECMB's obligation to report how it has met its primary objectives of (1) advancing the efficient use of energy; (2) reducing air pollution and other negative environmental impacts; (3) promoting economic development and providing energy security/affordability.<sup>2</sup> These objectives are combined with a mandate to educate and inform Connecticut's residents on the wise and efficient use of energy.

Despite national accolades, 2008 was a challenging year for Connecticut's energy efficiency programs. Rising energy costs, growing unemployment, and a competitive global marketplace resulted in heavy demand for CEEF assistance, necessitating curtailment of some programs. This curtailment will intensify if ratepayer contributed funds from CEEF programs are used for deficit reductions, to the severe detriment of the state.



Jeffrey Gaudiosi



Richard W. Steeves

Support and maintenance of the CEEF is an investment strategy for deficit reduction. **For every \$1 spent on electric efficiency, Connecticut receives electric system benefits of over \$4. For every \$1 spent on gas efficiency, over \$2 in gas system benefits are realized.** These returns on investments are phenomenal in today's economic climate and demonstrate that CEEF programs are an important part of the solution to the state's economic crisis by reducing customer costs, making the state more competitive, and generating green collar jobs.

CEEF programs are successful and imperative for the well being of Connecticut. The ECMB is committed to working cooperatively with the General Assembly and all of Connecticut's energy stakeholders to continue the state's leadership status in the realm of energy efficiency.

Jeffrey Gaudiosi, ECMB Chairperson

Richard W. Steeves, ECMB Vice-Chairperson

<sup>1</sup> Conn. Gen. State.§16-245m.

<sup>2</sup> Conn. Gen. State.§16-245m.

## Section 1

## Energy Efficiency: An Investment In Connecticut

# Leading with Efficiency

Connecticut's energy efficiency programs are an invaluable resource. The programs help reduce energy consumption, lower energy bills, create jobs, lessen dependence on foreign fuels, and decrease the emission of greenhouse gases from power plants. **Businesses, residents and the state profit from these economic, environmental and societal benefits.**

Connecticut is a leader in implementing high-quality energy efficiency programs. Since 2000, the American Council for an Energy-Efficient Economy (ACEEE) has ranked Connecticut as

one of the top states for energy efficiency. In 2008, Connecticut ranked third in the ACEEE's 2007 State Energy Efficiency Scorecard. This top-tier ranking clearly indicates that Connecticut's energy efficiency legislation,

programs, codes and policies are national models to be emulated.

The least expensive kilowatt is the one not used. Energy efficiency is the most cost-effective resource available to policymakers to address rising energy costs and reliability challenges, and meet the greenhouse gas reduction goals in the Governor's Climate Action Plan. Efficiency programs avoid the need to site and construct costly generation plants that contribute to pollution.

The Connecticut Energy Efficiency Fund supports more than **1,500 existing** green collar jobs with ratepayer funds and serves as an economic development engine creating private sector businesses to deliver energy-efficiency services. Energy auditors, HVAC technicians, lighting installers, Community Action Agency



weatherization staff, and energy-efficiency entrepreneurs are among the faces of the green collar workforce in the state. It is imperative that these green collar jobs and private investment in energy efficiency service businesses be retained in Connecticut's economy. Support and maintenance of the Connecticut Energy Efficiency Fund is critical in protecting this highly productive segment of the state's economy.

Since 1998, Connecticut's energy efficiency programs have delivered energy demand reductions equivalent to the generating capacity of a 558 megawatt power plant. In 2008, CEEF programs activities resulted in 4.2 billion kilowatt-hour lifetime savings. This is equivalent to:

- Providing electricity to over 510 thousand homes for one year
- Reducing energy costs by \$774 million
- Avoiding the emissions of 2.4 million tons of carbon dioxide



# Organizational Structure

## Connecticut Energy Efficiency Fund

Created in 1998<sup>1</sup>, the Connecticut Energy Efficiency Fund (CEEF) helps state and local governments, small and large businesses, homeowners and renters to use energy more efficiently. Primary objectives of the CEEF are to advance energy efficiency,

mitigate negative environmental impacts of energy generation, promote economic development through increased energy reliability, lower energy bills and enhance energy security.

## Energy Conservation Management Board

The same legislation<sup>2</sup> that created the CEEF produced the Energy Conservation Management Board (ECMB). The ECMB is an appointed group of 14 members who represent public and private entities who serve voluntarily and meet year-round. The ECMB's original purpose was to advise and assist the state's two electric distribution companies, The Connecticut Light & Power Company (CL&P) and The United Illuminating Company (UI), in developing and implementing CEEF programs. With the passage of 2007 legislation<sup>3</sup>, the ECMB's oversight expanded to include the energy efficiency programs of the Connecticut Municipal Electric Energy Cooperative and the natural gas utilities—Connecticut Natural Gas Corporation, Southern Connecticut Gas Company and Yankee Gas Services Company.

market transformation initiatives. Each October, utility administrators file annual efficiency plans for the following year with the Connecticut Department of Public Utility Control (DPUC). The DPUC reviews the plans and makes final decisions regarding proposed programs, budgets and incentives. The 2005 *Act Concerning Energy Independence* (EIA)<sup>4</sup> directed the DPUC and ECMB to implement efficiency and load management programs and initiatives that would reduce Federally Mandated Congestion Charges (FMCCs) on electric utility bills. The reduction of these FMCCs through EIA programs is a top priority of the DPUC and the ECMB.

To assist in the creation of the most effective possible efficiency programs, the ECMB retains national level energy consultants who work throughout the year with the ECMB and utilities to develop and improve CEEF programs. The ECMB also retains independent research organizations to evaluate the effectiveness of CEEF programs. The ECMB, its consultants and utility administrators utilize these third-party evaluations to guide program improvements and identify new opportunities to enhance CEEF programs.

### Public Input

The ECMB values input from the public to improve the effectiveness of CEEF programs and has established five conduits for public comments:

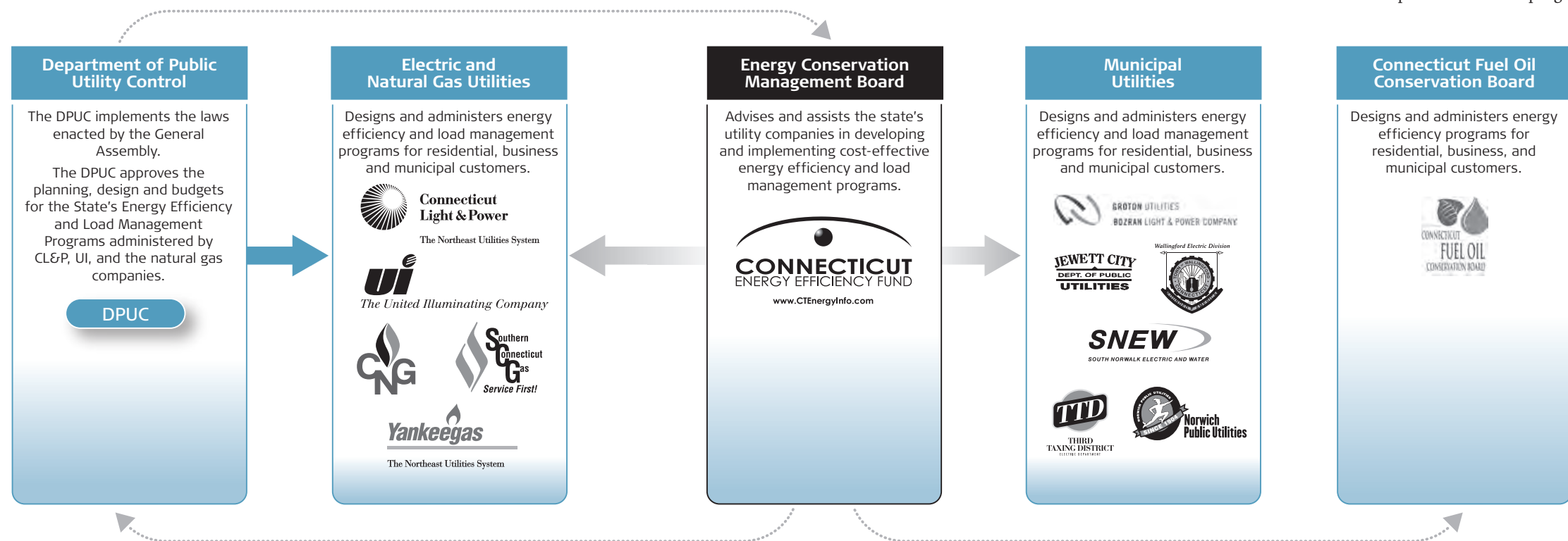
1. Public comment at ECMB monthly meetings
2. Annual public forums
3. Public review of reports and plans
4. Consideration of specific products/technologies or program revisions
5. Focused topic discussions at ECMB monthly meetings and subcommittee meetings

## Integration of Electric, Natural Gas and Oil Programs

In 2008, the ECMB continued to work towards the seamless integration of the CEEF's programs with other sources of conservation assistance. This integration benefits CEEF program participants by enabling them to focus on the most effective approach to efficiency without having to navigate multiple administrative systems. The electric and natural gas companies' efficiency programs are closely integrated.

In 2008, the ECMB also began working with the new Fuel Oil Conservation Board (FOCB) to integrate fuel oil conservation into existing CEEF programs. The ECMB and the FOCB intend to continue their partnership to deliver integrated, fuel-blind efficiency programs to Connecticut businesses and residents. The Office of Policy & Management (OPM) and the ECMB worked closely together to integrate OPM's residential energy audit subsidy and furnace/boiler replacement rebate programs.

The ECMB is charged with advising utility administrators in the development of comprehensive annual plans to implement cost-effective efficiency and load management programs and



1 Conn. Gen. Stat. §16-245m.  
 2 Conn. Gen. Stat. §16-245m.  
 3 Conn. Gen. Stat. §16-32f and §7-233y.  
 4 PA 05-01, An Act Concerning Energy Independence.

### Energy Efficiency vs. Energy Conservation

Energy efficiency and energy conservation are often used interchangeably; however they actually reflect complementary strategies. Energy conservation is any behavior that results in the use of less energy. Energy-efficient technologies perform the same tasks as inefficient units, but use less energy. Purchasing a compact fluorescent lightbulb (CFL) that uses less energy than an incandescent bulb

to provide the same amount of light is an example of energy efficiency. Turning the CFL off when a room is no longer in use is an example of energy conservation. Effective, comprehensive programs use both strategies, as appropriate, to reduce energy consumption while maintaining or improving comfort or productivity.

### Annual and Lifetime Savings

ENERGY STAR® appliances, CFLs and high-performance insulation are examples of energy-efficient technologies that perform the same function as inefficient units but use less energy. Homeowners who replace inefficient appliances with efficient

CEEF programs. Annual energy savings show the immediate benefits of electric and gas efficiency measures while lifetime figures show the long-term energy savings.

Funding reductions in CEEF programs will effect a loss of both short- and long-term energy savings and the resulting benefits. These repercussions will reverberate long after Connecticut's budget crisis has been resolved. For example, demand reductions from future CEEF programs have also been bid into the Independent System Operator of New England's (ISO-NE) Forward Capacity Market by the CEEF's utility administrators. If CEEF funds are diverted to reduce anticipated budget deficits, the utilities' commitments made to ISO-NE to delivery energy efficiency as a capacity resource will not be fulfilled.

units will experience a reduction in energy consumption over the year. This reduction is called *annual energy savings*. *Lifetime energy savings* are calculated by multiplying annual energy savings by the number of years the energy-saving technology is expected to operate. This report tracks the annual and lifetime savings resulting from 2008

### Kilowatt, Kilowatt-Hour and Cubic Feet

Annual and lifetime savings are listed separately throughout this report. Electric savings are reported in kilowatt-hours (kWh) and kilowatts (kW). A kilowatt-hour is a measure of the amount of electrical energy that has flowed (or a customer's usage). A kilowatt is a measure of the rate of electrical energy flow (energy demand)—a 100-watt equivalent CFL typically uses 29 watts to illuminate a desk. A watt is too small of a measurement for meaningful articulation of electrical needs, so electricity demand is tracked in kilowatts, which equals 1,000 watts. Natural gas energy savings are reported in 100 cubic feet (ccf).

### Peak Demand

A critical component of CEEF programs is load management—balancing electric supply and demand. Electrical demand (kilowatts) cannot be stored easily or economically, so electric utilities and other electrical suppliers must have sufficient generation capacity available to meet the maximum demand on the electrical grid systems whenever it occurs. This highest point of customer demand for electricity is called *peak demand*. New England's electrical grid is summer peaking—the highest electrical demand occurs on hot, humid summer days. Demand for electricity usually peaks on summer weekday afternoons when air conditioners are operating.

