Public Service of New Hampshire

PSNH Energy Park
780 No. Commercial Street,
Manchester, NH 03101

Public Service Company of New Hampshire
P.O. Box 330
Manchester, NH 03105-0330
(603) 634-2459
Fax (603) 634-2438

The Northeast Utilities System

Christopher J. Allwarden
Senior Counsel

July 2, 2009

HAND DELIVERED

Thomas S. Burack, Commissioner
NH Department of Environmental Services
Chairman, NH Site Evaluation Committee
29 Hazen Drive
Concord, NH 03302

Re: SEC Docket No. 2009-01 – Motion for Declaratory Ruling Regarding Modifications to Merrimack Station Electric Generating Facility in Bow

Dear Chairman Burack:

Pursuant to the record request made to PSNH during the hearing in this matter on June 26, 2009, for the annual reports made by PSNH to the Legislature pursuant to RSA 125-O:13, IX, enclosed are an original and 18 copies of the following:

1. Copy of PSNH Legislative Update dated June 26, 2007 (1 page).

2. Copy of PSNH Legislative Update dated June 18, 2008 (1 page).

3. Copy of PSNH Update to the NH Legislative Oversight Committee dated June 30, 2009 (27 pages), and Section II, Spring 2009-Background Material (133 pages) which was supplied with this Update, and which includes materials previously provided to Legislators.

Very truly yours,

Christopher J. Allwarden
Senior Counsel, Legal Department

Encs.

cc: Moving Parties
Michael J. Iacopino, Esq.
Barry Needleman, Esq.

PSNH Legislative Update- June 26, 2007

Update relative to the reduction of mercury emissions at PSNH Coal Fired power plants as outlined in HB1673.

As required by HB 1673 (RSA 125-O:13 Compliance- Paragraph IX) PSNH shall report by June 30, 2007 to the legislative oversight committee on electric utility restructuring, and the chairpersons of the house science, technology and energy committee and the senate energy and economic development committee, on the progress and status of:

1) Achieving early reductions in mercury emissions:

DOE Mercury Reduction Project at Merrimack Unit 2

- **Parametric Testing**
  - September – November 2006
  - Used temporary equipment set-ups
  - Used various combinations of sorbents to assess effectiveness
  - Varied rates of injections
  - Varied location of injection points
- **Optimum plan for long term test**
  - Engineered and purchased equipment for long-term test and post DOE use
  - Installed and commissioned new equipment
  - Long term test – June to November 2007
- **Measurement tools and methods**
  - Completed sorbent trap measurements
  - Installed and monitored Hg CEMs
  - Identified testing methods for long-term test including new EPA methods
- **Results of Parametric tests**
  - Initial injection plan 10 – 30%
  - Enhanced injection plan scattering of individual points between 30 – 60%
  - Sustainable results to be determined during long-term test

2) Installing and operating the scrubber technology:

CLEAN AIR PROJECT UPDATE

- **Engineering**
  - Specifications developed for key components
  - Possible Site plan layouts developed
  - Equipment options identified
  - Vendor lists and contacts established
  - Industry impact of high number of scrubber installations analyzed
- **Commercial and Purchasing**
  - Contract Strategy determined and approved
  - Program Manager Specification written
  - Program Manager out to Bid
- **Permits and Approvals**
  - Temporary Air Permit Application submitted to NHDES-ARD June 7, 2007
  - Town of Bow presentations and submittals underway
  - Company financing approvals initiated
- **Site work**
  - Existing oil tank removal completed
  - Site surveys completed
  - South Yard studies completed

PSNH Legislative Update- June 18, 2008*

Update relative to the reduction of mercury emissions at PSNH Coal Fired power plants as outlined in HB1673.

As required by HB 1673 (RSA 125-O:13 Compliance- Paragraph IX) PSNH shall report by June 30, 2007 to the legislative oversight committee on electric utility restructuring, and the chairpersons of the house science, technology and energy committee and the senate energy and economic development committee, on the progress and status of:

1) Achieving early reductions in mercury emissions:

DOE Mercury Reduction Project at Merrimack Unit 2

- **Program Schedule Fall 06 – Spring 08**
  - Completed Parametric Testing Nov 2006
  - Completed Long Term Testing April 1, 2008
  - Used various combinations of sorbents to assess effectiveness
  - Varied rates of injections
  - Varied location of injection points
- **Long term Test Evaluations**
  - Long term test – Fall 2007 thru March 2008
  - Equipment performance
  - Balance of Plant Issues
  - Mercury Removal Performance
- **Measurement tools and methods**
  - Completed sorbent trap measurements
  - Installed and monitored Hg CEMs
- **Results of Parametric tests**
  - Initial injection plan 10 – 30%
  - Enhanced injection resulted in a wide variation of results
  - Sustainable results will depend on the ability to resolve balance of plant issues

2) Installing and operating the scrubber technology:

