



CONNECTICUT LEAGUE OF  
CONSERVATION VOTERS EDUCATION FUND

# YOUR Connecticut Energy Guide

*Revised April 2009*

What you **WANT** to know  
What you **NEED** to know, and  
**WHERE YOU CAN FIND IT**



# YOUR Connecticut Energy Guide

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The Connecticut League of Conservation Voters Education Fund is a nonprofit, non-partisan, statewide environmental organization. Our mission is to strengthen Connecticut's environmental movement through education and by involving citizens in state and local public policy decisions regarding the state's natural resources.

## Acknowledgements

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### NOTE:

Every effort has been made to ensure the accuracy of the information presented in this document as of September 30, 2008. It is only intended to be general summary information to the public. It is not intended to take the place of either written program guidelines, law or regulation. Other incentive programs may become available to Connecticut businesses and citizens that have not been documented here.

# Connecticut's Energy Future

Energy needs—how they will be met and at what cost economically and environmentally—are at the forefront of international, national and local policy debate.

Given the particularly high cost of energy in Connecticut that debate is not new to the state. Recent dramatic price increases and their impact on Connecticut consumers—from households, to business, to state and local governments—has lent a new urgency to it.

In addition, we have become increasingly aware that our energy consumption is one of the major contributors to global warming. Obviously the impacts of global warming are universal and will affect different regions differently. The Union of Concerned Scientists reported in *Confronting Climate Change in the U.S. Northeast* if global warming emissions continue to grow unabated, Connecticut can expect dramatic changes in its climate. Rising temperatures and sea levels will have an adverse effect on our state's tourism, agricultural, and industrial sectors. Therefore, any plans regarding Connecticut's energy future must also consider the repercussions that energy choices will have on climate change and the future our children inherit.

There are a number of factors that contribute to Connecticut's high energy costs. The most significant is the fact that most of our state's energy generation relies on imported fossil fuels—specifically oil and natural gas—and the world-wide demand for both has caused prices to rise dramatically. In addition, a shortage of sufficient transmission capacity in the southwest corner of the state resulted in the imposition of the federal government's "congestion charge" on Connecticut customers. The mandated federal congestion charge will remain until sufficient generation and transmission capacity is in place to meet peak demand.

State lawmakers, regulators, and utilities worked together to address the congestion issues, and now new transmission lines are being built and new "peaking" power plants await approval.

However, it was the landmark legislation enacted in 2007 (PA07-242), that dramatically changed Connecticut's energy policy and approach. The most important change the new law made was the requirement that Connecticut Light and Power (CL&P) and United Illuminating (UI), the two major utilities responsible for purchasing and distributing power to most of the state's consumers, invest in all cost effective efficiency measures before purchasing additional generation.

The historic law also greatly expanded funding mechanisms for Connecticut's energy efficiency programs, widely considered among the best in the nation. These programs are largely funded by a surcharge on CL&P and UI ratepayer bills, and include opportunities for free energy audits, rebates, tax-credits, grants, and low-interest loans to benefit all types of customers—from residential to commercial to industrial. Program highlights are contained in the Consumer Guide pages that follow.

Efforts to publicize the success of these programs, together with increased concerns about climate change and rising energy prices have created a measurable demand for the state's efficiency programs. And that's good news! Helping homeowners, businesses, and local governments conserve energy saves money, reduces greenhouse gas emissions, and lessens the need for additional electric generating and transmission facilities.

Experts agree that for every \$1 spent on efficiency up to \$4 is saved in energy costs. Yet, despite the many benefits of Connecticut's expanded energy efficiency programs, at time of publication, many are concerned that funding for these popular programs may be in jeopardy. In recent months, state regulators have been reluctant to authorize any additional monies to fund nearly oversubscribed programs, and utility companies are fearful that they may have to halt projects because of overspending and budget constraints. Both parties agree they need to find the right balance between continuing to keep these helpful programs available, and costs to the ratepayer—and neither wants to discourage people from conserving energy.

Connecticut has taken significant steps to promote energy efficiency and the use of renewable energy. Our state residents and businesses have heard the message of conservation loud and clear. Recognizing the state budget challenges that lie ahead, we must encourage our Governor and lawmakers to fight the urge to turn back the clock on an environmentally and economically secure energy future. Connecticut's energy consumers must make sure that our state leaders remain committed to funding energy conservation and efficiency programs at levels that meet the ever-growing demand.

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For every one dollar  
invested in efficiency,  
the results are  
\$4 in cost savings.

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# Put MORE GREEN in your pocket!

## Incentives for Increasing Energy Efficiency In Your Home

### RENEWABLE ENERGY SYSTEMS FOR YOUR HOME

Incentives are available to encourage residential customers to install their own electric generating systems. With more customers generating their own electricity, overall demand for new large energy generating facilities is reduced.

*Bill and Bonnie Green share more than a home. Together they share an increasing concern over global warming and rising energy costs. This year, the Green's installed a solar panel system on the south facing roof of their raised ranch located in Middlesex County.*

*At \$28,000, the system wasn't inexpensive, but they found a number of incentive programs to help. The Connecticut Clean Energy Fund PV Rebate Program covered \$15,000—more*

*than half of the total cost. When the couple files their 2008 federal income tax return, they expect to receive a rebate of \$2,000, leaving an out-of-pocket expense of about \$11,000. They're paying for the rest of the expense with a low interest loan (6 percent over 10 years) from the Connecticut Housing Investment Fund, which, among other things, supports homeowners making energy efficient improvements to their homes.*

*The Green's expect their new solar panel system to pay for about half of the electricity used in their three-bedroom, 2,000-square-foot house over the course of a year.*

#### RENEWABLE ENERGY EFFICIENCY SYSTEMS FOR YOUR HOME

##### GRANTS

<p>State of Connecticut Incentives</p>	<p><b>DPUC Grants for Customer-Side Distributed Resources</b></p> <p>Grant payments at \$450 per kilowatt for customer owned electric generating systems (e.g. fuel cells, photovoltaic, CHP/cogeneration etc.) from a unit less than 65 megawatts. Grants may also be awarded for reduction in the demand for electricity on the premises through conservation or load management.</p> <p>Contact CT Department of Public Utilities at (860) 827-2691 or visit <a href="http://www.state.ct.us/dpuc/dg.htm">http://www.state.ct.us/dpuc/dg.htm</a>.</p>
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##### LOAN PROGRAMS

<p>State of Connecticut Incentives</p>	<p><b>DPUC Low Interest Loans for Customer-Side Distributed Resources</b></p> <p>Long term financing is available to install customer owned electric generating systems e.g. fuel cells, photovoltaic, wind, CHP/cogeneration. Projects must have a minimum capacity of 50 kw and no more than 65 MW. Loans also available for the conservation and load management, for example peak reduction or demand response systems.</p> <p>Fixed interest rates (no more than prime) and loan amount varies. To apply, contact Bank of America Leasing and Capital at (201) 345-2860.</p> <p>Contact the Connecticut Department of Public Utilities at (860) 827-2811 or visit <a href="http://www.state.ct.us/dpuc">http://www.state.ct.us/dpuc</a>.</p>
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## RENEWABLE ENERGY EFFICIENCY SYSTEMS FOR YOUR HOME

LOAN PROGRAMS	
State of Connecticut Incentives continued	<p><b>Connecticut Housing Investment Fund (CHIF) Energy Conservation Loan Program</b></p> <p>Provides \$400 – \$25,000 loans for single family homes (1–4 units) and \$2,000 – \$60,000 loans for multi-family residences (5 or more units) at 1%, 3%, or 6% interest rates for solar space heating systems, solar water heating systems, photovoltaics, geo-thermal technology, wind or biomass energy.</p> <p>Visit <a href="http://www.chif.org/owner_borrowers/index.shtml#energy">http://www.chif.org/owner_borrowers/index.shtml#energy</a>.</p>
Federal Government Incentives	<p><b>Energy Efficient Mortgages (EEMs)</b></p> <p>Energy efficient mortgages can be used to finance energy efficient improvements and renewable energy technology in new or existing homes. The federal government certifies private lenders through the Energy Star program, as well as conventional mortgages sold to Fannie Mae and Freddie Mac. The federal government also insures mortgages through the Federal Housing Authority (FHA) or Veterans Affairs (VA) programs.</p> <p>Visit <a href="http://www.resnet.us/ratings/overview/faq_mortgage.htm">http://www.resnet.us/ratings/overview/faq_mortgage.htm</a>.</p>
	<p><b>Federal Housing Authority (FHA) Energy Efficient Mortgages</b></p> <p>Allows lenders to add up to 100% of energy efficient improvements to an existing mortgage by insuring a loan for up to 5% of the home's appraised value or \$4,000 (whichever is greater) up to \$8,000.</p> <p>Visit <a href="http://www.fha.com/lending_limits.cfm">http://www.fha.com/lending_limits.cfm</a>.</p>
	<p><b>Department of Veterans Affairs (VA) Energy Efficient Mortgages</b></p> <p>Available to qualified military personnel, reservists, and veterans.</p> <p>Visit <a href="http://www.homeloans.va.gov/elib2.htm">http://www.homeloans.va.gov/elib2.htm</a>.</p>
TAX CREDITS / EXEMPTIONS	
State of Connecticut Incentives	<p><b>Sales and Use Tax Exemption for Solar and Geothermal Systems</b></p> <p>100% sales tax exemption of solar and geothermal heat pumps and solar thermal and solar electric systems. Eligible equipment includes solar electricity generating systems, passive or active solar water or space heating systems; equipment related to such systems and the sales of services relating to the installation of such systems are also tax-exempt.</p> <p>Call (860) 297-5962 or visit <a href="http://www.ct.gov/drs">http://www.ct.gov/drs</a>.</p>
Federal Government Incentives	<p><b>The U.S. Environmental Protection Agency's Energy Star Program</b></p> <p>Lists private lenders who offer home buyer assistance, home energy rating assistance, special financing and other assistance. Connecticut Lenders can be contacted directly from the Energy Starweb site at <a href="http://www.energystar.gov/index.cfm?fuseaction=new_homes_partners.showIncentives&amp;s_code=CT">http://www.energystar.gov/index.cfm?fuseaction=new_homes_partners.showIncentives&amp;s_code=CT</a>.</p>
	<p><b>Residential Solar and Fuel Cell Tax Credit</b></p> <p>A 30% tax credit up to \$2,000 for the purchase and installation of residential solar electric and solar water heating systems. Individuals can take:</p> <ul style="list-style-type: none"> <li>– 30% credit up to the \$2,000 cap for a photovoltaic system plus a</li> <li>– 30% credit up to a separate \$2,000 for a solar heating system and a</li> <li>– 30% tax credit up to \$500 per 0.5 kilowatt available for fuel cells.</li> </ul> <p>Credits are calculated based on individual expenditures excluding any other energy financing. Consumers who receive other incentives are advised to consult with a tax professional. Effective until December 31, 2008.</p> <p>Contact Public Information – IRS at (800) 829-1040 or visit <a href="http://www.irs.gov">http://www.irs.gov</a>.</p>
	<p><b>Residential Energy Conservation Subsidy Exclusion (personal)</b></p> <p>According to Section 136 of the IRS code, energy conservation subsidies provided by public utilities either directly or indirectly is nontaxable. However, because the IRS has not issued a definitive ruling, consult a tax attorney.</p> <p>Visit <a href="http://www.irs.gov/publications/p525/index.html">http://www.irs.gov/publications/p525/index.html</a>.</p>

## RENEWABLE ENERGY EFFICIENCY SYSTEMS FOR YOUR HOME

### TAX CREDITS / EXEMPTIONS

Connecticut Cities & Towns	<p><b>Property Tax Exemption for Renewable Energy Systems</b></p> <p>Connecticut municipalities are required to provide property tax exemptions for Class I Renewables (e.g. solar electric, wind, and fuel cell systems) and hydropower facilities in 1-4 residential buildings. The exemption is available on systems installation after October 1, 2007. In addition, municipalities are required to exempt any passive or active solar water or space heating system or geothermal energy resource in any type of building.</p> <p>Contact Taxpayer services: (800) 382-9463 or visit <a href="http://www.ct.gov/drs">http://www.ct.gov/drs</a>.</p>
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### REBATES, INCENTIVES AND SERVICES

State of Connecticut Incentives	<p><b>Solar PV Rebate Program</b></p> <p>The Connecticut Clean Energy Fund offers rebates to Connecticut residents who work through participating solar installers that install solar PV systems up to 10 kilowatts (kW). Performance-based rebates up to \$5 per watt for system and installations costs on the first 5 kW and \$4.30 per for the next 5 kW.</p> <p>Up to \$46,500 rebate per household.</p> <p>Call (860) 257-2362 or visit <a href="http://www.ctcleanenergy.com">http://www.ctcleanenergy.com</a>.</p>
Utility Companies	<p><b>Net Metering</b></p> <p>The state's two largest utilities, United Illuminating and Connecticut Light and Power, are required to provide net metering to customers that generate electricity using Class I Renewable Energy sources up to 2 megawatts in capacity.</p> <p>Any customer's net excess generation (NEG) during any monthly billing period is carried over to the following month as a credit, and at the end of an annual period the utility will pay the customer for any remaining net excess generation.</p> <p>Contact the Connecticut Department of Public Utilities at (860) 827-2961 or visit <a href="http://www.dpuc.state.ct.us">http://www.dpuc.state.ct.us</a>.</p>

# PULL THE PLUG ON PHANTOM LOAD!

“PHANTOM LOAD” is a term used to describe the electricity consumed by a device when it is “plugged in”, but “turned off” and not in active use.

*For example, televisions, stereo systems, microwave ovens, coffee makers—just about any appliance that has a clock or light that continues to operate after it is shut off—still draw electricity. All devices that operate off a remote consume some power as they maintain a “ready state” waiting to be switched on. Cell phone or laptop chargers left plugged in still use some electricity even though the phone or laptop is not attached, along with the hair dryer, cordless toothbrush, toaster, or video-game system plugged in, but not being used— all contribute to a typical household’s phantom load.*

## REDUCE YOUR HOME PHANTOM LOAD

- *Unplug devices not in use. If it is not plugged in, it can’t suck energy.*
- *Whenever possible, place electric devices, such as computer components or stereo systems, on power strips that can be manually turned off with a single switch. Be aware that some systems (e.g. large entertainment units) need to be re-programmed when completely shut down which may prove inconvenient.*
- *Purchase Energy Star products when buying new appliances.*

The average CT home has over 25 phantom loads, resulting in an estimated 2% - 8% of an annual electric bill.

## BECOME A CONSUMER ADVOCATE!

*Become a consumer advocate! Ultimately we need to turn to manufactures to address the problem of phantom load. Do we really need clocks on every appliance? Manufacturers ought to be required to provide consumers information about a product’s energy consumption, and encouraged to eliminate unnecessary phantom load. Contact your state and federal lawmakers and urge them to consider this legislative initiative!*

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## A FUN GADGET!

*A number of simple to use, plug-in power meters are available now in retail stores and in some local libraries to help you reduce your energy consumption and save money. These little gadgets will show you the amount of energy used by appliances in your home, and helps you determine which appliances are worth keeping plugged in. On the market as Kill-A-Watt EZ, Watts Up Pro, and EML2020, some also contain optional software to monitor and record your entire household system.*

# ENERGY IMPROVEMENTS FOR YOUR HOME

An energy efficient home can reduce your utility bills, increase the value of your property, improve indoor air quality, and reduce your carbon footprint. If you are planning a home improvement project, consider taking advantage of the wide variety of incentives available to help you incorporate energy efficient changes in your home.