ISO-NE projects that Connecticut's peak demand will grow from 7,320 megawatts (MW) in 2007 to 8,475 MW in 2016. CEEF and EIA programs are designed to help residential and business customers reduce use of electricity at peak times (typically noon to 8 p.m.). It is expensive to build electricity

### Customer Sectors

The ECMB and the CEEF's utility administrators ensure energy efficiency benefits are broadly realized by all customer sectors through appropriately tailored programs. 2008 CEEF programs benefitted these customer sectors: municipal, school, state government, non-profit, residential, limited-income, small business,



generating plants that may run for only a few hours a year at the "peak" of demand. Energy-efficient technologies and design help decrease demand on the electrical grid and are more cost-effective and environmentally sound solutions than building new power plants. The ECMB and CEEF also promote energy conservation behaviors during these peak times in the form of the Wait 'til 8 campaign, which asks residents and businesses to voluntarily shift use of major energy-consuming appliances such as washing machines and dishwashers, from mid-afternoon to after 8 p.m. Since 2000, the programs have reduced 481 MW of peak demand.

university, and large commercial and industrial customers. This holistic coverage of all customer sectors means that everyone, even if indirectly, benefits from Connecticut's award-winning, energy efficiency programs. The following Table A summarizes the annual and lifetime energy savings by customer sector.

Table A: Summary of Energy Savings by Customer Sector

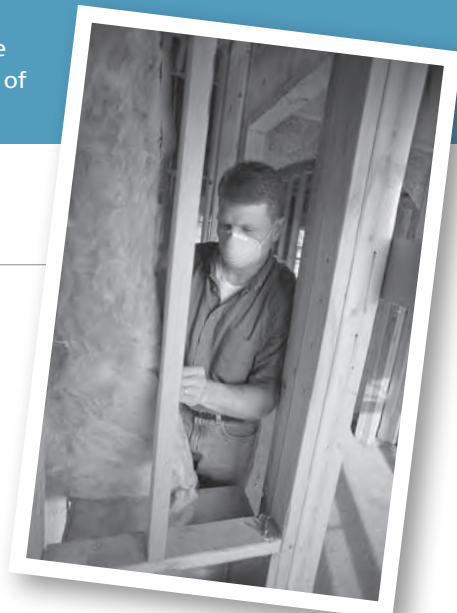
(In millions of kWh and thousands of ccf)

	Annual Savings				Lifetime Savings			
	Electric		Natural Gas		Electric		Natural Gas	
Customer Sector	2008	2009 Plan	2008	2009 Plan	2008	2009 Plan	2008	2009 Plan
Limited-Income	16	19	248	253	142	156	3,464	3,385
Residential (Non Limited-Income)	106	111	384	589	907	785	6,968	12,169
Commercial & Industrial	246	147	344	664	3,241	1,916	5,527	8,211
<b>Totals</b>	<b>368</b>	<b>277</b>	<b>977</b>	<b>1,507</b>	<b>4,290</b>	<b>2,857</b>	<b>15,959</b>	<b>24,264</b>



# House Calls

Improved insulation saves the Elm Village complex 3,380 ccf of natural gas annually.



## Home Energy Solutions



Blower door technology measures home air leakage.

Most homes leak energy (and money) through their windows, doors, attic hatches and elsewhere because older homes were often built inefficiently with cost and aesthetic design being the main focus rather than energy efficiency. This inefficiency results in high heating and cooling bills.

Connecticut's Home Energy Solutions program is a whole-house solution that reduces energy costs and consumption. Technicians perform a home energy assessment and provide a range of weatherization and efficiency measures. Homes with central heating/cooling receive ductwork tests to assess air leakage, and if leaks are significant, ductwork is sealed to improve efficiency. Technicians

review the work completed at a "kitchen table" wrap-up so homeowners understand the services performed and the resulting energy savings. To assist the homeowner, energy technicians also discuss additional efficiency steps and conservation behaviors that can increase energy savings such as available appliance/insulation rebates, renewable energy options, and possible financing opportunities for future investment in efficiency.

### Efficient on the Shoreline

Barbara Dunlap of Fairfield appreciates the energy savings the program brings. In February 2008, her 20-year-old home received an energy assessment. Energy specialists administered a blower door test to pinpoint critical air leaks and provided weatherization services to seal located drafts. Incandescent lighting fixtures were replaced with CFLs and Ms. Dunlap

was presented with energy conservation literature at the "kitchen table" wrap-up. Since the assessment, Ms. Dunlap has seen annual energy savings of 711 kWh and lifetime energy savings of 5,487 kWh. In addition to energy bill reductions, she has noticed a discernible comfort change in her home's draftiness after participating in the program.

### Home Efficiency in Bristol, CT

Lisa DiNoia lives in a 66-year-old colonial home in Bristol that is heated with natural gas. In September 2008, energy specialists visited her home to determine where she was losing energy and money. A blower door test determined where air leaks were occurring and the installation of a simple basement door sweep resulted in huge energy savings. Caulking was performed in the unheated basement while the attic was found to be well insulated.



Ms. DiNoia should realize annual and lifetime electric energy savings of 168 kWh and 4,104 kWh, respectively. Weatherization services will result in annual gas savings of 29 ccf and lifetime savings of 720 ccf.

"This was an outstanding service...Home Energy Solutions is a wonderful program and I couldn't have asked for more."  
Lisa DiNoia

2008 Home Energy Solutions Program		
	<b>Customers Served</b>	
	13,884	
	<b>Energy Savings</b>	
	kWh Annual	kWh Lifetime
	12,698,378	140,587,688
	CCF Annual	CCF Lifetime
	362,624	6,533,389
	<b>CO<sub>2</sub> Emissions Reduced</b>	
	8,996 Tons	
	<b>Annual Savings</b>	
	\$ 2,944,496	

## Limited Income Programs

Energy bills typically comprise a disproportionately high percentage of limited income household budgets as compared to average income households. The Home Energy Affordability Gap model measures the shortfall between "actual" and "affordable" energy bills. A 2008 study<sup>5</sup> found

that Connecticut households at or below 185 percent of the federal poverty level faced \$2,200 shortfalls; which statewide results in an aggregated energy gap of \$510 million.

This gap will continue to widen under recent

economic conditions. Fortunately, CEEF's limited income programs, Weatherization Residential Assistance Partnership (WRAP) and UI Helps, provide valuable weatherization measures to help renting and home-owning customers reduce the energy gap. These programs are fuel blind—providing services to income-eligible electric,

gas and oil heat customers. Energy specialists assess a home's efficiency and perform a range of measures such as CFLs, caulking cracks/leaks and adding attic insulation. These measures are designed to reduce heating and cooling losses. Energy specialists can also install water-saving equipment, and upgrade appliances and heating systems.



"I have noticed a decrease in my electric bill, which I am very grateful for."  
Noimett Stevenson

2008 Limited Income Programs		
	<b>Customers Served</b>	
	11,213	
	<b>Energy Savings</b>	
	kWh Annual	kWh Lifetime
	15,006,187	135,686,907
	CCF Annual	CCF Lifetime
	248,438	3,464,191
	<b>CO<sub>2</sub> Emissions Reduced</b>	
	9,545 Tons	
	<b>Annual Savings</b>	
	\$ 3,169,759	

### Elm Village, East Hartford





In June 2008, the CEEF's WRAP program worked with the East Hartford Housing Authority to deliver efficiency services to Elm Village, an 85-apartment senior housing complex. The 42-year-old apartments were very drafty, so 26 thousand square feet of insulation was installed in the attic space. Energy specialists installed 743 lighting fixtures, 87 ENERGY STAR® refrigerators and 38 efficient room air conditioners. The Elm Village complex should realize annual and lifetime energy savings of 165,310 kWh and 1.9 million kWh, respectively. Resident Noimett Stevenson remarked, "The lighting in my unit is much better, particularly my bathroom lighting. Most importantly, I have noticed a decrease in my electric bill, which I am very grateful for."

### North Haven Housing Authority

In September 2008, the CEEF's UI Helps program worked with a 70-unit complex managed by the North Haven Housing Authority. North Haven High School students worked with CEEF energy specialists to help install efficient lighting fixtures and provide energy conservation tips to residents. Blower door tests determined where weatherization services were critical, and 120 low-flow showerheads/aerators were installed. The complex realized annual and lifetime energy savings of 49,279 kWh and 338,237 kWh, respectively. The housing authority reports that drafts and energy bills have been reduced.

<sup>5</sup> Fisher, Sheehan & Colton. Home Energy Affordability Gap: Connecticut Legislative Districts. Rel. February 2009. <http://www.operationfuel.org>.

# Building Green Dreams

2008 Residential New Construction		
	<b>Customers Served</b>	
	938	
	<b>Energy Savings</b>	
	kWh Annual	kWh Lifetime
	2,337,593	32,537,621
	<b>CO2 Emissions Reduced</b>	
	1,253 Tons	
	<b>Annual Savings</b>	
	\$ 427,180	

## Energy-Efficient New Homes

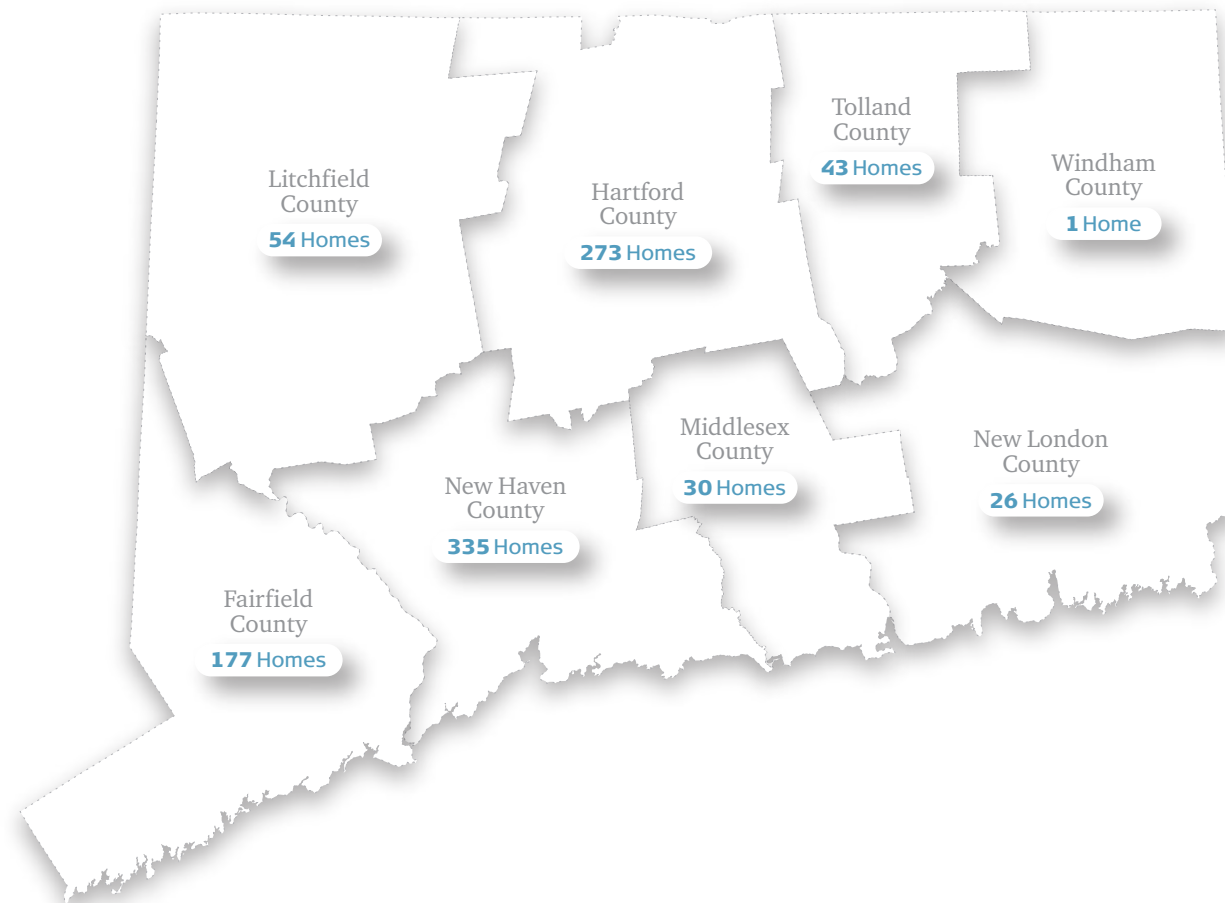
CEEF's Residential New Construction program provides technical support and financial incentives to make integrating efficient design and technologies feasible in residential construction projects. This allows architects, builders and residents to design new homes that use less energy from the beginning—at the blueprint.