CLEAN AIR PROJECT UPDATE

- **Engineering**
  - Projects defined in 5 major components
  - Specifications developed for 4 key components
- **Commercial and Purchasing**
  - Program Manager Hired Sept 2007
  - Scrubber Island and Chimney proposals are in negotiations
  - Vendor Proposals requested and received for Wastewater Treatment Facility and Material Handling System
- **Review, Permits and Approvals**
  - NHDES – May 12 presentation
  - Temporary Permit expected October 2008
  - Town of Bow –Local permitting
  - Regional Planning Commission
- **Site work**
  - Existing oil tank removed
  - Site surveys and studies completed
  - Warehouse construction underway
  - On-site engineering facilities completed
- **Schedule and Costs**
  - Tie-ins: MK#1 Fall 2012, MK#2 Spring 2013
  - Project Costs will be updated with review of major equipment bids

***year corrected to reflect June 2008 update**

THE BRIDGE TO NEW HAMPSHIRE'S CLEAN ENERGY FUTURE

Public Service of New Hampshire
The Northeast Utilities System





UPDATE TO THE NH LEGISLATIVE OVERSIGHT COMMITTEE

JUNE 30, 2009

William H. Smagula
Director of Generation, Public Service of New Hampshire

Elizabeth H. Tillotson
Technical Business Manager, Public Service of New Hampshire

Clean Air Project
Merrimack Station

Clean Air Project – Merrimack Station

Update to the NH Legislative Oversight Committee
Public Service Company of New Hampshire
June 30, 2009

Table of Contents

June 2009

Public Service Company of New Hampshire

Merrimack Station
Clean Air Project

Cost, Contract, Construction, and Schedule Update

Cost & Contract Information

1. **Total Project Cost Estimate** (no change from figure contained in Summer, 2008 filings with U.S. Securities and Exchange Commission and N.H. Public Utilities Commission) — **$457 million**

ITEM	*APPROXIMATE COST*
▪ **Portion of Estimated Total Project Cost resulting from Contracted Goods and Services**	$345 million
▪ **Portion of Estimated Total Project Cost from Investment Carrying Costs (Allowance for Funds Used During Construction [AFUDC])**	$55 million
▪ **Portion of Estimated Total Project Cost from Fees & Payments**	$8 million
▪ **Internal Labor Costs**	$7 million
▪ **Indirect Costs and Contingencies**	$42 million
TOTAL	**$457 MILLION**

2. **Status of Contracted Work**

Portion of Estimated Total Project Cost for Goods and Services under Contract as of this Date: *Approximately $256 million (about 75% of total estimated project contract costs)*

Major Contracts Executed and in Place include:

- *Program Manager Services (Engineering Design and Construction Management)*
- *Flue Gas Desulphurization System (Scrubber system)*
- *Material Handling System*
- *Site Preparation*
- *Chimney*
- *Wastewater Treatment Facility*
- *Foundation Installation & Misc*
- *Electric Power Distribution U/G*
- *Booster Fans and Motors*

Contracts Remaining:

- *No major contracts remain*
- *A number of minor contracts including ductwork, dampers and piping; plant control systems; continuous emissions monitoring system; etc.*

Contract Structure: *Majority of costs are controlled by fixed price contracts, reducing future escalation exposure.*

Construction

3. Status of Construction

Major Construction began on March 9, 2009 with the receipt of the Temporary Permit

Number of jobs created:

- *approximately 150 - 200 contractors on site at this time*
- *at peak construction, 300-400 jobs*

New Hampshire contractors and companies on site at present:

Contractors on site at this time include:

- *Carpenters*
- *Laborers*
- *Iron workers*
- *Operators*
- *Concrete finishers*
- *Pipe fitters*
- *Electrical workers*

(Representing members of the following unions: New Hampshire Local 668, Local 118, Local 7, Local 98, Local 3, Local 490. Local 131, Local 669, Local 609, Local 4
Massachusetts Local 127, Local 549, Local 687, Local 1485, Local 534, Local 1282, Local 70, Local 1, Local 107, Local 108, Local 243, Local 537, Local 387, Local 175)

New Hampshire companies on site at this time:

Over 30 NH companies are providing primary services to the project with over 25 additional support companies (including as shown below)

- *Aggregate Industries*
- *Ayer Electric*
- *Eastern Analytical, Inc*
- *George Cairns & Sons*
- *New Quality Fence Corp.*
- *North Branch Construction, Inc*
- *Redimix Concrete Inc.*
- *Scanada International Inc.*
- *TF Moran*
- *Weaver Brothers*

Schedule

4. Status of Schedule

Effective Date of Scrubber Law: June 8, 2006

Statutory Mandatory Project Completion Date: July 1, 2013

Current Estimated Project Completion Date: June, 2012

Estimated Benefits to Customers from Early Completion (June 2012):

- ***ECONOMIC***
  RSA 125-O:16 Economic Performance Incentives: Customers benefit from early emissions reduction credits that can be converted to fungible SO2 allowances

  AFUDC Carrying Costs: At end of project, AFUDC is high, so completing the work ahead of schedule can save millions of dollars.

- ***ENVIRONMENTAL***
  Estimated Additional Emissions Reductions Achieved with an Early Project Completion:
  - *Eliminates over 220 pounds of mercury;*
  - *Eliminates over 31,000 tons of SO2;*
  - *Provides additional reduction to particulate emissions.*

Note: *These early completion benefits to customers are contingent upon the estimated early project completion date. Any delays in the project, whether from technical, regulatory, or judicial causes, will reduce these projected benefits.*

Clean Air Project Permit Overview

Below is a list of the majority of permits obtained to date.