*conserving energy is a solution that we can all be involved in. Scott replaced his old, energy-hogging refrigerator and took advantage of weatherization programs that helped increase the energy efficiency of his home, including new energy-efficient windows and insulation. He estimates the energy savings on his 2-bedroom, Barkhamstad home to be about \$1200 a year.*

*Scott Forester believes America must become energy independent and stop relying on foreign sources of oil. He believes*

## ENERGY IMPROVEMENTS FOR YOUR HOME

### GRANTS

No grant programs had been identified as of the date of publication.

### LOAN PROGRAMS

State of Connecticut Incentives	<p><b>Connecticut Housing Investment Fund (CHIF) Energy Conservation Loans</b></p> <p>Available for owners of 1-4 family homes who meet established income limits for family size and location. May be used for a variety of conservation improvements, including financing HVAC upgrades, programmable thermostats, windows, insulation, boilers and furnaces.</p> <p>Call (860) 233-5165 ext. 2019 for an application or visit <a href="http://www.chif.org/owner_borrowers/index.shtml#energy">http://www.chif.org/owner_borrowers/index.shtml#energy</a>.</p>
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### TAX CREDITS / EXEMPTIONS

Federal Government Incentives	<p><b>Sales and Use Tax Exemptions for Energy Efficiency Products</b></p> <p>100% of CT Sales tax exemption for compact fluorescent light bulbs (CFL), certain weatherization products, (e.g. programmable thermostats, insulation, weatherstripping, etc.) and Energy Star rated windows, doors and natural gas and propane furnaces and boilers. Oil furnaces and boilers must be 84% efficient.</p> <p>Contact CT Department of Revenue Services at (860) 297 5962 or visit <a href="http://www.ct.gov/drs">http://www.ct.gov/drs</a>.</p>
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### REBATES, INCENTIVES AND SERVICES

Utility Companies	<p>Connecticut's utility companies offer a variety of incentives to install energy efficient equipment and a number of conservation and energy efficiency programs for their residential customers. Be sure to contact your provider directly for information related to:</p> <ul style="list-style-type: none"> <li><b>Cash rebates</b> for purchasing energy-efficient lighting, air conditioning, refrigeration and water heaters.</li> <li><b>Demand Response, or Direct Load Control programs</b> Some utilities are developing technologies that will allow you to voluntarily reduce electricity consumption during peak times, usually during the summer seasons.</li> </ul> <hr/> <p>Connecticut's utility companies offer a variety of conservation and energy efficiency programs for their residential customers. Be sure to contact your provider directly for information related to:</p> <ul style="list-style-type: none"> <li><b>Low-interest loans</b> for high-efficiency equipment</li> <li><b>New construction programs</b> offering incentives and training in "green design" and use of energy-efficient equipment</li> <li><b>Water Heater Wrap Programs</b>, which provides free or discount insulation</li> <li><b>In-home/on-line energy audits</b> to help you examine your energy consumption and highlight recommendations for energy saving</li> <li><b>Energy Assistance Programs</b> which help income eligible customers reduce their energy by sealing windows and doors, replacing inefficient appliances and furnaces and installing energy efficient lighting.</li> </ul>
Connecticut Light & Power	<p><b>CT Energy Efficiency Fund (CEEF)</b> offers a number of programs that Connecticut Light and Power (CL&amp;P) residential customers can take advantage of. CEEF programs are funded by a conservation charge on customer electric bills.</p> <p>CL&amp;P customers can call either (877) WISE-USE or (860) 832-4972 or visit <a href="http://www.cl-p.com">http://www.cl-p.com</a>.</p>

## ENERGY IMPROVEMENTS FOR YOUR HOME

### REBATES, INCENTIVES AND SERVICES

United Illuminating Company	<p><b>CT Energy Efficiency Fund (CEEF)</b> offers a number of programs that United Illuminating residential customers can take advantage of. CEEF programs are funded by a conservation charge on customer electric bills.</p> <p>UI residential customers can call (203) 499-2923 or visit <a href="http://www.uinet.com">http://www.uinet.com</a>.</p>
Natural Gas Companies	<p><b>Connecticut Natural Gas</b> Call (860) 827-3000 or visit <a href="http://www.cngcorp.com">http://www.cngcorp.com</a></p> <p><b>Yankee Gas</b> Call (800) 989-0900 or visit <a href="http://www.yankeegas.com">http://www.yankeegas.com</a></p> <p><b>Southern Connecticut Gas Company</b> Call (800) 659-8299 or visit <a href="http://www.soconngas.com">http://www.soconngas.com</a></p>

### REBATES, INCENTIVES AND SERVICES

Connecticut Municipal Electric Energy Cooperative (CMEEC)	<p>The CT Municipal Electric Energy Cooperative (CMEEC) represents, supports, and is owned by Connecticut's municipal utilities, including:</p> <p><b>Bozrah Light and Power</b> Call (860) 889-7388 or visit <a href="http://www.grotonutilities.com/electric_bozrah.asp">http://www.grotonutilities.com/electric_bozrah.asp</a>.</p> <p><b>East Norwalk Third District Taxing District</b> Call (203) 866-9271 or visit <a href="http://www.ttd.gov/Frames/community%20frame.htm">http://www.ttd.gov/Frames/community%20frame.htm</a>.</p> <p><b>Groton Public Utilities</b> Call (860) 446-4000 or visit <a href="http://www.grotonutilities.com">http://www.grotonutilities.com</a>.</p> <p><b>Jewett City Department of Public Utilities</b> Call (860) 376-2955 or visit <a href="http://www.jewettcitydpu.com">http://www.jewettcitydpu.com</a>.</p> <p><b>Norwich Public Utilities</b> Call (860) 887-2555 or visit <a href="http://www.norwichpublicutilities.com/efficiency-main.html">http://www.norwichpublicutilities.com/efficiency-main.html</a>.</p> <p><b>South Norwalk Electric and Water</b> Call (203) 866-3366 or visit <a href="http://www.snew.org">http://www.snew.org</a>.</p> <p><b>Town of Wallingford Public Utilities</b> Call (203) 294-2263 or visit <a href="http://www.town.wallingford.ct.us/">http://www.town.wallingford.ct.us/</a>.</p>
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## Cut Costs & Improve Your Bottom Line!

### Incentives for Increasing Energy Efficiency In Your Business

## RENEWABLE ENERGY SYSTEMS FOR YOUR BUSINESS

The demand for electricity, particularly during peak periods, increases the pressure on our existing generating capacity and forces our rates up. To reduce this pressure, incentives are available for commercial and industrial customers to install their own customer-owned generating systems (including renewable energy systems) or projects that conserve electricity or reduce load during peak demand times.

*Dr. Benjamin Rivers has a large veterinary practice, hospital, and boarding kennel in southeastern Connecticut. He had*

*always been interested in alternative energy systems. When the CT Clean Energy Fund (CCEF) started providing rebates for solar installations, Dr. Rivers decided the time was right to invest. Out-of-pocket expenses for the 114 solar panels ran \$43,400 after receiving \$82,000 in state rebates and an \$18,600 in tax credits. His monthly bills are now \$500 a month, rather than the \$1500 a month without the solar panels. Dr. Benjamin is delighted and expects to recoup his investment in less than 5 years.*

### RENEWABLE ENERGY SYSTEMS FOR YOUR BUSINESS

#### GRANTS

State of Connecticut Incentives	<p><b>CT Clean Energy Fund (CCEF) - On-Site Renewable Distributed Generation Program</b></p> <p>Provides grants to support the installation of renewable energy systems that generate electricity at commercial, industrial and institutional buildings. Eligible systems include wind, solar photovoltaic (PV), fuel cells, landfill gas, biomass, and certain kinds of hydropower. Grant amounts vary by technology. PV projects are limited to \$850,000 to \$4 million maximum on other eligible projects. Additional incentives for projects in Southwestern Connecticut. All installations must participate in the ISO-NE demand response program.</p> <p>All applicants are encouraged to schedule pre-application discussions with the CCEF staff before submitting an application under this program.</p> <p>Call (860) 563-5851 ext. 331 or visit <a href="http://www.ctcleanenergy.com">http://www.ctcleanenergy.com</a>.</p>
	<p><b>CCEF – Project 150 Initiative</b></p> <p>Requires the state’s electric distribution companies to enter into contracts to obtain at least 150 megawatts (MW) of “Class I” renewable energy. These long-term power purchase contracts must be in place by October 1, 2008. Deadline for third round of funding was May 30th, 2008. CCEF intends to recommend at least 25 MW of projects for DPUC approval.</p> <p>Call (860) 563-5851 ext. 331 or visit <a href="http://www.ctcleanenergy.com/projectSO">http://www.ctcleanenergy.com/projectSO</a>.</p>
	<p><b>DPUC Capital Grants for Customer-Side Distributed Resources on Commercial and Industrial Premises</b></p> <p>Grant Payments of \$450 per Kilowatt for customer owned electric generating systems (fuel cells, photovoltaic, CHP/ cogeneration, wind, etc.). Maximum unit capacity is 65 MW.</p> <p>Call the Connecticut Department of Public Utilities at (860) 827-2961 or visit <a href="http://www.state.ct.us/dpuc/">http://www.state.ct.us/dpuc/</a>.</p>

## RENEWABLE ENERGY SYSTEMS FOR YOUR BUSINESS

GRANTS	
State of Connecticut Incentives continued	<p><b>OPM – New Energy Technology Program</b></p> <p>Provides grants to applicants who submit promising pre-commercial technologies that conserve energy or facilitate the use of renewable energy. Individual awards up to \$10,000 will be awarded to as many as five “small firms”—a firm that employs 30 or fewer people—each year. Recipients also receive additional support and technical assistance, including help with identifying potential industry partners, or other state and federally sponsored programs.</p> <p>Call the Connecticut Office of Policy and Management at (860) 418-6384, or visit <a href="http://www.ct.gov/opm">http://www.ct.gov/opm</a>.</p>
Federal Government Incentives	<p><b>USDA Rural Energy For America Grant (REAP)</b></p> <p>Grants up to 25% of the total cost of energy efficiency improvements and renewable energy systems for agricultural producers and rural small business.</p> <p>Visit <a href="http://www.usda.gov/farmbill">http://www.usda.gov/farmbill</a>.</p>
LOAN PROGRAMS	
Federal Government Incentives	<p><b>USDA Rural Energy For America Loan Program (REAP)</b></p> <p>Loan Guarantees up to \$25 million are available for energy efficiency improvements and renewable energy systems for agricultural rural small business.</p> <p>Visit <a href="http://www.usda.gov/farmbill">http://www.usda.gov/farmbill</a>.</p>
State of Connecticut Incentives	<p><b>Low Interest Loans for Customer-Side Distributed Resources</b></p> <p>Long term financing is available to customers for installation, capital and project development costs associated with:</p> <p>(1) the generation of electricity from a unit with a rating of not more than 65 megawatts including but not limited to fuel cells, CHP/cogeneration, photovoltaic systems or small wind turbines, OR</p> <p>(2) a reduction in the demand for electricity on the premises through methods of conservation and load management. Fixed interest rates (no more than prime) and loan amount varies.</p> <p>To apply, contact Bank of America Leasing and Capital at (201) 345-2860.</p> <p>Call the Connecticut Department of Public Utilities at (860) 827-2811 or visit <a href="http://www.state.ct.us.dpuc">http://www.state.ct.us.dpuc</a>.</p>
TAX CREDITS/EXEMPTIONS	
State of Connecticut Incentives	<p><b>Sales &amp; Use Tax Exemption for Solar and Geothermal Systems</b></p> <p>100% sales tax exemption of solar and geothermal heat pumps and solar thermal and solar electric systems.</p> <p>Eligible equipment includes solar electricity generating systems, passive or active solar water or space heating systems; equipment related to such systems and the sales of services relating to the installation of such systems are also tax-exempt.</p> <p>Call (860)297-5962 or visit <a href="http://www.ct.gov.drs">http://www.ct.gov.drs</a>.</p>
Federal Government Incentive	<p><b>Corporate Tax Incentives for Renewable Energy</b></p> <p>Provides Federal Business Tax Credits on equipment in place from January 1, 2006 until December 31, 2008.</p> <ul style="list-style-type: none"> <li>– 30% tax credit for solar, solar hybrid lighting, and fuel cells, and</li> <li>– 10% for micro turbines and geothermal.</li> </ul> <p>For equipment installed after January 1, 2009, the tax credit for solar goes to 10% and expires for fuel cell and microturbine.</p> <p>Contact the IRS – Public Information office at (800) 829-1040 or visit <a href="http://www.irs.gov">http://www.irs.gov</a>.</p>
	<p><b>Modified Accelerated Cost-Recovery System (MACRS)</b></p> <p>Allows businesses to recover investments in certain property through depreciation deductions. Solar, wind, geothermal, fuel cells, micro turbines, and solar hybrid lighting technologies are classified as 5-year “property” under the IRS code.</p> <p>For more information, see IRS Publication 946, IRS Form 4562: Depreciation and Amortization, and Instructions available at <a href="http://www.irs.gov">http://www.irs.gov</a> or contact the IRS Public Information Office at (800) 829-1040.</p>

## RENEWABLE ENERGY SYSTEMS FOR YOUR BUSINESS

### TAX CREDITS/EXEMPTIONS

Federal Government Incentives continued	<p><b>Renewable Electricity Production Tax Credit (PTC)</b></p> <p>PTC is a per kilowatt-hour tax credit for electricity generated by qualified energy resources—2.0¢/kW for wind, geothermal, closed-loop biomass; 1.0¢/kW for open loop biomass, small irrigation hydroelectric, landfill gas, municipal solid waste resources and hydropower.</p> <p>A business can take the credit by completing Form 8835, “Renewable Electricity Production Credit,” and Form 3800, “General Business Credit” which are available at <a href="http://www.irs.gov">http://www.irs.gov</a> or by calling (800) 829-4933.</p>
	<p><b>Residential Energy Conservation Subsidy Exclusion (Corporate)</b></p> <p>According to Section 136 of the IRS code, energy conservation subsidies provided by public utilities either directly or indirectly are nontaxable. However, because the IRS has not issued a definitive ruling, please contact a tax attorney.</p>
	<p><b>For other corporate tax credits or exemptions</b></p> <p>Contact IRS Telephone Assistance for Businesses toll-free at (800) 829-4933 or visit <a href="http://www.irs.gov">http://www.irs.gov</a>.</p>
Connecticut Cities & Towns	<p><b>Property Tax Exemption for Renewable Energy Systems</b></p> <p>Effective October 1, 2007 Connecticut municipalities are required to provide property tax exemptions for Class I Renewables (e.g. solar electric, wind, and fuel cell systems) and hydropower facilities in 1-4 residential buildings, and are authorized but not required to offer property tax exemptions for qualifying combined heat and power (CHP) systems.</p> <p>In addition, municipalities are required to exempt any passive or active solar water or space heating system or geothermal energy resource in any type of building.</p> <p>Contact Taxpayer Services at (800) 382-9463 or visit <a href="http://www.ct.gov.dr.s">http://www.ct.gov.dr.s</a>.</p>
<b>REBATES, INCENTIVES AND SERVICES</b>	
Utility Companies	<p><b>Net Metering</b></p> <p>The state’s largest electric utilities, United Illuminating and Connecticut Light and Power, are required to provide net metering to customers that generate electricity using Class I Renewable Energy sources up to 2 megawatts in capacity.</p> <p>Any customer’s net excess generation (NEG) during any monthly billing period is carried over to the following month as a credit, and at the end of an annual period the utility will pay the customer for any remaining net excess generation.</p> <p>Contact: Connecticut Department of Public Utilities at (860) 827-2961 or visit <a href="http://www.state.ct.us/dpuc">http://www.state.ct.us/dpuc</a>.</p>

# ENERGY IMPROVEMENTS FOR YOUR BUSINESS

Improving energy efficiency in your business is an excellent way to lower operating expenses, improve job performance, and increase profits. The most recent Connecticut Business and Industry Association survey reported more and more Connecticut companies are incorporating “green” business practices to meet their economic, corporate, and social goals. A wide variety of incentives to reduce your company’s energy costs are available.