Nationally, home energy efficiency is benchmarked by the ENERGY STAR® Homes program. ENERGY STAR is a joint partnership between the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE). Though supportive of ENERGY STAR, the Residential New Construction program challenges architects and

builders to move to a new, higher level of efficiency—high-performance and Zero Energy homes.

Raising the energy efficiency bar requires architects and builders to think “outside the building frame” and find new ways to help homeowners save energy and money. The program provides incentives and technical assistance for electric and gas efficiency measures such as insulation, ENERGY STAR lighting and appliances, gas water heaters and geothermal heat pumps.

Energy-efficient homes consume less energy, resulting in lower utility bills. According to ENERGY STAR, homeowners can save up to \$400 annually and reap the energy savings year after year. Energy-efficient homes often have higher resale values due to their energy savings.



# Retail Products

## CFLs & ENERGY STAR Appliances

The compact fluorescent light bulb (CFL) has become the icon for energy efficiency and justly so; CFLs use 75 percent less electricity than incandescent bulbs while producing the same amount of light. The CEEF's award-winning Retail Products program promotes the sale of CFLs in Connecticut's grocery, home improvement, and big box stores by working with lighting manufacturers to rebate bulbs before they even reach store shelves. This approach is administratively less costly, encourages CFL purchase at the store where they are competitively priced, and allows customers to purchase discounted CFLs without having to submit mail-in rebates or bring coupons to the store.






The CEEF, CL&P and UI are Initiative Sponsors of the Northeast Energy Efficiency Partnerships (NEEP), an organization whose mission is to promote energy efficiency in the Northeast. Recently the EPA and DOE recognized NEEP and its Initiative Sponsors with a “Sustained Excellence in Program Delivery” award for their 2008 ENERGY STAR Appliance and Lighting Initiative.


In 2008, the CEEF and its electric utility administrators continued their partnerships with the EPA, DOE and other efficiency programs built around the ENERGY STAR brand. The promotion of ENERGY STAR by the CEEF and its partners has helped make the reach of energy-efficient appliances ubiquitous across the state.




## Retail Rebates




Heating and cooling account for about 55 percent of the energy use in a typical United States home. CEEF's Residential Rebates program provides residential customers with a quick and efficient way to receive incentives for installing energy-saving heating and cooling systems. In 2008, the

CEEF provided rebates for natural gas water heaters, geothermal heat pumps, HVAC systems and room air conditioners. These stand-alone rebates are different from the rebates offered exclusively for Home Energy Solutions program participants.

2008 Retail Products		
	<b>Customers Served</b>	
	434,933	
	<b>Products Sold</b>	
	CFLs	2,993,241
	Hard-Wired	32,247
	Torchieres	8,287
	Other Products	1,536
	<b>Energy Savings</b>	
	kWh Annual	kWh Lifetime
	83,361,675	677,969,324
	<b>CO2 Emissions Reduced</b>	
	44,700 Tons	
	<b>Annual Savings</b>	
	\$ 15,233,803	

2008 Retail Rebates	
	<b>Rebates by Category</b>
	Natural Gas Hot Water
	353
	Geothermal Heat Pump
	93
	HVAC
	3,903
	Room A/C Turn-In
	2,554

Results from Gas Hot Water Rebates		
	<b>Energy Savings</b>	
	CCF Annual	CCF Lifetime
	21,462	434,112
	<b>CO2 Emissions Reduced</b>	
	129 Tons	
	<b>Annual Savings</b>	
	\$ 36,929	

Results from A/C Turn-Ins		
	<b>Energy Savings</b>	
	kWh Annual	kWh Lifetime
	145,497	1,014,547
	<b>CO2 Emissions Reduced</b>	
	78 Tons	
	<b>Annual Savings</b>	
	\$ 26,589	

# A Directive to Educate

A mandate of the ECMB is to educate Connecticut's residents and businesses about CEEF programs, new energy efficiency technologies and energy conservation efforts. CEEF's educational outreach is delivered through a variety of means including public forums, training seminars, school-based

programs (kindergarten through college), trade shows and museum exhibits. These efforts are vital in providing the information and tools needed by Connecticut's residents and businesses to reduce energy consumption and lower energy bills.

## Forums & Community Presentations

The ECMB and utility administrators understand that it is important to educate Connecticut's community groups, municipal energy task forces and residents about the benefits of energy efficiency. Throughout 2008, ECMB members and utility staff delivered nearly 100

presentations on CEEF programs across the state. Presentations introduced the background and purpose of the CEEF, reviewed program offerings with information on accessing energy assistance, and provided energy conservation tips.

Energy efficiency education is fun at the OneThing Expo.

## OneThing Expo

In cooperation with Governor M. Jodi Rell's campaign, the CEEF was the Residential Focal Point Sponsor of the inaugural OneThing Expo in October 2008. For three days, staff from Connecticut's electric and natural gas utilities led Connecticut residents through a 400-square foot booth depicting a model energy-

efficient home. The home showcased CFLs, ENERGY STAR-rated appliances, high-performance insulation and energy-efficient windows. The home's garden showcased a high efficiency HVAC unit and invited visitors to participate in Energy Stacker—a game comparing the energy use of inefficient appliances versus ENERGY STAR units. On Education Day, utility staff led ten-minute educational tours for over 20 school groups.

## Green Collar Job Training

The CEEF, through its eEsMarts™ educational program and the CEEF-funded efforts of the Institute for Sustainable Energy (ISE), continued partnering with the Connecticut Technical High School System (CTHHS) to develop and train Connecticut's future "green collar" workforce. Since 2006, CEEF's eEsMarts program has worked with the CTHHS's electrical instructors to incorporate efficient and renewable energy topics in classroom lessons. The 2008 workshop promoted the integration of clean and efficient energy technologies with focused training on solar, siting and proper orientation of

solar photovoltaic (PV) panels and included staff and curriculum materials from the Connecticut Clean Energy Fund's Learning for Clean Energy Innovations program.

Additionally, ISE is heading up a Green Collar Jobs taskforce with the CTHHS's superintendent and administration to upgrade the curriculum to include information on high-performance building standards, energy efficiency and renewable technologies. An in-service training was held in October 2008 for 350 CTHHS instructors.

# In Our Schools

## Pre-K-12 Energy Education

A primary objective of the CEEF's education and outreach programs is to educate tomorrow's energy consumers—Connecticut's youth. The CEEF's eEsMarts program is an energy efficiency and clean energy learning initiative for Pre-K-8 Connecticut classrooms and Connecticut Energy Education is the CEEF's Grade 9-12 initiative administered by ISE. The CEEF's Grade Pre-K-12 curriculum helps students, teachers, and families understand the inextricable link between energy consumption and environmental issues such as air quality and global warming.

eEsMarts and Connecticut Energy Education offer teacher training workshops and curriculum materials regarding efficient and renewable energy technologies. The programs partner with educational organizations to maximize their

effectiveness. For example, eEsMarts partners with Wesleyan University to deliver high-quality science-based workshops to guide teachers through its lessons and challenge them to incorporate inquiry-based teaching methods in classroom instruction. All lessons directly align with Connecticut State Department of Education Framework Content Standards and National Science Standards. Workshops are offered in two arrangements: (1) School District (Town) Specific; or (2) General. Lessons and workshops are **free** for all Connecticut teachers and school districts.

In 2008, eEsMarts hosted district-specific workshops for Ansonia, Bridgeport, Danbury, Hartford, Monroe, Ridgefield, Waterbury and Wethersfield teachers. The annual eEsMarts Summer Institute at Wesleyan University trained over 110 PreK-9 teachers during two- and three-day intensive workshops. Connecticut Energy Education materials are available online for all school districts and the program hosts teacher training workshops at schools and educational conferences statewide.



Teachers learn new lessons at an eEsMarts workshop.

## Essays on Energy

In the spring of 2008, over 450 sixth, seventh and eighth graders from across Connecticut submitted essays detailing their ideas for making Connecticut residents and towns more energy efficient. In May 2008, 19 students were honored at the fourth annual eEsMarts Energy Efficiency Essay Contest ceremony. The student's essays ranged from green roofs to simply turning off the lights and all could serve as a blueprint for energy efficiency policy in Connecticut. The contest serves as a true catalyst for great energy efficiency ideas from tomorrow's future workforce of engineers, scientists and policymakers.

"Don't use the lights that don't need to be used... if there is a lot of natural sunlight lighting up my bedroom, I don't need to turn on the lights."

Kate, 6th grader, Madison, CT

"A simple step to saving energy is to change household light bulbs to compact fluorescent bulbs."





Ashley, 7th grader, Ansonia, CT

"I believe that building green roofs will make the New Milford Public School District more energy efficient."

Krista, 7th grader, New Milford, CT

"When buying new products, look for the ENERGY STAR label, as those products are guaranteed to reduce energy use and pollution."

Caleb, 8th grader, Hamden, CT

2008 eEsMarts	
	Teachers Trained 382
	Curriculum Lessons Distributed 5,105
2008 Connecticut Energy Education	
	Teachers Trained 316
	Curriculum Lessons Downloaded 2,557

# In Our Community

## SmartLiving™ Center



Located on the Boston Post Road in Orange, the SmartLiving Center is a science museum, hands-on activity center, home improvement showroom and education resource center all rolled into one. Open to the public six days a week, the facility educates adults, teachers and students regarding the effects of our present day energy-consuming lifestyle on natural resources and the environment.

Visitors can participate in guided tours through the SmartLiving Center's interactive demonstrations and exhibits on efficient technologies and renewable energy sources. The purpose of these tours is to empower students of all ages to become stewards of the earth and the environment. The center also hosts family science days, training events and meetings. In 2008, the SmartLiving Center received 12,940 visitors and hosted 250 group tours, seminars and free events.

## Museum Partnerships Program

The objective of the Museum Partnerships program is to expand upon the SmartLiving Center concept to reach a broader audience across Connecticut by installing energy-efficient displays and exhibits at educational museums, science centers, technical high schools, and other high-traffic public venues.

In 2008, the CEEF and the Connecticut Clean Energy Fund continued their joint partnership with the Connecticut Science Center, developing and designing the Energy City Gallery. Opening in May 2009, the Center is expected to educate

approximately 400,000 visitors annually about climate change and the efficient and renewable energy technologies available to combat this global environmental issue. The Energy City Gallery includes interactive exhibits on sustainability, energy-efficient windows, passive solar design, residential solar PV installations, energy-efficient appliances and lighting, biomass, wind power, fuel cells, day lighting and real-time monitoring systems.

In 2009, the CEEF will work with Stepping Stones Museum for Children in Norwalk to develop a traveling energy exhibit that will stop at schools, municipalities and museums statewide.

## 2009 Community Initiative

In 2009, the CEEF will expand its energy efficiency outreach with a Community Outreach pilot. This initiative will reach out to select Connecticut communities to instill an energy-efficient ethic and energy conservation behaviors in community members. From municipal buildings to individual residents, communities will be asked to make a commitment to energy efficiency and its resulting economic, societal and environmental benefits.

The CEEF will double its efforts in participating communities to educate them about its programs, incentives and associated energy savings through community forums and presentations. Like other CEEF program modifications, this initiative is a direct result of public comments requesting expanded assistance to provide additional support for community-based efforts.

# In Our Workplace

The CEEF continuously educates Connecticut's business and energy vendor communities about new technologies, programs and business opportunities. This training and outreach includes seminars, local chamber and business presentations, and technical sessions

for Connecticut's existing energy efficiency workforce—more than 1,500 strong. HVAC technicians, lighting installers, energy auditors and engineers make up Connecticut's green collar energy workforce and these jobs depend on, and are supported by the CEEF.

## Training Seminars & Technical Presentations

The CEEF offers technical training seminars and forums for vendors, large commercial and industrial customers and utility administrators to continuously educate them about emerging technologies and new building design standards and codes. In 2008 more than 20 technical seminars were held statewide to educate Connecticut's energy workforce. Training seminar topics included building code training, daylight dividends, high-performance lighting, energy management software, boiler and chiller optimization, energy management planning, Certified Energy Managers, compressed air systems, and Leadership in Energy and Environmental Design. More than 1,000 professionals attended these seminars.

CEEF's utility administrators also hosted several technical sessions to educate and inform energy

efficiency vendors about new technologies, processes and programs effecting 2008 business operations. These technical sessions were held for both residential and commercial program vendors.



