

Testimony By Joint Supporters Before the Connecticut Senate Committee on  
Energy and Technology March 18, 2010 in support of Senate Bill, No. 463  
An Act Concerning Financing Of Energy Efficiency And Renewable Energy

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Chairman Fonfara and Honorable members of the Committee, other members of the General Assembly who may be present, members of the Staff and members of the Administration who may be present, thank you for opportunity to comment in support of S463 on improving financing for energy efficiency and renewable energy in Connecticut.<sup>2</sup>

We speak on behalf of a voluntary association called the Joint Supporters that has participated in a number of the regulatory proceedings implementing 05-01 and that appears on legislative and regulatory policy matters in a number of other States.<sup>3</sup>

We are addressing the potential role of smaller cogeneration, including micro-combined heat and power (micro-CHP) and other smaller generation facilities and the need to insert specific language that elicits action from this sector of resources. Certainly existing Public Act 05-01 benefits should be available for residential cogeneration, including discounted natural gas. Net

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<sup>2</sup> It is a privilege to appear before this Committee in review of these crucial issues. Environmental, energy and economic policy issues do go together. The convergence of these issues has been at the core of our firm's mission since 1989 when it was incorporated in Connecticut. In earlier iterations we have addressed issues such as revival of hydropower at existing dams in Connecticut, the potential of the State's industrial and commercial facilities to absorb cogeneration facilities (including the cogen projects at the YMCAs), the 05-01 monetary grant program and the expansion and smooth working of the State's energy efficiency resources. Our clients were selected for the first and then two more of the first twenty monetary awards. Our development affiliate was part of an energy efficiency and combined heat and power consortium that lost the longer term supply bid to Kleen Energy.

The E Cubed Company, LLC, provides strategic services at the "exponential" interface of energy, environmental and economic issues, hence the name "E to the third power" of "E Cubed".

The firm is now incorporated in Delaware, and has provided services related to the topics of this bill in a number of jurisdictions, including Washington, DC and all States north and east of, DC. We have also worked on these issues in Michigan and Ohio. We have negotiated policies and practices for interconnecting to the grid, both distributed generation and large generation. We have participated in Connecticut's and ISO-New England's standardization of interconnection for small generators and in twelve other states and two other RTOs.

<sup>3</sup> We are here today on behalf of sustainable energy firms, builders, plumbers, environmental groups, manufacturers, engineering firms and others that want to broaden the opportunities that can be provided to residences and smaller commercial installations. PV installers want products to offer when the house is inappropriate for solar installation. HVAC replacements are slowed by the economy but still need to occur. Replacing an aging or defunct furnace or boiler with a micro-CHP system greatly enhances overall societal energy efficiency, reduces emissions and creates and sustains jobs. Did I mention that some of the manufacturers rushing to meet the European micro-CHP market are also evaluating sites for facilities in the Northeastern U.S.?

metering should continue to be available although the daytime price differential that is much higher for solar should be also be made available for smaller scale micro-CHP.

What is residential cogeneration? Historically combined heat and power systems came in all sizes, except small. Now small is available. And available at the household level.

We provide several documents for your review while we are speaking and are available for further technical review sessions. Your pink folder should have this comment, a statement in support, a justification, and a single page with a pictures of trees and cars on it. Specific mark-ups are or will be provided to the Chair and to Staff.

In part, your bill tackles the issue of the aging population of home space heating systems. Separately, combined heat and power is addressed. The two can now be addressed by residential cogeneration systems using natural gas and propane. National data in the 2005 Residential Energy Consumption Survey by the EIA the latest available shows that nationally one-fifth of space heating systems are older than 1985.

Large-scale data from Massachusetts and New Jersey analyzed by Conservation Services Group and by The E Cubed Company, suggest that in this region, including Connecticut, more than one-third of home space heating systems are over twenty-five years old. Moving from one-third to one-fifth would represent enormous efficiency gains for Connecticut, especially when it can produce substantial electricity energy benefits as well.

In sum, stimulating micro-CHP can greatly enhance the efficiency of residential heating in Connecticut while enabling homeowners to produce half their electricity at home from the same fuel supply. Enhancing micro-CHP support can create work for Connecticut's plumbing and heating service providers and other parts of the energy infrastructure. S463 should be more aggressive. Not only should it provide support for combined heat and power at C&I facilities it should provide substantial incentives for micro-CHP at 1-4 family residences.

While S463 represents a valuable step in expanding access to in-state energy technology resources for combined heat and power, it needs to be amended to specifically expand opportunities for residential combined heat and power. These changes and emphases are needed in multiple sections. A one-third to one-half carve out of the proposed Class III revisions benefiting CHP is appropriate.

Seventeen states and the District of Columbia recognize this by allowing net metering of small systems using natural gas, propane, or other fossil fuel compared to forty-three jurisdictions that allow PV and other resources to net meter. Residential Micro-CHP reforms have been passed by various states in the past few years, including Maine, Maryland, Massachusetts, New York, Pennsylvania, and Vermont. Various states provide alternative energy credits and/or incentives such as property tax relief.

Substantial micro-CHP and smart meter reforms passed out of the New Jersey Assembly's Committee on Telecommunications and Energy on March 4, 2010 and will be voted upon Monday March 22, 2010. Earlier this week their Senate considered modifications to its SB 463 to adopt the reforms being advanced in that Assembly. The New Jersey Legislation recognizes

various needs addressed by your SB 463, including the need to buttress RPS achievements with CHP and not exclusively commercial and industrial CHP.

In that regard, the NJ legislation recognizes smaller CHP as a Class II resource along with resource recovery and hydropower power. It creates a Class II energy credit for micro-CHP and incorporates smaller CHP into multiple other parts of the statute stimulating energy efficiency and renewables. It is based in part on Maine's initiatives last year to expand net metering that recognized micro-CHP to 660 kilowatts as valuable resources that could be part of group net metering. The New Jersey version establishes group net metering for renewables and both site and group net metering for micro-CHP. It expands the importance of smaller CHP and micro-CHP systems.

Back to Connecticut, residential cogeneration using in-state energy infrastructure is now real. More than 100,000 systems are installed worldwide.

During the storms this past weekend, hundreds of thousands of homes across the northeast, including more than 35,000 homes in Connecticut lost grid power. With a home micro-CHP system, e.g. freewatt's™ plus system, many of those homes could have sustained its basic electric needs while using the normal fuel that heats the house. Its normal 1.2 kilowatt base output would have kicked up to 1.8 kW and a series of smart controls could have rotated the available current around to selected loads in the household. In short, a thousand homes could have met 1,800 kW of load with these machines. It seems small, but crucial at the individual household, however in aggregate could be quite effective

Turning back to the 1.2 kW mode of operation, let me report the results of the US EPA Emissions Calculator for those the same 1,000 homes on an annual basis. A summary page is attached to these remarks. Societal CO2 creation will be reduced by almost 3,000 tons per year (over 40%), 737 tons of Carbon will not be emitted, societal fuel consumption will be reduced 33%, These 1,000 homes will have essentially displaced or removed 492 cars off Connecticut's roads or removed the amount of carbon that would need to be stored in 614 acres of forest.

Now that residential cogeneration is deploying rapidly worldwide (more than 100,000 installations so far) the above states and now Connecticut should see the wisdom of giving households and smaller commercial facilities the opportunity to deploy micro-CHP. Micro-CHP equipment generally meets the home's or facilities heating needs (when supplemented by a boiler or furnace) and produces electricity, perhaps half or more of the annual electricity consumption from the same fuel that is heating the house.