*Jane Brooks owns a large art gallery in Fairfield county. Her electric bills have dropped 60% from \$360 to \$150 a month simply by changing light bulbs! Jane replaced her 50-watt halogen bulbs with special 7-watt L.E.D. bulbs that screw into the existing track-lighting sockets. An extra bonus? She received a rebate on the purchase of her new bulbs from her local utility!*

*Dean Ayer opened a restaurant, bar, and comedy club in downtown New Haven two years ago. Last March he had his electric utility conduct an energy audit and found that he could save \$2,500 a year by switching to an off-peak rate. Since he only uses power at night, Dean started saving immediately! Bonus? A more thorough audit found that by replacing his fan motor on his walk-in refrigerator he was also eligible for a rebate!*

ENERGY IMPROVEMENTS FOR YOUR BUSINESS	
TAX CREDITS/EXEMPTIONS	
State of Connecticut Incentives	<p><b>Sales and Use Tax Exemption for Energy Efficiency Products</b></p> <p>100% CT Sales Tax Exemption for compact fluorescent bulbs (CFL), certain weatherization products (e.g. programmable thermostats, insulation, weather stripping, etc.). Energy Star rated windows, doors, and natural gas and propane furnaces and boilers. Oil furnaces and boilers must be 84% efficient.</p> <p>Contact CT Department of Revenue Services at (860) 297-5962 or visit <a href="http://www.ct.gov/drs">http://www.ct.gov/drs</a>.</p>
Federal Government Incentives	<p><b>Energy Efficient Commercial Buildings Tax Deduction</b></p> <p>Provides a tax deduction ranging between \$0.30 –1.80 per square foot to owners of new or existing commercial buildings who install energy efficient improvements that reduce the building’s total energy and power cost by 50% or more. Tenants may be eligible if they make construction expenditures.</p> <p>Visit <a href="http://www.efficientbuildings.org">http://www.efficientbuildings.org</a>. Review the National Renewable Energy Laboratory Report, NREL/TP-550-40228 February, 2007 for additional information.</p> <p>IRS Notice 2006-52 established a process to allow taxpayers to obtain a certification that the property satisfies the energy efficiency requirements contained in the statute; IRS Notice 2008-40 was issued in March 2008 to clarify the rules for energy efficient commercial buildings placed in service from January 1, 2006 through December 1, 2008.</p> <p>View the document at <a href="http://www.irs.gov/pub/irs-drop/n-06-52.pdf">http://www.irs.gov/pub/irs-drop/n-06-52.pdf</a> or call (800) 829-1040.</p>
GRANTS, LOANS, REBATES, INCENTIVES AND SERVICES	
State Building Code	<p><b>Green Building Provisions PA 07-242</b></p> <p>Required a revision in the State Building Code by January 1, 2008. The new code will require all buildings be designed to provide optimum cost-effective energy efficiency. It also requires building projects constructed after January 1, 2009 which are expected to cost at least \$5 million, and building renovation projects after January 1, 2010 expected to cost \$2 million must achieve a LEED silver rating or a two-globe rating from the Green Globes USA design program.</p> <p>Call (860) 685-8310 or visit <a href="http://www.bcap-energy.org/state_status.php?state_ab=CT">http://www.bcap-energy.org/state_status.php?state_ab=CT</a>.</p>
State of Connecticut Incentives	<p><b>DPUC-Approved Ameresco CT Energy Efficiency Incentive Program</b></p> <p>Ameresco offers rebates to all Connecticut commercial, industrial, and institutional customers who reduce electric demand during peak hours: Summer – 1-5pm and Winter 5-7pm. Technologies used during all peak hours are eligible, including lighting, motors, and air compressors. Qualifying projects include retrofits and new construction.</p> <p>Rebates available up to \$600 per kW savings for summer and winter, and up to \$50 per kW for winter-only savings.</p> <p>Call (866) 314-9611 or visit <a href="http://www.amersco.com/ctdsmeep">http://www.amersco.com/ctdsmeep</a>.</p>
Utility Companies	<p>Connecticut’s utility companies offer a variety of conservation and energy efficiency programs for commercial and industrial customers. Be sure to contact your provider directly for information related to their programs.</p>

## ENERGY IMPROVEMENTS FOR YOUR BUSINESS

### GRANTS, LOANS, REBATES, INCENTIVES AND SERVICES

Connecticut Light & Power (CL&P)	<p><b>CT Energy Efficiency Fund (CEEF)</b></p> <p>Offers a number of programs that Connecticut Light and Power (CL&amp;P) customers can take advantage of. CEEF programs are funded by a conservation charge on customer electric bills.</p> <p>CL&amp;P customers can call either (877) WISE.USE or (860) 832-4972 or visit <a href="http://www.cl-p.com">http://www.cl-p.com</a>.</p>
	<p><b>Small Industrial and Commercial Energy Efficiency Loan Program</b></p> <p>Interest-free loans ranging from \$5,000 – \$250,000 (6 year maximum payback time) for the installation of electric energy efficient systems. Small (less than 100 employees) must have an average demand of 350 kW over the last 12 months.</p> <p>Loans are not available for customers who qualify for CL&amp;P’s Energy Conscious Blueprint or Small Business Energy Advantage programs.</p>
	<p><b>Energy Conscious Blueprint Program</b></p> <p>CL&amp;P commercial and industrial customers can receive up to 100% of the costs associated with energy efficient new construction or major renovations. The program covers new equipment and replacement of existing equipment. Incentives are typically based on the energy efficiency of a design or the incremental costs between less expensive, standard-efficiency equipment and a more expensive, high-efficiency option.</p> <p>Call (877) 947-3873 or visit <a href="http://www.cl-p.com/index.asp">http://www.cl-p.com/index.asp</a>.</p>
	<p><b>Energy Opportunities Efficiency Program</b></p> <p>CL&amp;P commercial and industrial users that have an average peak demand greater than 200 kilowatts are eligible for rebates on various retrofit possibilities. Customers with less than this amount could also qualify for this program if they do not qualify for other CL&amp;P incentive programs.</p> <p>Call (877) 947-3873 or visit <a href="http://www.cl-p.com/index.asp">http://www.cl-p.com/index.asp</a>.</p>
	<p><b>Express Rebate Programs</b></p> <p>Various rebate programs including the Lighting Rebate Program offers rebates ranging from \$5 to \$55 per unit to commercial and industrial customers for installing more energy efficient lighting fixtures.</p> <ul style="list-style-type: none"> <li>- <b>Motor Up Rebate Program</b> offers rebates based on motor horsepower and range from \$45 to \$700.</li> <li>- <b>Cool Choice Program</b> offers rebates on cooling systems that meet or exceed current program efficiency standards. Rebates vary.</li> </ul> <p>Call (877) 947-3873 or visit <a href="http://www.cl-p.com/index.asp">http://www.cl-p.com/index.asp</a>.</p>
	<p><b>Operation and Maintenance Program</b></p> <p>All CL&amp;P commercial and industrial customers are eligible to receive 50% of the cost for analysis and up to 50% for the installation of all energy efficient equipment that improve the maintenance and operation of electric equipment.</p> <p>Call (877) 947-3873 or visit <a href="http://www.cl-p.com/index.asp">http://www.cl-p.com/index.asp</a>.</p>
	<p><b>Small Business Energy Advantage Program Business</b></p> <p>Customers with an average 12-month peak demand between 10 kW and 200 kW qualify, however industrial customers with loads below 50 kW are preferred. Rebates and loans vary depending upon the project.</p> <p>An energy assessment of the facility is conducted by a contractor who submits a proposal of possible energy-efficiency measures, estimated energy savings, customer incentives, and financing options. If approved, an exact rebate amount is determined and in some cases the remaining cost of the project can be paid off in the form of a zero interest loan directly from CL&amp;P.</p> <p>Call (877) 947-3873 or visit <a href="http://www.cl-p.com/index.asp">http://www.cl-p.com/index.asp</a>.</p>
United Illuminating Company (UI)	<p><b>CT Energy Efficiency Fund (CEEF)</b></p> <p>Offers a number of programs that United Illuminating customers can take advantage of. CEEF programs are funded by a conservation charge on customer electric bills.</p> <p>UI residential customers can call (203) 499-2923 or visit <a href="http://www.uinet.com">http://www.uinet.com</a>.</p>
	<p><b>Cool Choice Energy Efficiency Incentive Program</b></p> <p>Offers rebates to commercial, industrial or agricultural UI customers that install high-efficiency air conditioning and air-to-air heat pump systems.</p> <p>Rebates vary and range from \$70 to \$200 per ton depending on the specific type of technology. Preapproval required for rebates over \$5000.</p> <p>Call (877) 947-3873 or (203) 499-5828 or visit <a href="http://www.uinet.com/index.asp">http://www.uinet.com/index.asp</a>.</p>

## ENERGY IMPROVEMENTS FOR YOUR BUSINESS

### GRANTS, LOANS, REBATES, INCENTIVES AND SERVICES

United Illuminating Company (UI)	<p><b>Energy Conscious Blueprint Grant Program</b>                  Provides design and implementation grants to help with costs of energy efficient buildings.                  Call (877) 947-3873 or (203) 499-2025 or visit <a href="http://www.uinet.com/index.asp">http://www.uinet.com/index.asp</a>.</p>
	<p><b>Energy Conscious Blueprint Rebate Program</b>                  Customers with commercial and industrial new construction, additions or major renovation projects are eligible to participate. Rebates are customized to the individual project and so vary.                  Call (877) 947-3873 or (203) 499-2025 or visit <a href="http://www.uinet.com/index.asp">http://www.uinet.com/index.asp</a>.</p>
	<p><b>Energy Opportunities Program</b>                  UI offers rebates for a wide range of technologies to retrofit existing building in energy efficient ways. Rebates vary by technology and efficiency but are determined by either 50% of the project cost or 75% of the system savings, whichever is less.                  Call (877) 947-3873 or (203) 499-2025 or visit <a href="http://www.uinet.com/index.asp">http://www.uinet.com/index.asp</a>.</p>
	<p><b>Express Lighting Rebate Program</b>                  UI commercial and industrial customers are eligible for rebates on energy-efficient lighting equipment installed into already existing facilities. Rebates range from \$10 to \$50 per fixture. Preapproval required for rebates over \$1000.                  Call (877) 947-3873 or visit <a href="http://www.uinet.com/index.asp">http://www.uinet.com/index.asp</a>.</p>
	<p><b>Motor Up Incentive Program</b>                  Provides rebates to industrial, commercial, institutional and agricultural customers for installing high energy efficient motors that operate a minimum of 2,000 hours per year and meet efficiency standards.                  Rebates range from \$45 – \$700/motor.                  Call (877) 947-3873 or (203) 499-5828, or visit <a href="http://www.uinet.com/index.asp">http://www.uinet.com/index.asp</a>.</p>
	<p><b>Small Business Energy Advantage Program (Combination Rebate &amp; Loan Program)</b>                  UI's small business customer can receive rebates ranging from 25% to 50% of the cost of energy efficiency improvements, based on an energy audit completed by a UI representative. Remaining costs may be paid off as a zero interest loan on the business' monthly utility bill.                  Call (877) 947-3873.</p>
	<p>The Connecticut Municipal Electric Energy Cooperative (CMEEC) represents, supports, and is owned by Connecticut's municipal utilities, including:</p> <p><b>Groton Public Utilities</b>                  Call (860) 446-4000 or visit <a href="http://www.grotonutilities.com">http://www.grotonutilities.com</a>.</p> <p><b>Jewett City Department of Public Utilities</b>                  Call (860) 376-2955 or visit <a href="http://www.jewettcitydpu.com">http://www.jewettcitydpu.com</a>.</p> <p><b>South Norwalk Electric and Water</b>                  Call (203) 866-3366 or visit <a href="http://www.snew.org/">http://www.snew.org/</a>.</p> <p><b>Town of Wallingford Public Utilities</b>                  Call (203) 294-2263 or visit <a href="http://www.town.wallingford.ct.us/page.cfm?name=DEPARTMENT%20OF%20PUBLIC%20UTILITIES">http://www.town.wallingford.ct.us/page.cfm?name=DEPARTMENT%20OF%20PUBLIC%20UTILITIES</a>.</p>
Connecticut Municipal Electric Energy Cooperative (CMEEC)	<p><b>The Wallingford Electric Division</b> offers energy conservation programs for commercial and industrial customers.                  Call (203) 294-2271 for full details on these programs, including:</p> <ul style="list-style-type: none"> <li>– Free lighting and energy audits</li> <li>– Incentive payments of up to 33% of the pre-tax project cost for lighting retrofits and energy efficiency equipment including HVAC, air compressor equipment, and three-phase motor replacements</li> <li>– Incentive payments for higher efficiency lighting and energy audits, incentive payments retrofits and installation</li> </ul>