## Business Community Presentations

Energy efficiency is a proven way to reduce the cost of doing business in Connecticut. Installing energy-efficient and load management technologies in facilities reduces overhead and increases business profits. These economic benefits are vital to Connecticut companies trying to reduce costs without eliminating jobs and growth.

The CEEF facilitates educational outreach to local chambers of commerce, business and

manufacturing groups, and trade associations in an effort to educate them about the economic benefits of energy efficiency. ECMB members and CEEF utility administrators attend numerous chamber and business meetings across the state to deliver the message of energy efficiency and energy conservation.



# Small Businesses: Connecticut's Business Backbone

## Small Business Energy Advantage – with Zero Percent Financing

Today's competitive global marketplace and economic climate are straining the backbone of Connecticut's economy—small business. Connecticut's entrepreneurs are facing rising energy prices, decreasing consumer demand for products and services, and a national credit crisis that has resulted in stagnation in the personal and business loan industry. This deterioration is evident by recent

numbers from the Secretary of the State's Office: in 2008 there was an 11 percent decrease in new business start-ups and an 18 percent increase in business dissolutions in Connecticut (more than 13,000 businesses), when compared to 2007.<sup>1</sup>

Small businesses are an integral part of Connecticut's communities and towns. Small business owners and employees are our neighbors and Connecticut's families depend on small businesses for products and services. Critical in the current economic downturn, the Small Business Energy Advantage (SBEA)

program helps ensure small business entrepreneurs are able to keep their doors open and their highly skilled workforces employed. The program boosts the bottom line by reducing energy consumption, lowering energy bills and operating costs, and ensuring that hard-earned dollars are not wasted on energy-inefficient equipment and behaviors.

### Services

The CEEF's SBEA program provides cost-effective, turnkey energy-saving services for small business owners who do not have the time, financial resources, or in-house expertise necessary to analyze and modify energy usage. SBEA-qualified contractors conduct no-cost energy assessments to determine potential energy-saving measures and work with CEEF utility administrators to prepare customer proposals that detail suggested measures, estimate energy savings and calculate total costs. The energy-efficient improvements translate into monthly energy bill savings that result in a quick payback and low out-of-pocket investment for small businesses. Zero percent financing for up to three years is offered to qualified customers.

### Building Efficiency for Centerville Lumber

Since 1929, Centerville Lumber in Hamden has provided high-quality retail lumber and hardware supplies to New Haven county residents and contractors. In 2008, third-generation owner Richard Roos approached the SBEA program about making efficiency improvements to its downtown Hamden store.

A SBEA-qualified contractor performed a facility energy assessment and determined that Centerville Lumber needed a lighting retrofit. Standard fluorescent lights were replaced with high-efficiency units and 400-watt metal halide fixtures were replaced with 228-watt fluorescents. Centerville Lumber's EXIT signs were retrofitted with high-efficiency LED replacements. These energy-efficient measures resulted in 17,624 kWh and 178,442 kWh annual and lifetime energy savings, respectively. The efficiency measures also reduced the company's peak demand by 4.82 kW. The efficiency investments will pay for themselves in 26 months and will help ensure Centerville Lumber's doors are open for generations to come.

### Alderman Motor Co. Reignites Efficiency

Since 1924, The Alderman Motor Company has served Meriden residents at its South Broad Street location. Rebuilt in 1980, the Cadillac car dealership and auto repair shop provides exceptional customer service and is a pillar of the Meriden business community.

In 2008, Alderman Motor Company's owner, Joel Platt, determined the building's lighting system should be modernized and more energy efficient. He contacted the SBEA program and requested an energy assessment of the dealership. A SBEA-qualified contractor determined the dealership's old T-12 fluorescent lighting should be replaced with new three-lamp T-8 fixtures and that 750-watt pulse-start metal halides should be used instead of 1,000-watt metal halides.

These efficient lighting measures will help Alderman Motor Company realize annual energy savings of 67,102 kWh, lifetime energy savings of 867,145 kWh and reduced peak demand of 19.6 kW. "The program helps," stated Platt. "In this economy, anything I can save or cut out helps." The energy savings will pay for themselves in 26 months and the company took advantage of the SBEA's zero percent interest financing option. Energy savings will boost dealership profits and allow for reinvestment in the business, sales force and community.



New energy-efficient lighting will save electricity year after year.



"In this economy, anything I can save or cut out helps." Joel Platt

2008 Small Business Energy Advantage		
	<b>Customers Served</b>	
	1,999	
	<b>Energy Savings</b>	
	kWh Annual	kWh Lifetime
	46,734,459	557,060,249
	<b>CO<sub>2</sub> Emissions Reduced</b>	
	25,060 Tons	
	<b>Annual Savings</b>	
	\$ 8,072,547	

<sup>1</sup> Press Release: Record Number of Connecticut Businesses Shut Down in 2008. Office of the Secretary of the State. Hartford, CT. January 28, 2009. [http://www.ct.gov/sots/lib/sots/releases/2008/1.28.09\\_bysiewicz\\_reports\\_record\\_number\\_of\\_businesses\\_shut\\_down\\_in\\_2008.pdf](http://www.ct.gov/sots/lib/sots/releases/2008/1.28.09_bysiewicz_reports_record_number_of_businesses_shut_down_in_2008.pdf).

# New Construction & Equipment

## Energy Conscious Blueprint



Efficient design and natural sunlight contributes to a great working environment.

Commercial buildings, manufacturing plants and industrial factories consume large amounts of energy to produce the goods and services consumers demand. Incorporation of energy-saving opportunities before a building's designs are finalized or equipment is ordered is a fraction of the cost of a later retrofit or replacement of inefficient equipment.

The CEEF's Energy Conscious Blueprint program provides technical assistance and financial incentives to

Connecticut businesses and municipalities purchasing new equipment, making major renovations, or constructing new buildings. CEEF and its utility administrators work with customers and design teams to brainstorm and identify energy-saving strategies and equipment.

Typically, energy-efficient equipment costs more than standard units do, so the CEEF offers incentives to cover a portion of the incremental cost (the cost difference between standard and efficient equipment). This incentivizes customers to make wise energy choices the first time.

Energy Conscious Blueprint promotes both electric and gas efficiency measures including efficient lighting, occupancy sensors, high-efficiency natural gas furnaces and boilers, chillers, cool roofs, high-speed cooler/freezer doors and commercial kitchen cooking equipment. Additionally, the program offers prescriptive rebates for high-efficiency commercial HVAC systems (CT Cool Choice) and premium-efficiency motors (CT Motor Up).

### Harvesting Daylight in North Haven

F&F Mechanical is a HVAC mechanical contracting firm located in North Haven. Two years ago F&F Mechanical initiated the design phase of a new facility and turned to CEEF to help design their state-of-the-art 500,000 square foot facility.

The facility was designed to take advantage of outside lighting through daylight harvesting in the perimeter offices and common areas, including the manufacturing zone. Large windows and an open building layout allow light to spill into the facility. The installation of high-efficiency lighting fixtures, reflective ceilings, occupancy sensors and timers manage the facility's additional lighting needs and electricity consumption around the clock. The harvesting of free daylight also provides a quality working environment for F&F Mechanical's employees.

Additional energy-efficient measures include climate control and HVAC systems that reduce the facility's energy use and maintain comfort. F&F Mechanical installed high-efficiency boilers, full direct digital control systems, variable frequency drives on HVAC pumps and fan motors, and free-cooling economizers and dampers.

"With the CEEF's guidance and energy-efficiency expertise, we were able to focus on our bottom line and our energy use," stated John Ferrucci, vice president of F&F Mechanical. These energy-efficient measures resulted in 125,000 kWh annual energy savings. The firm is in the process of designing another building and will turn to CEEF again to continue building for a greener tomorrow.

### Norwalk Community Center Under "New Controls"

Originally constructed in the 1930s as an elementary school, the Ben Franklin Center is city-owned and leased to Norwalk Economic Opportunity Now, Inc. (NEON), a private non-profit community action agency that serves the greater Norwalk area. The 80-year-old building's inefficiencies were easy to identify, as the original steam heat system and pneumatic controls were non-functioning. To maintain a 70-degree temperature in the daycare rooms, meant that other portions of the building would overheat to temperatures in excess of 80 degrees with the windows open!

To address this issue, Norwalk worked with the Energy Conscious Blueprint program to replace the center's old boilers with three new high-efficiency models and upgrade the energy management system. The gas-fired hot water, condensing boilers are estimated to save more than 9,000 ccf of gas annually and 135,000 ccf over their 15-year lifetime.

A new Direct Digital Control energy management system (EMS) was installed to control the start-stop of the boilers, boiler fuel pumps, chiller and other devices, and to control temperature settings. The automated EMS ensures that the building is heated and cooled evenly throughout, saving



"These boilers have an operating design efficiency of up to 98%. Together with an electronic EMS and energy-efficient pumps, we anticipate significant energy savings."

Alan Lo

an additional 2,441 ccf annually. "The new EMS allows my staff to monitor, track/trend, make adjustments and receive trouble notices remotely," stated Alan Lo, Ben Franklin Center's building and facilities manager. "Norwalk saves on staffing costs and the EMS provides for the comfort of all building occupants." All the energy-efficient measures installed will save the Ben Franklin Center almost \$12,000 annually.

2008 Energy Conscious Blueprint		
	<b>Businesses Served</b>	
	983	
	<b>Energy Savings</b>	
	kWh Annual	kWh Lifetime
	64,241,087	968,216,123
	CCF Annual	CCF Lifetime
	194,729	2,938,327
	<b>CO2 Emissions Reduced</b>	
	35,621 Tons	
	<b>Annual Savings</b>	
	\$ 11,250,412	

# Existing Buildings: Opportunities for Energy Efficiency

## Energy Opportunities

A joint electric and gas efficiency CEEF program, Energy Opportunities was created to help business owners and facility managers retrofit existing commercial, industrial or municipal facilities to reduce and manage energy consumption. The decision to retrofit can be based on many factors including productivity benefits, reduced operating costs, ease-of-use, compatibility with other systems and aesthetics/comfort.



### Norwalk Hospital Operating More Efficiently

In November 2005, the CEEF was approached by Norwalk Hospital to explore energy-saving opportunities for its facility improvement project. The hospital is a 328 bed, private, not-for-profit community hospital that serves Fairfield County. Operating for more than 100 years, this hospital has always been ahead of the curve in leadership in medical care, programs and

community involvement. Hospital staff wanted to extend this leadership to energy efficiency.

The Energy Opportunities project involved over ten energy-efficient measures including retrofitting the lighting, occupancy sensors, chillers, premium-efficiency motors, ENERGY STAR-transformers, optimization of the operating suite's control system, and the facility's energy management system.

The project was completed in 2008, and the installed energy-efficient measures resulted in 4.8 million kWh and 78.9 million kWh annual and lifetime savings, respectively. The efficiency measures reduced the hospital's summer peak demand by 708 kW. Norwalk Hospital President and CEO Geoffrey Cole estimates that implementation of this energy efficiency program will save \$1.2 million annually for the next ten years. "Norwalk Hospital is introducing modern energy efficiency systems to benefit our patients and our community," states Cole.

Retrofitting involves installation of new or modified parts/equipment in a building currently in use. CEEF's Energy Opportunities program works with customers to identify energy-saving retrofit projects. Customers retain complete control over the project so owners and facility managers can make decisions based on business needs and funding.

Energy-saving opportunities typically include energy-efficient lighting and controls, HVAC systems and controls, refrigeration, water heating, and process-related equipment. CEEF offers technical assistance, as well as financial incentives that help offset incremental cost differences between purchasing standard and efficient equipment. The incentives and energy savings from efficient equipment are sufficient to convince businesses and municipalities that energy efficiency is the right choice.

### Stratford Public Schools

Throughout 2008, the CEEF worked closely with Stratford Public Schools to retrofit the town's 10 elementary, middle and high schools with energy-saving measures to reduce energy consumption and lower the Board of Education's energy bills.

Bunnell High and Wilcoxson Elementary schools' lighting systems were retrofitted and lighting controls were installed to reduce electrical consumption. Flood Middle, Wooster Middle, Franklin Elementary, Lordship Elementary, Nichols Elementary, Second Hill Lane Elementary, Eli Whitney Elementary and Stratford Academy were retrofitted with lighting controls. With the lights burning brightly and efficiently in the hallways and classrooms, school officials can focus on illuminating the minds of the students.

Energy management system controls and new HVAC systems were installed at Wooster Middle, Chapel Elementary, Franklin Elementary and Stratford Academy. Boiler controls were also installed at Chapel Elementary and Johnson Academy schools.



