

Procurement Plan:  
Status Report -  
Conclusion of Stakeholder Input Process

## ***Procurement Plan Status Report – Today's Discussion***

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- I. Overview of Utility Plan and CEAB Response**
- II. Report on Stakeholder Workshops**
  - **Process and Issues**
- III. CEAB and Utility Collaboration on Additional Analysis**
- IV. Remaining Activities and Timing**

## **I. Overview of Filed Utility Plan and CEAB Response**

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- ❑ Legislatively Prescribed Procurement Planning Process
- ❑ January 2008 Plan filed Jointly by CL&P and UI
- ❑ CEAB Initial Review – February, 2008
- ❑ Public Comment/Hearing on Utilities' Plan
- ❑ CEAB Process for Modifying Utilities' Plan
  - Stakeholder Input Workshops
  - Collaborative Analysis CEAB consultants and utilities

## **CEAB Process for 2008 Plan**

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- **Objectives**

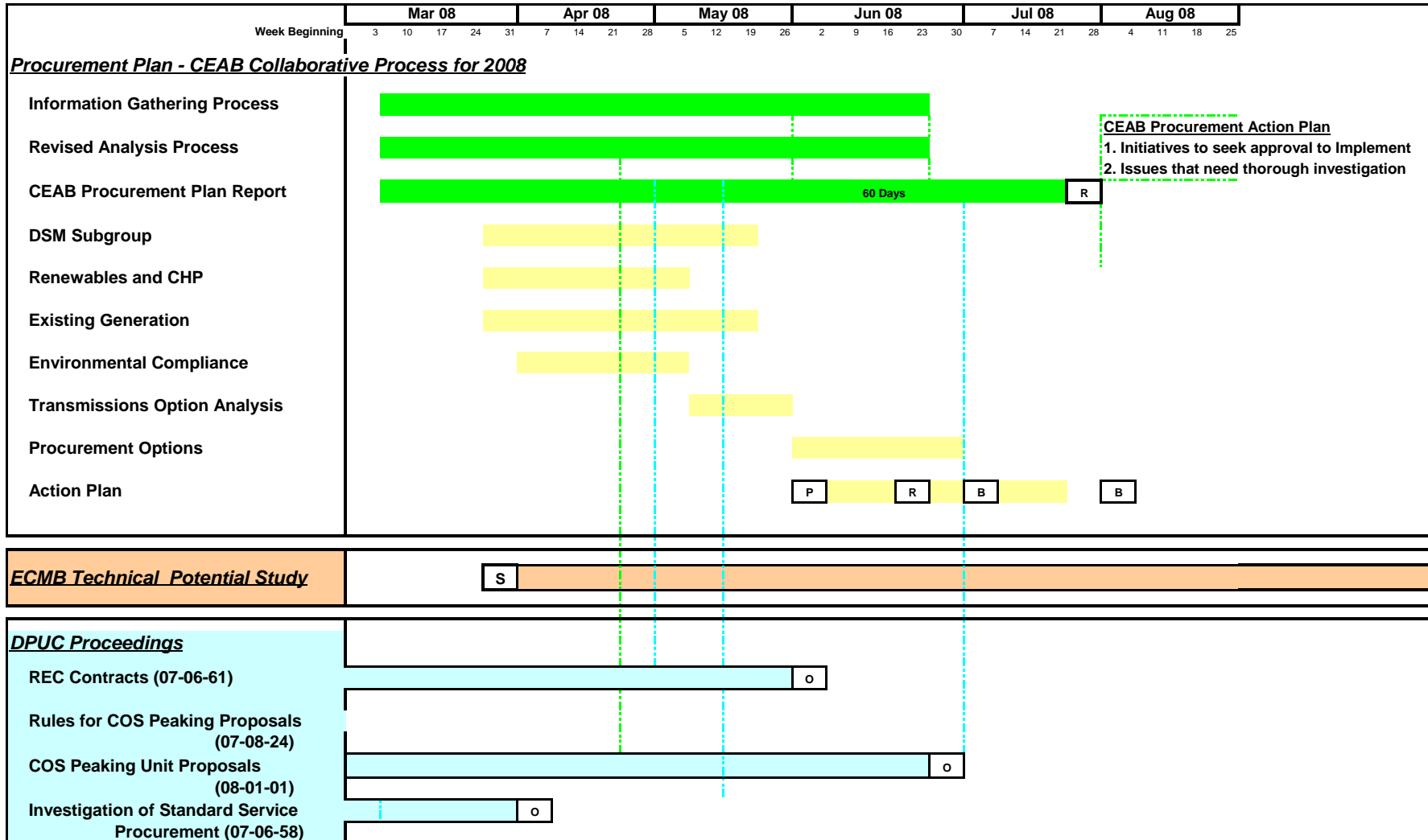
1. A 2008 Plan with recommendations for procurement actions
2. Address Key Issues Identified in the review process
3. CEAB-Utilities collaboration with key stakeholder input
4. Provide the DPUC a well-considered 2008 Plan for 120 day review
5. Develop the Planning Process to expedite 2009 and future planning cycles

## ***Stakeholder Input Process – Focus on Key Areas***

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- Demand Management
  - Focus on funding mechanism for aggressive program approaches
- Renewable Energy
  - Examine CCEF outlook for meeting RPS requirements
- Environmental Compliance
  - Address ground level ozone emissions regulations
- Connecticut Generation
  - Examine ability to rely on continued operation of older steam-based generation throughout the next 10+ years
- Transmission
  - Integrate transmission options and studies into analysis

# Stakeholder Input and Collaborative Analytical Process



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## ***Collaboration Process in 2008 Modified Plan***

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### ■ **CEAB and Utilities Collaboration**

- Goal: Address Key Issues Jointly to the extent possible
- Ultimately, August 1, 2008 Plan will be a CEAB Plan

### ■ **Key Stakeholder Input**

- Several stakeholders offered to assist in comments
- Overview of CEAB process presented to Stakeholders March 13th
- Many have key information and necessary input
- Workshops held with targeted stakeholders that have important information to capture for consideration in the Plan

## Demand Management – Recommendation to Move to DSM Focus

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### **Information and Direction**

- **Reviewed DSM analysis basis for scope, cost and practical potential** of the expansion of Energy Efficiency and Price Responsive Demand
  - Cost effectiveness process
  - Capability to ramp up programs
  - Funding Sources for DSM expansion
- **ECMB asked CEAB to formally support its request to the DPUC** to immediately bring energy efficiency funding to the levels established as economic in the utilities projects and identified
- ECMB expects **high consumer demand levels** for programs is an indicator of the capability to aggressively scale up programs.
- **DSM Focus is a legitimate resource** case pending outcome of DSM potential study for energy efficiency and demand response
- **DSM Focus levels of savings should be a fundamental planning assumption** for evaluation of generation and transmission needs and emissions implications

## Demand Management – Recommendation to Move to DSM Focus

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### **Qualifiers**

- The DPUC has not approved the a long range funding plan
- Revised assessments of programs will occur annually in ECMB budget approval process
- A more detailed look at the potential will be available in the Fall of 2008
- Levels of programs both energy efficiency and demand response is unprecedented

### **Stakeholders**

- Utilities, ECMB, Environment Northeast, AARP, First Light Power

### **Workshops**

- Workshops held April 11 and May 2

## Renewable Energy

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### **Information and Direction**

- Renewable project development that includes **long term contracts should result in REC prices closer to a cost basis** than to ACP
- **Renewables should be modeled in scenarios with associated transmission projects**
- Each scenario will incorporate state by state results of **supply curve analysis**
- **REC pricing will be phased in to be based on primarily long term contract prices** for RECs substantially below ACP
- Result: in **3 of the 4 scenarios RPS requirements should be met**

## Renewable Energy

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### **Qualifiers**

- Long Term REC contracting is not prevailing policy in region
- Projected renewable capacity used in the subsequent analysis will be based on resource potential, not specific projects under development
- The Plan should discuss dynamics of long term contracting, project development and REC pricing

### **Stakeholders**

- Utilities, CCEF, Environment Northeast, AARP

### **Workshops**

- Workshops held April 2, 17 and May 5
- Other calls with CCEF consultants

## Environmental Compliance

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### **Information and Direction**

- **Initiated dialogue between DEP, utilities and Connecticut Generation owners**
- **Established scenario assumptions** for individual Electric Generation Unit (EGU) for each scenario
- Establishing planning levels for Statewide compliance of individual pollutants, particularly NOX and CO2
- Apply **multiple scenarios/cases for individual EGU emission rate levels** for NOx, Sulfur, CO2 and HG to modeling effort of utilities
- Apply multiple scenarios/cases for statewide targets/caps of individual pollutants
- **Metrics to be produced to demonstrate plan impacts on High Electric Demand Days (HEDD)** emissions to enable future working group efforts be captured in procurement planning