## ENERGY IMPROVEMENTS FOR YOUR BUSINESS

### GRANTS, LOANS, REBATES, INCENTIVES AND SERVICES

Connecticut Municipal Electric Energy Cooperative (CMEEC)	<p><b>Bozrah Light and Power</b> Call (860) 889-7388 or visit <a href="http://www.grotonutilities.com/electric_bozrah.asp">http://www.grotonutilities.com/electric_bozrah.asp</a>.</p> <ul style="list-style-type: none"> <li>- <b>Commercial &amp; Industrial Energy Efficiency Rebate Program</b> Offers incentives for its commercial and industrial customers to install energy efficient equipment such as lighting, lighting controls/sensors, heat pumps, air conditioners, motors, et. al. in their facilities. Maximum incentive is 50% of the cost of the project. Call (860) 446-4000 or email &lt;grotonutilities@yourservice.com&gt;.</li> <li>- <b>Groton Utilities offers cash incentives</b> for customers who participate in their Demand Response Program. This program requires customers to voluntarily reduce electricity consumption during peak times of the year when the electric system is severely constrained and the price of electricity is very high. Call (860) 446-4000 or email &lt;grotonutilities@yourservice.com&gt;.</li> </ul>
	<p><b>Norwich Public Utilities</b> Call (860) 887-2555 or visit <a href="http://www.norwichpublicutilities.com/efficiency-main.html">http://www.norwichpublicutilities.com/efficiency-main.html</a>.</p> <ul style="list-style-type: none"> <li>- <b>Commercial &amp; Industrial Energy Efficiency Rebate</b> Rebates offered on energy efficient lighting, retrofits, HVAC and air equipment. Call (860) 464-4000 or email &lt;grotonutilities@yourservice.com&gt;.</li> <li>- <b>Zero-percent financing</b> to their commercial customers for energy efficiency improvements. Call (860) 823-4522 or email &lt;jeffbining@npumail.com&gt;.</li> <li>- <b>Cool Choice Program</b> Provides cash rebates to help offset the costs of high efficiency HVAC systems purchased after January 1, 2007. For eligibility information and an application, visit <a href="http://www.norwichpublicutilities.com/pdfs/app-CoolChoice.pdf">http://www.norwichpublicutilities.com/pdfs/app-CoolChoice.pdf</a>.</li> </ul>
	<p><b>Norwich Public Utilities</b> Call (860) 887-2555 or visit <a href="http://www.norwichpublicutilities.com/efficiency-main.html">http://www.norwichpublicutilities.com/efficiency-main.html</a>.</p> <ul style="list-style-type: none"> <li>- <b>Motor Up! Program</b> Provides incentives to upgrade to premium efficiency electric motors purchased and installed or placed in stock after January 1, 2007. For eligibility information and an application, visit <a href="http://www.norwichpublicutilities.com/pdfs/app-MotorUp.pdf">http://www.norwichpublicutilities.com/pdfs/app-MotorUp.pdf</a>.</li> </ul>
Natural Gas Companies	<p><b>East Norwalk Third District Taxing District</b> Call (203) 866-9271 or visit <a href="http://www.ttd.gov/Frames/community%20frame.htm">http://www.ttd.gov/Frames/community%20frame.htm</a>.</p> <ul style="list-style-type: none"> <li>- <b>Commercial Motor Upgrades</b> To replace old motors with high efficiency motors for commercial and industrial customers. Call (203) 866-9271 or download the form at <a href="http://www.ttd.gov/Conservation%20Motor%20Form%202007.pdf">http://www.ttd.gov/Conservation%20Motor%20Form%202007.pdf</a>.</li> <li>- <b>Free lighting audits and upgrade cost estimates</b> Available for commercial customers. Cash payments of up to 33% of the cost of upgrading to high efficiency lighting. Information is available by calling (203) 866-9271.</li> </ul>
	<p><b>Connecticut Natural Gas</b> Call (860) 827-3000 or visit <a href="http://www.cngcorp.com">http://www.cngcorp.com</a>.</p> <p><b>Yankee Gas</b> Call (800) 989-0900 or visit <a href="http://www.yankeegas.com">http://www.yankeegas.com</a>.</p> <p><b>Southern Connecticut Gas Company</b> Call (800) 659-8299 or visit <a href="http://www.soconngas.com">http://www.soconngas.com</a>.</p>



# Greening Your Community

## Incentives for Increasing Energy Efficiency In Your City or Town

### Some communities are leading by example.

#### Simsbury

Over the past ten years, the town of Simsbury has participated in Connecticut Energy Efficiency Programs for all new and renovated town buildings, resulting in energy savings and award payments totaling \$339,341.00, and cost increase avoidances of between 20% and 30%. In their April 2008 town report, officials cited energy savings through the use of efficient lighting, occupancy sensors, upgraded motors, digital control heating and ventilating systems, and more efficient HVAC equipment.

#### Stamford

The City of Stamford began working on energy efficiency measures in 1998 and has followed action plans for accomplishing a 20 percent reduction in greenhouse gas emissions by 2018 along with a commitment to purchasing 20% of its energy supply come from clean, renewable energy sources by 2010.

Through cost effective investments, comprehensive changes in major energy systems, improved energy performance through operational practices and management level support, the city has saved an overall 15% reduction in energy use, for an annual cost savings of over \$1.2 million in FY 2007. Stamford's commitment to energy efficiency has led them to implement conservation systems throughout its entire public school system, including the construction of a new pre-K through eighth grade magnet school that meets LEED (Leadership in Energy and Environmental Design) silver standard.

#### Lebanon

Earlier this year, the town of Lebanon contracted with a local company specializing in energy conservation for improvements to their Town Hall. Upgrades in lighting, including more energy efficient ballast's, fixtures, CFL bulb replacement, occupancy sensors in offices, and new LED exit signs will produce an estimated cost savings of almost \$2000 this year.

The entire project was scheduled to cost a total of \$12,000, however the program incentive provided almost 50% of the costs, and helped finance at 0% interest the remainder. Monthly payments are equal to the estimated monthly energy savings, so there is no increased cost to the Town. At the end of the repayment period, the Town realizes the savings from the reduction in electric use.

## CT CLEAN ENERGY COMMUNITIES PROGRAM

Right now, individuals and local businesses who participate in the CT Clean Energy Options Program (offered to CL&P and UI customers only) are given an opportunity to choose clean energy from sources such as wind, landfill gas, and small, low-impact hydropower. Participants can easily enroll in the Options Program by signing up on their bill, or online at <http://www.gocleanenergy.com>.

By meeting these three requirements, local towns can qualify for one or more free solar energy systems. In addition, the town will be able to access real-time information on the performance of their solar system.

For example, the City of Middletown qualified as a Clean Energy Community because of the number of enrollees in the Clean Energy Options program; the City received a 2 kilowatt solar system. The system was installed at the Middletown High School, and the amount of energy generated from the system over time (historical) or in real-time can be viewed by the public.

Visit <http://www.view2fatspaniel.net/CCEF/middletown/index.html>, and be prepared to be fascinated. In addition to viewing the performance of the system, the technology also calculates the amount of greenhouse gases avoided.

For more information about Connecticut Clean Energy Communities program call (860) 563-0015. Visit <http://www.ctcleanenergy.com>

## COMMUNITY INNOVATIONS GRANTS PROGRAM

The CT Clean Energy Fund provided 40 communities with \$5000 grants to increase local awareness about the Connecticut Clean Energy Options program. [This program was a pilot project and is now fully subscribed. CCEF intends to seek additional funding. Governor Rell and your state legislators can help support this effort.](#)

Towns that received clean energy grants used them to support a wide variety of public outreach efforts, including the purchase of compact fluorescent light bulbs (CFL) to give residents who enroll in the CT Clean Energy Options program, support educational projects involving children (such as art competitions and essay contests), and stocking public libraries with new books and DVDs on alternative energy and climate change. Visit <http://www.ctcleanenergy.com> for program updates.

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As of September, eighty (80)  
CT cities and towns have  
committed to purchase at least  
20% of their electricity from  
Clean Energy sources.

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# RENEWABLE ENERGY PROGRAMS

In addition to the Connecticut Clean Energy Communities Program and the Community Innovations Grants Program, the following programs are also available to communities.

REBATES, INCENTIVES AND SERVICES	
State of Connecticut Incentives	<p><b>Solar PV Rebate Program</b></p> <p>The Connecticut Clean Energy Fund offers rebates to government and nonprofit agencies who work through participating solar installers that install solar PV systems up to 10 kilowatts (kW). Performance-based rebates up to \$5 per watt for system and installations costs on the first 5 kW and \$4.30 per for the next 5 kW.</p> <p>Up to \$46,500 rebate per household. Call (860) 257-2362 or visit <a href="http://www.ctcleanenergy.com">http://www.ctcleanenergy.com</a>.</p>
	<p><b>DPUC-Approved Ameresco CT Energy Efficiency Incentive Program</b></p> <p>Ameresco offers rebates to all Connecticut commercial, industrial, and institutional customers who reduce electric demand during peak hours: Summer – 1-5pm and Winter 5-7pm. Technologies used during all peak hours are eligible, including lighting, motors, and air compressors. Qualifying projects include retrofits and new construction.</p> <p>Rebates available up to \$600 per kW savings for summer and winter, and up to \$50 per kW for winter-only savings.</p> <p>Call (866) 314-9611 or visit <a href="http://www.amersco.com/ctdsmEEP">http://www.amersco.com/ctdsmEEP</a>.</p>
Utility Companies	<p><b>Net Metering</b></p> <p>The state’s two largest utilities, United Illuminating and Connecticut Light and Power, are required to provide net metering to customers that generate electricity using Class I Renewable Energy sources up to 2 megawatts in capacity.</p> <p>Any customer’s net excess generation (NEG) during any monthly billing period is carried over to the following month as a credit, and at the end of an annual period the utility will pay the customer for any remaining net excess generation.</p> <p>Call the Connecticut Department of Public Utilities at (860) 827-2961 or visit <a href="http://www.dpuc.state.ct.us">http://www.dpuc.state.ct.us</a>.</p>
United Illuminating Company (UI)	<p><b>Energy Conscious Blueprint Grant Program</b></p> <p>Provides design and implementation grants to help with costs of energy efficient buildings.</p> <p>Call (877) 947-3873 or (203) 499-2025 and visit <a href="http://www.uinet.com/index.asp">http://www.uinet.com/index.asp</a>.</p>
	<p><b>Energy Conscious Blueprint Rebate Program</b></p> <p>Customers with commercial and industrial new construction, additions or major renovation projects are eligible to participate. Rebates are customized to the individual project and so vary.</p> <p>Call (877) 947-3873 or (203) 499-2025 and visit <a href="http://www.uinet.com/index.asp">http://www.uinet.com/index.asp</a>.</p>
	<p><b>Energy Opportunities Program</b></p> <p>UI offers rebates for a wide range of technologies to retrofit existing building in energy efficient ways. Rebates vary by technology and efficiency but are determined by either 50% of the project cost or 75% of the system savings, whichever is less.</p> <p>Call (877) 947-3873 or (203) 499-2025 and visit <a href="http://www.uinet.com/index.asp">http://www.uinet.com/index.asp</a>.</p>
LOANS	
State of Connecticut Incentives	<p><b>DPUC Low Interest Loans for Customer-Side Distributed Resources</b></p> <p>Long Term Financing is available to install customer owned electric generating systems e.g. fuel cells, photovoltaic, wind, CHP/ cogeneration. Projects must have a minimum capacity of 50 kw and no more than 65 MW. Loans also available for the conservation and load management, for example peak reduction or demand response systems.</p> <p>Fixed interest rates (no more than prime) and loan amounts varies. Contact Bank of America Leasing and Capital at (201) 345-2860.</p> <p>Contact the Connecticut Department of Public Utilities at (860) 827-2811 or visit <a href="http://www.state.ct.us/dpuc">http://www.state.ct.us/dpuc</a>.</p>

# RENEWABLE ENERGY PROGRAMS

GRANTS	
State of Connecticut Incentives continued	<p><b>CT Clean Energy Fund (CCEF) - On-Site Renewable Distributed Generation Program</b></p> <p>Provides grants to support the installation of renewable energy systems that generate electricity at commercial, industrial and institutional buildings. Eligible systems include wind, solar photo-voltaic (PV), fuel cells, landfill gas, biomass, and certain kinds of hydropower.</p> <p>Grant amounts varies by technology. PV projects are limited to \$850,000 to \$4 million maximum on other eligible projects. Additional incentives are available for projects in Southwestern Connecticut. All installations must participate in the ISO-NE demand response program.</p> <p>All applicants are encouraged to schedule pre-application discussions with the CCEF staff before submitting an application. Call (860) 563-5851 ext. 331 or visit <a href="http://www.ctcleanenergy.com">http://www.ctcleanenergy.com</a>.</p>
	<p><b>DPUC Capital Grants for Customer-Side Distributed Resources</b></p> <p>Grant payments of \$450 per Kilowatt for customer owned electric generating systems (fuel cells, photovoltaic, CHP/cogeneration, wind, etc.) Maximum unit capacity is 65 MW.</p> <p>Call the Connecticut Department of Public Utilities at (860) 827-2961 or visit <a href="http://www.state.ct.us/dpuc/">http://www.state.ct.us/dpuc/</a>.</p>

## GREEN SCHOOLS

In Connecticut, the cost of energy for public schools is over \$125 million annually. A report by the Institute for Sustainable Energy at Eastern Connecticut State University determined that energy efficiency measures could save taxpayers over \$37 million a year. In addition to the cost savings, “green” schools provide better indoor air quality and better learning environments.

Beginning in 2009, Connecticut will require all new school facilities costing \$5 million or more (with at least \$2 million in state funding) to achieve LEED–Silver Certification or equivalent “green” building standards. The requirement also applies to renovations of \$2 million or more.

Contrary to concerns that “green schools” are too costly to be built in line with local budgets, the report, *Greening America’s Schools, Costs and Benefits* (Greg Kats, October 2006), described several “green schools” that were constructed with no cost premiums, and determined that the average school cost increase was only 1.7%.

In the *High Performance Schools Initiative Report* by the CT Green Building Council and the Institute for Sustainable Energy, stakeholders concluded that high performance or “green” schools provide multiple co-benefits to students and their communities, including:

- Overall cost savings through lowered lifetime operating costs
- Healthier environments for the building occupants
- Enhanced learning atmosphere
- Environmental stewardship.

Numerous other studies have also determined that increases in early costs are outweighed by lower utility costs paid with taxpayer money, improved student academic performance, and any health and productivity improvements for students, faculty, and office personnel.

For more information on “green” schools, visit <http://www.buildgreenschools.org/action/index.html>.



# Understanding Your Electric Bill

**Your monthly electric bill can help identify energy and cost saving opportunities for your home, business and community.**

Your monthly electric bill provides loads of information to help you identify energy and cost-saving opportunities for your home, business, and community. Knowing how to read your bill can help you identify billing errors. Understanding how electricity is measured and charged can lead you to discover ways to lower your bill by controlling when and how energy is used. In addition, once you take steps to reduce your energy consumption, your monthly energy bill can help monitor your energy usage by giving you a record of your progress!

## Your Electric Bill Layout

Basic account information including account number, service address, customer name and mailing address, and bill due date are typically found on the first page of your monthly bill. An account summary, which contains your previous balance and any payments received during the billing period are also featured in this first section along with your current charges that determine the total amount due. Your utility company may also include a "special message" section on the first page to direct you to important information on new services, programs, and customer events.

## Rate Schedules

In Connecticut, each utility company offers different rates for different types of customers such as residential, commercial, industrial, and institutional. These "rate schedules" determine how you are billed. Rate schedules also vary within category based on the amount of electrical load and voltage requirements, and can adjust up or down depending on the season.

Utilities also offer optional "Time of Use" rates to allow customers to save money by shifting their energy use to "off-peak" periods. In Connecticut, the cost to provide electricity is generally highest between noon and 8:00 p.m.

weekdays, and in the summer months. (*Think: afternoon heat wave = higher prices*). Off-peak rates during all other times and on weekends provide customers with an opportunity to reduce overall demand, and a financial incentive to lower their monthly bill. While "Time of Use" rates are currently optional, mandatory "Time of Use" electric rates are being phased-in, beginning this year with high-use customers, and ending in 2013.

Rate schedules for customers of UI and CL&P (investor-owned utilities) are governed by the Connecticut Department of Public Utilities (DPUC), and must be approved by the DPUC before they are changed. Rates for the Connecticut's six municipally-owned electric utilities are not regulated by the DPUC, and are generally lower because they are exempted from certain taxes and renewable portfolio standards (RPS), and because they have greater flexibility in purchasing power on the wholesale market.

Contact your utility company and request a description of all rate schedules to be sure you are being billed at the correct rate and are aware of the next rate change date.

## Your Electric Meter

In the Meter Information section of your utility bill you will find the meter reading for last month and this month, the difference between the two readings, and the total kilowatt-hours\* used during this period. You will also see if the meter reading is based on an actual reading or an estimated reading. Utilities will estimate your electric usage based on past usage if they are unable to arrange a direct reading because of access, weather, or some other difficulty. Any differences between the actual or estimated bill will be determined at the next actual reading.