All the energy-efficient measures installed at the ten schools will save the Stratford Board of Education 540,628 kWh annually and 11.8 million kWh over the lifetime of the measures. The measures will also reduce natural gas usage by 21,865 ccf annually and 327,975 ccf over the lifetime of the measures.

As a result of the energy efficiency improvements, Stratford public schools should reduce their summer peak demand by 176 kW. The energy savings will pay for the measures within four years.

## Lighting Express Rebate

Businesses and municipalities focused solely on replacing lighting fixtures can utilize the CEEF's prescriptive program—Lighting Express Rebate. This fixed rebate allows facility managers and business owners to be expeditiously paid for the incremental cost of installing high-efficiency lighting fixtures as compared to standard, inefficient lighting.





2008 Energy Opportunities		
	<b>Businesses Served</b>	
	779	
	<b>Energy Savings</b>	
	kWh Annual	kWh Lifetime
	115,467,004	1,500,066,430
	CCF Annual	CCF Lifetime
	35,890	443,214
	<b>CO<sub>2</sub> Emissions Reduced</b>	
	62,132 Tons	
	<b>Annual Savings</b>	
	\$ 19,973,238	

# Existing Buildings (CONTINUED)

## Operations & Maintenance Services

Inadequate maintenance can lead to drastic energy losses and high energy costs. The CEEF's Operations & Maintenance (O&M) program can help customers improve the electrical and thermal efficiency of their operations by making changes and repairs, rather than making costly capital investments. CEEF administrators work with customers to identify both electric and gas efficiency O&M improvements. These improvements may qualify for financial incentives to offset a portion of the project cost once measures are installed.

Each facility is unique, so O&M improvements are designed for a building's site. Some common O&M measures include economizer repairs/conversions, rewiring of lighting circuits, repairs/replacements of steam traps, and rewiring of lighting circuits for more efficient switching. In addition to identifying efficiency measures, CEEF administrators provide training and outreach to the customers' in-house personnel so energy-efficient improvements can be maintained over time.

2008 Operations & Maintenance	
	<b>Businesses Served</b> 65
	<b>Energy Savings</b>
	kWh Annual      kWh Lifetime
	9,264,937      86,718,708
	CCF Annual      CCF Lifetime
	1,377      13,770
	<b>CO<sub>2</sub> Emissions Reduced</b> 4,976 Tons
	<b>Annual Savings</b> \$ 1,601,441

### Aqua Blasting Corporation

Founded in 1971, Aqua Blasting Corporation is a privately-owned family business located in Bloomfield. The business provides various services including shot peening, glass bead peening, vapor blasting, dry abrasive blasting, as well as other specialized operations.

Previously Aqua Blasting worked with CEEF to improve lighting efficiencies throughout its facility. In 2008, the corporation turned to CEEF's expertise again to assist in making improvements to its compressed air system. Aqua Blasting's air compressors were running at maximum output during most production hours and could not maintain enough air supply to operate the blasting equipment. It was determined that the air piping was too small to provide sufficient air for the compressors, so an intermediate flow controller was installed. This efficiency measure was much less expensive than buying a new air compressor—something Aqua Blasting had considered.

"The compressed air system has increased our production," stated Victoria Stavola, president of Aqua Blasting. "We didn't need to purchase another air compressor that would cost more to operate and maintain." The efficiency measures helped the corporation save 89,250 kWh annually, 1.3 million kWh over the lifetime of the measures, and reduced its peak demand by 35.7 kW.

# Load Management

## Electrical Grid System & Peak Demand

New England's electrical grid operator, ISO-NE, designed the system to meet peak demand for electricity – hot summer weekdays when air conditioners are operating at full force. During peak demand, ISO-NE depends on less-efficient, fossil fuel power "peaking" plants to provide additional electricity needed to meet demand. It is highly inefficient to build and utilize expensive electricity generating plants that run only a few days a year at "peak" demand.

CEEF's energy efficiency and load management programs reduce peak demand. These result in a broad range of benefits to Connecticut's residents and businesses including reduction of Federally Mandated Congestion Charges (FMCC) on electric bills, improvement of transmission system reliability, and reduction of power plant and capital cost improvements.

## Demand Reduction Program

CEEF's Demand Reduction program converts energy usage information into savings opportunities – during peak demand periods, the cost for electricity is highest. The program helps commercial and industrial customers understand their energy consumption patterns. This knowledge helps them reduce peak kilowatt demand and potentially reduce electrical usage (kWh).

CEEF administrators work with customers to determine where equipment or system-specific loads can be controlled to reduce energy consumption. A contractor examines manufacturing equipment, HVAC, lighting and process controls – all the discrete systems using power in a building. The contractor develops

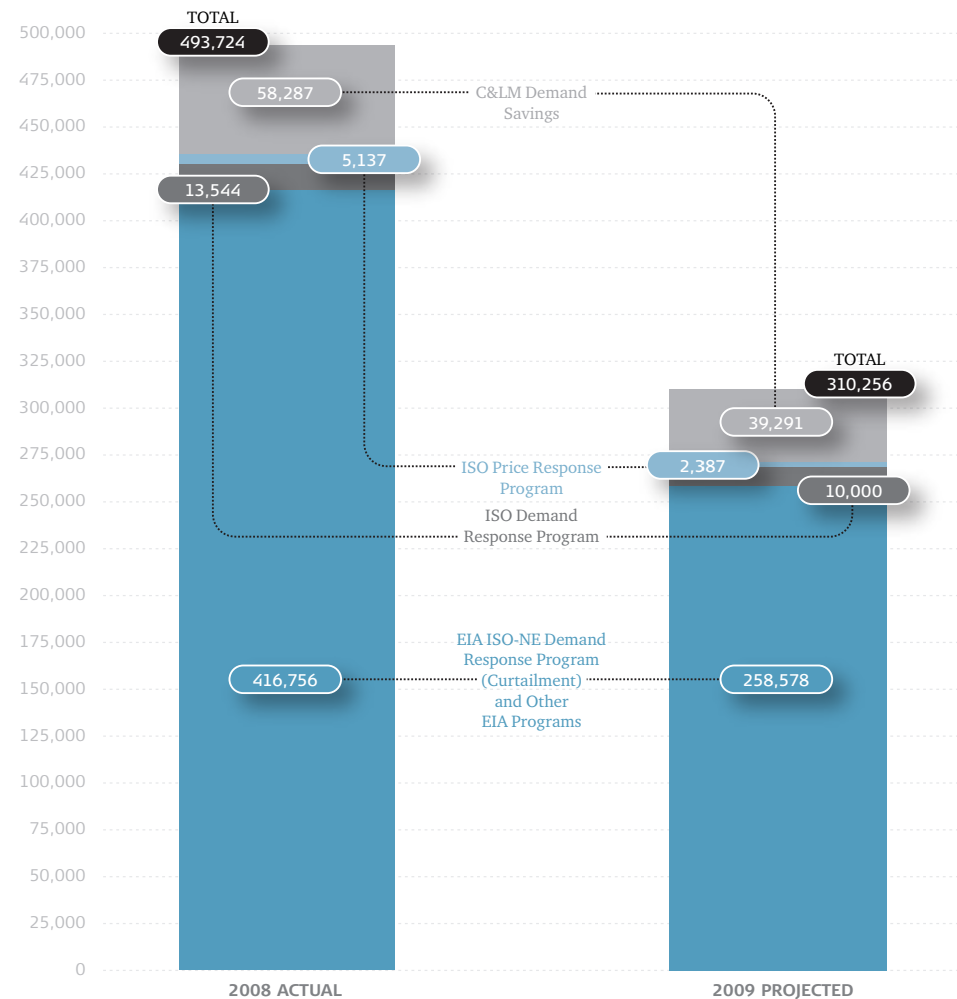
a proposal for installing and/or implementing measures to reduce demand. These measures include rescheduling equipment to run during off-peak hours, curtailing usage through energy-efficient measures, combining or aggregating projects, and using remote and/or automated control systems to shut down equipment. The Demand Reduction program utilizes real-time energy monitoring and controls to automatically direct a predetermined sequence of events during a customer's time of peak demand to reduce their energy demand. CEEF's program uses financial incentives to offset the cost of the demand reduction controls.

# Load Management (CONTINUED)

Reduction in peak demand has environmental benefits. During periods of peak demand, electricity is often generated by supplemental power plants. When energy efficiency and demand reduction controls are used, the demand for electricity from these often less efficient peaking plants is decreased. This results in the reduction in emissions of significant amounts of sulfur and nitrogen oxides, and the greenhouse gas carbon dioxide.

Chart A illustrates that CEEF's efficiency and demand response programs are responsible for more than 493,724 kW of peak demand savings in Connecticut in 2008. These kW savings allow the electrical grid to provide reliable, less-expensive electricity for Connecticut's homes and businesses without the need for new generation. The majority of these kW savings are achieved through ISO-NE's Demand Response program (bottom segment). The peak demand savings that result from CEEF program efforts are represented in the top segment.

**CHART A: Peak Demand Savings Available from the CEEF, CMEEC and Energy Independence Programs**  
(in kW)



Note: 2008 Actuals include 417 MWs from EIA initiatives.

# Connecticut's History of Energy Legislation

Connecticut has been a leader in implementing high-quality energy efficiency programs and services as far back as 1988. In recent years, Connecticut policymakers have enacted a series of legislation and policies to benefit utility ratepayers, continuing the state's legacy of leadership in energy efficiency.

In 2004, the Federal Energy Regulatory Commission asked ISO-NE to develop market-based incentives for meeting the New England region's future capacity needs. ISO-NE proposed the Locational Installed Capacity (LICAP) market in which capacity payments were calculated using an established price curve based on supply. Because of concerns that LICAP would result in a competitive imbalance among regional generators, the program was twice delayed and ultimately replaced through a settlement process. This resulted in ISO-NE's creation in June 2006 of an alternate capacity market, the Forward Capacity Market (FCM).

In 2005, the Connecticut Legislature passed PA 05-1, the *Energy Independence Act* (EIA) to help address the rising cost of energy. The EIA directed the Department of Public Utility Control (DPUC) to implement a variety of energy efficiency and load management initiatives aimed at reducing Federally Mandated Congestion Charges (FMCC). The EIA provided for customer incentives to install or implement energy efficiency, demand reduction, and distributed generation measures.

In 2007, the Connecticut Legislature passed PA 07-242, *An Act Concerning Electricity and Energy Efficiency*. This legislation reaffirmed Connecticut's long-term commitment to energy efficiency as a cornerstone of the state's energy, economic development and environmental policies.

During 2008, the ECMB and the electric utilities concentrated their efforts on two sections of this legislation: the Integrated Resource Plan (§ 51) and the Electric Efficiency Partners (§ 94).

CL&P and UI began an integrated resource planning (IRP) process in 2007. On January 1, 2008, they submitted a joint IRP plan to the Connecticut Energy Advisory Board (CEAB). This IRP plan complied with the mandate to include all cost-effective, energy efficiency projects as the first resource selected. On August 1, 2008, the CEAB submitted its modified IRP plan to the DPUC. This modified version recommended the DPUC consider high levels of energy efficiency.

To carry out the legislative mandates, the ECMB has relied heavily on its expert consultants, and increased the efforts of individual board members by adding committees that focus exclusively on residential and commercial/industrial programs.



# Efficiency Protects the Environment



A primary focus of CEEF is to reduce air pollution and improve air quality in the Northeast. The more efficient Connecticut's homes, businesses and schools are, the less energy they consume. This decrease in energy consumption results in less demand for energy from power plants. Reducing plant operation time reduces emissions of air pollutants and greenhouse gases.

Electricity generation from non-renewable fossil fuels (e.g., coal, natural gas) produces two of the six "criteria pollutants" defined

by the national Clean Air Act<sup>1</sup> and the U.S. Environmental Protection Agency as healthy air quality indicators—nitrogen and sulfur oxides. Nitrogen oxides are precursors to ozone, a primary component of summer smog. Nitrogen and sulfur oxides in particulate form reduce visibility and are associated with public health problems such as asthma. Both air pollutants are linked to acid rain and acid deposits in Connecticut's rivers and lakes.

The New England Governors, Eastern Canadian Premiers and the Connecticut General Assembly have established forward-looking goals to reduce greenhouse gas emissions. Although Connecticut was an early leader in developing climate change policy, the state's greenhouse gas emissions continue to grow. The Governor's Steering Committee on Climate Change 2007 Progress Report notes that Connecticut needs "to decrease greenhouse gas emissions by more than one million metric tons per year for over forty years."<sup>2</sup>

CEEF programs can resolve this emissions problem. In 2008, CEEF program activities resulted in the following environmental benefits.