Federal

FEDERAL AVIATION ADMINISTRATION (FAA):

- Chimney
- Temporary Cranes

ENVIRONMENTAL PROTECTION AGENCY (EPA):

- Storm Water Discharge – Notice of Intent

State

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES (NH DES):

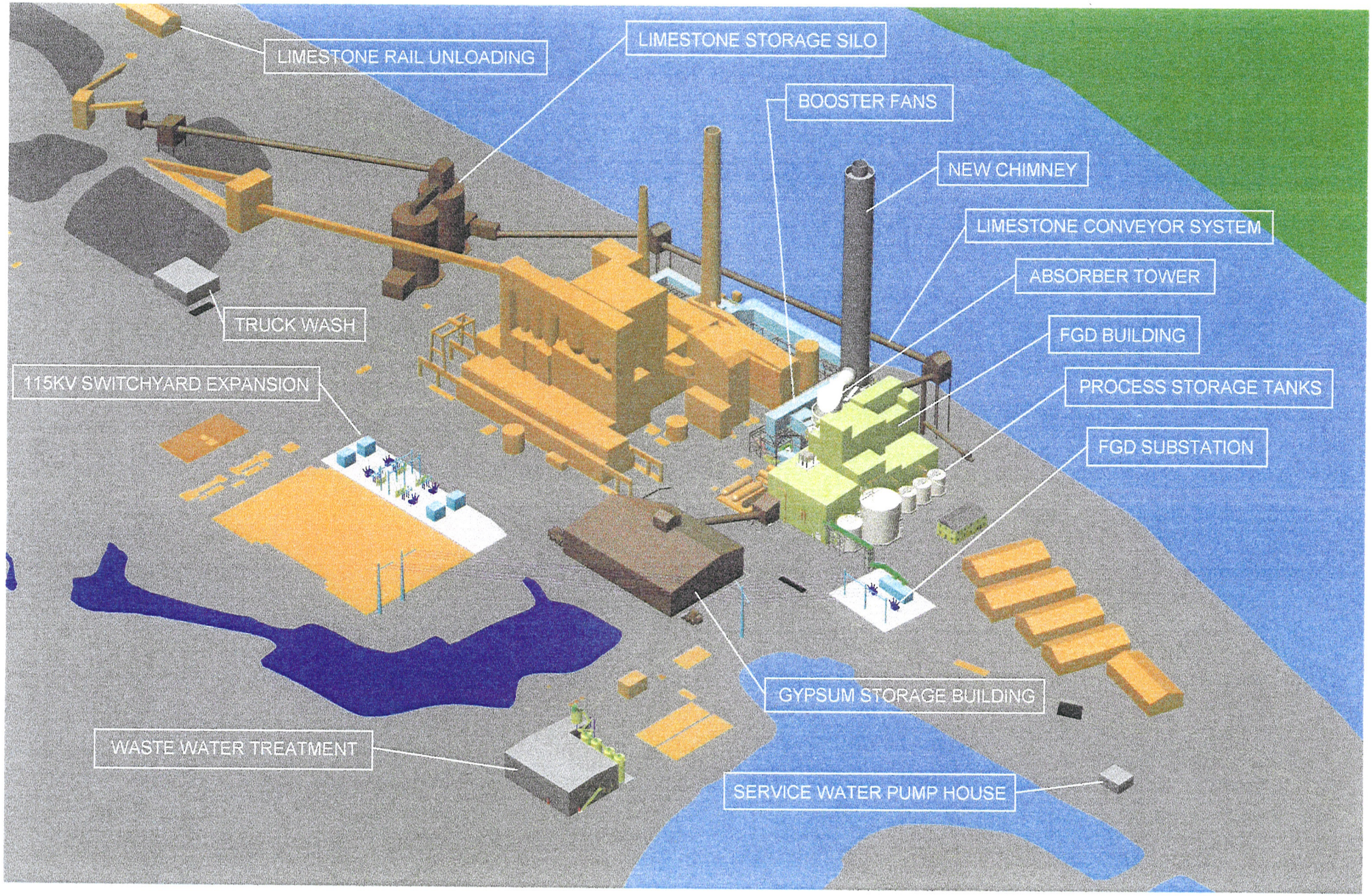
- Air Permit
- Styrene Air Permit (Chimney Liner Fabrication)
- Phase 1 Alteration of Terrain Permit
- Phase 2 Alteration of Terrain Permit
- Asbestos Demolition/Renovation Notification
- Approval of Construction of Guard Station Septic System
- Exemption for Vested Rights Shoreland Protection
- Approval of North Septic System
- Wetlands Permit/Dept. of Army Corp. of Engineers / Dredge and Fill Permit
- Approval of South Septic System (CMA)

Local

TOWN OF BOW:

- Phase 1: Site Plan Review 203-08; Wetlands CUP 410-08; Aquifer Protection Conditional Use Permit (CUP) – 411-08
- Phase 2: Site Plan Review 203-08; Wetlands CUP 410-08; Aquifer Protection CUP – 411-08
- Construction/Building Permits:
  - Chimney Foundation
  - Absorber Vessel Foundation
  - Scrubber Bottom Mat Foundation
  - FRP Building Foundation
  - Chimney Shell
  - Scrubber Top Mat
  - Guardhouses and Attendee Booths
  - Application for Driveway Permit
  - Chimney Building Structure
  - Installation of Construction and Storage Trailers
- Demolition Permits: Unit 1 Original out Buildings, Plant Entrance and Guard Office
- Special Exceptions and Variances:
  - #106-08 Special Exception – Gypsum Storage Bldg.
  - #107-08 Special Exception – WWT.
  - #106-09 Special Exception - FRP Bldg.
  - #108-08 Limestone Silo (1) Variance; and Silo (2) Variance
  - #109-08 Wet FGD Bldg Variance

PUBLIC SE[illegible]ICE OF NEW HAMPSHIRE
MERRIMA[illegible]K CLEAN AIR PROJECT



June 4, 2009 Start of Concrete Placement on Chimney Shell

Chimney Shell as of June 25, 2009

Stack Liner Fabrication Area

Major Foundations for the FGD Building including the Absorber Vessel

Merrimack Station

Unit 2

Activated Carbon Injection - Overview and Status

- Sorbent Injection Trial Results and background
- DOE Project Excerpts

Merrimack Unit 2 - Sorbent Injection Trial to Reduce Mercury Emissions

Jan-05

Test Results as presented by Sorbent Technologies (STC) November 2005

Method	Initial Summary of Results - Nov 05	Revised Summary or Results- Jan 05	Change in Mercury Emissions Reduction	
SCEM (semi continuous emissions monitoring)	29%	29%	No change	
OHM (Ontario-Hydro method)	43%	11%	-32%	note 3
Method 324 (EPA alternative method)	25%	26%	1%	

Notes-

1. Changes were a result of the QA/QC (quality assurance/quality control) process required and completed by NHDES.
2. Three measurement testing methods were used. Both the OHM and Method 324 were stack/duct testing methods sub-contracted by STC.
3. A number of analysis and reference errors by sub-contractor completing the OHM method were identified by NHDES.

   This correction resulted in significantly less mercury removal calculated by this method.

The corrected data shows mercury removal during the trial was 20%+/-10%

Evaluation of Control Strategies to Effectively Meet 70 –90% Mercury Reduction

PSNH Merrimack Station
Site Project Kickoff Meeting

August 24, 2006

Jean Bustard, Tom Campbell - ADA-ES, Inc.
Bill Smagula, Paul Raichle, Laurel Brown - PSNH

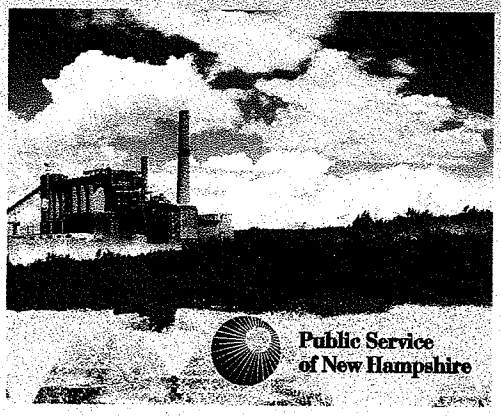
DOE/NETL Project Manager: Andrew O'Palko

Merrimack Unit 2

MK2: 335 MW

Coal: Eastern Bit and Venezuelan Blend
~50/50 split
1.0 – 1.3% sulfur
(1.2%S is current target)

Cyclone Boiler
SCR
C-ESP



ADA-ES

Project Goals

- Evaluate the capability of SO_3 tolerant sorbents to achieve 70 to 90% mercury removal
- Evaluate the effect of co-benefits from SO_3 mitigation on mercury control, and the balance of plant benefits from lowered flue gas temperatures of increased plant efficiency and overall reduced emissions
- Evaluate the impact of sorbent injection on ash disposal
- Support the education and transfer of information and results to local and state interests groups

ADA-ES

DOE Areas of Interest

- Testing with a cyclone boiler
  - *Limited testing data from Sorbent Technologies available from Summer 2005*
- High flue gas temperatures (330 - 350°F)
- Smaller SCA ESPs
- New SO_3 tolerant activated carbons
- Effect of different coal blends on mercury removal
- New technologies??? (Mobetec/MinPlus)