An estimated bill may cause your bill to be higher or lower than you would expect. If you would rather not pay the estimated bill you can choose to sign up for your utilities equal

# UNDERSTANDING YOUR ELECTRIC BILL

payment plan that calculates 11 equal monthly payments, with the 12th month reflecting actual usage and the additional amount due, or credit owed. You can also choose to read your own meter and call in the reading yourself.

Automatic read meters, or AMR, is a technology that utilities can use to collect information from your meter and transfer it to a central database for billing and/or analysis. AMR technologies include handheld, mobile, and network technologies that read the meter remotely by radio signal, telephone, or power line. AMR technology is intended to limit the number of estimated bills based on past usage, and reduce employee trips to read meters. Still, there are occasions when even with AMR, the utility is unable to read your meter, and again you have the choice to pay the estimated bill, opt for a regular payment plan, or read the meter yourself and submit the reading directly to your utility.

## Reading Your Meter

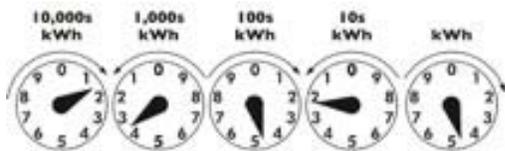
Each meter is numbered—make sure your meter number matches the same meter number on your bill.

**Digital Meters** – If you have a digital meter, simply read the numbers exactly as they appear on the face of the meter (left to right) and call it in to your utility company as soon as possible.

**Dial Meters** – If your meter has round dials like those pictured below, follow these instructions.

1. Stand directly in front of the meter so you can clearly see the pointer on each dial.
2. Each of the five dials represents one digit in the current reading. As you will see, the dials move clockwise and counter-clockwise.
3. Read the numbers, beginning from RIGHT TO LEFT.
4. If the pointer is between two numbers choose the lower number. However, if the pointer is between 0 and 9, choose 9.

For example, this meter reads 13424.



You can also read your meter from week to week to monitor your energy usage. Let's say next week your meter reads 13659. Simply subtract last week's meter read 13424 from this week's 13659 and you will see that 235 kilowatt hours have been used.

## The Different Charges

With the introduction of energy deregulation in the late 1990s, Connecticut's two largest electric utilities were restructured. These utilities were required to sell their power plants and other companies were allowed to compete to sell electricity to Connecticut consumers. Your bill reflects this restructuring so that the generation and delivery portions of your bill are separated and itemized.

### Generation Charge

Since 1999, CL&P and UI no longer produce electricity. They purchase it from private companies and deliver it to customers. Because of this restructuring, other companies can now compete to provide you with your electricity. You can (and should!) choose your own electric supplier and shop for the cleanest source and most competitive price for your home, business or institution!

Remember, only the Generation Service Charge (GSC) is open to competition; delivery and customer service during power outages will continue to be provided (and charged) by your current electric utility. If you have any questions on how to shop for an electricity provider, call DPUC Customer Outreach at 1-888-922-3782 or visit <http://www.ct-energyinfo.com>.

Please note: The Connecticut Municipal Electric Energy Cooperative (CMEEC) is responsible for procuring power and financing and building generating resources for members of the cooperative, including Groton Utilities, Jewett City Department of Public Utilities, Norwich Public Utilities, and the Second and Third Taxing Districts of Norwalk (South Norwalk and East Norwalk, respectively). CMEEC also provides power for the Wallingford Department of Public Utilities, Bozrah Light and Power, and the Mohegan Tribal Authority. As a wholesale power supplier, CMEEC is able to enter into long-term contracts at the lowest available prices. Customers of CMEEC members are not eligible to shop for competitive suppliers; however, these customers are currently enjoying some of the lowest electric rates in Connecticut. CMEEC is currently the only such electric cooperative in Connecticut.

### Delivery Charge

Delivery charges are generally represented by a transmission charge, which is the charge for delivering power from the power plant over high-voltage lines, and distribution charge which is a charge for delivering the electricity over poles and wires to homes and businesses.

# UNDERSTANDING YOUR ELECTRIC BILL

## Competitive Transition Assessment (CTA)

To allow your electric distribution company to recover "stranded costs"; DPUC authorizes utilities to collect for investments (such as power plants) that the utilities did not recover when they auctioned off these assets.

Combined Public Benefits Charge is the sum of three charges mandated by state law. These charges fund conservation and renewable energy programs and cover the utility's costs in complying with various public policies, e.g., protecting hardship customers from shutoffs in the winter months.

## Federally Mandated Congestion Charges (FMCC)

While electricity demand has grown in Connecticut, the state's energy infrastructure has not. FMCC charges for the congestion on the transmission system (particularly in the southwestern third of the state) and the legislative mandated measures to respond it. Congestion limits the ability of the utilities to import power from other parts of Connecticut and other regions. To maintain system reliability in the face of this congestion, older, less efficient power plants in southwestern Connecticut need to run even though their costs of

production exceed what their owners can earn by selling the power on the wholesale market. A large part of the congestion charge revenue goes to plant owners for "reliability-must run" payments. Congestion charges have decreased in recent years with the construction of the Bethel-Norwalk and Norwalk-Middletown transmission lines, still FMCC charges account for about 6% of the average residential bill in Connecticut.

## Monthly usage review

Your energy use will vary month to month. If you heat with oil, gas, or wood, your monthly electric bill will be lower in the winter. If you have air conditioning, your highest bills will be in the summer. Review the graph that represents your daily energy use and you will easily be able to determine which months you use more electricity. Once you identify which months to expect the highest usage and where your electric costs are going you will be able to make lifestyle changes that can lower your monthly bill and decrease your overall energy consumption

## What is a kilowatt-hour (kWh)?

In order to determine how much electricity costs, consumers need to understand how it is measured. Electric companies charge their customers by the kilowatt-hour, represented as kWh. A kilowatt equals 1000 watts.

**A kilowatt-hour refers to the use of an electrical device or combination of devices that use 1000 watts for an hour.**

For example, a 100 watt light bulb on for 10 hours would equal one kilowatt hour, or 1 kWh.

Similarly, a 1,500 watt portable space heater will use 1,500 watts in an hour or 1.5 kWh. To determine the cost of operating it for the winter season, consider a typical Connecticut household may use the heater 45 hours during the winter months (1/2 hour per day for three months). As of February 2008, Connecticut's electric rates averaged 16.4 cents per kilowatt-hour (kWh), so we calculate:

$$1500 \text{ watts}/1000 = 1.5 \text{ kWh} \times 45 \text{ hours} \times 16.4 \text{ cents} = \$11.07$$

To calculate the average operating cost for any electrical appliance you can use the following formula:

$$\text{watts}/1000 = \text{kWh} \times \text{hours of operation} = \text{kWh} \times \text{kWh rate} = \text{cost.}$$

Watts can usually be found on the appliance nameplate. If the nameplate lists amps, just convert to watts using the formula: **volts x amps = watts.**



## Major Players in Connecticut Energy Policy

**Federal and state agencies, private utilities, and nonprofits/advocacy groups are involved.**

### FEDERAL AGENCIES



#### U.S. Department of Energy (DOE)

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The DOE was established in 1977 in response to the energy crisis by combining several different agencies into one over arching authority. The agency's mission is to advance the country's national, economic, and energy security; promote scientific and technological innovation; and ensure the environmental cleanup of the national nuclear weapons complex.

The DOE is headed by a President-appointed Secretary, with divisions devoted to several types of non-renewable and renewable energy research. In 2005, the DOE had an enhanced role in the designation of National Interest Electric Corridors, which give transmission utilities seeking to construct transmission facilities the right to override state and local permitting decisions for electric transmission facilities.

<http://www.doe.gov>

#### Federal Energy Regulatory Council (FERC)

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The Federal Energy Regulatory Commission, or FERC, is an independent agency that regulates the interstate transmission of electricity, natural gas, and oil. FERC also reviews proposals to build liquefied natural gas (LNG) terminals and interstate natural gas pipelines as well as licensing hydropower projects. The FERC consists of up to five commissioners appointed by the President who serve for five year terms, and was created in 1978 as the successor to the Federal Power Commission.

The Energy Policy Act of 2005 gave FERC additional responsibilities, including overseeing the reliability of the nation's electricity transmission grid, penalty authority to prevent market manipulation, and supplementing state transmission siting efforts in national interest electric transmission corridors and review of company mergers, acquisitions involving electric utilities. Since deregulation, FERC has become increasingly involved in the pricing of electricity for Connecticut's utilities. It was influential in the creation of ISO-NE as the administrator of New England's wholesale electric markets.

<http://www.ferc.gov>

# FEDERAL AGENCIES



## Independent Systems Operator – New England (ISO-NE)

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The ISO-NE, is a regional transmission organization (RTO), created when New England states began to require a separation of electricity distribution and generation. The ISO-NE is charged with three main responsibilities dealing with the electricity grid:

- 1) monitoring the grid on a minute-to-minute basis to ensure reliability
- 2) development and oversight of the wholesale electric marketplace, and
- 3) managing bulk electric power systems.

ISO-NE is a not-for-profit corporation that works independently from the states it regulates.  
<http://www.iso-ne.com>

## New England Power Pool (NEPOOL)

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An alliance of approximately 100 utility companies who manage and direct all major energy production and transmission in the New England states. NEPOOL was created in the early seventies after a region-wide blackout, and was designed to ensure reliable communication and delivery of electricity throughout New England. Dispatch functions were replaced in the mid-nineties with the creation of ISO-NE. <http://www.iso-ne.com>

## U.S. Environmental Protection Agency (EPA)

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The EPA was established in 1970 to protect human health and the environment. It houses 10 regional offices, several labs and a headquarters office in Washington D.C., and employs 18,000 engineers, scientists and policy analysts. The EPA is led by an Administrator who is appointed by the President. The EPA's responsibilities include:

- 1) developing and enforcing environmental regulations providing grants to a variety of programs including public education, drinking water funds, and brownfields
- 2) conducting environmental research
- 3) publishing information on a wide array of issues relating to the environment; and
- 4) sponsoring partnerships and programs designed around pollution prevention and energy conservation.

<http://www.epa.gov>.

## STATE AGENCIES



### CT Department of Environmental Protection (DEP)

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The DEP is responsible for implementing environmental policy passed by the legislative and executive branches. Although various DEP departments deal with energy policy and climate change issues, the Climate Change and Energy Team, within the Bureau of Air Management has primary responsibility. The Team works with many groups—including FERC, DPUC, CEAB, ECMB, and CCEF—to ensure that environmental impacts, such as climate change, are considered when implementing state energy policy.

In addition, the Office of Pollution Prevention provides assistance to Connecticut's businesses, institutions, municipalities, and residents to improve their energy efficiency and invest in renewable energy sources.

The DEP also has primary responsibility for implementing the Regional Greenhouse Gas Initiative (RGGI) which will go into effect in 2009. <http://www.ct.gov/dep>

### Department of Public Utility Control (DPUC)

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The Department of Public Utility Control is statutorily charged with regulating, to varying degrees, the rates and services of Connecticut's investor-owned, electricity, natural gas, water, and telecommunication companies. The Department is the franchising authority for the state's cable television companies.

The DPUC is headed by a Chairman and has an additional four commissioners, each appointed by the Governor. The DPUC is responsible for ensuring that residents receive adequate energy services at reasonable rates and those utility companies are operating efficiently.

### Office of Policy and Management (OPM)

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Created in 1977, OPM is composed of eight divisions. The Energy Management Unit within the Policy Development and Planning Division is responsible for energy policy as well as increasing energy efficiency in state-owned and leased buildings. It is also charged with developing energy performance standards for state-funded construction and oversees energy purchases for state facilities, including natural gas and electricity. <http://www.opm.state.ct.us>

### Office of Consumer Counsel (OCC)

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The Office of Consumer Counsel is an independent state agency with statutory responsibility to represent customers of Connecticut's five regulated utilities—electric, gas, water, telephone, and to some extent, cable television, primarily in matters that go before the Department of Public Utility Control (DPUC). The OCC is comprised of attorneys, accountants, financial analysts, and support staff and is mainly responsible for ensuring reasonable rates and adequate service, particularly when representing consumers before the DPUC, FERC, state and federal courts, and the legislature. <http://www.ct.gov/occ>

### Connecticut Attorney General

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Connecticut's Attorney General is the chief legal officer of the state responsible for intervening on various types of proceedings involving electricity matters (including proceedings before the DPUC and FERC), to protect the state, the public interest, and Connecticut consumers. <http://www.ct.gov/ag>

## STATE AGENCIES



### Connecticut Siting Council (CSC)

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The CSC was formed in 1972. The Council's original jurisdiction was siting power facilities and transmission lines, and has since been extended to include various other forms of infrastructure including telecommunication sites. <http://www.ct.gov/csc>.



### Connecticut Energy Advisory Board (CEAB)

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The CEAB was reestablished and restructured in 2007 by PA 07-242, Section 53. The CEAB is responsible for representing the state in regional energy planning, participating in the state's annual load forecast proceeding, reviewing procurement plans submitted by electric distribution companies, and issuing and evaluating requests for proposals related to energy policies. To view of summary of the impact of PA 07-242 on the CEAB, visit <http://www.ctenergy.org/>.



### Energy Conservation Management Board (ECMB)

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Created in 1998 by the state legislature, the ECMB advises and assists the state's utilities in developing and implementing cost-effective conservation programs. With approval from the DPUC, it directs the distribution of the Connecticut Energy Efficiency Fund monies raised through a surcharge on customers' electric bills. These programs are carried out by Connecticut Light and Power and United Illuminating Company. <http://www.ctsaveenergy.org>



### Connecticut Clean Energy Fund (CCEF)

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The CCEF was formed in 2000 in order to promote, develop and invest in clean energy sources to benefit Connecticut's ratepayers. It is administered by Connecticut Innovations (CI), a quasi-public authority, and governed by an appointed Advisory Committee and CI's Clean Energy Investment Committee. The state legislature requires CCEF to develop a comprehensive plan to support renewable energy sources and increase additional demand. The current plan covers the period from July 1, 2008 to June 30, 2010. <http://www.ctcleanenergy.com>



### Institute of Sustainable Energy (ISE)

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The ISE was established at Eastern Connecticut State University in 2001 to identify and develop ways to promote sustainable energy. The ISE concentrates on four main areas relating to energy education, policy and conservation. These include:

- 1) public education campaigns and events for both students and professionals
- 2) development of ISE's resources to form a library of information regarding sustainability and clean energy
- 3) assistance in the development of state and local energy policy; and
- 4) support for the development of energy solutions, particularly for municipalities and universities.

The ISE is funded by the CCEF and receives grants and donations from a variety of other organizations including the U.S. EPA and the DOE and Connecticut's OPM, DEP, CCEF and Connecticut Green Building Council. <http://www.easternct.edu/depts/sustainenergy>

## PRIVATE UTILITY COMPANIES

### [Northeast Utilities \(NU\)](#)

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Created in 1966, NU serves 75–80% of the state’s residents through its subsidiary, the Connecticut Light and Power (CL&P), which provides electricity for customers in 149 towns. It also implements the state’s energy conservation programs which range from low-income weatherization to Energy Star incentives to rebates for geothermal installation. <http://www.nu.com>

### [United Illuminating Company \(UI\)](#)

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The United Illuminating Company provides electricity and energy-related services to customers in southern Connecticut. UI was formed in 1899, and continues to serve about 15-20% of consumers in the Greater Bridgeport and Greater New Haven areas. Similar to CL&P, UI is responsible for providing energy efficiency and conservation programs for its customers.

