Connecticut Energy Advisory Board

IRP / Procurement Workplan Update

December 4, 2009

CEAB
Connecticut Energy Advisory Board

Topics

1. Schedule Update
    - CEAB Objectives for 2010 Plan Process
    - EDC IRP Report
        - Collaboration update
        - Public comments
    - CEAB Process
2. CEAB Stakeholder input Workshops
    - Summary of the Workshops held
    - Nuclear Workshop Agenda
    - Key Insights
3. Analytics and Case Development
4. Next Steps

1. Schedule Update

CEAB Objectives for 2010 Plan Process

- Develop Long Term Electric Resource Plan
  - Include recommendations for near and long-term procurement and planning
  - Expand framework to develop recommendations out to 2030 as per CEAB Visioning
  - Add key areas including repowering, natural gas and demographics as it affects load
  - Incorporate analysis on integration of the portfolio by modeling diverse scenarios
  - Develop a position state policy or organization enablers that are needed to enact the plan
- Provide DPUC a well considered Plan by April 1 for its review
  - Support recommendations with appropriate metrics and analytics
- Address state organizational and operational issues to better enable IRP implementation and future planning processes

1. Schedule Update

EDC IRP Report

Collaboration

- EDCs participated in Stakeholder input Workshops
- We have exchanged thoughts on the Whitepaper Topics that the EDCs are producing
- The EDCs will be providing us with an overview of their scenario analytics so that our '20 year' analysis can be consistent

IRP Report

a. To be filed January 1 with CEAB
b. Reviewed immediately for interim report to CEAB prior to Feb. 5th Board meeting
   - Solicit public comment
     - written by January 26,
     - public meeting for comment likely February 11
c. Modification and Approval included with CEAB Long Term Plan at April 2nd Board meeting

1. Schedule Update

CEAB Progress

1. Workshops: Stakeholder Input

- 7 Workshops Complete including DPUC workshop on Transmission, Nuclear on December 7th
- Workshops were well attended with broad stakeholder participation and valuable input

2. On-going Research Effort and Collaboration with EDCs/Key Stakeholders

- Research underway on 15 whitepaper topics
- Input from designated Board members on several topics
- Plan to review Brattle baseline analysis in mid December
- Separate stakeholder meetings with NRG
- On-going involvement from NE ISO
- Industry outreach in key areas

1. Schedule Update

CEAB Progress *– cont'd.*

3. Analytics and Case Development

- Developing a list of key long term supply scenarios and required analytics to run in the Jan/Feb timeframe

1. Schedule Update

Key Input 2010 Procurement Plan Process

Nov. 2009	Stakeholder Workshops
Dec. 2009	EDC Collaboration on their analytical efforts **Currently no 'Preview of Findings' Planned for CEAB**
Jan 1, 2010	EDCs Plan to be filed
Jan 2010	Review of EDCs Plan **CEAB Sponsored 20 Year look Analysis of Resources**
Feb 2010	Public Hearing and Comment **Long session to process results and recommendations**
March 2010	Final approval of Procurement Plan
April 1, 2010	Procurement Report Filed with DPUC

2. CEAB Stakeholder Input Workshops

Workshop Schedule

Completed

Topic	Date	Location
DPUC Transmission	11/2	New Britain
Repowering	11/5 AM	LOB
Renewable Energy	11/5 PM	LOB
Energy Security	11/9 PM	LOB
Environmental Policy	11/19 AM	LOB
Natural Gas	11/19 PM	LOB
DSM	11/23 AM	LOB

Upcoming

Topic	Date	Location
Nuclear	12/7 AM	LOB

2. CEAB Stakeholder Input Workshops

DPUC Technical Session – 4. Transmission

Objective: Gather input from EDCs and other parties on how to best integrate transmission and resource planning

DPUC: DPUC requested CEAB comments on its Strawman, issued on 11/25 with comments due 12/8

2. CEAB Stakeholder Input Workshops

CEAB Workshops – 12. Repowering

Objective: Consider life of existing generation plant and the impacts of retirements and/or repowering

Speakers: Judith Lagano, Peter Fuller, NRG: *Repowering in Connecticut*

Eric Johnson, ISO New England: *Preliminary Results from the Economic Study ISO completed for the New England Governors*

Joel Gordon, PSEG

Derek Phelps, Connecticut Siting Council

Key Insights: Opportunity to repower while there is excess system capacity

Comparable capacity levels at existing sites with cleaner more efficient combined cycles, conversions to Bio-fuels, and new CT's