## Environmental Compliance

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### **Qualifiers**

- Supplemental analysis will build-in DEP air quality regulation changes that are contemplated but not yet adopted
- Generator response to evolving regulations could vary from analytical results that the collaborative with utilities will produce

### **Stakeholders**

- Utilities, CCEF, Environment Northeast, AARP

### **Workshops**

- Workshops held April 14 and May 5
- Numerous discussions with DEP staff

## Connecticut Generation

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### **Information and Direction**

- **Initiated dialogue between DEP, utilities and Connecticut Generation owners on continued operation costs**
- **Attempted to secure support of generators to provide:**
  1. A primer on the way a generating company looks at continued operation of older generation.
  2. Cost estimates for these relevant categories by generating unit technology.
  3. Individual owners' sponsored best available public information to be used with specific units in economic analysis.
  4. Support in applying the correct 'potential' retrofit projects, i.e., emissions reduction technologies, for the each unit.
- **NRG provided technical expertise in identifying likely environmental compliance retrofit projects**
- **Generation companies via NEPGA maintain the appropriateness of FERC level revenue requirement costs as the proper GFC for determining continued operation**

## Connecticut Generation

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### **Qualifiers**

- **No consensus** on how to estimate economic obsolescence
- CEAB analysis will assume utility GFC and environmental compliance project costs in determining likely retirement cases
- Generator response to evolving regulations could vary from analytical results the collaborative with utilities will produce.

### **Stakeholders**

- Utilities, DEP, Environment Northeast, AARP, NRG, PSEG, Competitive Power Ventures, NEPGA, First Light Power

### **Workshops**

- Workshops held April 2, 17 and May 5
- Numerous discussions with NRG, First Light and NEPGA

## Transmission Considerations

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### **Information and Direction**

- Meetings with ISO and stakeholders (plus PAC meetings) established views on:
  - Needs Assessment & Options Analysis Report
  - 2010 FCM Delisting Process Reliability Assessment
  - Additional Connecticut Areas of Concern (from Nov 07 PAC)      ISO-NE
  - LFRM & Daily Second Contingency Dispatch Requirements
  - ISO studies on Transmission requirements to support renewable generation build out
- Plan to run indicative analysis comparing in state generation v. substantial transmission investment

## Transmission Considerations

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### **Qualifiers**

- ISO-NE analysis on transmission to support renewables not yet complete
- Analysis must capture some transmission projects in Maine
- Connecticut should not be a capacity zone with NEEWS
- Phase II of the current CT Transmission project and the CT procurement dramatically reduce requirements for operating reserves

### **Stakeholders**

- Utilities, NRG, PSEG, Competitive Power Ventures, NEPGA, First Light Power, ISO-NE

### **Workshops**

- Workshop held May 14
- Additional meeting to be scheduled with Northeast Utilities

## ***Procurement Plan Status Report – Today's Discussion***

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**III. CEAB and Utility Collaboration on Additional Analysis**

*IV. Remaining Activities and Timing*

### **III Collaborative Analytical Effort with the Utilities**

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- **Many questions need to be addressed for complete IRP and Procurement analysis**
- **With utilities, we are prioritizing the analysis to be finalized in next few weeks**
- **Future analytical agenda to be established**

## **THEMES TO REPORT ON IN CEAB REPORT**

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### **1. DSM Focus**

1. Economics
2. Potential
3. Risks

### **2. Renewable Energy**

1. Economics Potential
2. Current Project Potential
3. Renewable Resource developable potential vs. RPS
4. Need for and benefits of long term REC contracting
5. Results of Supply curve build out approach

### **3. Outlook for existing Connecticut Generation**

1. Economics of Continued Operation in FCM Market
2. Impact of tightening emissions on Continued Operations
3. Retirement potential

\* LSR impact ,LFRM impact, Emissions Profile Impact, Transmission build requirements

## **THEMES TO REPORT ON IN CEAB REPORT (cont'd)**

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### **4. Comparison of Connecticut to Outside Connecticut generation builds**

- LMP suppression
- Transmission Build requirements
- Capacity Zone Risk

### **5. Indicative analysis of Non-Transmission Alternatives to NEEWS**

### **6. The Value of Hedging through**

1. Standard Service long-term purchases
2. Contracting for Renewables Energy, Capacity and RECs
3. In State ICAP
4. New OPCAP
5. Energy Block Purchasing Long-term
6. COS Generation
  1. Existing Capacity
  2. New Capacity

## Analysis Prioritization Process

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- **Establish a new analytical baseline**
  - **Current Trends Scenario**
  - **Renewable Energy Build out that meets RPS**
  - **DSM Focus**
  - **Emission rate limits set at lower / next step DEP levels**
  - **Provide additional metrics for HEDD demand day and summer NOx measurements**
  
- **Review Metrics**
  - **Establish a few limited alternative cases**
    - Transmission changes
    - Nuclear injection
    - .....

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## Remaining Milestones – approximate dates

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- **June 26th - Preview of results to subcommittee**
  - Scenario Metric Analysis*
  - Resource Considerations and Analyses*
  - Procurement Options*
  - Costs, Benefits and Risks*
  - Recommendations*
  - Proposed Report Outline*
- **June 30th- Preview for July 11th CEAB Meeting**
  - Revised PowerPoint Presentation on Results and recommendations*
- **July 3rd material distribution for June CEAB Meeting**
  - Present PowerPoint on recommendations and results*
- **July 11th CEAB Meeting**
  - Present Results*
  - Vote On Recommendations*
- **July 21st Circulate Draft Report for Comment**
- **July 25th Send Final Report to the Board in their Monthly Package**
- **August 1st CEAB Meeting**
  - Vote on Plan*

***Supporting Material – Not to be Presented unless  
needed within the Discussion***

## **I. Overview of Filed Utility Plan and CEAB Response**

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- ❑ Legislation and the Prescribed Procurement Planning Process
- ❑ The January 2008 Plan filed Jointly by CL&P and United Illuminating
- ❑ CEAB Initial Review – February, 2008
- ❑ Public Comments on the Utilities' Procurement Plan
- ❑ Revised CEAB Process for Modifying the Utilities' Plan
  - Stakeholder Input Workshops
  - Collaborative Analysis CEAB consultants and the utilities

## *Procurement Planning Process Statutory Timeline*

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- **Utilities jointly develop a Connecticut Procurement Plan**
- **Utilities present the plan for CEAB review on January 1, 2008**
  - **Utilities and their consultant Brattle Group make a presentation to the CEAB on January 4, 2008**
- **CEAB has 120 days for 2008 cycle to review and analyze the Utilities' plan.**
  - **Future years the CEAB will have 60 days**
- **CEAB approves or modifies and approves the plan then submits the plan to the DPUC by May 1, 2008**
- **DPUC conducts a review of the filed plan, 120 days**
  - **Future years the DPUC will have 60 days**

## *The January 2008 Plan filed Jointly by CL&P and UI*

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### **Findings**

1. Regional resource adequacy needs are satisfied for the next several years.
2. Connecticut's local resource adequacy needs are satisfied for the foreseeable future.
3. Market prices will continue to be high and volatile.
4. Natural gas dependence will persist.
5. External, uncontrollable factors are the primary drivers of customer costs
6. Renewable Portfolio Standards are unlikely to be fully met with renewable generation.
7. Nuclear and DSM mitigate CO<sub>2</sub> emissions more effectively than other resource solutions.
8. Increased DSM could reduce customer Costs, CO<sub>2</sub> emissions, and gas usage.
9. Non-gas base load generation would reduce dependence on natural gas.
10. "Market Regime" vs. "Cost-of-Service" affects rate stability, and may have future customer cost implications.

### **Recommendations**

1. Maximize the use of demand side management (DSM), within practical operational and economic limits, to reduce peak load and energy consumption.
2. Explore other power procurement structures such as longer term power contracts on a cost-of-service basis with merchant and utility owners of existing and new generation.
3. Evaluate the structure and costs of Connecticut's renewable portfolio standard (RPS) in the context of a regional re-examination of the goals and costs of similar policies in New England.
4. Consider potential ways to mitigate the exposure of Connecticut consumers to the price and availability of natural gas (though it will not be possible to eliminate gas dependence).

## *The January 2008 Plan filed Jointly by CL&P and UI*

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- **Study Components**

1. Quantify the need for additional resources across a range of scenarios.
2. Identify potential resource solutions (supply & demand-side) to meet needs.
3. Evaluate the performance of resource solutions.
4. Recommend resource strategies.

### **Regional Scope & Time Horizon**

- ISO-New England electric market simulation
- Modeled years 2011, 2013, 2018 and 2030

- **Methodology**

- Four Scenarios
- Five future generation addition cases
  - *Conventional, DSM Focus, Coal and Nuclear*

- **Metrics**

- Customer Cost, Market Price, Gas Dependence, Emissions....