The lead company supporting these efforts in Connecticut is ECR International, Inc., an upstate New York manufacturer of HVAC equipment, which has teamed its furnaces and boilers with Honda's 1.2 kilowatt micro-Combined Heat Power System. The combined installation meets all of a home's heating needs and about half the annual electricity requirements while producing the needed heat. Configurations can also run in demand response mode in conjunction with smart meters and smart grid capabilities.

We urge the Committee to pass out S463 with amendments in line with a few further revisions that we identify here and have or will provide to the Chairman and Staff in detail. The most notable revision requested of you is to establish incentives for residential micro-CHP

technologies, incentives that are substantial enough to stimulate households to leverage their own investment.

Connecticut's earlier monetary grant programs leveraged industrial and commercial investment of approximately \$6 for every \$1 awarded. E Cubed analyzed the first 90 applications and awards and provided the analyses to the Rhode Island Legislature in January 2007.

Residential programs, such as residential micro-CHP can be supported with the expectation of leveraging closer to \$2 for every \$1 awarded, hence incentives need to be substantial but will have long-lasting effect.

Thank you for the opportunity to testify in support of Senate Bill 463

# CHP Results



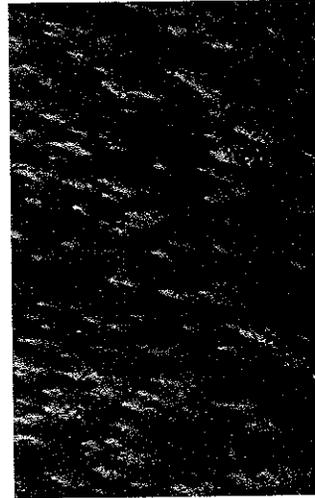
The results generated by the CHP Emissions Calculator are intended for educational and outreach purposes only; it is not designed for use in developing emission inventories or preparing air permit applications.

Annual Emissions Analysis					
	CHP System	Displaced Electricity Production	Displaced Thermal Production	Emissions/Fuel Reduction	Percent Reduction
NOx (tons/year)	1.41	2.06	2.88	3.52	71%
SO2 (tons/year)	0.02	2.79	0.02	2.79	99%
CO2 (tons/year)	4,163	3,785	3,358	2,979	42%
Carbon (metric tons/year)	1,029	936	830	737	42%
Fuel Consumption (MMBtu/year)	71,170	48,738	57,547	35,115	33%
Acres of Forest Equivalent				614	
Number of Cars Removed				492	

This CHP project will reduce emissions of Carbon Dioxide (CO2) by 2,979 tons per year

This is equal to 737 metric tons of carbon equivalent (MTCE) per year

This reduction is equal to removing the carbon that would be absorbed by 614 acres of forest



OR

This reduction is equal to removing the carbon emissions of 492 cars



## **Statement in Support of Amendment to CT Senate Bill 463**

### **To Incent Micro-Combined Heat and Power (Micro-CHP)**

*If 20 percent of US energy supply was produced by CHP by 2030, it would save around 5.3 quadrillion BTUs annually, which is roughly half of the energy consumed currently by US households. Put another way, this would be equivalent to removing 154 million cars from the road (over half of the US vehicle fleet). Placed in the context of Connecticut for every 1,000 small residential or small commercial micro-CHP installations 471 cars could be removed from the road. <sup>1</sup>*

**Statement of Purpose** – We ask the Connecticut General Assembly and this Committee to back amendments that would expand incentives for integrated cogenerating building Micro-combined heat and power generating systems (Micro-CHP) that are manufactured, installed and operated in accordance with applicable government and industry standards, that are capable of being connected to the local electric power distribution system.

The “low hanging fruit” or “easy access light bulbs switch-outs” cannot yield as much efficiency improvements as in the past. Micro-CHP offers the fresh opportunity to address both electrical and fuel efficiency improvements for 1-4 family residences and smaller commercial establishments. It should be incented to do so.

- Micro-CHP systems are thermostatically led. When the property calls for heat the system delivers all the heat needed to keep the property comfortable, and simultaneously provides 1.2 kW of electricity.
- In the daytime, operating a micro-CHP system reduces the amount of electricity you are required to purchase from the grid. At nighttime, when your property’s load reduces below 1.2 kW - you might have on a few clock radios, etc. – the micro-CHP system will export a small amount of power that will be reused the very next morning.
- In this way, you are storing a small amount of power on the grid for later use. This is like using the grid as a virtual battery. Most homes or small commercial properties WILL NOT have a net excess of kilowatt-hours at the end of any given month.

Incentives for micro-CHP give a benefit to consumers that will aid in the adoption of this technology

- The residential, Small Office/Home Office (SOHO) and commercial building sector together is responsible for over 50% of Connecticut’s electricity consumption. The sector should obtain a greater share of the incentives available.
- Residential and small commercial adoption of efficient technology is highly price sensitive, micro-CHP helps stabilize the cost stream.
- It’s important that the state of Connecticut give their consumers as much Choice as possible with regards to energy efficiency.

#### **Energy Efficient, Eco-Friendly Technology for a Stronger Nation**

The United States EPA has recognized micro-CHP as an emerging technology that has the potential to substantially reduce greenhouse gas emissions once it is more widely adopted. EPA stresses the importance of CHP/micro-CHP being adopted across the United States. Again from the December 2008 DOE report:

*CHP should be one of the first technologies deployed for near-term carbon reductions. The cost-effectiveness and near-term viability of widespread CHP deployment place the technology at the forefront of practical alternative energy solutions such as wind, solar, clean coal, biofuels, and nuclear power.*

Residential-sized and small commercial sized CHP systems are commonly referred to as micro-CHP systems and have a combined thermal and electrical efficiency exceeding 80 percent. Over 100,000 units are in use in Japan and Europe and micro-CHP is now available in the United States. They are eligible for feed-in-tariffs in UK, Germany, Austria and Netherlands.

Micro-combined heat and power systems provide Connecticut and its homeowners with significant economic, emissions and grid support benefits. This all makes a very compelling case for micro-CHP. These facts address the issues that are at the forefront of today’s agenda...Energy Efficiency, National Security, and Energy Independence!!

#### **Micro-CHP Technology & Our Nation’s Energy Future:**

##### **Improved Energy Efficiency**

<sup>1</sup> The United States Department of Energy, “Combined Heat and Power— Effective Energy Solutions for a Sustainable Future”, dated December 1, 2008. The report is available online at the following link: [http://www1.eere.energy.gov/industry/distributedenergy/pdfs/chp\\_report\\_12-08.pdf](http://www1.eere.energy.gov/industry/distributedenergy/pdfs/chp_report_12-08.pdf)

- Utilizing micro-CHP can result in more than a 15-30% reduction or more in fuel required for residential and small commercial electricity generation. The power produced by micro-CHP displaces electricity that would otherwise be purchased from the utility, reducing a property's annual electric bill by about half.

#### **A Better Environment**

- Compared to conventional grid supplied power, micro-CHP typically reduces CO2 emissions as well as SOx, NOx and particulates associated with global warming by as much as 40 percent or more.
- The recent Department of Energy CHP report Combined Heat and Power – Effective Energy Solutions for a Sustainable Future states that if 20% of US electricity production came from CHP, "CO2 emissions could be reduced by more than 800 million metric tons (MMT) per year." "In this 20 percent scenario, over 60 percent of the projected increase in CO2 emissions between now and 2030 could be avoided."

#### **Economic Growth**

- The Department of Energy states that if CHP generated 20% of US energy needs by 2030, it would generate \$234 billion in new investments and create almost 1 million new "highly skilled, technical jobs."