FCM Process at ISO-NE is large impediment to repowering — even with a near term need

Long Term contracting is a necessity according to developers

EDCs agree with generation owners that generation faces complex economic and environmental pressure

2. CEAB Stakeholder Input Workshops

CEAB Workshops – 3. Renewable Energy

Objective: Input on how 2030 RPS requirements can optimally be met considering environmental, economic and cost factors

Speakers: Jim Platts, Eric Johnson, ISO New England: *Overview of New England RPS and Renewable Resource Outlook*

Paul Michaud, Connecticut Clean Energy Fund: *CT Outlook – Navigant Potential Study*

Jim Lanard, Deepwater Wind: *New England Offshore Wind Development and Costs*

Heather Hunt, New England States Council on Energy: *New England Governors Blueprint*

Key Insights: Need to quantify in state vs. In-Region vs. Import: Canadian/NY

Transmission costs for some options (*e.g.* import from Midwest will be massive)

Limited in-state renewable potential — some biomass and fuel cells

2. CEAB Stakeholder Input Workshops

CEAB Workshops – 8. Energy Security

Objective: Broaden the scope of energy security considerations from 2009 Plan

Speakers: Joel Gordes: *Energy Security - Overview Concerns and Issues*
Joe King: *CASE Energy Assurance Study*
Eric Johnson, ISO New England: *ISO-NE and Energy Security*
Derek Phelps: *CSC Decision on Energy Security*
Jim Shuckerow, NU
Alan Trotta, UI

Key Insights: Energy Security is a complex subject
Other efforts do not address resource choice or fuel choice and energy security
We can collaborate with CASE in developing our metrics
EDCs 10-year analysis focus is on facility loss or fuel interruption

2. CEAB Stakeholder Input Workshops

CEAB Workshops – 7. Environmental

Objective: Review of existing and expected regulations for Nox, Sox, mercury and CO2 as well as water issues as affect energy planning and implementation

Speakers:

Tracy Babbidge, DEP Air Bureau: *Air Quality and Climate Change*

Peter Francis, DEP Office of LIS: *Long Island Sound Regulatory Issues*

Oswald Inglese, DEP Waste & Materials Mgt.: *Water Pollution Control/Intake & Discharge Issues*

Kate Shanley, UI : EDC Update: *Process of Working with DEP*

Jamie Howland, Environment Northeast (ENE): *Relationship of DSM to Air Quality and CO2*

2. CEAB Stakeholder Input Workshops

CEAB Workshops – 7. Environmental – *cont'd.*

Key Insights:

- Enhanced financial pressures toward retirement of older steam units given expected air and water regulations and required investments
  - Connecticut cannot meet federal health based AQ standards without stricter state or federal pollution standards
  - Additional economy wide actions necessary to meet State/Federal CO2 goals
  - Water intake rules will affect all CT power plants within energy planning timeframe (5 -10 years)
- Potential impact on repowering, where existing water intake systems were a plus
- Need to identify interim (2030) goal to meet Global Warming Solutions Act provisions (80% reductions from 2001 levels by 2050)
- Address issues impacting non-attainment on high electric demand days
- Need to consider environmental issues associated with new transmission development

2. CEAB Stakeholder Input Workshops

CEAB Workshops – 11. Natural Gas

Objective: Discuss new potential supply paradigm for gas with advent of shale gas development; input on natural gas supply parameters, demand and pricing

Speakers:
Steve Leahy, NEGA: *Natural gas Supply Overview*
Mike Dirrane, Spectra Energy: *Overview of Algonquin and Spectra*
Bill Hansen, Iroquois: *Overview of Iroquois Pipeline*
Paul Rossi, UI: *EDC natural gas whitepaper & key areas of focus to 2020*
Mike Petit, Hess: *LNG Overview and focus on Weaver's Cove project*
John Rudiac and Edna Karanian: LDC *View on natural gas supply*

Key Insights:
Gas as an attractive "bridge" fuel if we believe shale story

Additional flexibility from new pipelines, LNG, and more gas supply

Decreasing pressure on prices, basis and potential for gas flow reversals

Need to understand risks/likelihood of Shale not materializing (water, technological risk, infrastructure costs)

Consider longer term implications of New England awash with gas (*e.g.,* on emissions, transport sector, renewables)

2. CEAB Stakeholder Input Workshops

CEAB Workshops – 2. DSM

Objective: Evaluate cost/benefit relative to meeting 10-year environmental reliability, energy security and economic State requirements