## **Procurement Plan Scenario Summary**

<b>Scenario Name</b>	<b>Fuel Prices</b>	<b>Load</b>	<b>Cost / Siting</b>	<b>CO<sub>2</sub> Price</b>
<b>“Current Trends”</b>	Moderate	Moderate	Nominal (high)	Moderate (high)
<b>“Strict Climate”</b>	Slightly High	Slightly Low	Nominal (high)	High
<b>“High Fuel/Growth”</b>	Very High	High	Higher	Somewhat Higher
<b>“Low Stress”</b>	Low	Very High	Moderate	Moderate (high)

# Study Architecture

**4 Resource Solutions**

## 4 Scenarios

	Current Trends	Strict Climate	High Fuel/ Growth	Low Stress
Conventional Gas	Metrics	Metrics	Metrics	Metrics
DSM-Focus	Metrics	Metrics	Metrics	Metrics
Nuclear	Metrics	Metrics	Metrics	Metrics
Coal	Metrics	Metrics	Metrics	Metrics

**2030**

**2018**

**2013**

**2011**

**Metrics:**

- Customer Cost
- Market Price
- Gas Dependence
- Emissions
- ...

## Identify Candidate Resource Solutions

Resource Solution	Planned DSM *	Candidate Resources	Additional Gas
“Conventional Gas”	Aggressive	<b>Gas-fired CCs and CTs</b> Economic mix of technologies	As needed to fill rest of gap
“DSM-Focus”	Aggressive	<b>Additional DSM**</b> by 2011: +160 MW, 370 GWh by 2013: +320 MW, 1000 GWh by 2018: +603 MW, 2600 GWh	As needed to fill rest of gap
“Nuclear”	Aggressive	<b>1 Nuclear Unit in 2018</b> (1200 MW)	As needed to fill rest of gap
“Coal”	Aggressive	<b>1 Coal Unit in 2018</b> (1200 MW)	As needed to fill rest of gap

\* DSM effectiveness (on reducing peak load MW & energy GWh) depends on scenario.

\*\* Values shown are for Current Trends scenario.

## CEAB Initial Review – Summary Scorecard

Plan Compliance with the Requirements of PA 07-242 Section 51(b): January 1, 2008 Plan Contents

<b>Section 51, Part (b): On or before January 1, 2008, the companies shall submit to the Connecticut Energy Advisory Board an assessment of:</b>	
<b>Requirement</b>	<b>Degree of Compliance</b>
1) the energy and capacity requirements of customers for the next 3, 5 and 10 years	<b>FULL</b>
2) the manner of how best to eliminate growth in electric demand	<b>PARTIAL</b>
3) how best to level electric demand in the state by reducing peak demand and shifting demand to off-peak periods	<b>PARTIAL</b>
4) the impact of current and projected environmental standards, including, but not limited to, those related to greenhouse gas emissions and the federal Clean Air Act goals and how different resources could help achieve those standards and goals	<b>LOW</b>
5) energy security and economic risks associated with potential energy resources	<b>PARTIAL</b>
6) the estimated lifetime cost and availability of potential energy resources	<b>PARTIAL</b>

## CEAB Initial Review – Summary Scorecard

Plan Compliance with the Requirements of PA 07-242 Section 51(b): January 1, 2008 Plan Contents

<p><b>Section 51, Part (c): Resource needs shall first be met through all available energy efficiency and demand reduction resources that are cost-effective, reliable and feasible. The projected customer cost impact of any demand-side resources considered pursuant to this subsection shall be reviewed on an equitable basis with non demand-side resources. The procurement plan shall specify:</b></p>	
Requirement	Degree of Compliance
1) the total amount of energy and capacity resources needed to meet the requirements of all customers,	<b>FULL</b>
2) the extent to which demand-side measures, including efficiency, conservation, demand response and load management can cost-effectively meet these needs,	<b>FULL</b>
3) needs for generating capacity and transmission and distribution improvements,	<b>PARTIAL</b>
4) how the development of such resources will reduce and stabilize the costs of electricity to consumers, and	<b>PARTIAL</b>
5) the manner in which each of the proposed resources should be procured, including the optimal contract periods for various resources.	<b>LOW</b>

## CEAB Initial Review – Summary Scorecard

Plan Compliance with the Requirements of PA 07-242 Section 51(b): January 1, 2008 Plan Contents

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<b>Section 51, Part (d): The procurement plan shall consider</b>	
<b>Requirement</b>	<b>Degree of Compliance</b>
1) Approaches to maximizing the impact of demand-side measures;	<b>FULL</b>
2) the extent to which generation needs can be met by renewable and combined heat and power facilities;	<b>PARTIAL</b>
3) the optimization of the use of generation sites and generation portfolio existing within the state;	<b>LOW</b>
4) fuel types, diversity, availability, firmness of supply and security and environmental impacts thereof, including impacts on meeting the state's greenhouse gas emission goals;	<b>PARTIAL</b>
5) reliability, peak load and energy forecasts, system contingencies and existing resource availabilities;	<b>PARTIAL</b>
6) import limitations and the appropriate reliance on such imports; and	<b>FULL</b>
7) the impact of the procurement plan on the costs of electric customers.	<b>PARTIAL</b>

*CEAB Initial Review – February 1, 2008 Board Discussion*

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- **Concern expressed about the lack of consideration given to the following:**
  - **Existing Connecticut generation unit retirements**
  - **Environmental compliance needs**
  - **Transmission Project and alternatives**
- **There was consensus of the board that the document is highly inadequate and does not meet the mandates of the legislation.**
- **There was consensus that a final decision on a course of action should be delayed until public comment was in and the February 11th public hearing complete to see if they provided any insights relevant to making a decision on a course of action.**

## **Synopsis of Public Comment**

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- **Written Comments**

- Twenty sets of written comments from organizations
- Over forty emails from individuals

- **Comments at Public Hearing**

- Over a dozen speakers from commenting organizations
- Brattle Group, the Companies' consultant
- Transcripts prepared

## **Recommendation 1: Maximize DSM**

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- **Summary of Comments**

- ECMB and many others strongly support
- Most individual emails addressed this point
- Several comments expressing concerns on feasibility, cost, and reliability

- **Observations:**

- Recommendation is consistent with Sect 51(c) emphasis
- The Plan uses best available information to assess this goal
- Further work needed on implementation and integration

## ***Recommendation 2: Explore Long Term Contracts***

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- **Summary of Comments**

- Several cautionary comments on L-T contracts
- Several recommendations for further inquiry
- Comments on the value for Renewable projects

- **Observations:**

- The Plan is not offered as a Procurement Plan
- This area warrants attention; clearly requires further work

## **Recommendation 3: Evaluate RPS Structure**

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- **Summary of Comments**

- Several comments differed with the Plan's renewables analysis
- Several noted the lack of a CT potential assessment
- CCEF analysis points to several omissions

- **Observations:**

- The Plan would benefit from added information
- More investigation of compliance with current RPS is useful
- This area warrants attention; clearly requires further work

## **Recommendation 4: NG Exposure Mitigation**

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- **Summary of Comments**

- Some note that DSM and renewables would meet this need
- AG proposes a refund mechanism
- Some note that permitting and siting improvements are key

- **Observations:**

- The issue is complex and interconnected with other issues
- This area warrants attention; clearly requires further work