#### **A More Independent & Secure Nation and State**

- Requiring less fuel to accomplish the very same result not only promotes energy efficiency, but also puts us on a path towards energy independence and increases our nations' and state's energy security.
- Residential and small commercial combined heat and power/micro-combined heat and power provides grid support and reliability to electric power systems that are already approaching peak capacity. During peak demand, localized neighborhoods are the first to lose power or experience a brown out. The utility has the option to bring in more power cables with the associated costs or encourage the installation of distributed generation, such as residential and small commercial combined heat and power/micro-combined heat and power.
- Residential and small commercial combined heat and power/micro-combined heat and power can help electric utilities meet mandates requiring them to meet target reductions in emissions by certain dates.
- Generating power close to the electric load reduces electricity losses associated with transmission over power lines.

#### **Micro-CHP Technology & Our Nation's Homeowners:**

##### **Savings on Electric Bills**

- In an average size home in the northern US, residential and small commercial combined heat and power/micro-combined heat and power has the potential to generate half of a typical home's annual electrical needs, saving a homeowner hundreds of dollars on their electric bills.

##### **Backup Power**

- Residential and small commercial combined heat and power/micro-combined heat and power systems can operate as backup power generators in the event of a power outage, keeping heat and lights on and avoiding costly damage associated with freezing pipes.

##### **Reduce Carbon Footprint**

- A typical home or small commercial property owner will cut 4-6,000 lbs of carbon annually – equivalent to removing a car from the road for six months.

##### **Flexible Application – Retrofit Ready**

- The system is designed as a standard furnace or boiler and will retrofit seamlessly.
- Because of the design, residential and small commercial combined heat and power/micro-combined heat and power has a greater ability to fit into a much larger percentage of US housing stock, and therefore have a much greater impact than solar or wind power with their major siting challenges.

##### **Internet Connectivity And Smart Grid Capability**

- Residential and small commercial combined heat and power/micro-combined heat and power system products are already Internet connected for remote monitoring, control, troubleshooting, diagnostics, and maintenance.

##### **Quiet Operation**

- Well-designed residential and small commercial combined heat and power/micro-combined heat and power CHP systems can be quieter than a refrigerator.

##### **Improved Comfort**

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- Residential and small commercial combined heat and power/micro-combined heat and power systems can deliver a continuous low level heat to the property, reducing temperature swings normally experienced with traditional home and small commercial heating appliances.

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**JUSTIFICATION**  
**AMENDMENT FOR MICRO-COMBINED HEAT AND POWER (MICRO-CHP)**  
**(S463)**

- **The Proposed Amendment – Micro-Combined Heat and Power/ Combined Heat and Power** is an important action because it will help encourage homeowners and small commercial property owners to take advantage of one of the most highly efficient and effective energy systems for the home and small commercial property – Micro-combined heat and power.
- Micro-combined heat and power systems change the way people heat and power their properties by taking one fuel input and producing two energy outputs – heat and electricity.
- As a result, micro-CHP systems have efficiencies that can exceed 90% - that is they use 90% of the fuel input to produce heat and power, far exceeding the efficiencies of central power plants.
- Combined heat and power has strong support around the country, and the ability to net meter already occurs in 17 jurisdictions including DC, and growing.
- The Department of Energy and the US EPA have made CHP one of their top objectives to promote energy efficiency, energy independence, and reduce pollution.

**The benefits that micro-CHP offers homeowners and society at large include:**

1. **Reduced Greenhouse Gas Emissions** – Every 1,000 micro-combined heat and power systems at just 1-2 kilowatts installed is equal to taking 492 cars off of Connecticut's roads every year.
2. **Reduced Energy Costs** – For the same amount of fuel needed before to just heat a home, homeowners can now both heat their home and produce electricity needed to power their appliances.
3. **Energy Conservation/Energy Independence** – Micro-CHP systems use roughly 30% less fuel than was needed before to separately heat and power properties. Furthermore, they use a fuel widely available in North America and therefore, micro-CHP helps to reduce our dependence on foreign oil.
4. **Increased Grid Reliability** – Micro-combined heat and power systems can help relieve grid congestion during peak times, thereby increasing grid reliability and also, putting downward pressure on energy prices. For example, one system can increase output 50% to help meet grid reliability or reduce grid congestion.
5. **Provides Back-up Power** – Micro-CHP systems can provide back-up power for a home or small commercial property in the event of a grid outage.

6. **Accelerate the pace of replacement for less efficient space heating systems and produce electricity at the same time –**
- a. Swap-outs of less efficient heating systems could be accelerated through adoption of more efficient smaller CHP/Micro-CHP.
  - b. Approximately 50% of the home and small commercial space heating systems in Connecticut were installed prior to 1990 and are much less efficient than the Micro-CHP system that also produces electricity from the heating fuel.
  - c. Approximately one-third of these heating systems in Connecticut are more than 25 years old and 5% may be more than 60 years old. Nationally only one-fifth of space heating systems are more than 25 years old.
  - d. Approximately 28,000 of Connecticut's residential and small commercial scale furnaces and boilers were replaced in 2008. If one-third of the annual turnover could also produce on-site electricity and smart grid benefits, then 8-10,000 units at 1-4 kW could provide substantial distributed generation benefits.

**Areas of the S463 meriting placement of micro-CHP language.**

This is preliminary and will be revised with post-hearing written comments.

1. Section 1 (3) - Include micro-Combined Heat and Power and smaller CHP systems within the eligible in-state energy savings technologies list.
  - a. "3) "Eligible in-state energy savings technologies" means Class I renewable energy sources, as defined in section 16-1 of the general statutes, as amended by this act, solar hot water technologies for domestic hot water only, combined heat and power systems with an engineered efficiency rating of not less than sixty per cent, including micro-combined heat and power systems."
2. Section 3 (a) & (b)– Support the re-opener of monetary grants for larger projects with a micro-CHP modification.
  - a. (a) The Department of Public Utility Control shall, not later than January 1, 2006, establish a program to grant awards to retail end use customers of electric

distribution companies to fund the capital costs of obtaining projects of customer-side distributed resources, except in the case of micro-CHP under 10 kW the award shall be \$5,000, as defined in section 16-1, as amended by this act.”

3. Section 4 - in definition of Class III source insert provisions for residential CHP to participate.

Including the word “residential” prior to “commercial and industrial facilities..>”

- a. “(44) "Class III source" means the electricity output from combined heat and power systems with an operating efficiency level of no less than fifty per cent, determined quarterly on a rolling annual average basis, that are part of customer-side distributed resources developed at residential, commercial and industrial facilities in this state on or after January 1, 2006,”

4. Section 6 – micro-combined heat and power system.

- a. “and, on and after the effective date of this section, shall give a credit for any electricity generated by a customer from a combined heat and power system, including micro-combined heat and power and other residential combined heat and power systems.”