**Table B: Reflecting Reduction in Criteria Pollutants and Carbon Dioxide**  
(In Tons)

	Annual Savings				Lifetime Savings			
	Electric		Natural Gas		Electric		Natural Gas	
	2008	2009 Plan	2008	2009 Plan	2008	2009 Plan	2008	2009 Plan
SO <sub>x</sub>	105	79	—	—	1,228	818	—	—
NO <sub>x</sub>	58	43	—	—	672	447	—	—
CO <sub>2</sub>	197,236	148,554	5,888	9,084	2,300,159	1,531,950	96,228	146,303

<sup>1</sup> CAA § 101-131; USC § 7401-7431.  
<sup>2</sup> Challenges and Accomplishments in Implementing Connecticut's Climate Change Action Plan. Rel. 2007. Available at: <http://ctclimatechange.com/documents/2007ProgressReport.pdf>.

# Demonstrating Economic Results

## Energy Savings

A primary goal of CEEF programs is to promote energy savings for all Connecticut customers. In 2008, CEEF programs generated \$751 million in lifetime energy savings for electric customers and \$22 million in lifetime energy savings for natural gas customers. For every \$1 spent on electric efficiency, Connecticut receives electric system

benefits of more than \$4. For every \$1 spent on gas efficiency, more than \$2 in gas system benefits is realized.

2008 CEEF programs benefited all customer sectors. Table C details the energy savings (in dollars) by customer sector.

**Table C: Summary of Energy Savings by Customer Sector**  
(In millions of dollars)

Customer Sector	Annual Savings				Lifetime Savings			
	Electric		Natural Gas		Electric		Natural Gas	
	2008	2009 Plan	2008	2009 Plan	2008	2009 Plan	2008	2009 Plan
Limited Income	2.89	3.44	0.43	0.44	25.87	28.59	5.96	6.68
Residential (Non Limited Income)	19.42	20.31	0.66	1.01	165.71	143.41	11.99	20.94
Commercial & Industrial	42.44	25.41	0.27	0.52	559.87	330.91	4.37	6.49
<b>Totals</b>	<b>64.75</b>	<b>49.15</b>	<b>1.36</b>	<b>1.97</b>	<b>751.44</b>	<b>502.91</b>	<b>22.32</b>	<b>34.11</b>

## Economic Development & Efficiency

Promoting economic development for Connecticut's large and small businesses is a primary goal of CEEF. In 2008, with rising energy and overhead costs, Connecticut's businesses turned to CEEF programs to help reduce their energy consumption—lowering their energy bills and operating costs.

In 2008, CEEF programs assisted Connecticut's businesses by installing energy-saving measures to improve productivity, product quality, comfort, safety and to reduce pollution.

### In 2008, CEEF Programs:

- Assisted approximately 2,000 Connecticut small businesses save energy and money.
- Helped approximately 1,832 Connecticut commercial, industrial and municipal customers save energy and money.
- Supported approximately 1,500 non-utility jobs in the energy efficiency industry.
- Reduced operating costs and improved productivity in Connecticut's commercial and manufacturing industries.

# Assistance to Customers in Connecticut Towns\*

This list includes energy efficiency and conservation benefits provided to residential, commercial and industrial customers of the electric and gas utilities and CMEEC.

Andover	\$ 17,844	East Haven	\$ 613,327
Ansonia	\$ 215,415	East Lyme	\$ 213,068
Ashford	\$ 22,747	East Windsor	\$ 261,667
Avon	\$ 533,538	Eastford	\$ 4,281
Barkhamsted	\$ 8,254	Easton	\$ 186,796
Beacon Falls	\$ 96,801	Ellington	\$ 242,952
Berlin	\$ 384,010	Enfield	\$ 1,353,183
Bethany	\$ 52,329	Essex	\$ 191,640
Bethel	\$ 297,716	Fairfield	\$ 779,611
Bethlehem	\$ 30,519	Farmington	\$ 1,301,855
Bloomfield	\$ 631,764	Franklin	\$ 33,810
Bolton	\$ 109,055	Glastonbury	\$ 690,272
Bozrah	\$ 10,104	Goshen	\$ 20,458
Branford	\$ 297,567	Granby	\$ 117,509
Bridgeport	\$ 1,855,157	Greenwich	\$ 1,887,294
Bridgewater	\$ 6,263	Griswold	\$ 101,809
Bristol	\$ 764,697	Groton	\$ 902,222
Brookfield	\$ 471,767	Guilford	\$ 316,121
Brooklyn	\$ 58,724	Haddam	\$ 39,292
Burlington	\$ 81,969	Hamden	\$ 685,106
Canaan	\$ 135,499	Hampton	\$ 13,721
Canterbury	\$ 33,916	Hartford	\$ 3,594,307
Canton	\$ 508,650	Hartland	\$ 4,428
Chaplin	\$ 19,442	Harwinton	\$ 23,525
Cheshire	\$ 777,744	Hebron	\$ 83,424
Chester	\$ 46,961	Kent	\$ 12,308
Clinton	\$ 111,644	Killingly	\$ 1,480,096
Colchester	\$ 80,607	Killingworth	\$ 17,775
Colebrook	\$ 2,352	Lebanon	\$ 37,477
Columbia	\$ 92,829	Ledyard	\$ 1,633,443
Cornwall	\$ 11,496	Lisbon	\$ 82,941
Coventry	\$ 71,690	Litchfield	\$ 129,723
Cromwell	\$ 366,919	Lyme	\$ 16,211
Danbury	\$ 1,750,824	Madison	\$ 120,706
Darien	\$ 169,750	Manchester	\$ 964,992
Deep River	\$ 43,206	Mansfield	\$ 247,049
Derby	\$ 329,592	Marlborough	\$ 56,393
Durham	\$ 32,579	Meriden	\$ 871,319
East Granby	\$ 106,588	Middlebury	\$ 32,319
East Haddam	\$ 228,492	Middlefield	\$ 24,254
East Hampton	\$ 49,988	Middletown	\$ 2,971,307
East Hartford	\$ 2,939,213	Milford	\$ 1,252,969

Monroe	\$ 264,164
Montville	\$ 310,766
Morris	\$ 26,690
Naugatuck	\$ 590,611
New Britain	\$ 1,723,451
New Canaan	\$ 205,733
New Fairfield	\$ 23,485
New Hartford	\$ 154,370
New Haven	\$ 2,812,148
New London	\$ 562,100
New Milford	\$ 501,612
Newington	\$ 511,456
Newtown	\$ 514,967
Norfolk	\$ 11,129
North Branford	\$ 179,639
North Canaan	\$ 182,590
North Haven	\$ 813,082
North Stonington	\$ 14,650
Norwalk	\$ 1,486,991
Norwich	\$ 977,638
Old Lyme	\$ 67,424
Old Saybrook	\$ 108,286
Orange	\$ 258,870
Oxford	\$ 69,350
Plainfield	\$ 474,967
Plainville	\$ 920,204
Plymouth	\$ 369,610
Pomfret	\$ 91,752
Portland	\$ 355,582
Preston	\$ 51,357
Prospect	\$ 97,653
Putnam	\$ 228,099
Redding	\$ 27,761
Ridgefield	\$ 1,258,442
Rocky Hill	\$ 889,996
Roxbury	\$ 11,245
Salem	\$ 28,071
Salisbury	\$ 23,084
Scotland	\$ 24,348
Seymour	\$ 123,761
Sharon	\$ 38,093
Shelton	\$ 947,927
Sherman	\$ 31,060
Simsbury	\$ 432,267

Somers	\$ 132,545
South Windsor	\$ 1,294,088
Southbury	\$ 134,328
Southington	\$ 1,307,498
Sprague	\$ 280,415
Stafford	\$ 170,929
Stamford	\$ 4,276,538
Sterling	\$ 14,041
Stonington	\$ 331,140
Stratford	\$ 1,717,637
Suffield	\$ 147,650
Thomaston	\$ 254,808
Thompson	\$ 167,758
Tolland	\$ 163,438
Torrington	\$ 598,441
Trumbull	\$ 509,187
Union	\$ 4,822
Vernon	\$ 336,683
Voluntown	\$ 8,138
Wallingford	\$ 1,196,852
Warren	\$ 368
Washington	\$ 177,140
Waterbury	\$ 2,515,615
Waterford	\$ 931,722
Watertown	\$ 349,934
West Hartford	\$ 910,422
West Haven	\$ 856,092
Westbrook	\$ 357,327
Weston	\$ 93,224
Westport	\$ 380,559
Wethersfield	\$ 580,348
Willington	\$ 43,361
Wilton	\$ 287,427
Winchester	\$ 138,876
Windham	\$ 876,712
Windsor	\$ 1,719,963
Windsor Locks	\$ 250,672
Wolcott	\$ 297,548
Woodbridge	\$ 127,840
Woodbury	\$ 75,983
Woodstock	\$ 183,239

\* Based on 2008 data. All figures are approximate and may vary due to rounding. This does not include incentives for ISO-NE Load Response program participants.

# Funding Comes From Several Sources

## Ratepayer Funding

CEEF's electric efficiency and conservation programs are funded by a 3-mill charge on customer electric

bills. Natural gas programs are funded through rates and annual gross receipts tax revenues if available.

## Forward Capacity Market

In 2006, the Forward Capacity Market (FCM) was initiated by ISO-NE. Under the FCM plan, ISO-NE must create three-year forecasts of anticipated regional electrical capacity needs, defined exclusively as peak demand.

ISO-NE's FCM secures peak-demand available resources (capacity) through an auction process. Various entities bid in capacity resources, such as new energy generation. For the first time in the United States, the FCM treats energy efficiency, load management and demand response reductions as a capacity resource. This allows CEEF administrators to bid energy efficiency and demand response reductions into the FCM. As a result, the FCM has become another potential funding source for CEEF programs. CL&P and UI successfully bid the first capacity auction and their submissions were accepted for the second auction in December 2008.

Payments received from ISO-NE for this activity have contributed more than \$6.5 million in revenues to CEEF for additional programming.

The FCM requires entities to bid capacity resources three years prior to the year in which they are delivered. This allows adequate time for new generation to come on line. The FCM requires all capacity resources be qualified and bid with all the requisite financial assurances and performance requirements. This requires CEEF, CL&P and UI to make financial assurance to ISO-NE regarding their ability to provide the demand reduction three years in the future, or lose all or part of their financial assurance. This existing financial commitment makes it imperative that funding for CEEF in future years remains stable or increases.

## Regional Greenhouse Gas Initiative

The Regional Greenhouse Gas Initiative (RGGI) is the first mandatory, market-based effort in the United States to reduce greenhouse gas emissions. By 2018, ten Northeastern and Mid-Atlantic states have committed to capping and reducing carbon dioxide emissions from the power sector by ten percent. Participating RGGI states include Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont.

In an effort to offset carbon emissions, participating RGGI states sell emission allowances through a

series of auctions to energy generators and providers. In Connecticut, RGGI auction proceeds have been earmarked for CEEF, Connecticut Clean Energy Fund, and other clean energy programs and technologies.

In 2008, two RGGI auctions were successfully held on September 25 and December 17 and generated more than \$8.9 million for Connecticut's energy programs. The CEEF anticipates receiving approximately \$6.2 million by December 31, 2009 to provide additional funding for CEEF programs.

## Class III Renewable Credits


Public Act 05-1, the *Energy Independence Act*, created a new distributed Resources Portfolio Standard: Class III Renewables. CL&P and UI are allowed to receive Class III Renewable Energy Credits (RECs) for commercial and industrial megawatt hour

savings from CEEF-funded projects. These RECs are sold by electricity providers to energy suppliers or marketers interested in meeting their renewable portfolio standards. The sales from the RECs are reinvested in more CEEF programming.

## Leveraging of Oil Conservation Dollars

The ECMB is working collaboratively with the Fuel Oil Conservation Board (FOCB) and the Office of Policy & Management (OPM) to provide the most comprehensive energy efficiency and conservation services to Connecticut consumers in a manner that facilitates program access and minimizes consumer confusion. In 2008, this included the integration of oil conservation funds through the FOCB into CEEF residential programs. Additionally, OPM and the ECMB worked closely together to integrate OPM's residential energy audit subsidy and their furnace/boiler replacement rebate programs into CEEF residential programs.

The ECMB is committed to program integration, consistent with its legislative mandate "to offer joint programs providing similar efficiency measures that save more than one fuel resource," and regulatory directives to coordinate efficiency and conservation services. The ECMB plans to continue to deliver integrated, fuel-blind efficiency programs to Connecticut businesses and residents whenever given the opportunity.