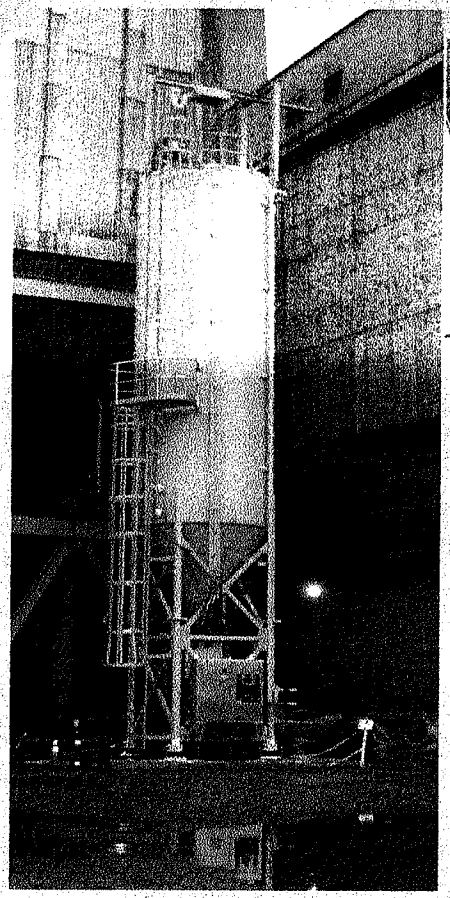
ADA-ES

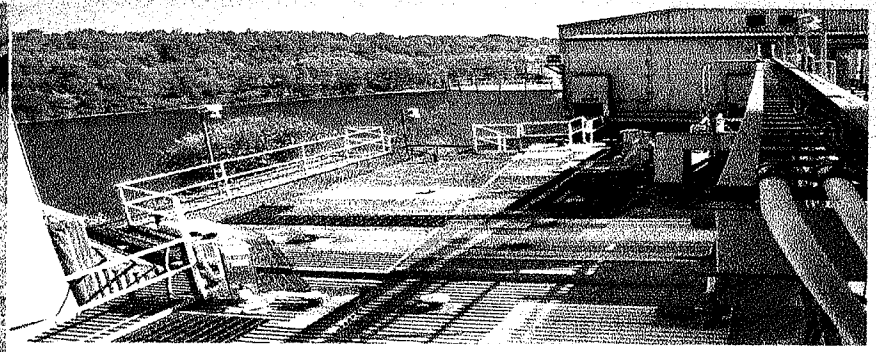
Project Tasks

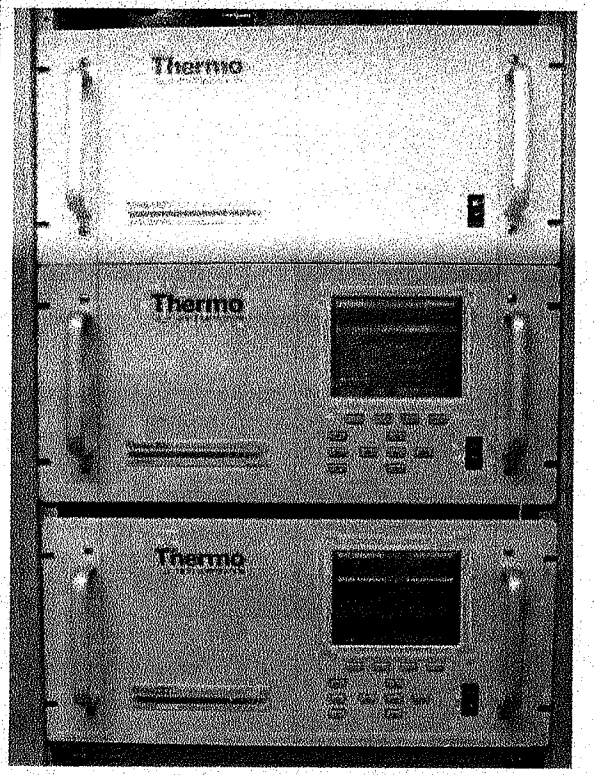
1. Pre-Test Planning
2. Design for site-specific needs and install equipment
3. Field testing
   - Sorbent Screening Tests
   - SO_3 Co-Benefits Analysis
   - Baseline testing
   - Parametric testing
   - Choose Long-Term Test Parameters
   - Long-term testing
4. Coal, Ash, and By-Product Sample Evaluation
5. Technology Transfer
6. Management and Reporting

ADA-ES

Evaluation of Sorbent Injection for Mercury Control







NETL
NATIONAL ENERGY TECHNOLOGY LABORATORY

Public Service of New Hampshire

The Northeast Utilities System

Project Review 2007

June 26, 2007

DOE Cooperative Agreement DE-FC26-06NT42780
DOE/NETL Project Manager: Andrew O'Palko

ADA-ES

Mercury Control Evaluations: ACI Timeline

Pilot Testing

1991 **EPRI**: Comanche

1995 **EPRI:** Hudson
DOE/EPRI: Comanche

2001 **EPRI**: Boswell, Sherco, Pleasant Prairie Nanticoke, Miller, Coal Creek, Others
DOE/EPRI: Valley, Powerton

DOE Phase I: Pleasant Prairie, Gaston, Salem Harbor, Brayton Point)
EPRI: Abbott, Laskin, Stanton, Coal Creek
DOE Gaston

Full-Scale Testing

2004 **DOE Phase II:** Holcomb, Stanton, Yates, Meramec, Leland Olds, Laramie River, St. Clair, Buck, Monroe, Antelope Valley, Conesville, Independence, Big Brown, Council Bluffs,Louisa, Dave Johnston, Portland, Lee, Miami Fort

2006 **Industry:** Multiple
DOE CCPI: Presque Isle

2008 **DOE Phase III:** Hardin, Hawthorn, Mill Creek, Limestone, Merrimack **Commercial:** 10+

DOE: No funding for 2008

ADA-ES

Mercury Control Evaluation: PSNH Merrimack

2006

DOE Phase III Award: Merrimack

Kick Off Meeting, Test Plan
Equipment Procurement

Baseline: October
Co-Benefit: October - November
Parametric: November

2007

Parametric: January - March

Balance of Plant: March
PAC Silo Install: May - June

Long Term Test: June

2008

ADA-ES

Why Merrimack?