General Assembly

February Session, 2010

**Raised Bill No. 463**

LCO No. 2361

\*02361\_\_\_\_\_ET\_\*

Referred to Committee on Energy and Technology

Introduced by:

(ET)

**AN ACT CONCERNING FINANCING OF ENERGY EFFICIENCY AND RENEWABLE ENERGY.**

Be it enacted by the Senate and House of Representatives in General Assembly convened:

Section 1. (NEW) (*Effective from passage*) (a) As used in this section:

- (1) "Eligible entities" means (1) any residential, commercial, institutional or industrial customer of an electric distribution company or natural gas company, as defined in section 16-1 of the general statutes, as amended by this act, who employs or installs an eligible in-state energy savings technology, (2) an energy service company certified as a Connecticut electric efficiency partner by the Department of Public Utility Control, or (3) an installer certified by the Renewable Energy Investments Fund;
- (2) "Energy savings infrastructure" means tangible equipment, installation, labor, cost of engineering, permits, application fees and other reasonable costs incurred by eligible entities for operating eligible in-state energy savings technologies designed to reduce electricity consumption, natural gas consumption, heating oil consumption or to promote renewable energy technologies or combined heat and power systems; and
- (3) "Eligible in-state energy savings technologies" means Class I renewable energy sources, as defined in section 16-1 of the general statutes, as amended by this act, solar hot water technologies for domestic hot water only, combined heat and power systems with an engineered efficiency rating of not less than sixty per cent, including micro-combined heat and power systems, and energy conservation and load management technologies that reduce energy consumption, including, but not limited to, heating oil, natural gas and electricity

**Micro-CHP inserts are in 16 pt type**

gas companies shall provide for repayment of loans made pursuant to this section as part of the loan recipient's monthly electric or gas bill. An eligible entity participating in the loan program established pursuant to this section may transfer their loan to a subsequent property owner if (1) the loan is current, (2) the eligible in-state energy savings technology is functioning as intended or designed, and (3) the new owner agrees to continue to adhere to the operational parameters of the technology. An eligible entity that participates in the loan program may pay back the loan principal with no prepayment penalties. The term of the loan shall be for a period that shall not exceed the lesser of (A) the estimated period needed to pay for one hundred twenty-five per cent of the investment through savings, or (B) the manufacturer's rated useful life of the eligible in-state energy savings technology.

(f) Each electric distribution company shall develop a prescriptive one-page loan application. Such application shall include, but not be limited to: (1) Detailed information, specifications and documentation of the eligible in-state energy technology's installed costs and projected energy savings, and (2) for requests for loans in excess of one hundred thousand dollars, certification by a licensed professional engineer with a state license held in good standing.

(g) No single project shall receive a loan for more than one million dollars and investments in any one eligible in-state energy savings technology shall not exceed twenty-five per cent of the energy savings infrastructure loan account, as established in section 2 of this act. Not less than \_\_\_\_ per cent of each company's loan program shall be reserved for residential projects and not less than \_\_\_\_ per cent shall be approved for projects in any one county. Class I renewable energy resources, as defined in section 16-1 of the general statutes, as amended by this act, shall receive not less than \_\_\_\_ per cent of available funds for such loan program, with the following commitments: (1) \_\_\_\_ per cent for solar photovoltaic installations, and (2) \_\_\_\_ per cent for fuel cell installations. Combined heat and power technologies shall receive not less than \_\_\_\_ per cent of available funds for such loan program. Conservation and load management projects shall receive not less than \_\_\_\_ per cent of available funds for such loan program.

(h) Each electric distribution company may examine additional funding resources for the energy savings infrastructure loan program, including, but not limited to, American Recovery and Reinvestment Act funds, federally mandated congestion charges, the Renewable Energy Investments Fund, regional greenhouse gas initiative auction revenue and forward capacity market revenue.

(i) On or before October 1, 2010, each electric distribution company shall establish a plan that includes procedures and parameters for its energy savings infrastructure loan program established pursuant to this section and submit such plan to \_\_\_\_ for approval or modification. The \_\_\_\_ shall approve or modify such

**Micro-CHP inserts are in 16 pt type**

plan within thirty days. If the \_\_\_ does not respond within thirty days, the plan shall be deemed to be approved.

(j) On or before January 15, 2011, and annually thereafter, each electric distribution company shall, in accordance with the provisions of section 11-4a of the general statutes, report to the joint standing committee of the General Assembly having cognizance of matters relating to energy with regard to the energy savings infrastructure loan program established pursuant to this section and the loans provided pursuant to such program.

Sec. 2. Section 16-245a of the general statutes is repealed and the following is substituted in lieu thereof (*Effective from passage*):

(a) An electric supplier and an electric distribution company providing standard service or supplier of last resort service, pursuant to section 16-244c, shall demonstrate:

- (1) On and after January 1, 2006, that not less than two per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;
- (2) On and after January 1, 2007, not less than three and one-half per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;
- (3) On and after January 1, 2008, not less than five per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;
- (4) On and after January 1, 2009, not less than six per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;
- (5) On and after January 1, 2010, not less than seven per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;
- (6) On and after January 1, 2011, not less than [~~eight~~] seven per cent of the total output or services of any such supplier or distribution company shall be

**Micro-CHP inserts are in 16 pt type**

generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;

(7) On and after January 1, 2012, not less than [nine] seven and one-half per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;

(8) On and after January 1, 2013, not less than [ten] eight per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;

(9) On and after January 1, 2014, not less than [eleven] eight and one-half per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;

(10) On and after January 1, 2015, not less than [twelve and one-half] nine per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;

(11) On and after January 1, 2016, not less than [fourteen] nine and one-half per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;

(12) On and after January 1, 2017, not less than [fifteen and one-half] ten per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;

(13) On and after January 1, 2018, not less than [seventeen] ten and one-half per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;

**Micro-CHP inserts are in 16 pt type**

(14) On and after January 1, 2019, not less than [nineteen and one-half] eleven per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;

(15) On and after January 1, 2020, not less than [twenty] eleven and one-half per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources.

(b) An electric supplier or electric distribution company may satisfy the requirements of this section (1) by purchasing certificates issued by the New England Power Pool Generation Information System, provided the certificates are for (A) energy produced by a generating unit using Class I or Class II renewable energy sources and the generating unit is located in the jurisdiction of the regional independent system operator, or (B) energy imported into the control area of the regional independent system operator pursuant to New England Power Pool Generation Information System Rule 2.7(c), as in effect on January 1, 2006; (2) for those renewable energy certificates under contract to serve end-use customers in the state on or before October 1, 2006, by participating in a renewable energy trading program within said jurisdictions as approved by the Department of Public Utility Control; or (3) by purchasing eligible renewable electricity and associated attributes from residential customers who are net producers.

(c) Any supplier who provides electric generation services solely from a Class II renewable energy source shall not be required to comply with the provisions of this section.

(d) An electric supplier or an electric distribution company shall base its demonstration of generation sources, as required under subsection (a) of this section on historical data, which may consist of data filed with the regional independent system operator.

(e) (1) A supplier or an electric distribution company may make up any deficiency within its renewable energy portfolio within the first three months of the succeeding calendar year or as otherwise provided by generation information system operating rules approved by New England Power Pool or its successor to meet the generation source requirements of subsection (a) of this section for the previous year.

(2) No such supplier or electric distribution company shall receive credit for the current calendar year for generation from Class I or Class II renewable energy

## Micro-CHP inserts are in 16 pt type

sources pursuant to this section where such supplier or distribution company receives credit for the preceding calendar year pursuant to subdivision (1) of this subsection.

(f) The department shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of this section.

(g) (1) Notwithstanding the provisions of this section and section 16-244c, for periods beginning on and after January 1, 2008, each electric distribution company may procure renewable energy certificates from Class I, Class II and Class III renewable energy sources through long-term contracting mechanisms. The electric distribution companies may enter into long-term contracts for not more than fifteen years to procure such renewable energy certificates. The electric distribution companies shall use any renewable energy certificates obtained pursuant to this section to meet their standard service and supplier of last resort renewable portfolio standard requirements.