## ***Other Key Issues Addressed in the Status Report***

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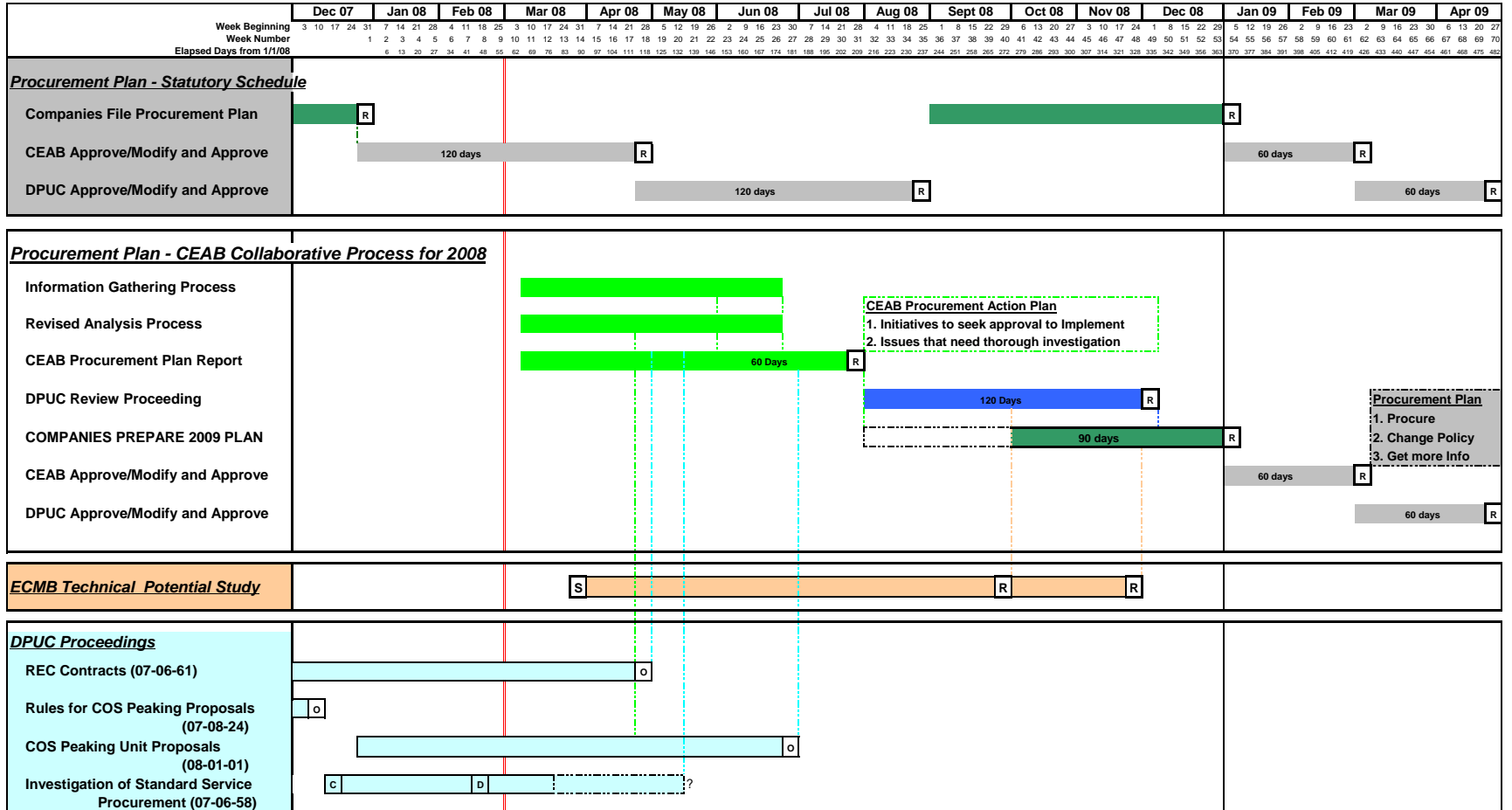
- **Overall Statutory Compliance**
- **Transmission Analysis**
- **Assumptions Concerning Generation Retirements**
- **Availability and Advancements in Technology**
- **Return to Cost of Service**

## ***Process Proposal for 2008 and 2009 Plans***

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### ■ **Objectives**

1. A 2008 Plan containing recommendations for procurement actions needed in 2008
2. Address the Key Issues ID'ed in the review process
3. CEAB-Utilities collaboration with key stakeholder input
4. Provide the DPUC a well-considered Plan for 120 day review in 2008
5. Develop the Planning Process to expedite 2009 and future cycles of the process



## ***Process Proposal – Collaboration Process***

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### **■ CEAB and Utilities Collaboration**

- Goal to address Key Issues Jointly, to the extent possible
- Ultimately, August 1, 2008 Plan will be a CEAB Plan

### **■ Key Stakeholder Input**

- Several stakeholders have offered to assist through comments
- Many of these have key information and input needed
- Workshops targeted to stakeholders that have important information will be conducted to assure this input is captured for consideration in the Plan

## ***Procurement Plan Status Report – Today's Discussion***

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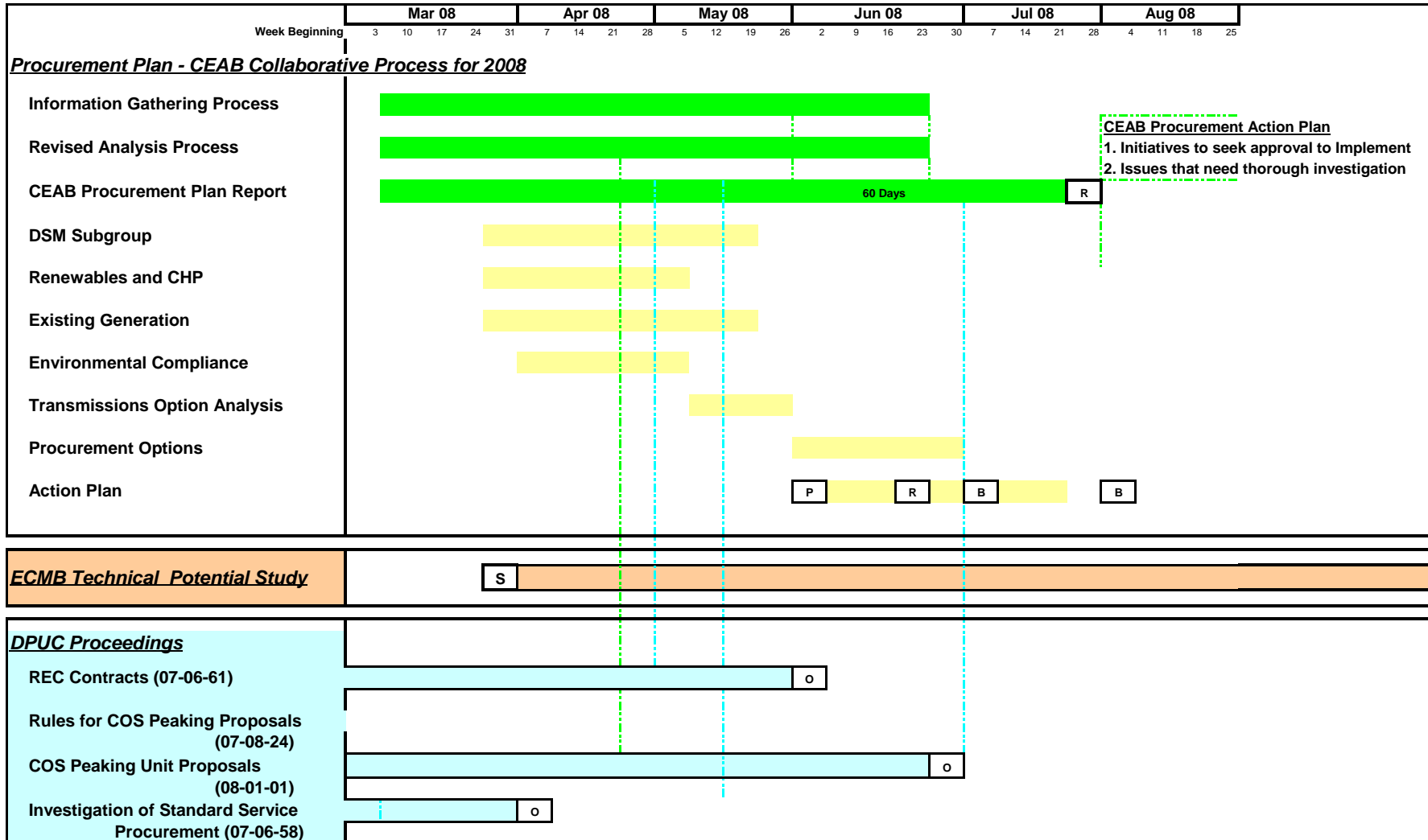
## **Stakeholder Input Process - Scope**

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### **Information Gathering: focus on key areas:**

- **Demand Management** – review Utilities recommendation to dramatically increase Energy Efficiency and Price Responsive Demand funding
- **Renewable Energy** – reconcile the utility perspective with that of the CCEF regarding the outlook for meeting RPS requirements.
- **Environmental Compliance** – integrate into the analysis the impacts of the continued reliance on older high emissions generating capacity
- **Connecticut Generation** – work with utilities and the Connecticut generation owners to incorporate a more realistic viewpoint of the ability to rely on the continued operation of older steam-based generation throughout the next 10 plus years.
- **Transmission** – develop additional analysis showing the impact transmission projects will have on economics, installed capacity, operable capacity, operating reserve, and statewide emissions.
- **Procurement Options** – analyze the most beneficial ‘procurement’ actions to meet the multiple objectives of minimizing ratepayer costs, emissions compliance and reliability.