- Cyclone Boiler: relatively small fleet
  - Different Combustion Process
  - Different Ash Characteristics
- SCR: Flue gas characteristics
- High Flue Gas Temperatures
- Dual Particulate Collection Devices: ESPs

ADA-ES

Laboratory/Pilot Scale Studies

- Performance of Powdered Activated Carbon (PAC) influenced by the flue gas characteristics
  - APC Configuration
  - Coal Type
    - Halogen content (Cl, Br, other)
    - Sulfur content (SO_3)
  - Flue Gas Temperature
  - SO_3
    - From coal
    - SCR
    - Flue gas conditioning

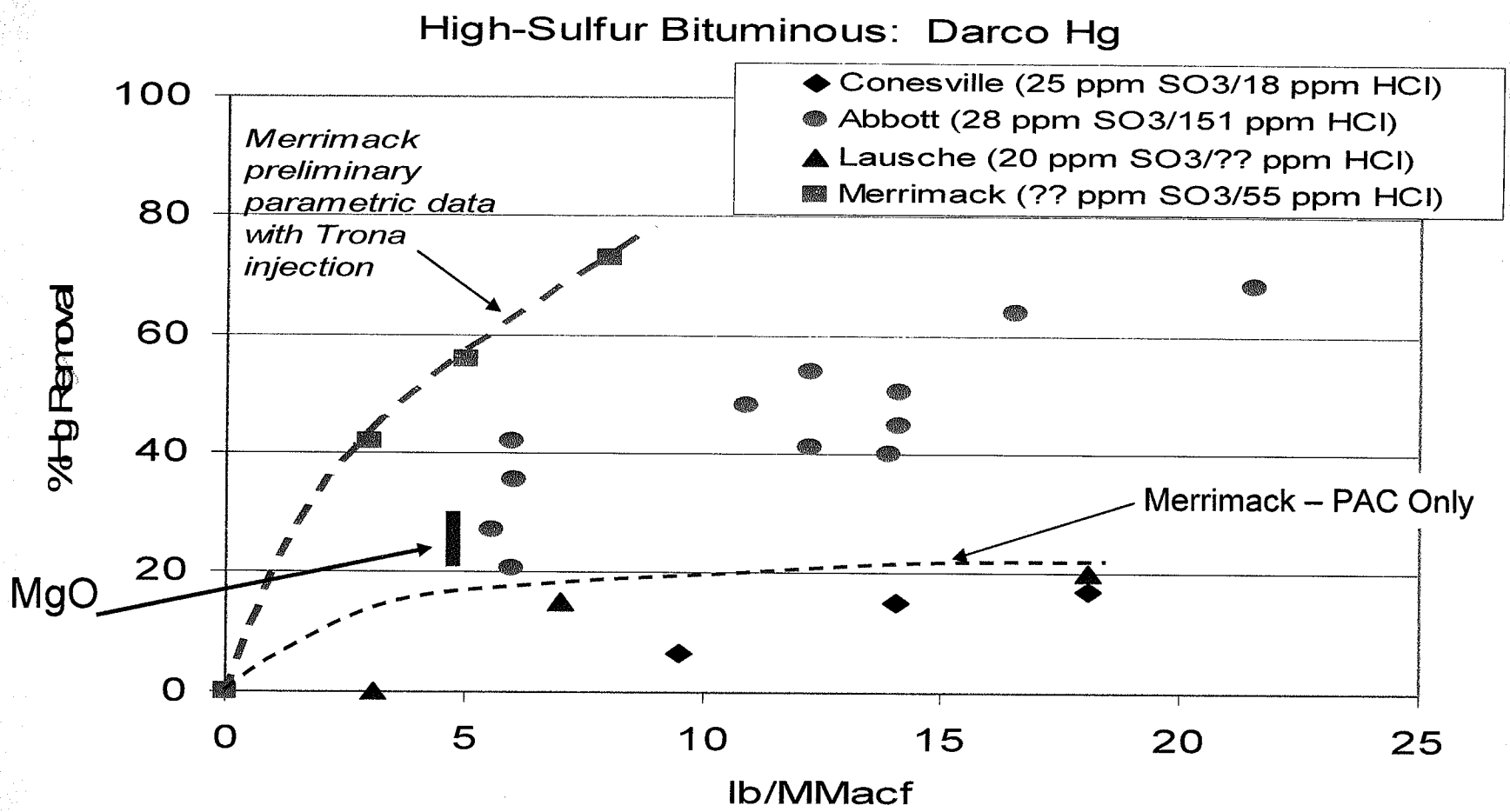
ADA-ES

Baseline Results

- Hg varies (range was 5 to 10 μg/m^3 from Aug 06 through Jan 07)
- No removal across the ESP
  - Based on CEM, STM
  - Low Hg levels in ash analysis (10 ppb)
- OH within 20% of Baseline CEM and STM results
- On and off site analysis of STM traps correlate well with inlet CEM
- >80% Oxidation of Mercury