(2) On or before July 1, 2007, the department shall initiate a contested case proceeding to examine whether long-term contracts should be used to procure Class I, Class II and Class III certificates. In such examination, the department shall determine (A) the impact of such contracts on price stability, fuel diversity and cost; (B) the method and timing of crediting of the procurement of renewable energy certificates against the renewable portfolio standard purchase obligations of electric suppliers and the electric distribution companies pursuant to subsection (a) of this section; (C) the terms and conditions, including reasonable performance assurance commitments, that may be imposed on entities seeking to supply renewable energy certificates; (D) the level of one-time compensation, not to exceed one mill per kilowatt hour of output and services associated with the renewable energy certificates purchased pursuant to this subsection, which may be payable to the electric distribution companies for administering the procurement provided for under this subsection and recovered as part of the generation services charge or through an appropriate nonbypassable rate component on customers' bills; (E) the manner in which costs for such program may be recovered from electric distribution company customers; and (F) any other issues the department deems appropriate. Revenues from such compensation shall not be included in calculating the electric distribution companies' earnings to determine if rates are just and reasonable, for earnings sharing mechanisms or for purposes of sections 16-19, 16-19a and 16-19e.

(3) On or before October 1, 2010, each electric distribution company shall determine (A) the cost of a certain percentage of each electric supplier and electric distribution company's total output or services of any such supplier or company from Class I renewable energy sources, (B) the manner in which such supplier or company shall recover such cost from customers, and (C) the manner in which such supplier or company will deposit such amount into an energy

## Micro-CHP inserts are in 16 pt type

savings infrastructure account, which shall be a separately held account. The costs determined pursuant to subparagraph (A) of this subdivision shall be the present day value pursuant to subdivision (4) of this subsection for the following percentages: (i) In 2011, one per cent; (ii) in 2012, one and one-half per cent; (iii) in 2013, two per cent; (iv) in 2014, two and one-half per cent; (v) in 2015, three and one-half per cent; (vi) in 2016, four and one-half per cent; (vii) in 2017, five and one-half per cent; (viii) in 2018, six and one-half per cent; (ix) in 2019, seven and one-half per cent; and (x) in 2020, eight and one-half per cent.

(4) Each electric distribution company shall determine the present day value of the costs determined pursuant to subdivision (3) of this subsection shall be no less than dollars per megawatt hour and shall not exceed the noncompliance penalty value and submit such determination to the Department of Public Utility Control for approval. Once approved, such mount shall be transferred into a separately held account pursuant to said subdivision (3).

Sec. 3. Section 16-243i of the general statutes is repealed and the following is substituted in lieu thereof (*Effective from passage*):

(a) The Department of Public Utility Control shall, not later than January 1, 2006, establish a program to grant awards to retail end use customers of electric distribution companies to fund the capital costs of obtaining projects of customer-side distributed resources, except in the case of micro-CHP under 10 kW the award shall be \$5,000, as defined in section 16-1, as amended by this act. Any project shall receive a one-time, nonrecurring award in an amount of [not less than] two hundred dollars [and not more than five hundred dollars] per kilowatt of capacity for such customer-side distributed resources, recoverable from federally mandated congestion charges, as defined in section 16-1, as amended by this act. [No such award may be made unless the projected reduction in federally mandated congestion charges attributed to the project for such distributed resources is greater than the amount of the award. The amount of an award shall depend on the impact that the customer-side distributed resources project has on reducing federally mandated congestion charges, as defined in section 16-1. Not later than October 1, 2005, the department shall conduct a contested case proceeding, in accordance with chapter 54, to establish additional standards for the amount of such awards and additional criteria and the process for making such awards.]

(b) The Department of Public Utility Control shall, not later than January 1, 2006, establish a program to grant to an electric distribution company a one-time, nonrecurring award to educate, assist and promote investments in customer-side distributed resources developed in such company's service territory; [ which resources the department determines will reduce federally mandated congestion charges, in accordance with the following:] (1) On or before January 1, [2008]

## Micro-CHP inserts are in 16 pt type

2011, two hundred fifty dollars per kilowatt of such resources, (2) on or before January 1, [2009] 2012, one hundred [fifty] forty dollars per kilowatt of such resources, (3) on or before January 1, [2010, one hundred] 2013, thirty dollars per kilowatt of such resources, and (4) [fifty] twenty-five dollars per kilowatt of such resources thereafter. Payment of the award shall be made at the time each such resource becomes operational. The cost of the award shall be recoverable from federally mandated congestion charges. Revenues from such awards shall not be included in calculating the electric distribution company's earnings for the purpose of determining whether its rates are just and reasonable under sections 16-19, 16-19a and 16-19e.

Sec. 4. Subdivision (44) of subsection (a) of section 16-1 of the 2010 supplement to the general statutes is repealed and the following is substituted in lieu thereof (*Effective from passage*):

(44) "Class III source" means the electricity output from combined heat and power systems with an operating efficiency level of no less than fifty per cent, determined quarterly on a rolling annual average basis, that are part of customer-side distributed resources developed at residential, commercial and industrial facilities in this state on or after January 1, 2006, a waste heat recovery system installed on or after April 1, 2007, that produces electrical or thermal energy by capturing preexisting waste heat or pressure from industrial or commercial processes, or the electricity savings created in this state from conservation and load management programs begun on or after January 1, 2006;

Sec. 5. Subsection (a) of section 16-243q of the general statutes is repealed and the following is substituted in lieu thereof (*Effective from passage*):

(a) On and after January 1, 2007, each electric distribution company providing standard service pursuant to section 16-244c and each electric supplier as defined in section 16-1 shall demonstrate to the satisfaction of the Department of Public Utility Control that not less than one per cent of the total output of such supplier or such standard service of an electric distribution company shall be obtained from Class III sources. On and after January 1, 2008, not less than two per cent of the total output of any such supplier or such standard service of an electric distribution company shall, on demonstration satisfactory to the Department of Public Utility Control, be obtained from Class III sources. On or after January 1, 2009, not less than three per cent of the total output of any such supplier or such standard service of an electric distribution company shall, on demonstration satisfactory to the Department of Public Utility Control, be obtained from Class III sources. On and after January 1, 2010, not less than four per cent of the total output of any such supplier or such standard service of an electric distribution company shall, on demonstration satisfactory to the Department of Public Utility Control, be obtained from Class III sources. Electric power obtained from customer-side distributed resources that does not meet air and water quality

## Micro-CHP inserts are in 16 pt type

standards of the Department of Environmental Protection is not eligible for purposes of meeting the percentage standards in this section. Notwithstanding section 16-243t, the number of Class III credits supplied by programs supported by the Energy Conservation and Load Management Fund shall not constitute more than twenty-five per cent of the requirements for any calendar year, as set forth in this section, for any electric supplier or electric distribution company providing standard service based on the prior calendar year's load in megawatt hours.