# Stakeholder Input and Collaborative Analytical Process



## Demand Management

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### 1. Issues

- The utilities analysis of the DSM was a comprehensive analysis working collaboratively with the Energy Conservation Management Board (ECMB) showed large additional potential of the DSM Focus 'resource' level
- Updated both energy efficiency and demand response program effects
- Adjustments were made to account for vintage of DSM economic potential study which is being updated this year and should be available by the Fall 2008
- Concern expressed on scaling programs versus economic analysis
- Concerns on the deliverability
- Concerns on additional funding source requirements

### 2. Stakeholders

- Utilities, ECMB, Environment Northeast, AARP, First Light Power

### 3. Workshops

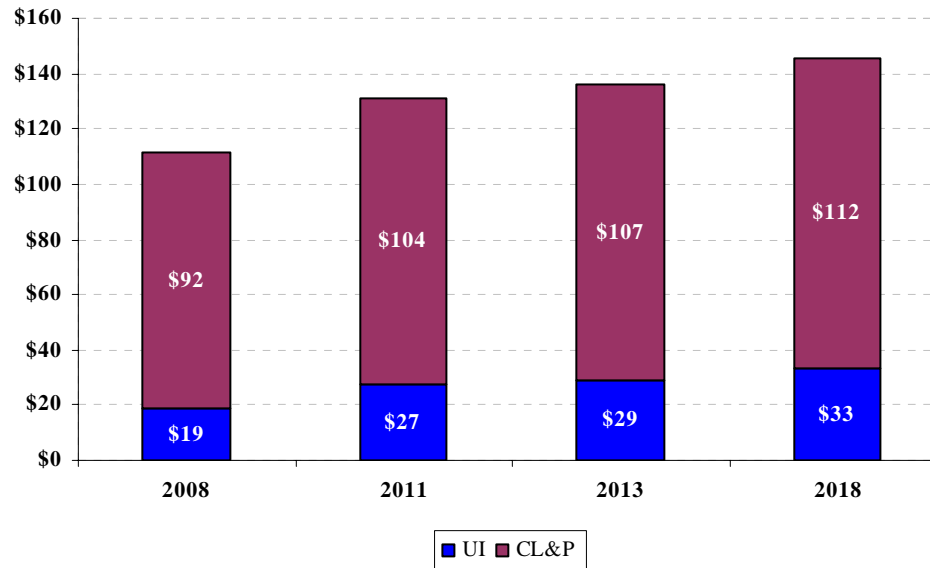
- Workshops held April 11 and May 2

## Utilities' Analysis - DSM Funding Level Assumptions show aggressive growth

- Table D.8: Reference Level DSM Annual Budgets (Nominal \$ Million)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
UI EE	\$17	\$17	\$19	\$21	\$23	\$24	\$25	\$25	\$26	\$27	\$28	\$29
UI DR	\$1	\$2	\$4	\$4	\$4	\$4	\$5	\$5	\$5	\$5	\$5	\$5
CL&P EE	\$68	\$68	\$71	\$78	\$81	\$82	\$83	\$85	\$86	\$87	\$88	\$89
CL&P DR	\$25	\$24	\$23	\$23	\$23	\$23	\$23	\$23	\$23	\$23	\$23	\$23
<b>Total (UI + CL&amp;P)</b>	<b>\$111</b>	<b>\$112</b>	<b>\$118</b>	<b>\$128</b>	<b>\$131</b>	<b>\$134</b>	<b>\$136</b>	<b>\$138</b>	<b>\$140</b>	<b>\$142</b>	<b>\$144</b>	<b>\$146</b>

- Figure D.5: Reference Level DSM Annual Budgets (Nominal \$ Million)

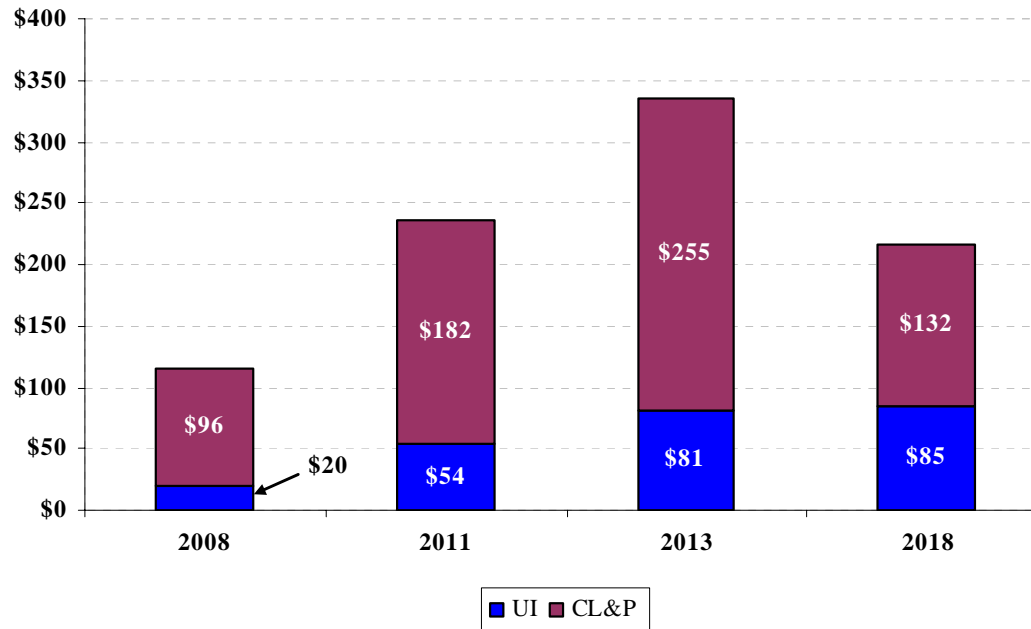


## Utilities' Analysis - The Higher DSM FOCUS Funding Levels and Impacts are Unprecedented

■ **Table D.9: DSM-Focus Level DSM Annual Budgets (Nominal \$ Million)**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
UI Total	\$18	\$20	\$26	\$38	\$54	\$70	\$81	\$81	\$82	\$83	\$84	\$85
CL&P Total	\$94	\$96	\$109	\$140	\$182	\$226	\$255	\$270	\$256	\$206	\$153	\$132
Total (UI + CL&P)	\$112	\$116	\$135	\$177	\$236	\$296	\$336	\$352	\$338	\$289	\$236	\$216

■ **Figure D.6: DSM-Focus Level DSM Annual Budgets (Nominal \$ Million)**



## Demand Management – Recommendation to move to DSM Focus

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### **Information and Direction**

- Reviewed DSM analysis basis for scope, cost and practical potential of the expansion of Energy Efficiency and Price Responsive Demand
  - Cost effectiveness process
  - Capability to ramp up programs
  - Funding Sources for DSM expansions
- ECMB has request CEAB to formally support its proposal before the DPUC to immediately bring funding levels for energy efficiency to the levels established as economic in the utilities projects and identified
- ECMB expects high consumer demand levels for their programs is an indicator of the capability to aggressively scale up programs.
- DSM Focus is a legitimate resource case pending the outcome of the DSM potential study for both energy efficiency and demand response
- DSM Focus levels of savings should be a fundamental planning assumption for evaluation of generation and transmission needs and emissions implications

### **Qualifiers**

- The DPUC has not approved the a long range funding plan
- Revised assessments of programs will occur annually for the ECMB budget approval process.
- Levels of programs both energy efficiency and demand response is unprecedented

## Renewable Energy – REC Shortfall

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### 1. Issues

- **The utilities analysis of the renewable energy project potential that lead to their concern on the likely renewable energy development shortfall as compared with the RPS requirements.**
  - Analysis based observations on current renewable project queue
  - Supported the current price level for Renewable Energy Credits (RECs) which is close to Alternative Compliance Payment (ACP) of \$55/mWh
  - Overall annual customer costs may rise to \$200 million by 2011, \$300+ million in 2018 (\$2008)
  - Some RECs at/near price cap level
  - Significant portion in ACP –large revenue stream
  - This outlook deserves additional study at the regional level to evaluate current policy
  - Transmission costs and concerns could dampen project development
- **CCEF presented information on an strong development pipeline for renewables**

### 2. Stakeholders

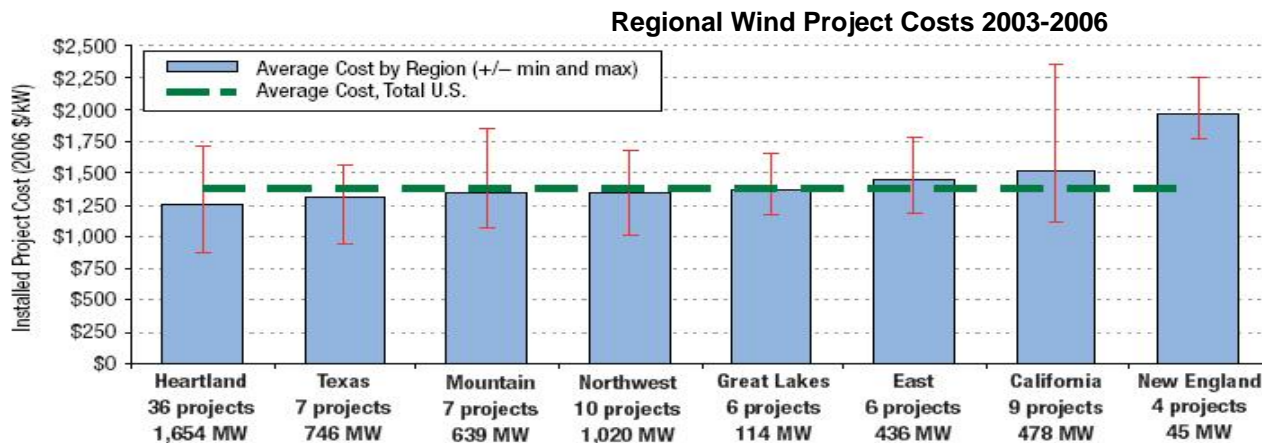
- **Utilities, CCEF, Environment Northeast, AARP**