Both CL&P and UI offer clean, alternative energy options to customers who choose to purchase renewable energy from Sterling Planet and Community Energy. <http://www.uinet.com>

### [Connecticut Municipal Electric Energy Cooperative \(CMEEC\)](#)

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The CMEEC is a publicly directed joint action supply agency created in 1976. It is co-owned by the municipal utilities in Groton, Norwich, Jewett City and two districts of Norwalk.

It also provides power for the CMEEC–participating utilities in Wallingford, Bozrah and the Mohegan Tribal Authority, and altogether, provides power for about 5% of Connecticut residents. CMEEC is governed by a Board of Directors comprised of two representatives from each of the six municipal utilities in its partnership.

CMEEC offers energy efficiency and conservation measures to its customers, including free CFLs, promotion of Energy Star products, and free energy audits. <http://www.cmeec.com>

## NONPROFIT AGENCIES/ADVOCACY GROUPS



### [Connecticut Climate Coalition](#)

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The CT Climate Coalition is a coalition of over 90 organizations coordinated by Clean Water Action. It is part of the larger New England Climate Coalition, and was founded in order to ensure that the governor creates and implements Connecticut's Climate Change Action Plan (CCAP), which details 55 actions that contribute to the overall reduction of greenhouse gas emissions in Connecticut. Current priorities for the coalition include expanded investments in energy efficiency programs for electricity, heating oil, and natural gas.



### [Environment Northeast \(ENE\)](#)

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ENE is a non-profit research and advocacy organization founded in 1998 to address a variety of environmental issues (particularly those relating to climate change, energy and air quality), while promoting sustainable economies. Its staff is comprised of policy research, economic, legal and technical experts that collaborate with other groups to identify and act on issues in Connecticut, New England and in the Eastern Canadian provinces. <http://www.env-ne.org>



### [SmartPower](#)

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SmartPower is a national nonprofit marketing organization that promotes the use of clean, alternative energy and energy efficiency and conservation. It works with states to promote both residential and municipal clean energy usage, and its core campaign, 20% by 2010, aims to have one-fifth of all energy usage come from renewable sources by the year 2010. SmartPower is currently working on a new energy efficiency campaign focused on young adults. <http://www.smartpower.org>



### [Operation Fuel, Inc.](#)

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Operation Fuel, Inc. is a nonprofit designed to assist families that are unable to afford fuel during the winter months. It is managed by an executive director and a board of directors comprised of representatives of utility companies, communities, and the state, and is funded mainly through donations from resident utility bills, grants, and an annual appeal. Operation Fuel works with local fuel banks in collaboration with social service agencies, nonprofits and community action groups to provide cash grants to households in need. <http://www.operationfuel.org>



### [Environment Connecticut](#)

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Environment Connecticut is a statewide advocacy group that supports a variety of environmental issues, specifically those related to air, water, and open space. <http://www.environmentconnecticut.org>



### [Connecticut Fund for the Environment \(CFE\)](#)

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Founded in 1978, CFE has championed various environmental issues in Connecticut using a combination of law, advocacy, and public education. CFE has been actively engaged in reducing the state's energy consumption through innovative policy solutions aimed at the transportation and building sectors, and its Save the Sound program has been very much involved in energy infrastructure siting projects in Long Island Sound. <http://www.cfenv.org>



## Want to Learn More?

For Pre-K through high school students, teachers, parents and administrators

### STUDENT RESOURCES

#### PRE-K – 4TH GRADE

Lessons and Activities	<p><b>Games and Puzzles</b> Includes coloring books, connect-the dots, word searches, puzzles, and a Junior-level version of “Watts That?” an interactive internet Energy Game Show. Visit <a href="http://www.energyquest.ca.gov/index.html">http://www.energyquest.ca.gov/index.html</a>.</p>
	<p><b>Energy related stories, games, and age appropriate activities</b> Includes scavenger hunts and home and school surveys. Visit <a href="http://www.eia.doe.gov/kids/">http://www.eia.doe.gov/kids/</a>.</p>
	<p><b>Energy Information and Activity Booklets</b> Visit <a href="http://www.need.org/energyinfo.php">http://www.need.org/energyinfo.php</a>.</p>
	<p><b>Hog Busters Training Camp</b> This site allows young children to explore the world of energy in a fun way that inspires them to save energy by “busting” energy hogs at home. Visit <a href="http://www.energyhog.org/childrens.htm">http://www.energyhog.org/childrens.htm</a>.</p>
	<p><b>Get Wise Web Site Games</b> Includes interactive Hangman, a Lights and Sound Memory Game, and e-cards to encourage friends and family to conserve energy. Visit the kids’ page at <a href="http://www.getwise.org">http://www.getwise.org</a>.</p>
	<p><b>Captain Planet</b> Has online games, coloring books, and more for aspiring Planeteers. Visit <a href="http://www.captainplanetfoundation.org/">http://www.captainplanetfoundation.org/</a>.</p>
	<p><b>Kids for Conservation online games</b> Visit <a href="http://www.maytagenergy.netfirms.com/club/online_games.htm">http://www.maytagenergy.netfirms.com/club/online_games.htm</a>.</p>
	<p><b>Get Smart About Energy!</b> The U.S. Dept. of Energy’s (DOE) new web site includes hands-on activities that address energy fundamentals, energy efficiency, sources of energy, and the environmental impacts of energy use. Visit <a href="http://www.eere.energy.gov/education/lessonplans/grades.cfm/grade=1">http://www.eere.energy.gov/education/lessonplans/grades.cfm/grade=1</a>.</p>
Contests and Competitions	<p><b>Earth Artists Program</b> An annual contest open to K-5 students who create posters and poems suggesting actions that they and others can take to increase awareness and protect the environment. All entries must be received by March 2008. Call EPA’s Education Program toll free at (888) EPA-7341 or visit <a href="http://www.epa.gov/region1/students/poem.html">http://www.epa.gov/region1/students/poem.html</a>.</p>
	<p><b>Igniting Creative Energy Challenge</b> Participating students compete in creating a project that best communicates smart energy choices for an individual, family, or community. Category entries include a science project, essay, story, artwork, photograph, music, video or Web site project. Grand prize is a trip to Hawaii. Visit <a href="http://www.ignitingcreativeenergy.org/">http://www.ignitingcreativeenergy.org/</a>.</p>
Resources/ Links	<p><b>Dr. E’s Energy Lab</b> Fun facts and information on energy issues for young kids. Visit <a href="http://www.eere.energy.gov/kids/">http://www.eere.energy.gov/kids/</a>.</p>

## TEACHER RESOURCES

### PRE-K – 4TH GRADE

Resources and Links	<p><b>Fun with the Sun</b> Energy activities, for grades K-2, developed by the National Renewable Energy Laboratory. Visit <a href="http://www.nrel.gov/docs/gen/fy01/30928.pdf">http://www.nrel.gov/docs/gen/fy01/30928.pdf</a>.</p>
Lessons and Activities	<p><b>NEED (National Energy Education Development Project)</b> Can help plan, develop, and implement energy education programs for your school, and offers a full catalog of products and services. Visit <a href="http://www.need.org/curriculum.php">http://www.need.org/curriculum.php</a>.</p>
	<p><b>Energy Information and Activities Booklets</b> Visit <a href="http://www.need.org/EnergyInfobooksActivities.php">http://www.need.org/EnergyInfobooksActivities.php</a>.</p>
	<p><b>Energy Chants</b> Visit <a href="http://www.need.org/needpdf/infobook_activities/PrimaryActivities/PChants.pdf">http://www.need.org/needpdf/infobook_activities/PrimaryActivities/PChants.pdf</a>.</p>
	<p><b>The Energy Hog Challenge</b> A set of classroom activities for grade levels 3-8 that guide children through lessons about different sources of energy, how we use energy at home, and how to bust energy hogs to save energy. Each student can become an Official Energy Hog Buster upon completion of the lessons. It covers the subject areas of Science, Math, Technology, Language Arts and Social Studies, and meets national learning standards. Visit <a href="http://www.energyhog.org/pdf/teacherguide.pdf">http://www.energyhog.org/pdf/teacherguide.pdf</a>.</p>
	<p><b>GetWise.org — LivingWise Resource Action Program</b> Introduces students to the concept of energy as a resource, and then extends that knowledge to the idea of renewable and nonrenewable resources in our daily lives. Correlates with Connecticut's 3rd – 5th Grade State Standards. Visit <a href="http://www.getwise.org/correlations/LivingWise/ct3-5.pdf">http://www.getwise.org/correlations/LivingWise/ct3-5.pdf</a></p>
	<p><b>Discovery Education</b> A division of Discovery Communications, LLC the leading global nonfiction media company and leader in digital video-based learning, Discovery Education produces and distributes high-quality digital resources in easy-to-use formats in all core-curricular subject areas. Visit <a href="http://www.school.discoveryeducation.com">http://www.school.discoveryeducation.com</a></p>
	<p><b>Get Smart About Energy!</b> The U.S. Dept. of Energy's new web site includes hands-on activities that address energy fundamentals, energy efficiency, sources of energy, and the environmental impacts of energy use. All the activities and lesson plans are aligned with the National Science Education Standards. Teacher guides are included with many of the lessons, and all the materials are free and reproducible. Access K-4 Energy Lessons at <a href="http://www.eere.energy.gov/education/lessonplans/grades.cfm/grade=1">http://www.eere.energy.gov/education/lessonplans/grades.cfm/grade=1</a>.</p>
	<p><b>Energy Match</b> An interesting and useful source of information about energy, energy conservation, and efficiency. Interactive activities for younger children to learn about energy. Visit <a href="http://www.energymatch.com/kidsgateway.asp">http://www.energymatch.com/kidsgateway.asp</a></p>
	<p><b>National Energy Foundation</b> Resources available for teachers and administrators. Visit <a href="http://www.nef1.org/educators.html">http://www.nef1.org/educators.html</a>.</p>
	<p><b>Energized Learning Lessons, Resources, and Links.</b> Visit <a href="http://www.energizedlearning.lbl.gov/s_links.html">http://www.energizedlearning.lbl.gov/s_links.html</a>.</p>
<p><b>eeSmarts.com</b> A utility sponsored initiative which provides age appropriate educational materials directly to the classroom. Visit <a href="http://www.eesmarts.com/ct/index.asp">http://www.eesmarts.com/ct/index.asp</a>.</p>	
Contests and Competition	<p><b>Igniting Creative Energy Challenge</b> Students compete in creating a project that best communicates smart energy choices for an individual, family, or community. Category entries include a science project, essay, story, artwork, photograph, music, video or web site project. Grand prize is a trip to Hawaii. Visit <a href="http://www.ignitingcreativeenergy.org/">http://www.ignitingcreativeenergy.org/</a>.</p>

## STUDENT RESOURCES

### GRADES 5 – 8

Lessons and Activities	<p><b>Games, Puzzles and Activities</b> Including Flash! Interactive “Watts That?” online game. Visit <a href="http://www.energyquest.ca.gov/games/index.html">http://www.energyquest.ca.gov/games/index.html</a>.</p>
	<p><b>Energy Matters online game</b> Visit <a href="http://www.library.thinkquest.org/20331/">http://www.library.thinkquest.org/20331/</a>.</p>
	<p><b>The Green Squad</b> Helps students understand the relationship between their schools, energy, and the environment. Visit <a href="http://www.ftexploring.com/links/lessonplans.html">http://www.ftexploring.com/links/lessonplans.html</a>.</p>
	<p><b>Connecticut Global Fuel Cell Center</b> Located 5 minutes from the UCONN Storrs campus, and provides hands-on demonstrations of the operation of a fuel cell, key components, and the applications of various types of fuel cells. Call (860) 486-8375 or visit <a href="http://www.ctfuelcell.uconn.edu/educationoutreach.htm">http://www.ctfuelcell.uconn.edu/educationoutreach.htm</a>.</p>
	<p><b>Science Fair Projects on Energy</b> Visit <a href="http://www.energyquest.ca.gov/projects/index.html">http://www.energyquest.ca.gov/projects/index.html</a>.</p>
	<p><b>Kids for Conservation online games</b> Visit <a href="http://www.maytagenergy.netfirms.com/club/online_games.htm">http://www.maytagenergy.netfirms.com/club/online_games.htm</a>.</p>
	<p><b>Energy Science Projects and Activities</b> Visit <a href="http://www.1.eere.energy.gov/education/science_projects.html">http://www.1.eere.energy.gov/education/science_projects.html</a>.</p>
	<p><b>FUNenergy games and activities</b> Visit at <a href="http://www.cwndesign.co.uk/funergy/">http://www.cwndesign.co.uk/funergy/</a>.</p>
Contests and Competitions	<p><b>Project Superpowers</b> Students enter a “top-secret” site where scientists are conducting experiments on Super Heroes to test their energy-saving Super Powers. To enter the lab go to <a href="http://www.projectssuperpowers.com">http://www.projectssuperpowers.com</a>.</p>
	<p><b>Cool It! The Climate Change Challenge</b> A competition where students learn about climate change and create local solutions to the global problem for awards up to \$10,000. Students can participate through their schools, home schools, after school programs, community centers, or other youth organizations. For more information send an email to &lt;<a href="mailto:ask@coolitchallenge.org">ask@coolitchallenge.org</a>&gt; or call (860) 465-0256.</p>
	<p><b>National Middle School Science Bowl</b> Offers 2 competitions at the National Middle School Science Bowl — an academic math and science competition and a model fuel cell car competition. Visit <a href="http://www.scied.science.doe.gov/nmsb/default.htm">http://www.scied.science.doe.gov/nmsb/default.htm</a>.</p>
Resources /Links	<p><b>Igniting Creative Energy Challenge</b> Students compete in creating a project that best communicates smart energy choices for an individual, family, or community. Categories include a science project, essay, story, artwork, photograph, music, video or web site project. Grand prize is a trip to Hawaii. Visit <a href="http://www.ignitingcreativeenergy.org/">http://www.ignitingcreativeenergy.org/</a>.</p>
	<p><b>Student Resources on Renewable Energy</b> Information on Biomass, Geothermal, Hydrogen, Wind and Solar Energy. Visit <a href="http://www.nrel.gov/learning/student_resources.html">http://www.nrel.gov/learning/student_resources.html</a>.</p>
	<p><b>Energy Planet’s Directory of Renewable Energy</b> Visit <a href="http://www.energyplanet.info/">http://www.energyplanet.info/</a></p>