Sec. 6. Section 16-243h of the general statutes is repealed and the following is substituted in lieu thereof (*Effective July 1, 2010*):

On and after January 1, 2000, each electric supplier or any electric distribution company providing standard offer, transitional standard offer, standard service or back-up electric generation service, pursuant to section 16-244c, shall give a credit for any electricity generated by a customer from a Class I renewable energy source or a hydropower facility that has a nameplate capacity rating of two megawatts or less and, on and after the effective date of this section, shall give a credit for any electricity generated by a customer from a combined heat and power system, including micro-combined heat and power and other residential combined heat and power systems. The electric distribution company providing electric distribution services to such a customer shall make such interconnections necessary to accomplish such purpose. An electric distribution company, at the request of any residential customer served by such company and if necessary to implement the provisions of this section, shall provide for the installation of metering equipment that (1) measures electricity consumed by such customer from the facilities of the electric distribution company, (2) deducts from the measurement the amount - of electricity produced by the customer and not consumed by the customer, and (3) registers, for each billing period, the net amount of electricity either (A) consumed and produced by the customer, or (B) the net amount of electricity produced by the customer. If, in a given monthly billing period, a customer-generator supplies more electricity to the electric distribution system than the electric distribution company or electric supplier delivers to the customer-generator, the electric distribution company or electric supplier shall credit the customer-generator for the excess by reducing the customer-generator's bill for the next monthly billing period to compensate for the excess electricity from the customer-generator in the previous billing period at a rate of one kilowatt-hour for one kilowatt-hour produced. The electric distribution company or electric supplier shall carry over the credits earned from monthly billing period to monthly billing period, and the credits shall accumulate until the end of the annualized period. At the end of each annualized period, the electric distribution company or electric supplier shall compensate the customer-generator for any excess kilowatt-hours generated, at the avoided cost of wholesale power. A

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customer who generates electricity from a generating unit with a nameplate capacity of more than ten kilowatts of electricity pursuant to the provisions of this section shall be assessed for the competitive transition assessment, pursuant to section 16-245g and the systems benefits charge, pursuant to section 16-245l, based on the amount of electricity consumed by the customer from the facilities of the electric distribution company without netting any electricity produced by the customer. For purposes of this section, "residential customer" means a customer of a single-family dwelling or multifamily dwelling consisting of two to four units.

This act shall take effect as follows and shall amend the following sections:		
Section 1	<i>from passage</i>	New section
Sec. 2	<i>from passage</i>	16-245a
Sec. 3	<i>from passage</i>	16-243i
Sec. 4	<i>from passage</i>	16-1(a)(44)
Sec. 5	<i>from passage</i>	16-243q(a)
Sec. 6	<i>July 1, 2010</i>	16-243h

**Statement of Purpose:**

To establish an energy savings infrastructure loan program by securitizing certain moneys and leveraging private investments, as well as to commit to a goal of fifty per cent of RPS to be Connecticut-based investments by 2020; to commit to building an energy-based economy; to commit to supporting Connecticut-based technologies; to allow for a financing term equal to the useful life of a technology; to enable financing of technology to be tied to meter rather than property owner; to reduce dependence on foreign fuel and to reduce carbon emissions.

*[Proposed deletions are enclosed in brackets. Proposed additions are indicated by underline, except that when the entire text of a bill or resolution or a section of a bill or resolution is new, it is not underlined.]*

General Assembly

February Session, 2010

**Raised Bill No. 463**

LCO No. 2361

\*02361\_\_\_\_\_ET\_\*

Referred to Committee on Energy and Technology

Introduced by:

(ET)

**AN ACT CONCERNING FINANCING OF ENERGY EFFICIENCY AND RENEWABLE ENERGY.**

Be it enacted by the Senate and House of Representatives in General Assembly convened:

Section 1. (NEW) (*Effective from passage*) (a) As used in this section:

- (1) "Eligible entities" means (1) any residential, commercial, institutional or industrial customer of an electric distribution company or natural gas company, as defined in section 16-1 of the general statutes, as amended by this act, who employs or installs an eligible in-state energy savings technology, (2) an energy service company certified as a Connecticut electric efficiency partner by the Department of Public Utility Control, or (3) an installer certified by the Renewable Energy Investments Fund;
- (2) "Energy savings infrastructure" means tangible equipment, installation, labor, cost of engineering, permits, application fees and other reasonable costs incurred by eligible entities for operating eligible in-state energy savings technologies designed to reduce electricity consumption, natural gas consumption, heating oil consumption or to promote renewable energy technologies or combined heat and power systems; and
- (3) "Eligible in-state energy savings technologies" means Class I renewable energy sources, as defined in section 16-1 of the general statutes, as amended by this act, solar hot water technologies for domestic hot water only, combined heat and power systems with an engineered efficiency rating of not less than sixty per cent, including micro-combined heat and power systems, and energy conservation and load management technologies that reduce energy consumption, including, but not limited to, heating oil, natural gas and electricity

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consumption. Such technologies may include, but not be limited to, high efficiency insulation and windows, boilers and furnaces, commercial burners, high efficiency heating, ventilating and cooling systems and electric energy savings investments and shall be installed and operated within Connecticut.

(b) Each electric distribution company shall establish an energy savings infrastructure loan program to provide \_\_\_ interest loans to eligible entities for investments in energy savings infrastructure through the purchase of eligible in-state energy savings technologies. Each such company shall establish such program for its service territory. Such company shall establish an entity to administer such program within the division or department of each company having cognizance of financial management. Each such division or department shall work with in-state banks and investment organizations to establish private sector funding opportunities.

(c) To qualify for a loan, eligible entities shall meet the following requirements:

(1) For boilers and furnaces, the existing boiler or furnace shall be not less than seven years old with an efficiency rating of not more than seventy-five per cent and the new boiler or furnace shall have an efficiency rating of not less than eighty-four per cent if oil-fired and not less than ninety per cent if gas-fired;

(2) For combined heat and power systems, that the system optimizes fossil fuel consumption for generating electricity and simultaneous thermal energy for space heating, space cooling or process manufacturing requirements;

(3) For Class I renewable energy resources, that such technologies will reduce demand on the grid or fossil fuel consumption; and

(4) For energy conservation and load management technologies, that energy saving measures were reviewed and certified by a licensed contractor with a state license held in good standing.

(d) Eligible entities seeking a loan under the loan program established in this section shall (1) contract with Connecticut-based licensed contractors, installers or tradesmen for the installation of an eligible in-state energy savings technology; (2) provide evidence of the cost of purchase and installation of the eligible in-state energy savings technology; and (3) periodically provide evidence of the operation and functionality of the eligible in-state energy savings technology to ensure that such technology is operating as intended during the term of the loan. If the electric distribution company determines pursuant to this subsection that an eligible in-state energy savings technology has not functioned as intended or designed for more than sixty days, such loan shall be immediately due in full at the discretion of such electric distribution company.

(e) At the request of an eligible entity, electric distribution companies and natural

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gas companies shall provide for repayment of loans made pursuant to this section as part of the loan recipient's monthly electric or gas bill. An eligible entity participating in the loan program established pursuant to this section may transfer their loan to a subsequent property owner if (1) the loan is current, (2) the eligible in-state energy savings technology is functioning as intended or designed, and (3) the new owner agrees to continue to adhere to the operational parameters of the technology. An eligible entity that participates in the loan program may pay back the loan principal with no prepayment penalties. The term of the loan shall be for a period that shall not exceed the lesser of (A) the estimated period needed to pay for one hundred twenty-five per cent of the investment through savings, or (B) the manufacturer's rated useful life of the eligible in-state energy savings technology.

(f) Each electric distribution company shall develop a prescriptive one-page loan application. Such application shall include, but not be limited to: (1) Detailed information, specifications and documentation of the eligible in-state energy technology's installed costs and projected energy savings, and (2) for requests for loans in excess of one hundred thousand dollars, certification by a licensed professional engineer with a state license held in good standing.

(g) No single project shall receive a loan for more than one million dollars and investments in any one eligible in-state energy savings technology shall not exceed twenty-five per cent of the energy savings infrastructure loan account, as established in section 2 of this act. Not less than \_\_\_ per cent of each company's loan program shall be reserved for residential projects and not less than \_\_\_ per cent shall be approved for projects in any one county. Class I renewable energy resources, as defined in section 16-1 of the general statutes, as amended by this act, shall receive not less than \_\_\_ per cent of available funds for such loan program, with the following commitments: (1) \_\_\_ per cent for solar photovoltaic installations, and (2) \_\_\_ per cent for fuel cell installations. Combined heat and power technologies shall receive not less than \_\_\_ per cent of available funds for such loan program. Conservation and load management projects shall receive not less than \_\_\_ per cent of available funds for such loan program.