### 3. Workshops

- **Workshops held April 2, 17 and May 5**
- **Other calls with CCEF consultants**

## Utilities Analysis - Renewable Portfolio Standards are Unlikely to be Fully Met with Renewable Generation

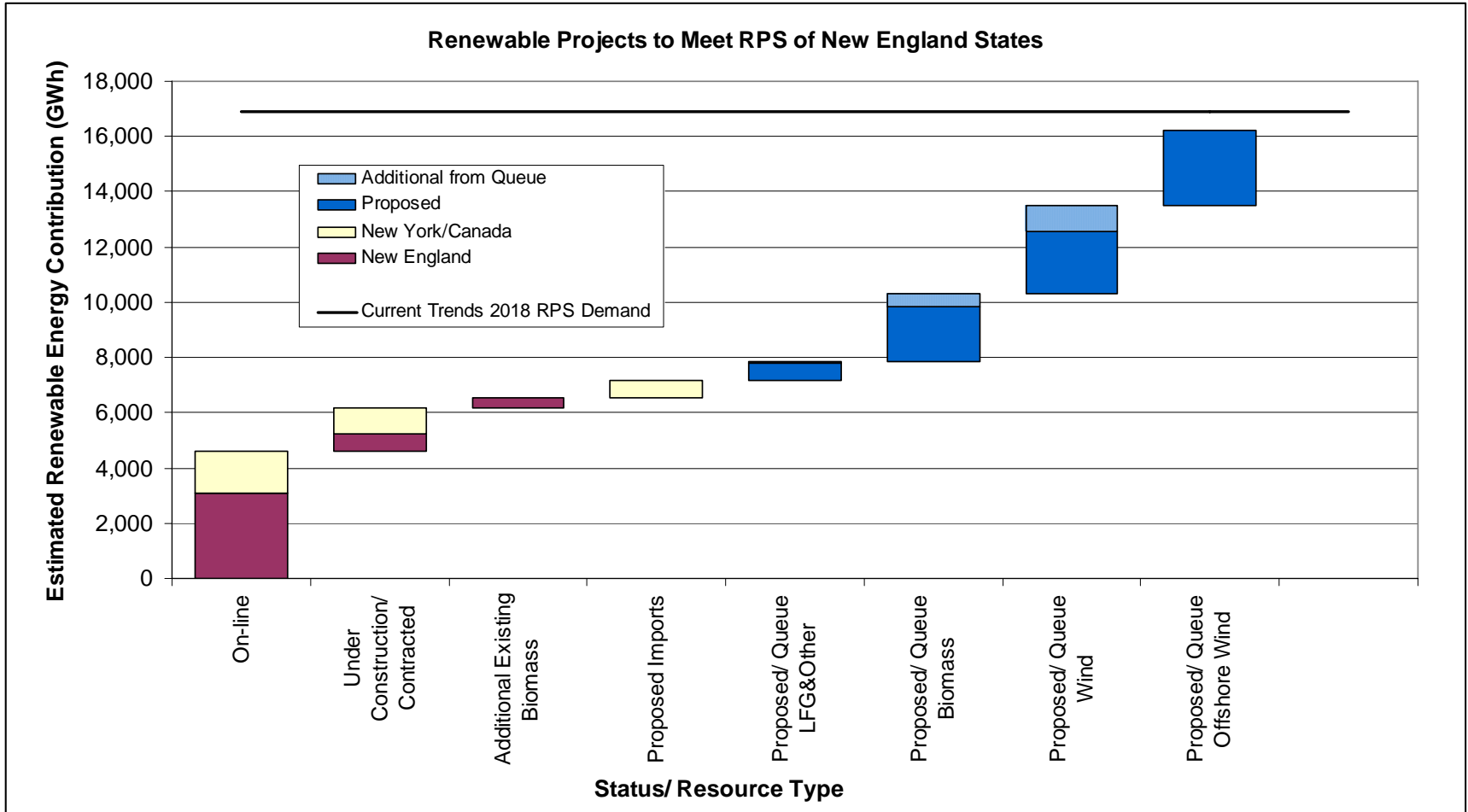
- **Connecticut Renewable Portfolio Standard (RPS):**
  - Escalating requirements similar to other New England states
  - Can use New England renewable energy credits (RECs)
  - Alternative payments (for REC shortfall) of \$55/MWh, not adjusted for inflation as other New England States
- **Renewable Costs**
  - Connecticut renewables limited and/or expensive compared to New England renewables
  - New England targets may not be met fully with renewables, due to costs and constraints



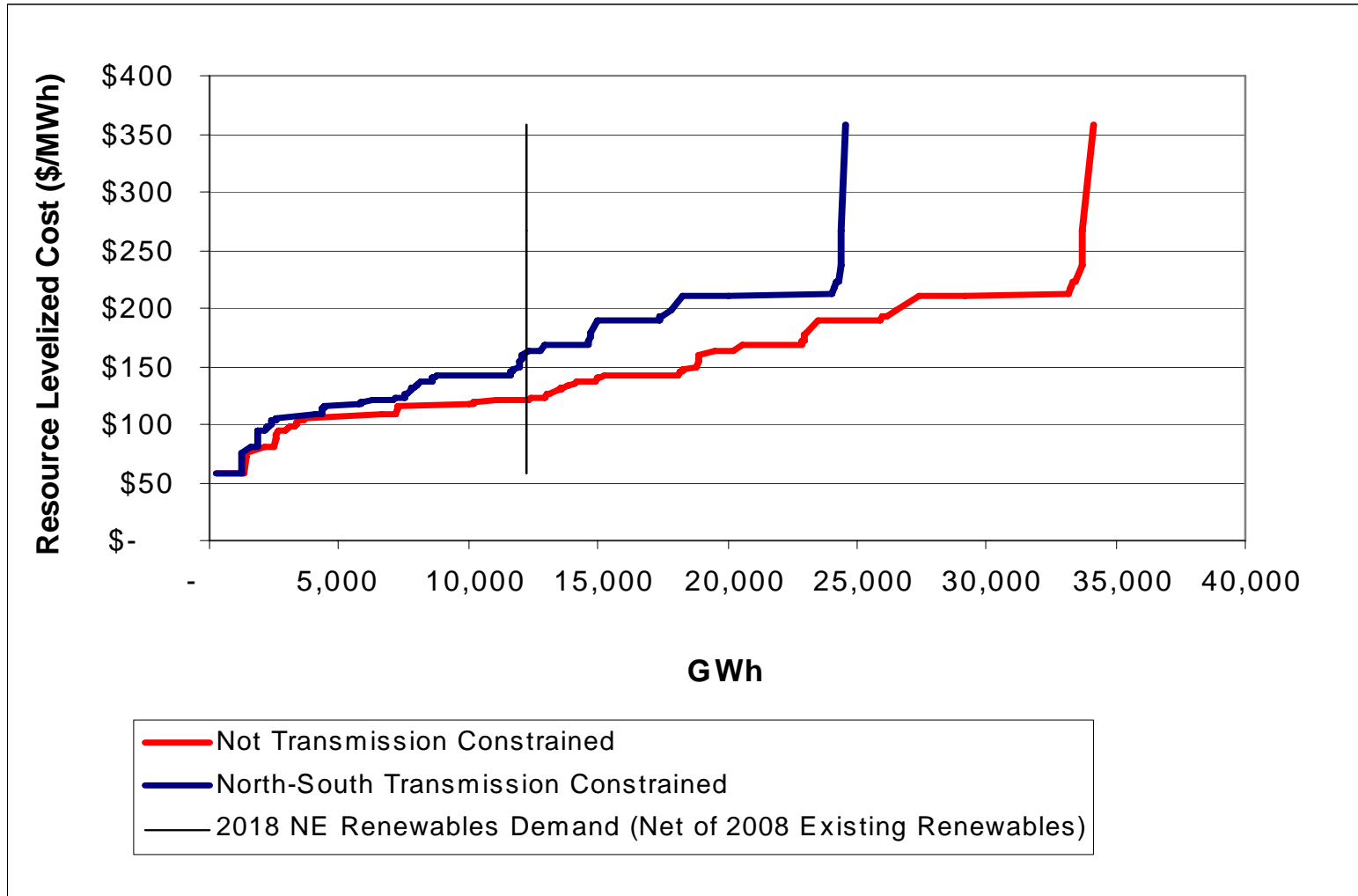
Source: Berkeley Lab database.