## TEACHER RESOURCES

### GRADES 5 – 8

Resources and Links	<p><b>Information on Connecticut Energy Issues</b> Energy Efficiency, Clean Energy Options, Utility Information for Restructuring, Energy Assistance, Environmental Issues, Consumer Issues and Research &amp; Public Policy. Visit <a href="http://www.CTEnergyInfo.com">http://www.CTEnergyInfo.com</a>.</p>
Lessons and Activities	<p><b>Connecticut Energy Education</b> Any of the lessons, labs, and activities on the Fundamentals of Energy, Climate Change, and Energy Efficiency apply to students from the 5th grade on. Visit <a href="http://www.ctenergyeducation.com">http://www.ctenergyeducation.com</a>.</p>
	<p><b>Flying Turtle</b> A massive web site for teachers who want to explore energy issues. Visit <a href="http://www.exploring.com/energy/energy.html">http://www.exploring.com/energy/energy.html</a>.</p>
	<p><b>National Energy Information Center (NEIC)</b> Resources for K–12 are published and updated yearly (in October). A service of the Energy Information Administration (EIA), that provides a list of generally available free or low-cost energy related educational materials. Visit <a href="http://www.eia.doe.gov/bookshelf/eer/kiddietoc.html">http://www.eia.doe.gov/bookshelf/eer/kiddietoc.html</a>.</p>
	<p><b>Connecticut Global Fuel Cell Center</b> Located 5 minutes from the UCONN Storrs campus, and provides hands-on demonstrations of the operation of a fuel cell, key components, and the applications of various types of fuel cells. Call (860) 486-8375 or visit <a href="http://www.ctfuelcell.uconn.edu/educationoutreach.htm">http://www.ctfuelcell.uconn.edu/educationoutreach.htm</a>.</p>
	<p><b>National Renewable Energy Laboratory</b> Offers K–12 Education programs on renewable energy and is designed to have students explore sustainable energy solutions for the future. Visit <a href="http://www.nrel.gov/education/">http://www.nrel.gov/education/</a>.</p>
	<p><b>Northeast Sustainable Energy Association</b> educational resources. Visit <a href="http://www.nesea.org/education/">http://www.nesea.org/education/</a>.</p>
	<p><b>Energy for Keeps</b> An illustrated guide for energy users produced by California’s Energy Education Group. The site includes information about the 240-page hardcover book (ISBN0-9744765-0-1) suitable for grades 6–12, and free downloadable fact sheets, student activities, and more. Visit <a href="http://www.energyforkeeps.com/">http://www.energyforkeeps.com/</a>.</p>
	<p><b>Get Smart About Energy!</b> U.S. Dept. of Energy’s new web site includes hands-on activities that address energy fundamentals, energy efficiency, sources of energy, and the environmental impacts of energy use, and all the activities and lesson plans are aligned with the National Science Education Standards. Teacher guides are included with many of the lessons, and all the materials are free and reproducible. Visit <a href="http://www.eere.energy.gov/education/lessonplans/grades.cfm/grade=2">http://www.eere.energy.gov/education/lessonplans/grades.cfm/grade=2</a>.</p>
	<p><b>NEED (National Energy Education Development Project)</b> Can help plan, develop, and implement energy education programs for your school, and offers a full catalog of products and services. Visit <a href="http://www.need.org/curriculum.php">http://www.need.org/curriculum.php</a>.</p>
	<p><b>Energy Match</b> An interesting and useful source of information and interactive activities about energy, energy conservation, and efficiency. Visit <a href="http://www.energymatch.com/kidsgateway.asp">http://www.energymatch.com/kidsgateway.asp</a>.</p>
	<p><b>National Energy Foundation Resources</b> Visit <a href="http://www.nef1.org/educators.html">http://www.nef1.org/educators.html</a>.</p>
	<p><b>Clean Energy Education</b> Includes Energy Efficiency lessons, Home Energy Quiz, Writing Across the Disciplines Lesson used to research the Clean Energy Options and 20% by 2010 campaign, and a Compact Fluorescent (CFL) Cost-Benefit Analysis. Visit <a href="http://www.ctenergyeducation.com/lessons">http://www.ctenergyeducation.com/lessons</a> and <a href="http://www.ctenergyeducation.com/index.htm">http://www.ctenergyeducation.com/index.htm</a>.</p>
Contests and Competitions	<p><b>Cool It! The Climate Change Challenge</b> A competition open to all middle and high school students. Students learn about the science of climate change, and then create real local solutions to this global problem for awards up to \$10,000. Students can participate through their schools, home schools, after school programs, community centers, or other youth organizations. For more information call (860) 465-0256 or send an email to <a href="mailto:ask@coolitchallenge.org">ask@coolitchallenge.org</a>.</p>

## TEACHER RESOURCES

### GRADES 5 - 8

Contests and Competitions	<p><b>Junior Solar Sprint Model Solar Car Competition</b></p> <p>Open to middle school students who design, build, and compete with model solar electric cars at area and state events around the Northeast. Each year, top winners from local races are invited to NESEA's Northeast JSS Championship. Visit <a href="http://www.nesea.org/education/jss/index.html">http://www.nesea.org/education/jss/index.html</a></p>
	<p><b>Igniting Creative Energy Challenge</b></p> <p>Participating K-12 students compete in creating a project that best communicates smart energy choices for an individual, family, or community. Category entries include a science project, essay, story, artwork, photograph, music, video or Web site project. Grand prize is a trip to Hawaii. Visit <a href="http://www.ignitingcreativeenergy.org/">http://www.ignitingcreativeenergy.org/</a>.</p>
Resources /Links	<p><b>Connecticut Energy Education Connecticut Science Framework Correlation Grid</b></p> <p>Visit <a href="http://www.ctenergyeducation.com/images/framework%20Alignment.doc">http://www.ctenergyeducation.com/images/framework% 20Alignment.doc</a></p>
	<p><b>CT Energy Education</b></p> <p>Offers hands-on workshops for your school, and can help arrange CEUs if available. Call Laura Kohl at (860) 465-0256 or visit <a href="http://www.ctenergyeducation.com">http://www.ctenergyeducation.com</a></p>
	<p><b>Energy Education Material and Resources for Teachers and Parents</b></p> <p>Visit <a href="http://www.energyquest.ca.gov/teachers_resources/books.html">http://www.energyquest.ca.gov/teachers_resources/books.html</a></p>
	<p><b>Academy of Energy</b></p> <p>Web site has games, puzzles, and student resources for energy education. Visit <a href="http://www.academyofenergy.org/students2.html">http://www.academyofenergy.org/students2.html</a></p>

## STUDENT RESOURCES

### GRADES 9 - 12

Lessons and Activities	<p><b>Energy consumption, conservation and sustainability issues</b> Visit <a href="http://www.eia.doe.gov/kids/energyfacts/saving/efficiency/savingenergy_secondary.html">http://www.eia.doe.gov/kids/energyfacts/saving/efficiency/savingenergy_secondary.html</a>.</p>
	<p><b>Flying Turtle's web site on Energy</b> Covers different types of energy, and energy transformations. Visit <a href="http://www.ftexploring.com/energy/energy-1.htm">http://www.ftexploring.com/energy/energy-1.htm</a></p>
	<p><b>12 Steps to a Sustainable High School</b> Visit <a href="http://ctclimatechange.com/documents/12stepstoasustainable_highschoolISE.pdf">http://ctclimatechange.com/documents/12stepstoasustainable_highschoolISE.pdf</a>.</p>
	<p><b>Connecticut Global Fuel Cell Center</b> Located 5 minutes from the UCONN Storrs campus, and provides hands-on demonstrations of the operation of a fuel cell, key components, and the applications of various types of fuel cells. Call (860)486-8375 or visit <a href="http://www.ctfuelcell.uconn.edu/educationoutreach.htm">http://www.ctfuelcell.uconn.edu/educationoutreach.htm</a>.</p>
	<p><b>Science Projects</b> Visit <a href="http://www.1.eere.energy.gov/education/science_projects.html">http://www.1.eere.energy.gov/education/science_projects.html</a>.</p>
	<p><b>FUNenergy games and activities</b> Visit <a href="http://www.cwndesign.co.uk/funenergy/">http://www.cwndesign.co.uk/funenergy/</a>.</p>
Contests and Competitions	<p><b>DOE High School Science Bowl</b> An academic tournament that tests the brainpower of high school teams on science and math topics. For regional competition information, contact Kevin McLaughlin at (860) 486-5536 or email &lt;kjm@enr.uconn.edu&gt;.</p>
	<p><b>Cool It! The Climate Change Challenge</b> A competition where students learn about climate change, and then create real local solutions to this global problem for awards up to \$10,000. Students can participate through their schools, home schools, after school programs, community centers, or other youth organizations. Call (860) 465-0256 or email &lt;ask@coolitchallenge.org&gt;.</p>
	<p><b>Igniting Creative Energy Challenge</b> Students compete in creating a project that best communicates smart energy choices for an individual, family, or community. Category entries include a science project, essay, story, artwork, photograph, music, video or web site project. Grand prize is a trip to Hawaii. Visit <a href="http://www.ignitingcreativeenergy.org/">http://www.ignitingcreativeenergy.org/</a>.</p>
Resources /Links	<p><b>Student Resources on Renewable Energy,</b> Including information on Biomass, Geothermal, Hydrogen, Wind and Solar Energy. Visit <a href="http://www.nrel.gov/learning/student_resources.html">http://www.nrel.gov/learning/student_resources.html</a>.</p>
	<p><b>CT Energy Consumption, Price and Expenditure Estimates</b> Visit <a href="http://www.eia.doe.gov/emeu/states/_seds_updates.html">http://www.eia.doe.gov/emeu/states/_seds_updates.html</a>.</p>
	<p><b>Energized Learning student resources and links</b> Visit <a href="http://www.energizedlearning.lbl.gov/s_links.html">http://www.energizedlearning.lbl.gov/s_links.html</a>.</p>
	<p><b>Energy Planet's Directory of Renewable Energy</b> Visit <a href="http://www.energyplanet.info/">http://www.energyplanet.info/</a>.</p>
	<p><b>Connecticut Energy Issues</b> Information on Energy Efficiency, Clean Energy Options, Utility Information for Restructuring, Energy Assistance, Environmental Issues, Consumer Issues and Research &amp; Public Policy. Visit <a href="http://www.CTEnergyInfo.com">http://www.CTEnergyInfo.com</a>.</p>
	<p><b>Middle and High School Energy Glossaries</b> Visit <a href="http://www.energy.gov/energyglossaries.htm">http://www.energy.gov/energyglossaries.htm</a></p>
	<p><b>Student Resources for Reports on Energy</b> Visit <a href="http://www.1.eere.energy.gov/education/report_resources.html">http://www.1.eere.energy.gov/education/report_resources.html</a></p>
	<p><b>Solar Connecticut Information on solar energy news</b> Visit <a href="http://www.solarconnecticut.org/">http://www.solarconnecticut.org/</a>.</p>
	<p><b>WattsNewCT</b> A Connecticut campaign to educate Connecticut consumers about changes in electric competition. Visit <a href="http://www.wattsnewct.gov">http://www.wattsnewct.gov</a></p>
<p><b>Learning About Renewable Energy and Energy Efficiency</b> A National Renewable Energy Laboratory Web site that provides a good overview of energy efficiency and renewable energy technologies, as well as resources for students by technology. Visit <a href="http://www.eetd.lbl.gov/eXroads/education.html">http://www.eetd.lbl.gov/eXroads/education.html</a></p>	

## TEACHER RESOURCES

### GRADES 9 -12

Lessons and Activities	<p><b>NEED (National Energy Education Development Project)</b> Can help plan, develop, and implement energy education programs for your school, and offers a full catalog of products and services. Visit <a href="http://www.need.org/curriculum.php">http://www.need.org/curriculum.php</a>.</p>
	<p><b>Connecticut Energy Education</b> is a curriculum resource for high school educators on energy topics in our state. CT Energy Education offers Lessons on the Fundamentals of energy, Climate Change, and Energy Efficiency. Many lessons may apply to students from 5th grade to college. All lessons are aligned to the Connecticut Science Frameworks.</p>
	<p><b>Connecticut Global Fuel Cell Center</b> Located 5 minutes from the UCONN Storrs campus and provides hands-on demonstrations of the operation of a fuel cell, key components, and the applications of various types of fuel cells. Call (860) 486-8375 or visit <a href="http://www.ctfuelcell.uconn.edu/educationoutreach.htm">http://www.ctfuelcell.uconn.edu/educationoutreach.htm</a></p>
	<p><b>Energy Education</b> Resources for Kindergarten through 12th Grade is published and updated yearly (in October) by the National Energy Information Center (NEIC). A service of the EIA, this publication provides students, educators, and other information users, a list of generally available free or low-cost energy related educational materials. Visit <a href="http://www.eia.doe.gov/bookshelf/eer/kiddietoc.html">http://www.eia.doe.gov/bookshelf/eer/kiddietoc.html</a></p>
	<p><b>Get Smart About Energy!</b> US DOE's new web site includes hands-on activities that address energy fundamentals, energy efficiency, sources of energy, and the environmental impacts of energy use, and all the activities and lesson plans are aligned with the National Science Education Standards. Teacher guides are included with many of the lessons, and all the materials are free and reproducible. Visit <a href="http://www.eere.energy.gov/education/lessonplans/grades.cfm/grade=3">http://www.eere.energy.gov/education/lessonplans/grades.cfm/grade=3</a>.</p>
Contests and Competition	<p><b>CT Energy Education CFL Challenge</b> Students calculate electrical usage in household lighting and create a cost-benefit analysis for replacing incandescent light bulbs with compact fluorescent light bulbs. Visit <a href="http://www.ctenergyeducation.com/lesson.htm?id=2f549jbd">http://www.ctenergyeducation.com/lesson.htm?id=2f549jbd</a>.</p>
	<p><b>Cool It! The Climate Change Challenge</b> A competition where students learn about the science of climate change, and then create real local solutions to this global problem for awards up to \$10,000. Students can participate through their schools, home schools, after school programs, community centers, or other youth organizations. Call (860) 465-0256 or send an email to &lt;<a href="mailto:ask@coolitchallenge.org">ask@coolitchallenge.org</a>&gt;.</p>
Resources /Links	<p><b>CT Energy Consumption, Price and Expenditure Estimates</b> Visit <a href="http://www.eia.doe.gov/emeu/states/_seds_updates.html">http://www.eia.doe.gov/emeu/states/_seds_updates.html</a></p>
	<p><b>CT Energy Education Correlation Grid</b> with CT Science Frameworks. Visit <a href="http://www.ctenergyeducation.com/images/Framework%20Alignment.doc">http://www.ctenergyeducation.com/images/Framework%20Alignment.doc</a>.</p>
	<p><b>Connecticut energy issues</b> Including Energy Efficiency, Clean Energy Options, Utility Information for Restructuring, Energy Assistance, Environmental Issues, Consumer Issues and Research &amp; Public Policy. Visit <a href="http://www.CTEnergyInfo.com">http://www.CTEnergyInfo.com</a>.</p>
	<p><b>Northeast Sustainable Energy Association</b> developed educational materials and resources. Visit <a href="http://www.nesea.org/education/">http://www.nesea.org/education/</a>.</p>
	<p><b>Energy Planet's Directory of Renewable Energy</b> Visit <a href="http://www.energyplanet.info/">http://www.energyplanet.info/</a>.</p>



## EnergySpeak

### Our Glossary of Energy Terms

**Base load** – The minimum amount of electric power delivered or required over a period of time at a steady rate.

**Biodiesel** – A fuel for diesel engines that produces less pollution. Biodiesel is derived from plant oils or animal fat, and can be blended with petroleum.

**Biomass energy** – A broad term for biological material that can be burned to produce energy, including trees, crops, algae and other plants, as well as waste materials such as food and drink manufacturing discharge, sludge, manure, industrial organic by-products and the organic fraction of household waste (see Waste-to-Energy).

**Cap-and-trade** – An approach used to curb emissions, particularly carbon dioxide, by using economic incentives. Generally, a government agency sets a cap on the amount of emissions permitted, and companies are given credits to emit a certain quantity. Companies that pollute less can sell their excess permits to others, while companies that pollute over their limit must purchase more allowances.

**Carbon dioxide (CO<sub>2</sub>)** – A gas that is produced from the burning of fossil fuels; the single biggest man-made contributor to global warming.