(h) Each electric distribution company may examine additional funding resources for the energy savings infrastructure loan program, including, but not limited to, American Recovery and Reinvestment Act funds, federally mandated congestion charges, the Renewable Energy Investments Fund, regional greenhouse gas initiative auction revenue and forward capacity market revenue.

(i) On or before October 1, 2010, each electric distribution company shall establish a plan that includes procedures and parameters for its energy savings infrastructure loan program established pursuant to this section and submit such plan to \_\_\_ for approval or modification. The \_\_\_ shall approve or modify such

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plan within thirty days. If the \_\_\_ does not respond within thirty days, the plan shall be deemed to be approved.

(j) On or before January 15, 2011, and annually thereafter, each electric distribution company shall, in accordance with the provisions of section 11-4a of the general statutes, report to the joint standing committee of the General Assembly having cognizance of matters relating to energy with regard to the energy savings infrastructure loan program established pursuant to this section and the loans provided pursuant to such program.

Sec. 2. Section 16-245a of the general statutes is repealed and the following is substituted in lieu thereof (*Effective from passage*):

(a) An electric supplier and an electric distribution company providing standard service or supplier of last resort service, pursuant to section 16-244c, shall demonstrate:

- (1) On and after January 1, 2006, that not less than two per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;
- (2) On and after January 1, 2007, not less than three and one-half per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;
- (3) On and after January 1, 2008, not less than five per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;
- (4) On and after January 1, 2009, not less than six per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;
- (5) On and after January 1, 2010, not less than seven per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;
- (6) On and after January 1, 2011, not less than [eight] seven per cent of the total output or services of any such supplier or distribution company shall be

**Micro-CHP inserts are in 16 pt type**

generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;

(7) On and after January 1, 2012, not less than [~~nine~~] seven and one-half per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;

(8) On and after January 1, 2013, not less than [~~ten~~] eight per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;

(9) On and after January 1, 2014, not less than [~~eleven~~] eight and one-half per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;

(10) On and after January 1, 2015, not less than [~~twelve and one-half~~] nine per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;

(11) On and after January 1, 2016, not less than [~~fourteen~~] nine and one-half per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;

(12) On and after January 1, 2017, not less than [~~fifteen and one-half~~] ten per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;

(13) On and after January 1, 2018, not less than [~~seventeen~~] ten and one-half per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;

**Micro-CHP inserts are in 16 pt type**

(14) On and after January 1, 2019, not less than [nineteen and one-half] eleven per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources;

(15) On and after January 1, 2020, not less than [twenty] eleven and one-half per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources.

(b) An electric supplier or electric distribution company may satisfy the requirements of this section (1) by purchasing certificates issued by the New England Power Pool Generation Information System, provided the certificates are for (A) energy produced by a generating unit using Class I or Class II renewable energy sources and the generating unit is located in the jurisdiction of the regional independent system operator, or (B) energy imported into the control area of the regional independent system operator pursuant to New England Power Pool Generation Information System Rule 2.7(c), as in effect on January 1, 2006; (2) for those renewable energy certificates under contract to serve end-use customers in the state on or before October 1, 2006, by participating in a renewable energy trading program within said jurisdictions as approved by the Department of Public Utility Control; or (3) by purchasing eligible renewable electricity and associated attributes from residential customers who are net producers.

(c) Any supplier who provides electric generation services solely from a Class II renewable energy source shall not be required to comply with the provisions of this section.

(d) An electric supplier or an electric distribution company shall base its demonstration of generation sources, as required under subsection (a) of this section on historical data, which may consist of data filed with the regional independent system operator.

(e) (1) A supplier or an electric distribution company may make up any deficiency within its renewable energy portfolio within the first three months of the succeeding calendar year or as otherwise provided by generation information system operating rules approved by New England Power Pool or its successor to meet the generation source requirements of subsection (a) of this section for the previous year.

(2) No such supplier or electric distribution company shall receive credit for the current calendar year for generation from Class I or Class II renewable energy

**Micro-CHP inserts are in 16 pt type**

sources pursuant to this section where such supplier or distribution company receives credit for the preceding calendar year pursuant to subdivision (1) of this subsection.

(f) The department shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of this section.

(g) (1) Notwithstanding the provisions of this section and section 16-244c, for periods beginning on and after January 1, 2008, each electric distribution company may procure renewable energy certificates from Class I, Class II and Class III renewable energy sources through long-term contracting mechanisms. The electric distribution companies may enter into long-term contracts for not more than fifteen years to procure such renewable energy certificates. The electric distribution companies shall use any renewable energy certificates obtained pursuant to this section to meet their standard service and supplier of last resort renewable portfolio standard requirements.

(2) On or before July 1, 2007, the department shall initiate a contested case proceeding to examine whether long-term contracts should be used to procure Class I, Class II and Class III certificates. In such examination, the department shall determine (A) the impact of such contracts on price stability, fuel diversity and cost; (B) the method and timing of crediting of the procurement of renewable energy certificates against the renewable portfolio standard purchase obligations of electric suppliers and the electric distribution companies pursuant to subsection (a) of this section; (C) the terms and conditions, including reasonable performance assurance commitments, that may be imposed on entities seeking to supply renewable energy certificates; (D) the level of one-time compensation, not to exceed one mill per kilowatt hour of output and services associated with the renewable energy certificates purchased pursuant to this subsection, which may be payable to the electric distribution companies for administering the procurement provided for under this subsection and recovered as part of the generation services charge or through an appropriate nonbypassable rate component on customers' bills; (E) the manner in which costs for such program may be recovered from electric distribution company customers; and (F) any other issues the department deems appropriate. Revenues from such compensation shall not be included in calculating the electric distribution companies' earnings to determine if rates are just and reasonable, for earnings sharing mechanisms or for purposes of sections 16-19, 16-19a and 16-19e.

(3) On or before October 1, 2010, each electric distribution company shall determine (A) the cost of a certain percentage of each electric supplier and electric distribution company's total output or services of any such supplier or company from Class I renewable energy sources, (B) the manner in which such supplier or company shall recover such cost from customers, and (C) the manner in which such supplier or company will deposit such amount into an energy

## Micro-CHP inserts are in 16 pt type

savings infrastructure account, which shall be a separately held account. The costs determined pursuant to subparagraph (A) of this subdivision shall be the present day value pursuant to subdivision (4) of this subsection for the following percentages: (i) In 2011, one per cent; (ii) in 2012, one and one-half per cent; (iii) in 2013, two per cent; (iv) in 2014, two and one-half per cent; (v) in 2015, three and one-half per cent; (vi) in 2016, four and one-half per cent; (vii) in 2017, five and one-half per cent; (viii) in 2018, six and one-half per cent; (ix) in 2019, seven and one-half per cent; and (x) in 2020, eight and one-half per cent.

(4) Each electric distribution company shall determine the present day value of the costs determined pursuant to subdivision (3) of this subsection shall be no less than dollars per megawatt hour and shall not exceed the noncompliance penalty value and submit such determination to the Department of Public Utility Control for approval. Once approved, such amount shall be transferred into a separately held account pursuant to said subdivision (3).