*New England:  
\$2000/kW  
45 MW  
Developed*

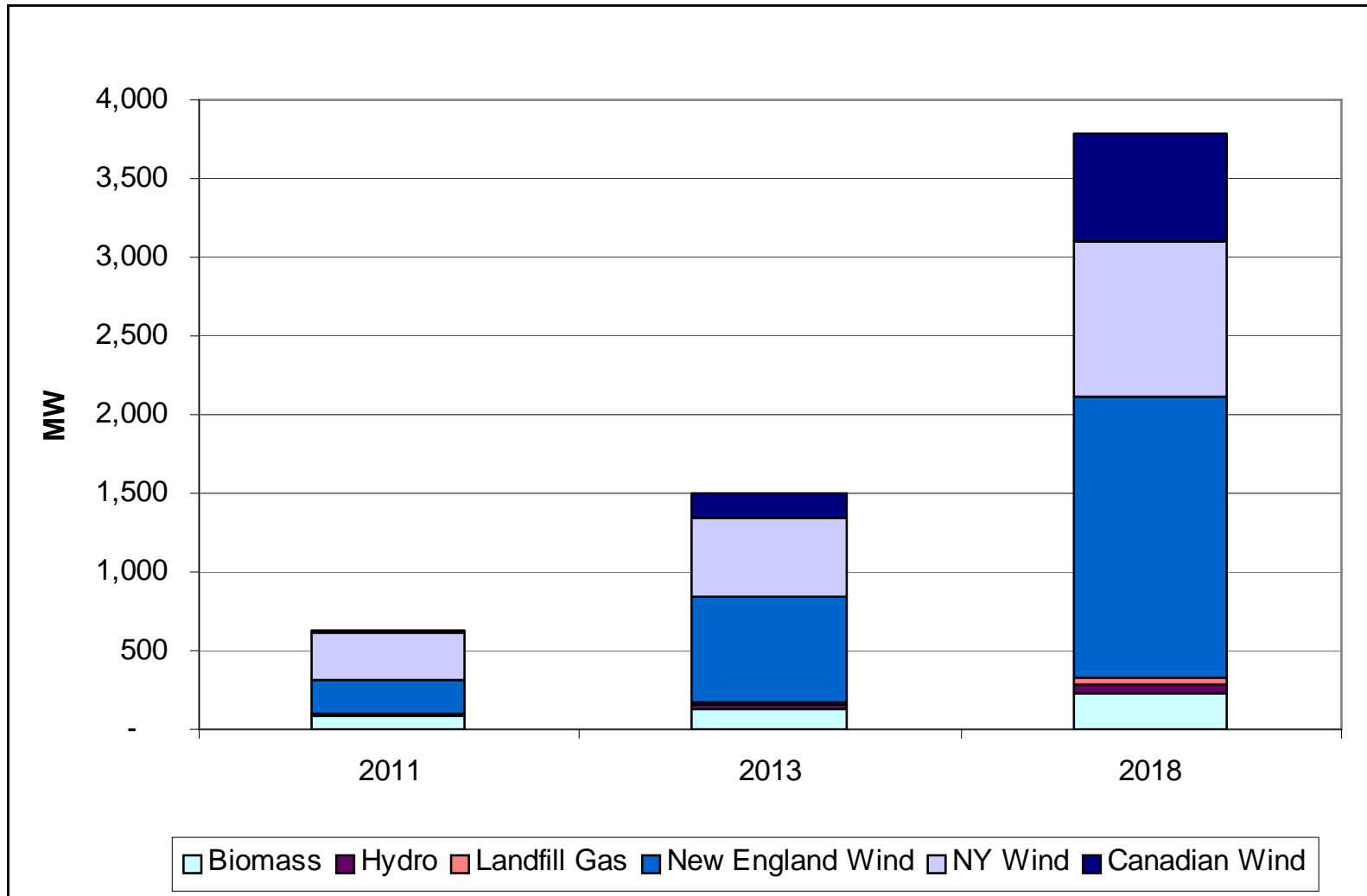
# Renewable Energy Generation Projects under Development



## Regional Renewable Energy Resource Potential – 2018



## Preliminary Renewable Energy Resources to meet RPS



## Renewable Energy

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### Information and Direction

- Renewable energy generation project development that includes long term contracts should result in REC prices closer to a cost basis rather than ACP
- The renewables should be modeled within the scenarios with the associated transmission projects.
- Each scenario will incorporate the state by state results of the supply curve analysis.
- REC pricing will be phased in to be based on primarily long term contract prices for RECs substantially below Alternative Compliance Payments
- The result is that in 3 of the 4 scenarios RPS requirements should be met

### Qualifiers

- Long Term REC contracting is not the prevailing policy in the region
- Projected renewable capacity used in the subsequent analysis will be based on resource potential rather than specific projects under development
- The Plan should discuss the dynamics of long term contracting and project development and REC pricing

## Environmental Compliance

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### 1. Issues

- **The utilities analysis did not account for evolving regulations for reducing allowed generation unit emission rates**
  - Status quo on regulations assumed
  - NO<sub>x</sub>, SO<sub>2</sub> and CO<sub>2</sub> allowance costs were included in modeling
- **DEP regulations trying to balance cost effective NO<sub>x</sub> reductions which may be accomplished with alternative resources supplementing emission rate reductions**
- **Evolving emission control technology requirements could impact the continued operation of existing CT generation**

### 2. Stakeholders

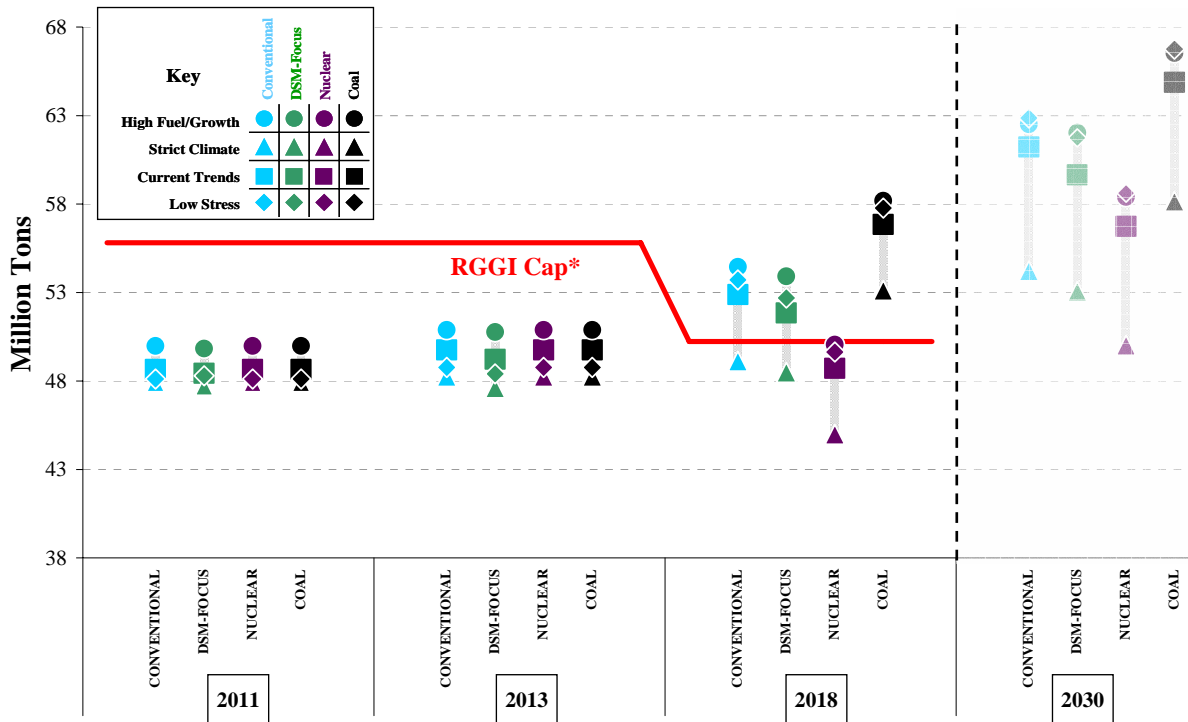
- **Utilities, DEP, Environment Northeast, AARP, First Light Power, NRG**

### 3. Workshops

- **Workshops held April 14 and May 5**
- **Numerous discussions with DEP staff**

# Utilities' Analysis Focused on CO<sub>2</sub> - Nuclear and DSM Mitigate CO<sub>2</sub> Emissions More Effectively than Other Resource Solutions

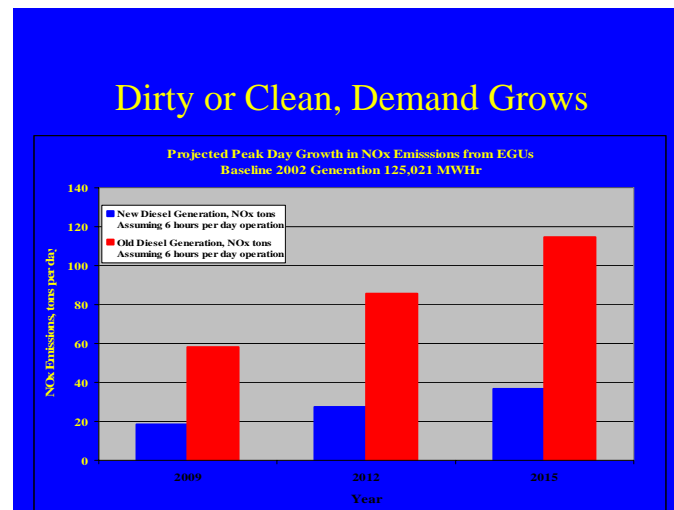
## CO<sub>2</sub> Emissions in ISO-NE



- CO<sub>2</sub> emissions are expected to increase as load grows.
- Nuclear displaces significant fossil CO<sub>2</sub>.
- Coal raises emissions substantially above New England's share of the RGGI cap.
- Increased DSM (that includes energy efficiency) also reduces CO<sub>2</sub> emissions.