ADA-ES

Parametric Test Results



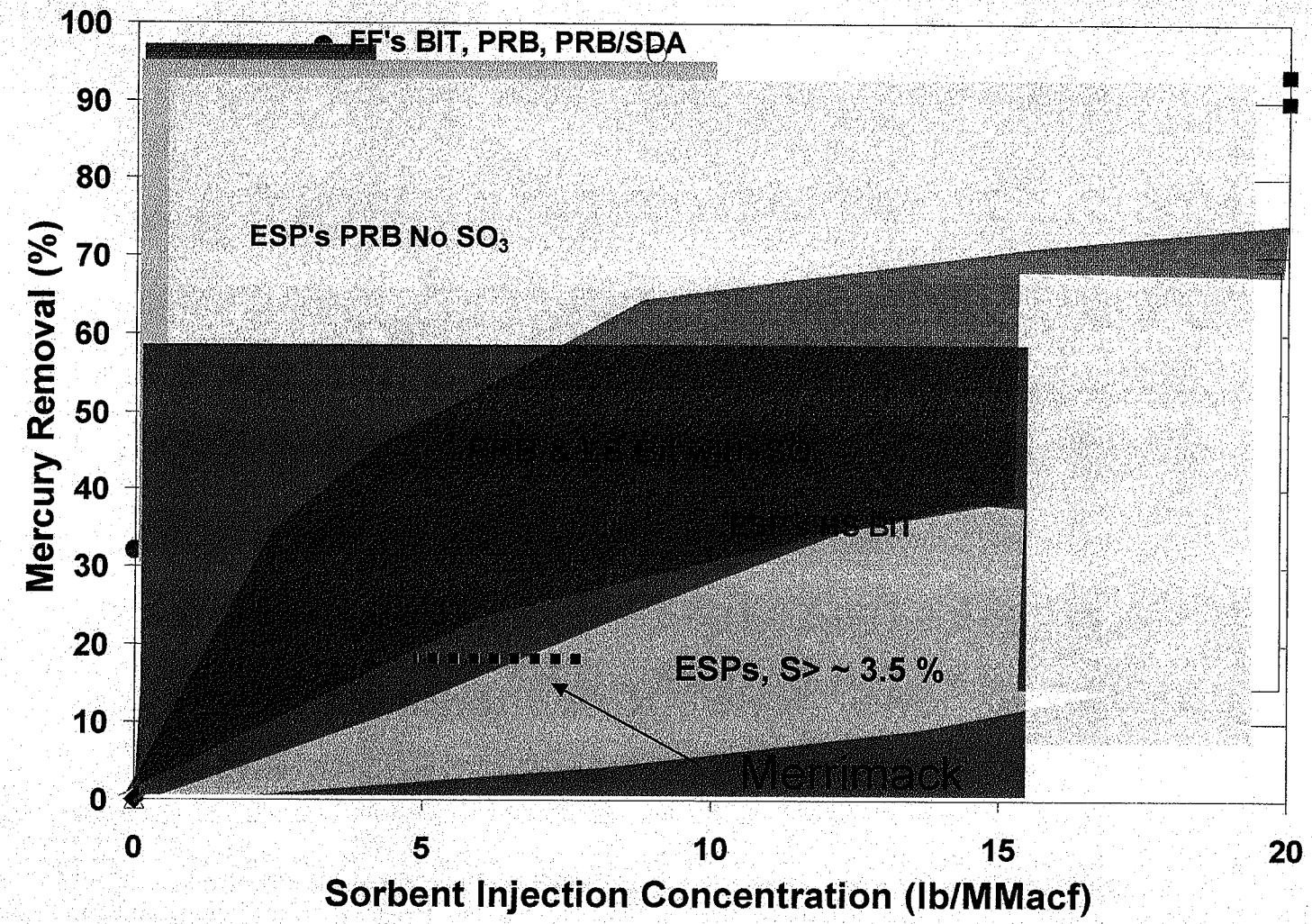
ADA-ES

Issues Remaining for Merrimack

- Ash Disposal
  - Plant has set up a schedule to dispose of the ash from the Original and Supplemental ESP hoppers separately
- NSR triggers – PM: 25ton/yr - ~7lb/hr – 98% ESP eff.
- Balance of Plant
  - Long term effects

ADA-ES

Mercury Reduction Trends with ACI on FF's and ESPs



ADA-ES

Ongoing Testing

- PAC Performance Enhancements
  - Fine PAC
  - Specialty Carbons and Blends
  - Co-Injection with Alkali Materials
  - Injection Location
- Balance of Plant Issues
  - Additional TOXECON II testing
  - Long Term testing of PAC injection upstream of an APH
  - Additional testing of Adsorbents for SO_3 control
  - General Specifications for TOXECON system designs

ADA-ES

Ongoing Testing

- Ameren's Labadie Power Plant
  - PRB coal
  - ESP
  - SO_3 FGC
- PSNH Merrimack Power Plant
  - E. Bit Coal + Offshore Supply
  - SCR + ESP
- RMP Hardin Generating Station
  - PRB Coal
  - SCR + Dry Scrubber + FF
- We Energies Presque Isle
  - PRB Coal
  - HS ESP + TOXECON

ADA-ES

Questions?