Sec. 3. Section 16-243i of the general statutes is repealed and the following is substituted in lieu thereof (*Effective from passage*):

(a) The Department of Public Utility Control shall, not later than January 1, 2006, establish a program to grant awards to retail end use customers of electric distribution companies to fund the capital costs of obtaining projects of customer-side distributed resources, except in the case of micro-CHP under 10 kW the award shall be \$5,000, as defined in section 16-1, as amended by this act. Any project shall receive a one-time, nonrecurring award in an amount of [not less than] two hundred dollars [and not more than five hundred dollars] per kilowatt of capacity for such customer-side distributed resources, recoverable from federally mandated congestion charges, as defined in section 16-1, as amended by this act. [No such award may be made unless the projected reduction in federally mandated congestion charges attributed to the project for such distributed resources is greater than the amount of the award. The amount of an award shall depend on the impact that the customer-side distributed resources project has on reducing federally mandated congestion charges, as defined in section 16-1. Not later than October 1, 2005, the department shall conduct a contested case proceeding, in accordance with chapter 54, to establish additional standards for the amount of such awards and additional criteria and the process for making such awards.]

(b) The Department of Public Utility Control shall, not later than January 1, 2006, establish a program to grant to an electric distribution company a one-time, nonrecurring award to educate, assist and promote investments in customer-side distributed resources developed in such company's service territory; [which resources the department determines will reduce federally mandated congestion charges, in accordance with the following:] (1) On or before January 1, [2008]

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2011, two hundred fifty dollars per kilowatt of such resources, (2) on or before January 1, [2009] 2012, one hundred [fifty] forty dollars per kilowatt of such resources, (3) on or before January 1, [2010, one hundred] 2013, thirty dollars per kilowatt of such resources, and (4) [fifty] twenty-five dollars per kilowatt of such resources thereafter. Payment of the award shall be made at the time each such resource becomes operational. The cost of the award shall be recoverable from federally mandated congestion charges. Revenues from such awards shall not be included in calculating the electric distribution company's earnings for the purpose of determining whether its rates are just and reasonable under sections 16-19, 16-19a and 16-19e.

Sec. 4. Subdivision (44) of subsection (a) of section 16-1 of the 2010 supplement to the general statutes is repealed and the following is substituted in lieu thereof (*Effective from passage*):

(44) "Class III source" means the electricity output from combined heat and power systems with an operating efficiency level of no less than fifty per cent, determined quarterly on a rolling annual average basis, that are part of customer-side distributed resources developed at residential, commercial and industrial facilities in this state on or after January 1, 2006, a waste heat recovery system installed on or after April 1, 2007, that produces electrical or thermal energy by capturing preexisting waste heat or pressure from industrial or commercial processes, or the electricity savings created in this state from conservation and load management programs begun on or after January 1, 2006;

Sec. 5. Subsection (a) of section 16-243q of the general statutes is repealed and the following is substituted in lieu thereof (*Effective from passage*):

(a) On and after January 1, 2007, each electric distribution company providing standard service pursuant to section 16-244c and each electric supplier as defined in section 16-1 shall demonstrate to the satisfaction of the Department of Public Utility Control that not less than one per cent of the total output of such supplier or such standard service of an electric distribution company shall be obtained from Class III sources. On and after January 1, 2008, not less than two per cent of the total output of any such supplier or such standard service of an electric distribution company shall, on demonstration satisfactory to the Department of Public Utility Control, be obtained from Class III sources. On or after January 1, 2009, not less than three per cent of the total output of any such supplier or such standard service of an electric distribution company shall, on demonstration satisfactory to the Department of Public Utility Control, be obtained from Class III sources. On and after January 1, 2010, not less than four per cent of the total output of any such supplier or such standard service of an electric distribution company shall, on demonstration satisfactory to the Department of Public Utility Control, be obtained from Class III sources. Electric power obtained from customer-side distributed resources that does not meet air and water quality

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standards of the Department of Environmental Protection is not eligible for purposes of meeting the percentage standards in this section. Notwithstanding section 16-243t, the number of Class III credits supplied by programs supported by the Energy Conservation and Load Management Fund shall not constitute more than twenty-five per cent of the requirements for any calendar year, as set forth in this section, for any electric supplier or electric distribution company providing standard service based on the prior calendar year's load in megawatt hours.

Sec. 6. Section 16-243h of the general statutes is repealed and the following is substituted in lieu thereof (*Effective July 1, 2010*):

On and after January 1, 2000, each electric supplier or any electric distribution company providing standard offer, transitional standard offer, standard service or back-up electric generation service, pursuant to section 16-244c, shall give a credit for any electricity generated by a customer from a Class I renewable energy source or a hydropower facility that has a nameplate capacity rating of two megawatts or less and, on and after the effective date of this section, shall give a credit for any electricity generated by a customer from a combined heat and power system, including micro-combined heat and power and other residential combined heat and power systems. The electric distribution company providing electric distribution services to such a customer shall make such interconnections necessary to accomplish such purpose. An electric distribution company, at the request of any residential customer served by such company and if necessary to implement the provisions of this section, shall provide for the installation of metering equipment that (1) measures electricity consumed by such customer from the facilities of the electric distribution company, (2) deducts from the measurement the amount - of electricity produced by the customer and not consumed by the customer, and (3) registers, for each billing period, the net amount of electricity either (A) consumed and produced by the customer, or (B) the net amount of electricity produced by the customer. If, in a given monthly billing period, a customer-generator supplies more electricity to the electric distribution system than the electric distribution company or electric supplier delivers to the customer-generator, the electric distribution company or electric supplier shall credit the customer-generator for the excess by reducing the customer-generator's bill for the next monthly billing period to compensate for the excess electricity from the customer-generator in the previous billing period at a rate of one kilowatt-hour for one kilowatt-hour produced. The electric distribution company or electric supplier shall carry over the credits earned from monthly billing period to monthly billing period, and the credits shall accumulate until the end of the annualized period. At the end of each annualized period, the electric distribution company or electric supplier shall compensate the customer-generator for any excess kilowatt-hours generated, at the avoided cost of wholesale power. A

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customer who generates electricity from a generating unit with a nameplate capacity of more than ten kilowatts of electricity pursuant to the provisions of this section shall be assessed for the competitive transition assessment, pursuant to section 16-245g and the systems benefits charge, pursuant to section 16-245l, based on the amount of electricity consumed by the customer from the facilities of the electric distribution company without netting any electricity produced by the customer. For purposes of this section, "residential customer" means a customer of a single-family dwelling or multifamily dwelling consisting of two to four units.

This act shall take effect as follows and shall amend the following sections:		
Section 1	<i>from passage</i>	New section
Sec. 2	<i>from passage</i>	16-245a
Sec. 3	<i>from passage</i>	16-243i
Sec. 4	<i>from passage</i>	16-1(a)(44)
Sec. 5	<i>from passage</i>	16-243q(a)
Sec. 6	<i>July 1, 2010</i>	16-243h

**Statement of Purpose:**

To establish an energy savings infrastructure loan program by securitizing certain moneys and leveraging private investments, as well as to commit to a goal of fifty per cent of RPS to be Connecticut-based investments by 2020; to commit to building an energy-based economy; to commit to supporting Connecticut-based technologies; to allow for a financing term equal to the useful life of a technology; to enable financing of technology to be tied to meter rather than property owner; to reduce dependence on foreign fuel and to reduce carbon emissions.

*[Proposed deletions are enclosed in brackets. Proposed additions are indicated by underline, except that when the entire text of a bill or resolution or a section of a bill or resolution is new, it is not underlined.]*