Efficiency Programs (2008)	
	<b>Ratepayer Funded (Electric)</b>
	\$75 million
	<b>Ratepayer Funded (Gas)</b>
	\$1.7 million
	<b>Forward Capacity Market</b>
	\$6.5 million
	<b>RGGI</b>
	\$0
	<b>Class III Renewables</b>
	\$7.6 million
<b>Oil Programs</b>	
\$0	
<b>Total Dollars</b>	
<b>\$90.8 million</b>	



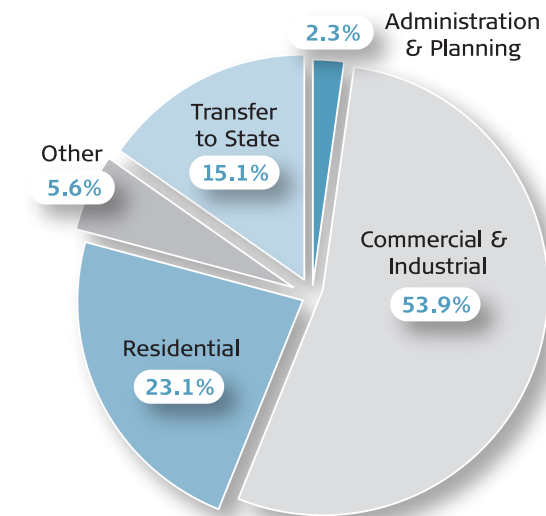
# 2008-2009 Budget Summaries (Electric and Natural Gas)

Conservation and Load Management Fund Programs	2008 Actuals Electric	2009 Plan Electric	2008 Actuals Natural Gas	2009 Plan Natural Gas
<b>RESIDENTIAL</b>				
Residential Retail Products	\$ 6,185,837	\$ 7,050,392	\$ -	\$ -
Appliance Retirement	429,006	-	-	-
<b>Total – Consumer Products</b>	<b>\$ 6,614,843</b>	<b>\$ 7,050,392</b>	<b>\$ -</b>	<b>\$ -</b>
Residential New Construction	2,003,729	1,754,314	-	750,000
Residential Heating & Cooling / Home Energy Solutions	9,234,935	11,301,018	2,261,702	2,400,000
Limited Income: WRAP / UI Helps	7,974,864	9,168,693	1,635,712	1,940,000
Water Heating	-	-	149,378	363,000
<b>Subtotal Residential</b>	<b>\$ 25,828,372</b>	<b>\$ 29,274,417</b>	<b>\$ 4,046,792</b>	<b>\$ 5,453,000</b>
<b>COMMERCIAL &amp; INDUSTRIAL</b>				
<b>C&amp;I LOST OPPORTUNITY</b>				
Energy Conscious Blueprint	\$ 21,882,500	\$ 10,312,789	\$ 1,289,077	\$ 2,200,000
<b>Total – Lost Opportunity</b>	<b>\$ 21,882,500</b>	<b>\$ 10,312,789</b>	<b>\$ 1,289,077</b>	<b>\$ 2,200,000</b>
<b>C&amp;I LARGE RETROFIT</b>				
Energy Opportunities	32,684,705	9,187,138	126,744	1,140,000
O&M (RetroCx, BOC, RFP)	1,947,109	1,673,041	20,752	200,000
Process Retrofit Pilot	-	-	129,987	-
Prime*	-	250,000	-	-
<b>Total – C&amp;I Large Retrofit</b>	<b>\$ 34,631,814</b>	<b>\$ 11,110,179</b>	<b>\$ 277,483</b>	<b>\$ 1,340,000</b>
Small Business	13,535,304	8,521,106	-	-
<b>Subtotal C&amp;I</b>	<b>\$ 70,049,617</b>	<b>\$ 29,944,074</b>	<b>\$ 1,566,560</b>	<b>\$ 3,540,000</b>
<b>OTHER-EDUCATION*</b>				
SmartLiving Center®—Museum Partnerships	\$ 454,249	\$ 534,246	\$ -	\$ -
EE Communities*	-	150,000	-	-
K-8 Education	519,144	582,202	-	-
Science Center	214,403	200,000	-	-
<b>Subtotal Education</b>	<b>\$ 1,187,797</b>	<b>\$ 1,466,448</b>	<b>\$ -</b>	<b>\$ -</b>
<b>OTHER-PROGRAMS/REQUIREMENTS</b>				
Institute for Sustainable Energy (ECSU)	\$ 400,000	\$ 500,000	\$ -	\$ -
Residential Loan Program (Including CHIF)	-	175,000	115,972	180,000
C&I Loan Program	-	250,000	-	90,000
C&LM Loan Defaults	50,513	104,700	-	-
<b>Subtotal Programs/Requirements</b>	<b>\$ 450,513</b>	<b>\$ 1,029,700</b>	<b>\$ 115,972</b>	<b>\$ 270,000</b>
<b>OTHER-LOAD MANAGEMENT</b>				
ISO Load Response Program Support	\$ 461,951	\$ 350,000	\$ -	\$ -
Power Factor	64,128	-	-	-
Water Heater Timer Promotion	11,634	-	-	-
<b>Subtotal Load Management</b>	<b>\$ 537,714</b>	<b>\$ 350,000</b>	<b>\$ -</b>	<b>\$ -</b>
<b>OTHER-RD&amp;D</b>				
Research, Development & Demonstration	\$ 195,991	\$ 275,000	\$ -	\$ -
<b>Subtotal RD&amp;D</b>	<b>\$ 195,991</b>	<b>\$ 275,000</b>	<b>\$ -</b>	<b>\$ -</b>
<b>OTHER-ADMINISTRATIVE &amp; PLANNING</b>				
Administration	\$ 1,032,685	\$ 1,255,000	\$ -	\$ -
Planning and Evaluation	1,906,829	2,073,000	169,181	260,000
Information Technology	1,890,903	1,743,000	-	95,000
ECMB	808,528	590,000	5,705	27,000
Performance Management Fee	4,208,792	3,370,532	-	-
General Awareness	3,618	-	-	-
<b>Admin/Planning Expenditures</b>	<b>\$ 9,851,354</b>	<b>\$ 9,031,532</b>	<b>\$ 174,886</b>	<b>\$ 382,000</b>

Conservation and Load Management Fund Programs	2008 Actuals Electric	2009 Plan Electric	2008 Actuals Natural Gas	2009 Plan Natural Gas
<b>PROGRAM SUB-TOTALS</b>				
<b>Residential</b>	<b>\$ 26,855,276</b>	<b>\$ 30,739,016</b>	<b>\$ 4,162,764</b>	<b>\$ 5,633,000</b>
<b>C&amp;I</b>	<b>70,802,354</b>	<b>30,825,623</b>	<b>1,566,560</b>	<b>3,630,000</b>
<b>Other*</b>	<b>10,443,727</b>	<b>9,806,532</b>	<b>174,886</b>	<b>382,000</b>
<b>TOTAL C&amp;LM BUDGET</b>	<b>\$ 108,101,357</b>	<b>\$ 71,371,171</b>	<b>\$ 5,904,210</b>	<b>\$ 9,645,000</b>
<b>Docket 05-07-14 PH01 EIA Programs</b>				
ISO Load Response Programs (Load Curtailment & Emer. Gen)	\$ 13,405,495	\$ 10,800,292	\$ -	\$ -
ISO Load Response Programs—Third Party Contracts	14,250,532	-	-	-
Residential HVAC	2,409	-	-	-
Electric & Gas Efficiency	45,044	-	-	-
General Awareness	-	-	-	-
Direct Load Control	8,051	-	-	-
Energy Opportunities	(4,673)	-	-	-
<b>Subtotal Docket 05-07-14 PH01 EIA Programs</b>	<b>\$ 27,706,858</b>	<b>\$ 10,800,292</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Total C&amp;LM and EIA Programs</b>	<b>\$ 135,808,215</b>	<b>\$ 82,171,463</b>	<b>\$ 5,904,210</b>	<b>\$ 9,645,000</b>

\* OTHER-EDUCATION is primarily allocated to residential programs. Totals vary due to rounding.

Chart B: 2008 Actuals: Electric & Gas Allocations



Until July 2008, CEEF programs operated on reduced funding due to the CEEF's continued obligation to cover securitization bonds related to the diversion of ratepayer conservation funds to the state's General Fund in 2004 to pay for deficit reductions.

CEEF programs are administered to maximize the cost-effectiveness and impacts of energy efficiency and load management activities. In the Northeast, CL&P and UI rank favorably in terms of program administrator cost per kilowatt-hour saved. Only 2.3 percent of the total CEEF budget was allocated to administrative expenses in 2008.

# Connecticut Municipal Electric Energy Cooperative

## Background

The Connecticut Municipal Electric Energy Cooperative (CMEEC) was formed in 1976 as a joint action supply and transmission agency by the state's municipal electric utilities. It is owned by Groton and Norwich, the Borough of Jewett City, and South and East Norwalk. CMEEC also provides power to these participating utilities: Town of Wallingford Department of Public Utilities, Bozrah Light and Power Company, and Mohegan Tribal Utility Authority.

## Serving Residential Customers

CMEEC expanded its distribution of CFLs through new and existing channels of direct installation, direct mail campaigns and school fundraisers. School fundraisers generated over \$25,000 in funds for schools and the sale of more than 25,000 CFLs. In 2008, CMEEC utilities distributed or installed more than 240,000 bulbs to residential customers: nearly four CFLs per household.

In the fall of 2008, CMEEC expanded its residential program efforts by creating Home Energy Savings (a program based on the CEEF's Home Energy Solutions program model) and made it available on a statewide basis. The Home Energy Savings program provides comprehensive whole-home weatherization and retrofit services to residential customers. Program measures include blower door and ductwork testing, air leak sealing, installation of CFLs, hot water pipe insulation and installation of water-saving equipment. CMEEC's authorized energy contractor can also assist residents with the procurement of attic insulation and ensures quality control through post-installation inspections. This effort is coordinated with the CEEF's and the Fuel Oil Conservation Board's insulation rebates. CMEEC serves its limited-

CMEEC provides a portfolio of energy efficiency initiatives and programs that assist all customer sectors—residential, commercial, industrial and limited income. Over the past two years, CMEEC has enhanced its energy-saving programs to improve customer energy efficiency and to reduce traditional energy supply needs. CMEEC's member utilities serve as energy managers for their customers and strongly believe that today's economic climate demands strengthening of efforts to reduce energy usage.

**In 2008, CMEEC's utilities realized annual savings of 18.57 million kWh and peak demand savings of 2.488 MW. These savings were realized through the delivery of a full array of efficiency programs.**

income customers by utilizing the Home Energy Savings programs as a delivery platform.

Other residential programs and outreach in 2008 included: new construction for multi-family developments; Cool Choice rebate for high-efficiency HVAC units; lighting catalog sales and area lighting shows; and rebates for ENERGY STAR-rated appliances.



## Commercial & Industrial Programs

In 2008, CMEEC ramped up its programs for commercial and industrial customers. Ongoing initiatives include fixed rebate programs for high-efficiency motors (Motor Up) and energy-efficient HVAC systems (Cool Choice). Other programs include custom incentives for building retrofit and new construction projects with an emphasis on retrofit lighting for schools and other public buildings, and CFL direct install and distribution programs for small commercial customers.

**CMEEC commercial and industrial programs resulted in energy savings of 9.972 million kWh and peak demand reduction of 1.752 MW.**

## Renewable Energy Program Update

CMEEC's supply program includes the promotion of clean energy development. As a part of this effort, CMEEC has partnered with the Connecticut Clean Energy Fund to administer selected alternative energy supply projects for the municipalities.

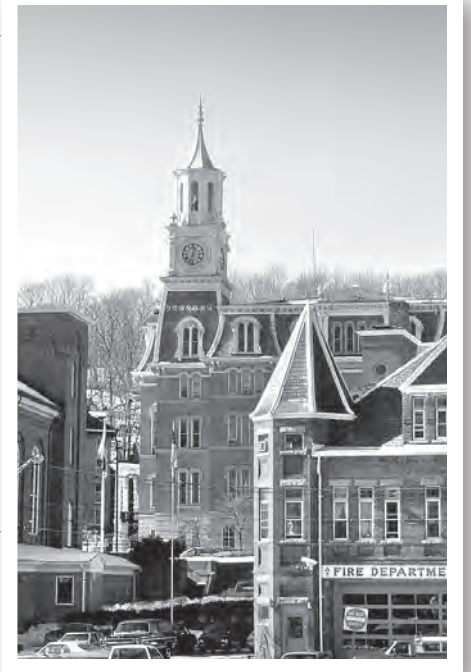
## Assistance to Customers

Table D details the incentives and rebates provided to CMEEC residential, commercial and industrial customers in 2008.