\*Emissions and RGGI cap shown here reflect the 6 member states of ISO-NE only. A surplus or deficiency does not indicate whole RGGI-region status.

## Extensive Utilities', CEAB discussion with DEP and Generators



### OTC HEDD MOU Commitments

State	NO <sub>x</sub> (tons per day)	% Reduction from HEDD Units
CT	11.7	25
DE	7.3	20
MD	23.5	32
NJ	19.8	28
NY	50.8	37
PA	21.8	32
Total	134.9	

- ### CT CO<sub>2</sub> Caps – Proposed Rule
- 2009-2014 10,695,036 tons CO<sub>2</sub>
  - 2015 10,427,660 tons CO<sub>2</sub>
  - 2016 10,160,284 tons CO<sub>2</sub>
  - 2017 9,892,908 tons CO<sub>2</sub>
  - 2018 9,625,532 tons CO<sub>2</sub>

## Enhancing the Scenario Modeling of Future Regulations

	<b>Boiler EGU NOx Rates (lb/mmbtu)</b>	<b>Statewide NOx Budget</b>	<b>Boiler EGU SOx Rates (ppm)</b>	<b>CT CO<sub>2</sub> Cap</b>
<b>Current Trends</b>	.12 by 2011 .08 by 2018	2691*	3000 by 2011 1500 by 2018	RGGI
<b>High Fuel</b>	.15 by 2013 .12 by 2018	4466*	3000 by 2011 1500 by 2018	Accelerated RGGI
<b>Climate Constrained</b>	.08 by 2013	<2691*	3000 by 2011 1500 by 2013	Accelerated RGGI
<b>Low Stress</b>	.12 by 2013 .08 by 2018	2691*	3000 by 2011 1500 by 2018	RGGI

\*The 2691 ton budget includes 3 industrial boilers and energy generating units greater than 15 MW. The budget for EGUs greater than 25 MW is 2559 tons.

## Environmental Compliance

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### **Information and Direction**

- Initiated dialogue between DEP, utilities and Connecticut Generation owners
- Established scenario assumptions for individual Electric Generation Unit (EGU) for each scenario
- Establishing planning levels for Statewide compliance of individual pollutants, particularly NOX and CO2
- Apply multiple scenarios/cases for individual EGU emission rate levels for NOx, Sulfur, CO2 and HG to modeling effort of utilities
- Apply multiple scenarios/cases for statewide targets/caps of individual pollutants.
- Metrics to be produced to demonstrate plan impacts on High Electric Demand Days (HEDD) emissions to enable future working group efforts be captured in procurement planning.

### **Qualifiers**

- Supplemental analysis will build-in DEP air quality regulation changes that are contemplated but not yet adopted
- Generator response to the evolving regulations could vary from the analytical results that the collaborative with utilities will produce.

## Connecticut Generation

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### 1. Issues

- **The utilities analysis of generation Going Forward Cost showed that CT units would continue to operate**
- **Generation companies maintain the analysis needed to include more costs and risks associated with continued operation, and thus more likely economic obsolescence**
- **Generation was not assumed to need to invest in upgrades to meet tightening emissions regulations**
- **Repowering considerations need to be evaluated**

### 2. Stakeholders

- **Utilities, DEP, Environment Northeast, AARP, NRG, PSEG, Competitive Power Ventures, NEPGA, First Light Power**

### 3. Workshops

- **Workshops held April 2, 17 and May 5**
- **Numerous discussions with NRG, First Light and NEPGA**

## **NEPGA MEMBERS INPUT TO CONNECTICUT IRP ON REQUIRED MINIMUM REVENUE FOR CONTINUED UNIT OPERATION**

### **NEPGA MEMBERS INPUT TO CONNECTICUT IRP ON REQUIRED MINIMUM REVENUE FOR CONTINUED UNIT OPERATION**

Asset Name	Units Type	MW	Cost of Service \$/kW-month	CONE	2010-2011	2011-2012	2012-2013
				Auction I \$4.50 Floor Price as % of Cost of Service	Auction II \$3.60 Floor Price as % of Cost of Service	Auction III \$2.95 Floor Price as % of Cost of Service	
Bridgeport Energy	combined cycle	442	9.52		47%	38%	31%
Milford 1 & 2	combined cycle	489	12.38		36%	29%	24%
NRG Devon 11-14	combustion turbines	119	13.79		33%	26%	21%
NRG Middletown 2-4, 10	fossil steam, CT (10)	770	5.37		84%	67%	55%
NRG Montville 5,6,10 & 11	fossil steam, CT (10, 11)	494	4.84		93%	74%	61%
NRG Norwalk Harbor 1 & 2	fossil steam	330	9.51		47%	38%	31%
PPL Wallingford 2-5	combustion turbines	169	10.85		41%	33%	27%
PSEG Bridgeport Harbor 2	fossil steam	130	8.98		50%	40%	33%
PSEG New Haven Harbor	fossil steam	448	6.97		65%	52%	42%
Total MW		3,391					
Average Rate			\$9.13		49%	39%	32%

**Notes:**

Cost of service taken from latest RMR filings and listed in ISO-NE COO Report dated May 9, 2008

Clearing prices for Auction II and III and CONE for Auction III are projections

## Connecticut Generation

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### **Information and Direction**

- Initiated dialogue between DEP, utilities and Connecticut Generation owners on continued operation costs
- Attempted secure support of the generation companies to provide:
  1. Some sort of a primer on the way a generating company looks at continued operation of older generation from cost and risk perspectives.
  2. Generic or average cost estimates for these categories by generating unit technology and fuel relevant to Connecticut existing units.
  3. Individual owners' sponsored best available public information to be used with specific units in economic analysis
  4. Support in applying the correct 'potential' retrofit projects, i.e., emissions reduction technologies, for the each unit. The scenarios anticipate the tightening regulations on allowable emissions rates.
- NRG provided technical expertise in identifying likely environmental compliance retrofit projects
- Generation companies via NEPGA maintain the appropriateness of FERC level revenue requirement costs as the proper GFC for determining continued operation

### **Qualifiers**

- Essentially no resolution consensus on how to estimate economic obsolescence
- CEAB analysis will assume utility GFC and environmental compliance project costs in determining the likely retirement cases.
- Generator response to the evolving regulations could vary from the analytical results that the collaborative with utilities will produce.

## Transmission Considerations / ISO-NE Issues

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### 1. Issues

- The utilities analysis did not evaluate transmission as an option or include costs of transmission variations in the metrics
- NEEWS Project alternatives should be addressed such as generation and DSM, particularly in light of DSM Focus .
- Questions existed on CT Capacity zone/LSR requirements and the needs for quick start operating capacity
- Implications of FCA results on CT Procurement planning regarding transmission implications

### 2. Stakeholders

- Utilities, NRG, PSEG, Competitive Power Ventures, NEPGA, First Light Power, ISO-NE

### 3. Workshops

- May 14<sup>th</sup> at ISO-NE and follow-up meeting requested by Northeast Utilities

## Transmission Considerations

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### **Information and Direction**

- Based upon our ISO-NE stakeholder meeting and PAC meetings we have established viewpoints on
  - Needs Assessment & Options Analysis Report
  - 2010 FCM Delisting Process Reliability Assessment
  - Additional Connecticut Areas of Concern (from Nov 07 PAC) ISO-NE
  - LFRM & Daily Second Contingency Dispatch Requirements
  - Their studies on Transmission requirements to support the renewable generation build out
- We will likely run indicative analysis comparing in state generation to proceeding with substantial transmission investment

### **Qualifiers**

- Transmission to support renewables analysis by ISO-NE is not yet complete
- Analysis needs to capture some of the transmission projects under development in Maine
- Connecticut should not be a capacity zone with NEEWS
- Phase II of the current CT Transmission project and the CT procurement dramatically reduce requirements for operating reserves