Speakers: Jeff Schlegel On behalf of ECMB: *Overview of Current DSM Programs*

Jeff Schlegel, KEMA: *Potential Study*

Jeff Schlegel: *State of Direct Response*

Jamie Howland, ENE: *Economic Impact Study*

Sidney Davidson: *Financing Options*

Key Insights: DSM benefits will take a long time to materialize and will require upfront self funding/need to compare to associated costs

Long-term economics continue to be espoused

Need to explore alterative funding mechanisms and models for delivery of DSM and provide 20 year outlook

Loans or debt financing will only enhance a minority of the program expenditures

KEMA and EDC focus does not address delayed funding scenarios

2. CEAB Stakeholder Input Workshops

CEAB Workshops – 5. Nuclear

This workshop has been greatly facilitated with the support of CASE

Objective:	Examine nuclear as a legitimate long-term supply option and potential impacts
Speakers:	Regis Matzie, Westinghouse: *State of Nuclear Power* Daniel Weekley, Dominion: *Operational Safety and Security Issues* Alan Hansen, AREVA: *Recycling* Leslie Kass, Nuclear Energy Institute and NRC: *Environmental Issues* Bruce Chung, CFO NINA, a subsidiary of NRG: *Costs and Financing Issues* Daniel Weekley, Dominion: *Costs and Financing of Nuclear Plans*
EDCs:	Plan to update cost information and key economic and technology parameters
CEAB/Other:	CEAB will collaborate with as well as with NRG and CASE; NRG Whitepaper

3. Analytics and Case Development

EDC - Analytical Process Overview

- EDCs will be utilizing an approach using 5 external scenarios to evaluate the 10 year impacts of the strategies below that result in changes to;
  - DSM funding levels
  - Renewable Energy Build out
  - Canadian Imports and
  - Technology integration such as Electric Vehicles and possibly Smart Grid
  - Hypothetical Nuclear in 2020
  - Retirements/repowering
- EDCs are quantifying the potential for economic obsolescence based retirements
- EDCs analytics will end up supporting findings and recommendations similar in format to 2008 IRP

3. Analytics and Case Development

CEAB – Analytical Process Overview

- CEAB analysis will extend to 2030 to look at several implications:
  - Ways to strategically look at resource mix transitions with favorable natural gas outlook given Shale
  - Major adjustments to the timing of DSM funding strategies
  - Repowering impacts
  - Environmental pressures on generation retirements
  - Longer term resource changes needs to meet expected Carbon levels
  - Nuclear capability to support energy and environmental objectives
  - Potential impacts of dramatic changes to demographics
    - Electrification of Transportation
    - Urbanization
  - CHP's potential role

3. Analytics and Case Development

CEAB Analytical Process – Comparing the Strategies

- There are four general areas to consider quantitatively in recommending a Resource Procurement Plan.
- Similar to the EDC's work, La Capra Associates will be using various tools to model the market impacts, the cost of electricity impacts and the emissions characteristics of the various strategies

1. **Financial / Economics** – Cost of Electricity, Going forward resource costs, Investment Capital requirements, exposure to volatility, measure of impact on Gross State Product, Lead Time Exposures
2. **Environmental Parameters** – Emissions rates for NOx, SO2, HG and CO2, Incremental Land Use, "Greenness"
3. **Reliability** – Resource Adequacy from various perspectives, Fuel Dependence, Resource Planning Flexibility
4. **Energy Security** – Generation Concentration, Degree of Interconnection, Fuel Supply Diversity, Capacity and Energy Import dependence

3. Analytics and Case Development

CEAB Process – Enablers to Fulfill The Strategies

- Several additional issues will be considered before recommending a Resource Procurement Plan.
- Some of these aspects will have organization requirements and/or energy policy regulations or legislation that would require changing.
- To determine if a resource plan can be implemented and facilitate more efficient implementation these areas must be addressed:

1. Financial Counterparty Options for Resources
2. Government Investment through direct involvement or financial guarantees
3. Transportation Strategies and Policies to change energy use patterns
4. Ratepayer risks absorption
5. Environmental compliance considerations that need to be changed
6. Jurisdictional responsibility changes (FERC, ISO)
7. State organizational changes or responsibility assignments to decide on and monitor implementation of the resource plan

4. Next Steps

- Assimilate Workshop information into whitepapers and analysis
- Preview of EDC sponsored Brattle Group analytics
- Compare La Capra Associates' market modeling with EDCs
- Begin communication of the IRP process with individual legislators and executive branch members
- Begin Analytical process in late December
- Begin to share White Paper insights with Board in January