**CHP/Cogeneration** CHP – Combined Heat and Power/Combined Cycle, also referred to as “cogeneration”; it is the simultaneous production of electricity and heat using a single fuel. The heat produced from the electricity-generating process is captured and used to produce high-and low-level steam. The steam can be used as a heat source for both industrial and domestic purposes and in steam turbines to generate additional electricity.

**Class I Renewables** – Renewable energy sources derived from solar power, wind power, fuel cell, methane

gas from landfills, or a biomass facility, provided such facility began operating after July 1, 1998, and the biomass is cultivated and harvested in a sustainable way.

**Class II Renewables** – Renewable energy sources derived from a trash-to-energy facility or biomass facility that does not meet the criteria for a Class I Renewable energy source. A hydropower facility, provided it is licensed by the Federal Energy Regulator Commission, or has met other licensing criteria is also considered a Class II Renewable energy source.

**Class III Renewables** – Sources derived from combined heat and power systems.

**Climate Change** – A phenomenon referring to variations in the Earth’s global climate over time caused by either natural processes or human activities. Recently the term Climate Change has applied specifically to modern average temperature variation and has become synonymous with global warming.

**CT Climate Change Action Plan (CCAP)** – A statewide proposal incorporating the recommendations set forth in the New England Governors/Eastern Canadian Premiers Climate Change Action Plan in 2001; its goal is to reduce greenhouse gas emissions to 1990 levels by the year 2010 and an additional 10% below that by the year 2020.

**Compact fluorescent light bulbs (CFL)** – A device that functions in a similar manner as a regular light bulb but uses only a quarter of energy to produce the same light; can last up to 11 years or 10,000 hours before being replaced.

**Congestion Charge** – Electric transmission congestion is the condition that occurs when transmission capacity is insufficient to enable safe delivery of all scheduled

# ENERGYSPEAK

or desired wholesale electricity transfers. Connecticut statute allow the federally mandated congestion charge to take into account costs associated with “congestion” as well as wholesale power costs, must-run contract costs, and other items.

**Conservation** – Steps taken to use less energy. These steps may involve improved efficiency but usually are measures instituted to avoid waste, reduce consumption, and the installation of equipment to ensure efficient energy use.

**Customer-Side Distributed Resources** – Refers to distributed energy, load management, energy efficiency, energy storage and other small-scale technologies owned or operated by energy users other than a utility and which reduces or eliminates the purchase of electricity through the standard distribution network.

**De-coupling** – The separation of a utility’s profits from its sales to provide incentives for utilities to actively promote consumer adoption of energy efficiency and conservation measures.

**Demand response** – When customers change their electric usage from normal consumption patterns in response to peak demand, usually in hot weather months. Demand response programs use rates and incentives to help customers manage electricity use and reduce the risk of electrical emergencies, such as blackouts.

**De-regulation** – Removal of governmental controls in a sector to allow for a free marketplace.

**Distributed generation** – Users who generate their own heat or electricity (onsite generation) independently of the grid (e.g. solar panels on homes) can sell surplus power back into the grid.

**Energy efficiency** – Means using less energy to perform the same function. Energy efficiency activities are distinguished from demand-side management (DSM) in that DSM generally refers to utility-sponsored and financed programs and may also include load management measures, while energy efficiency is a broader term, not limited to any particular sponsor, energy type or sector.

**Energy Star** – A joint program of the U.S. EPA and the U.S. DOE that identifies and labels energy efficient products.

**Fuel cells** – Devices that produce electricity and heat by combining fuel and oxygen in an electrochemical reaction. Fuel cells can operate on a variety of

fuels including natural gas, propane, landfill gas, and hydrogen. Unlike traditional energy technologies, fuel cells do not use a combustion process to convert fuel into heat and mechanical energy, but instead convert chemical energy into heat and electricity (see Hydrogen fuel cell, which is a specific type of fuel cell).

**Geothermal energy** – Energy produced by extracting heat or steam from the temperature beneath the Earth’s surface and using it to heat water or space.

**Global warming** – A gradual increase in global temperatures caused by the emission of greenhouse gases that trap the sun’s heat in the Earth’s atmosphere; contributing gases include carbon dioxide, methane and nitrous oxides.

**Grid** – The system of transmission lines through which electricity is provided to customers.

**Hybrid electric vehicle** – A vehicle that uses both an internal combustion engine and electric batteries to increase fuel efficiency that runs on regular gasoline.

**Hydrogen fuel cell** – A battery in which hydrogen reacts with oxygen to produce electricity; by-product is water as opposed to carbon dioxide, which is the by-product of combustion engines. Currently, Connecticut is the center for more fuel cell research than anywhere else in the world [see fuel cell].

**Hydropower** – The capture of energy from moving water. In hydroelectric power, water drives a turbine that produces electricity. There is currently a debate on what constitutes environmentally beneficial hydropower, since projects can be highly destructive of river ecology, even small hydro dams. Low impact designs are favored among the environmental community.

**Kilowatt (kW)** – A measure of electricity defined as a unit of energy, measured as 1 kilowatt (1,000 watts).

**Kilowatt hour (kWh)** – A measure of the amount of electricity produced per hour; the unit on which the price of electrical energy is based (e.g. 1 kWh = ten 100 watt bulbs burning simultaneously for one hour).

**LEED Standards** – Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ is the nationally accepted benchmark for the design, construction, and operation of green buildings. LEED standards focus in on five key areas of human and environmental health: sustainable site

# ENERGYSPEAK

development, water savings, energy efficiency, materials selection, and indoor environmental quality.

**Load control or Load management** – Steps taken to reduce power demand at peak load times or to shift some of it to off-peak times. This may be with reference to peak hours, peak days or peak seasons. The major driver of electric peaks is air-conditioning usage, which, therefore, becomes a prime target for load management efforts. Load management is achieved by persuading consumers to modify behavior or install equipment that automatically reduces consumption of specified customers during peak use periods.

**Megawatt** – One million watts of electricity.

**Non-renewable energy** – An energy source that can be used only once or cannot be replenished over a short period of time; includes fossil fuels such as coal, petroleum and natural gas.

**Peak load** - The maximum demand for electricity in a given period of time.

**Photovoltaic systems (PV)** – Refers to solid-state or semiconductor electrical devices (such as solar cells and arrays of solar panels) that convert light directly into direct current electricity. Inverters or static power converters are often used to convert the DC into usable 60 Hertz AC. PV panels are modular, lightweight, contain no moving parts (unless tracking devices are used), release no emissions and use no water.

**Regional Greenhouse Gas Initiative (RGGI)** – A cooperative effort by nine Northeastern and Mid-Atlantic states to reduce CO<sub>2</sub> emissions from the electric power sector, particularly by using a cap-and-trade system.

**Renewable Energy or Renewable Fuel Sources** – Energy derived from wind, hydro power, biomass or other solar resources. In Connecticut Renewables are categorized as either Class I, Class II, or Class III Renewables depending on their environmental impact.

**Renewable Energy Portfolio (RPS)** – A state policy that requires electricity providers to obtain a certain amount of their power from renewable energy sources by a certain date. Sources are divided into: Class I, Class II, or Class III Renewables depending on their environmental impact.

**Solar power** – The harnessing of energy from the sun's radiation to produce heat or electricity using panels, photovoltaic cells, or other technology.

**Stealth load** – The energy used by appliances while not in operation (e.g. the digital display on a microwave) that can contribute greatly to a customer's overall electricity usage. Also known as phantom load or vampire load.

**Sustainable** – A term used to characterize human activities that can be undertaken in such a way as to not adversely affect environmental conditions (such as soil, water quality, climate, biodiversity). More generally, sustainability refers to economic activity in today's world that does not interfere with the ability of future generations to enjoy economic prosperity, public health and natural environment.

**Transmission line** – A wire that carries large amounts of electricity over long distances from generating stations to substations before reaching the consumer. Transmission lines are generally high above the ground but can also be constructed below the surface. Lines operating at 69 kilovolts and higher are deemed "transmission" lines; lines operating at lower voltage are generally viewed as "distribution" lines.

**Turbine** – A machine for generating rotary mechanical power from the energy of a stream of fluid (such as water and steam), hot gas or wind).

**Waste-to-energy** – A range of processes associated with municipal or industrial waste where the waste is burned, gasified or digested at a high temperature and the heat energy is recovered to produce steam and/or generate electricity (see Biomass).

**Wind Turbines** – A wind energy conversion device that produces electricity; typically having one, two, or three blades.

## Some of the Sources for the Glossary Terminology

**CEAB Energy Plan Glossary**

<http://www.ctenergy.org/glossary.html>

**Energy Information Administration**

[http://www.eia.doe.gov/glossary/glossary\\_main\\_page.htm](http://www.eia.doe.gov/glossary/glossary_main_page.htm)

**Institute for Sustainable Energy Glossary**

<http://www.easternct.edu/depts/sustainenergy/education/glossary.htm>



## Our Picks for the Top Ten Web Sites For Energy News

In the past few years the amount of information that is available about energy-related issues has increased rapidly. Despite widespread interest in the subject, concerned citizens seeking news on energy matters and ways to control costs are instead met with an innumerable amount of web sites that can make finding answers to simple energy related questions a time-consuming task. The following sites are our picks for the top ten.

<http://www.ct-energyinfo.com>

CTENERGYINFO was developed by the Connecticut Department of Public Utility Control (DPUC) in conjunction with The Institute for Sustainable Energy to assist Connecticut consumers in locating information about energy related matters and help them identify strategies that can be employed to lower energy consumption and cost. This portal site covers topics including the Connecticut's Energy Efficiency Partners Program, "Green" Building Standards, Educational Programs, Clean Energy Options, Restructuring, Energy Assistance, Environmental Issues and more. An excellent resource for in-state programs.

<http://www.ctcleanenergy.com>

The Clean Energy Fund was established to promote clean and renewable energy use in Connecticut. This site contains information on clean and renewable energy sources, current and previous Connecticut investments, and how to apply for funding.

<http://www.onethingct.com>

*One Thing*, created by Governor Rell, is part of a widespread initiative aimed at creating measurable ways to reduce the cost of energy for consumers and businesses, strengthen state energy policy over the long and short term, and reaffirm Connecticut's position as a leader in renewable energy. This colorful web site is filled with energy

saving tips and attitude changing ideas. *One Thing* is managed under the Connecticut Office of Policy and Management (OPM).

<http://www.ase.org>

Alliance to Save Energy is a nonprofit coalition of business, government, environmental and consumer leaders that undertakes research, educational programs, and policy advocacy. This site offers an especially good listing of no-cost and low-cost tips for saving money and energy.

<http://www.dsireusa.org>

The Database of State Incentives for Renewable Energy is a comprehensive source of information on state, local, utility and selected federal incentives that promote energy efficiency and renewable energy.

<http://www.aceee.org>

American Council for an Energy Efficient Economy is a nonprofit organization dedicated to advancing energy efficiency as a means of promoting both economic prosperity and environmental protection.

<http://hes.lbl.gov>

The *Home Energy Saver* is a web-based energy audit tool designed to help consumers identify the best ways to save energy in their homes and find the resources to take advantage of cost savings. This project is sponsored by the U.S. Department of Energy (DOE) and is part of the national Energy Star program for improving energy efficiency in the home.

## TOP TEN WEB SITES

<http://www.sustainenergy.org>

The Institute for Sustainable Energy at Eastern Connecticut State University was established to identify, develop, and implement the means for achieving a sustainable energy future for Connecticut. The ISE web site provides information on energy education, energy policy, energy efficiency, renewable energy, and protection of environmental resources.

<http://www.ctgbc.org>

The Connecticut Green Building Council (CTGBC) is a chapter of the U.S. Green Building Council which provides education about the design and construction of high performance, energy efficient buildings, along with information about the LEED rating system and "green" building resources in Connecticut.

<http://www.energy.gov>

U.S. Department of Energy's web site which provides a comprehensive list of energy-related topics.



# Looking Back Looking Ahead

## Connecticut's Energy Policies & Programs: A Brief History

In the early part of the century, coal was the dominant fuel source in the United States and was found abundantly in many parts of the country. By 1945, oil had become the dominant source of energy, with domestic production peaking sometime in the following decade. Since then the nation has become increasingly dependent on oil supplied from other countries, especially those in the Middle East.

The United States found itself unprepared for its first energy crisis in 1973 when the Organization of Petroleum Exporting Countries (OPEC) placed an embargo on oil shipments to the West. States, including Connecticut, were suddenly forced to deal with the oil shortage themselves. In response, Governor Ella Grasso took two major steps to better manage the development and implementation of the state's energy policies. First, she created an Energy Agency and appointed a Commissioner. Second, she replaced an ineffective Utilities Commission with the Department of Public Utility Control (DPUC) to regulate Connecticut's electric rates. After analyzing the fixed and operating costs of utilities, return on investments, and reasonable profit, the DPUC set electric rates for Connecticut's electricity consumers.

The Energy Agency was dissolved by Governor William O'Neill in the mid-eighties, and its functions were distributed among various existing agencies, primarily the Office of Policy and Management (OPM). OPM continues to be a major player.

In the early nineties, electricity prices began to rise again. To alleviate these increased costs, the state looked to regulatory developments in the telecommunications industry as a possible model for the electricity industry. Theoretically, deregulation would drive down electricity rates through the development of competitive markets for the generation of electric power.

As a result, the Connecticut General Assembly determined that instead of having utility companies both generate and

transmit electricity, they would divest themselves of their generating facilities in order to open up the sector to competition. This meant that DPUC's responsibilities would be quite different since it would be limited to regulating electric rates to final customers.

In 2007, a new energy policy became the most urgent challenge for members of the Connecticut General Assembly. To meet the goals of improved energy efficiency and lower rates, and to alleviate the need to build new plants that would only further contribute to global warming, elected officials, state and federal agencies, nonprofits and advocacy groups, and private and public utilities came together to work out a plan for a smart energy future.

Legislation contained in An Act Concerning Electricity and Energy Efficiency (PA 07-242)\*, dramatically changed Connecticut's energy policy and approach, and the legislature continues to introduce legislation to support sustainable energy strategies. All good news.

### The future...

Still, the future of energy policy in Connecticut—and in the United States—depends on what steps we take next. The November 2008 elections indicated that energy issues were considered a priority by much of the electorate, whether their concern was national security over imported oil, increased awareness of global warming, or record-high gasoline prices. The new administration in Washington D.C., and the economic stress felt by state leaders across the country, including Connecticut, will require a new commitment to energy conservation and clean, "green" energy.

Certainly at the national level, Congress will have to address new technology and regulatory reforms related to a new grid—a network of transmission systems to accommodate new sources of power generation, particularly wind and solar. And those political battles may fade if the recent

drop in oil and gasoline prices makes America complacent in her demand for energy independence, improved mass transportation, or more fuel efficient vehicles.

In Connecticut, state leaders are facing an economic crisis and many wonder about the fate of recent, forward-thinking state programs aimed at increasing energy conservation and the use of clean, renewable energy. These consumer programs—grants, rebates tax incentives—combined with energy conservation, work. They save consumers money, reduce greenhouse gas emissions, and help promote energy independence.

Consumers at every level need to be informed and involved, and our elected leaders must be willing to act now in the best interest of our environment and our economy to ensure reliable, affordable and sustainable energy for our homes, businesses and the communities where we live, work, and play.

\*Highlights of PA07-242 can be found on pages 2-3.