

The Role of EE In Connecticut Integrated Resource Plan and ISO Forward Capacity Auction



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Connecticut Department of Public Utility Control

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CT Integrated Resource Plan Process for Development

**2 EDCs submit annual comprehensive resource plan
to CT Energy Advisory Board (CEAB)**



**CEAB reviews IRP
then submits, with/without modifications, to DPUC**



**DPUC initiates docket review of IRP
process open to input from EDCs, other Parties, interested persons**



**DPUC approves/modifies IRP in Docket Decision
or makes recommendations for future planning**



EDCs implement annual IRP as approved/modified by DPUC



DPUC Review of CT Integrated Resource Plan

Docket 08-07-01 (Feb. 18, 2009)

Legal Requirements of IRP per CT Statute

- IRP must meet the projected requirements of customers so as to minimize the cost of resources to customers over time & maximize consumer benefits
- IRP must be consistent with the state's environmental goals & standards
- EDCs, in consultation with the CEAB must review the state's energy & capacity resource assessment
- Develop a comprehensive plan for the procurement of energy resources, including, but not limited to:
 - conventional & renewable generating facilities
 - **energy efficiency, load management, demand response, CHP facilities**
 - distributed generation & other emerging energy technologies



DPUC Review of CT Integrated Resource Plan

Docket 08-07-01 (Feb. 18, 2009)

Legal Requirements of IRP per CT Statute (continued)

- Resource needs are to first be met through all available energy efficiency and demand reduction resources that are cost-effective, reliable & feasible
- The projected customer cost impact of any demand-side resources considered be reviewed on an equitable basis with other resources



ISO-NE Forward Capacity Market Forward Capacity Auction Documentation

Documentation includes:

1. Show of Interest Application for Demand Response

2. Qualification Documentation Package

- **Types of measures & facilities of implementation**
- **Estimated Demand Reduction (kW) per measure and/or per customer facility**
- **Source of Funding**
- **Customer Acquisition Plan including:**



ISO-NE Forward Capacity Market Forward Capacity Auction Qualification Documentation Package

Qualification Documentation Package (cont'd):

- **Measurement & Verification (M&V) plan** - (that complies with Market Rules)
- **Critical Path Schedule for DR projects**

FCA Performance Monitoring & Milestone Deliverables are applicable to Demand Resources

ISO-NE FCA#2 Demand Response Results

FCA#2 Cleared MW

Measure Type by Load Zone - New

CT = 50% of EE in FCA#2

LOAD ZONE	Distributed	Distributed	Energy Efficiency	RTDR	RTEG	Total Cleared MW
	Generation Fossil Fuel	Generation Renewable				
CT	28.652	0.000	114.900	17.910	0.000	161.462
ME	0.000	0.000	0.000	0.552	0.000	0.552
NEMA	6.541	0.000	35.183	71.541	2.000	115.265
NH	0.000	0.000	12.921	4.449	0.000	17.370
RI	0.000	0.000	13.787	4.398	0.000	18.185
SEMA	0.000	0.000	21.193	73.410	2.000	96.603
VT	0.000	0.000	10.309	2.008	0.000	12.317
West/Central Mass (WCMA)	0.000	0.000	19.764	10.722	1.000	31.486
Grand Total	35.193	0.000	228.057	184.990	5.000	453.240

Source: ISO-NE Demand Resources Dept. – FCA#2 DR Results ppt, May 6, 2009



CT Program Savings Documentation Manual M&V for EE Measures

In 2006, FERC settlement created an ISO-NE Forward Capacity Market

- **ISO-NE must now project region's energy needs 3 years in advance & conduct a Forward Capacity Auction (FCA) to purchase resources to satisfy future needs**
- **CL&P and UI submit new DR/EE projects into ISO-NE's FCA**
- **Per ISO-NE requirements, M&V Plans are submitted**
- **The PSD Manual provides the detailed cost/savings calculations for the individual EE technologies**

Sample CT PSD Manual page excerpt

2.2.2 C&ILO COOLING - UNITARY AC & HEAT PUMPS

Description of Measure

This measure encourages the installation of efficient Direct-Expansion (DX) cooling systems for C&I customers.

Method for Calculating Energy Savings

Cooling (A/C units and Air Source Heat Pumps)

$$\text{Annual kWh savings} = \text{Cap} * \left(\frac{1}{\text{EER}_B} - \frac{1}{\text{EER}_I} \right) * \frac{1}{1000} * \text{EFLH}_C$$

EFLH_c = Refer to Table 2.0.0

Heating (Air source heat pumps only)

$$\text{Annual kWh savings} = \text{Cap} * \frac{13,900}{12,000} * \left(\frac{1}{\text{HSPF}_B} - \frac{1}{\text{HSPF}_I} \right) * \frac{1}{1000} * \text{EFLH}_H$$

EFLH_h = Refer to Table 2.0.0

Cap = Unit's rated cooling capacity in Btu/h

EER_i = Installed unit's rated energy efficiency ratio

EER_b = Baseline energy efficiency ratio from Table 2.3

(Note: SEER_p and SEER_b are used for units < 5.4 tons)

HSPF_b = Baseline Heating seasonal performance factor, watt-hours per MBtu heat input, from ASHRAE 90.1-2004, Table 6.8.1B.

HSPF_i = installed Heating seasonal performance factor

EFLH_c = equivalent full load hours cooling

EFLH_h = equivalent full load hours heating

1000 = converts Wh to kWh

Ratio 13900/12000 = ratio of heat produced in the heating mode divided by cooling produced in the cooling mode.