**Table D: CMEEC Assistance to Customers by Service Area**

(Rounded to \$ thousands)

Bozrah Light and Power	\$ 10,000
Groton Utilities	\$ 761,000
Jewett City Department of Public Utilities	\$ 46,000
South Norwalk Electric and Water	\$ 80,000
Norwalk Third Taxing District	\$ 119,000
Norwich Public Utilities	\$ 969,000
Wallingford Electric Division	\$ 1,094,000



2008 CMEEC Program Highlights	
	<b>Instances of Customer Participation</b> 32,700
	<b>Energy Savings</b>
	kWh Annual   kWh Lifetime
	18,569,941   189,723,985
	<b>CO2 Emissions Reduced</b> 144,200 Tons
	<b>Annual Savings</b> \$ 2,414,100

Table E provides details of CMEEC's program budgets, annual and lifetime energy savings, and peak demand reduction in 2008.

Table E: 2008-2009 CMEEC Budget Summary

Program	Program Budget 2008	Actual Utility Costs 2008	% of Budget Spent	Proj. Annual Savings (kWh)	Annual Energy Savings (kWh)	% of Annual kWh Saved	Lifetime Savings (kWh)	Proj. kW Impact (Year End)	kW Impact	% of kW Impact Achieved
<b>RESIDENTIAL</b>										
Low Income Program	\$ 265,684	\$ 147,163	55%	300,548	812,407	270%	5,855,721	24	59	250%
Home Energy Savings	130,000	57,654	44%	265,849	13,313	5%	239,628	16	13	79%
Efficient Products										
Lighting	731,402	870,292	119%	5,377,954	7,668,076	143%	53,682,726	273	604	222%
Appliances	104,479	94,768	91%	151,418	48,762	32%	749,606	10	19	189%
<b>Subtotal-Residential</b>	<b>\$ 1,231,565</b>	<b>\$ 1,169,878</b>	<b>95%</b>	<b>6,095,769</b>	<b>8,542,557</b>	<b>139%</b>	<b>60,527,681</b>	<b>323</b>	<b>695</b>	<b>215%</b>
<b>COMMERCIAL &amp; INDUSTRIAL</b>										
Commercial New Construction	\$ 70,000	\$ 0	0%	70,000	0	0%	0	23	0	0%
Commercial Equipment Replacement										
Prescriptive	230,319	13,569	6%	740,576	34,255	5%	477,321	92	11	12%
Custom	213,370	203,752	95%	1,247,776	1,070,101	86%	15,412,514	378	164	43%
C&I Existing Facility Retrofit	1,056,590	1,470,274	139%	6,687,278	8,867,827	133%	112,202,470	1,093	1,578	144%
Demand Response		6,543								
<b>Subtotal-C&amp;I</b>	<b>\$ 1,570,278</b>	<b>\$ 1,694,138</b>	<b>108%</b>	<b>8,745,630</b>	<b>9,972,184</b>	<b>114%</b>	<b>128,092,305</b>	<b>1,587</b>	<b>1,752</b>	<b>110%</b>
Renewables	\$ 55,580	\$ 215,632	388%	18,527	55,200	298%	1,104,000	9	40	432%
<b>Total-All Programs</b>	<b>\$ 2,857,423</b>	<b>\$ 3,079,648</b>	<b>108%</b>	<b>14,859,926</b>	<b>18,569,941</b>	<b>125%</b>	<b>189,723,985</b>	<b>1,919</b>	<b>2,488</b>	<b>130%</b>

## Status of ECMB Responses to the Energy Efficiency and Load Management Mandates Enacted by Public Act 07-242

**Mandate Section 1** requires the ECMB to provide a report by January 1, 2009 regarding the cost-effectiveness of rebates for ENERGY STAR-rated boilers and furnaces.

**Status:** The ECMB and its consultants are working with utility administrators and the Office of Policy & Management to evaluate the program's effectiveness as it was not initiated until October 2008.

**Mandate Section 3** requires the ECMB, in consultation with the electric companies, to establish a residential window air conditioner 'turn-in with a new purchase' program, effective January 1, 2008 to September 1, 2008.

**Status:** The electric companies worked with the ECMB and its consultants to develop and implement a Residential Room Air Conditioner Turn-In program in 2008. Rebates for some room air conditioners were reduced in order to meet mandatory cost-effectiveness requirements and ensure responsible environmental disposal. Several Connecticut retailers participated in the program.

**Mandate Section 14** requires the ECMB, in consultation with the electric and natural gas companies, to develop and estimate the cost of a comprehensive residential conservation program and report its findings to the General Assembly by February 1, 2008.

**Status:** The ECMB created a Residential Energy Committee whose work provided the basis for development of a residential conservation program that met legislative requirements. The existing Home Energy Solutions program provided the basis for existing homes and the Residential New Construction program provided the basis for new home construction opportunities. Other requirements are still being developed and will draw heavily from existing programs and discussions between the ECMB and the Connecticut Clean Energy Fund on developing a High-Performance Homes program. This

program was integrated into the ECMB's 2008 Energy Excellence Plan (Section 97 of PA 07-242) dated May 27, 2008 and provided to the General Assembly on June 12, 2008. The Committee is actively working to develop financing options to expand conservation and efficiency service affordability in the residential sector.

**Mandate Section 51** requires the electric companies to develop a resource procurement plan covering 3, 5 and 10-year time frames, which must satisfy resource needs first through "all available energy efficiency and demand reduction resources that are cost-effective, reliable, and feasible." The goal of the procurement plan is to meet projected requirements while minimizing costs to customers over time and maximizes consumer benefits consistent with the state's environmental goals and standards.

**Status:** The electric companies, with input from ECMB consultants, developed a comprehensive procurement plan that ensures resource needs are first met through available energy efficiency and demand reduction resources that are cost-effective, reliable and feasible. On January 1, 2008, the electric companies and their consultant, The Brattle Group, completed their procurement plan. This report included a Demand Side Management (DSM) focus scenario that included "all energy efficiency and demand reduction resources that are cost-effective, reliable and feasible." On August 1, 2008, the Connecticut Energy Advisory Board submitted a follow-up report to the DPUC which is currently under review by the DPUC in Docket No. 08-07-01.

**Mandate Section 52** requires the electric companies to implement demand-side measures of the resource procurement plan "through the comprehensive (C&LM) plan" reviewed by the ECMB. The bill stipulates that all company costs associated with the procurement plan will be recoverable in a manner determined by the DPUC.

**Status:** This cannot be accomplished until the DPUC approves the procurement plan set forth in Mandate Section 51. The 2009 C&LM plan includes funding for the procurement plan.

**Mandate Section 84** requires the ECMB contract with an independent third party to assess Connecticut's conservation and energy efficiency potential, including conservation, demand response and load management, and report to the General Assembly by February 1, 2008.

**Status:** The ECMB selected a third party through a competitive bidding process. The final *Maximum Achievable Potential Study* will be submitted to the General Assembly in 2009.

**Mandate Section 87** requires the DPUC, in coordination with the ECMB, to establish a plan for a statewide energy efficiency and outreach marketing campaign by December 1, 2007 and begin implementation by March 1, 2008.

**Status:** The DPUC issued its final decision and Marketing Plan under Docket No. 07-06-60. The campaign was launched in phases, starting in July 2008 with the Wait 'til 8 Campaign and a Fall campaign. The electric companies continue to work with the DPUC and the ECMB to provide input on marketing campaign elements.

**Mandate Section 88** directed the DPUC, in consultation with the ECMB, to develop a real-time energy report for daily use by television and other media by April 1, 2008.

**Status:** In 2008, the DPUC developed a real-time energy report for daily use by television and other media, including its website: [www.ctenergyinfo.com](http://www.ctenergyinfo.com).

**Mandate Section 94** directed the ECMB to develop and file an analysis of the state's electric demand, peak electric demand and growth forecasts for electric demand and peak electric demand. The analysis was required to identify the principal drivers of electric demand and peak electric demand and their associated impact on electric costs.

**Status:** The ECMB and the electric companies collaborated to provide research and analysis. On October 22, 2007, the ECMB prepared the report, *An Analysis of Demand for Electricity in Connecticut*, and subsequently updated it on January 28, 2008. On May 15, 2008, the ECMB published a report, *The Cost of Electricity: An Analysis on the Components and Drivers of Electricity Costs in Connecticut*, which further expanded the analysis of its previous report. The ECMB presented the final report's findings to the General Assembly on June 12, 2008.

**Mandate Section 94** directed the ECMB, in consultation with the Connecticut Clean Energy Fund, to evaluate and approve enhanced demand-side management technologies that can be deployed by Connecticut Electric Efficiency Partners (EEP) to reduce customer electric demand.

**Status:** The ECMB conducted a public input session for regarding the EEP program on September 20, 2007. A report of *Observations and Recommendations* was submitted to the Department on December 14, 2007 in Docket 07-06-59. The ECMB published the *Recommendations for Standards of Evidence and Department Review of Proposals* on January 30, 2008. The ECMB also submitted *Recommendations for Prescriptive Incentives and Criteria for Department Review of EEP Proposals for Three Eligible Technologies* on March 6, 2008 in Docket 07-06-59.

**Mandate Section 97** directed the electric companies and ECMB to develop a comprehensive energy excellence plan and submit it to the General Assembly.

**Status:** The ECMB and the electric companies published this plan on May 27, 2008 and submitted it to the General Assembly.

**Mandate Section 116** directed the electric companies and ECMB to review the annual plan of the Fuel Oil Conservation Board.

**Status:** The ECMB reviewed the 2008 annual calendar year plan of the Fuel Oil Conservation Board in November 2008 and the 2009 calendar year plan in December 2008.



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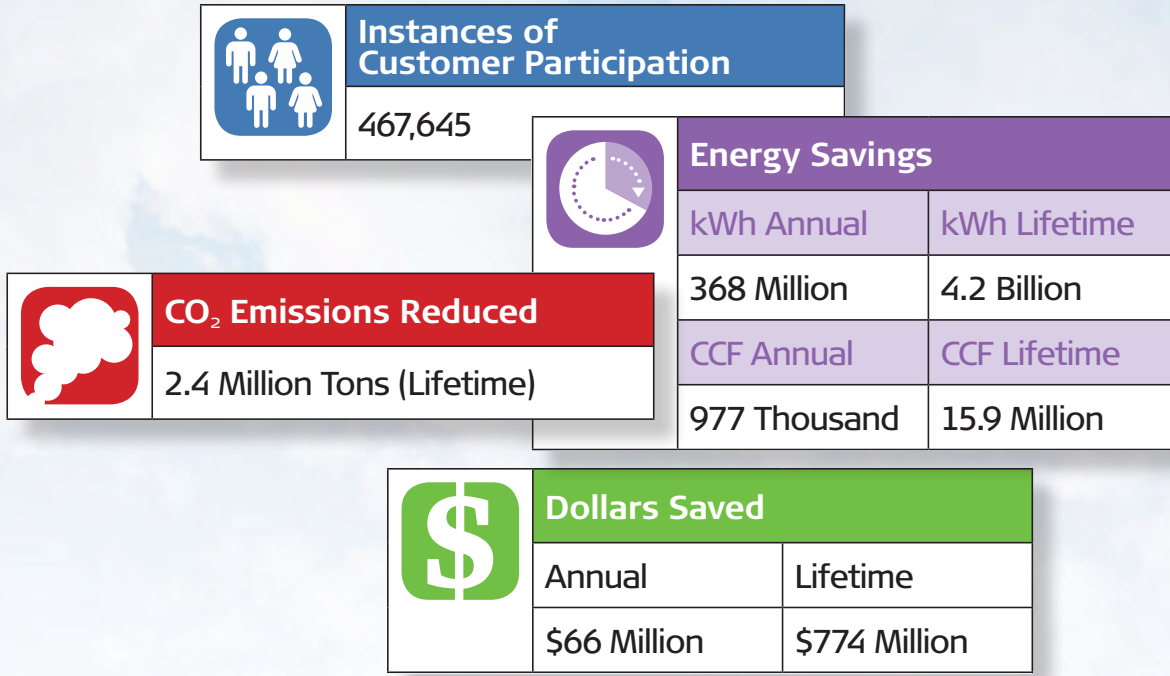


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# Connecticut Energy Efficiency Fund Activities in 2008 Produced Substantial Economic and Environmental Benefits for Residents, Businesses and Municipalities



Connecticut's Energy Efficiency Programs are funded by a charge on customer energy bills. The Programs are designed to help customers manage their energy usage and cost.

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