Jean Bustard or Tom Campbell
ADA-ES, Inc.
(303) 734-1727
jeanb@adaes.com
tomc@adaes.com

ADA-ES

THE BRIDGE TO NEW HAMPSHIRE'S CLEAN ENERGY FUTURE

Public Service of New Hampshire

The Northeast Utilities System





Clean Air Project

Merrimack Station

Today's Agenda

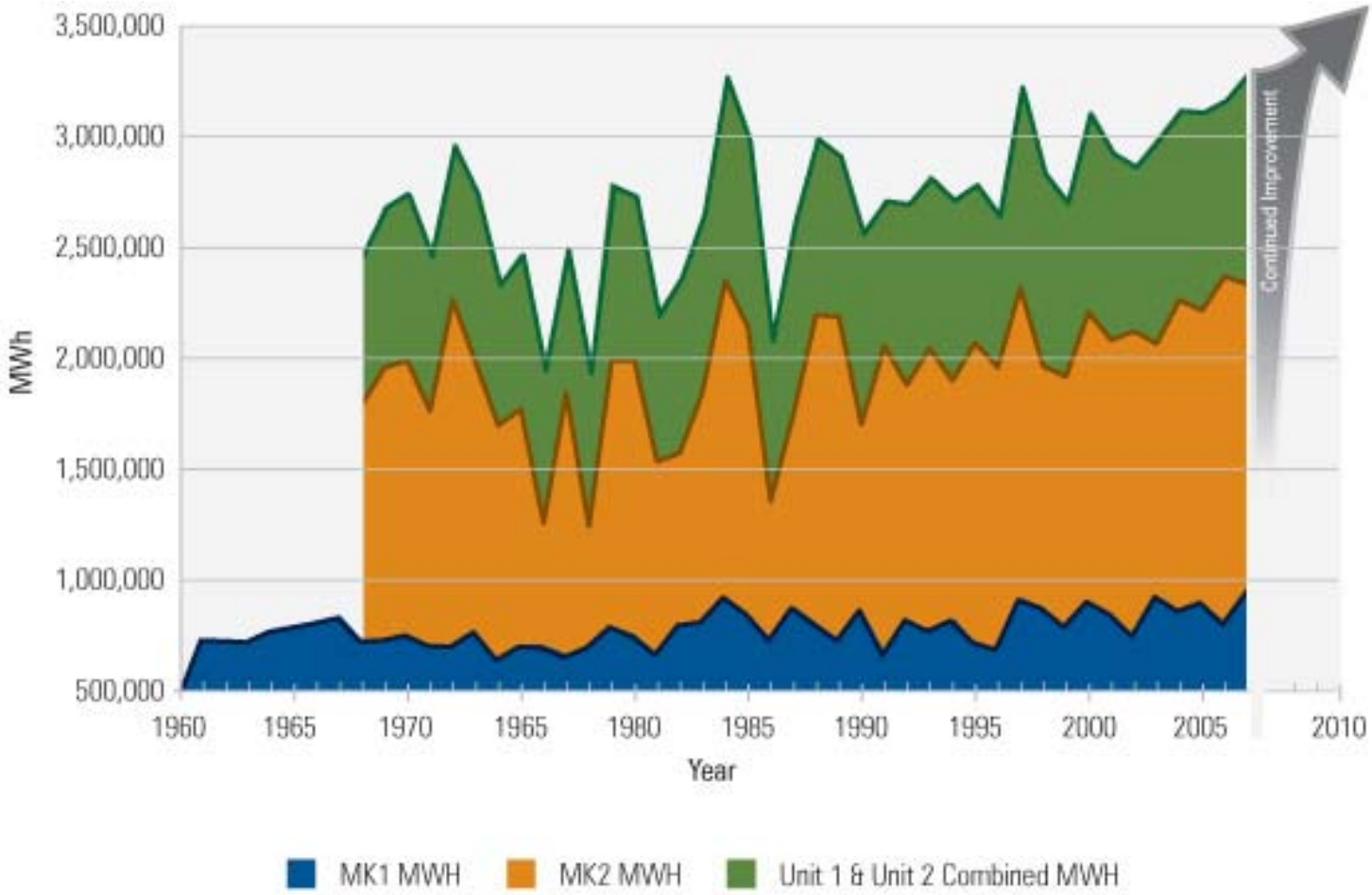
- The Clean Air Project
- Cost
- Project Benefits
- Senate Bill 152
- The Bridge to NH's Clean Energy Future

Merrimack Station in Bow

- **New Hampshire's workhorse**
  - Base load power plant that operates 24/7
  - Coal-fired
  - 433 MW net output
  - Enough energy for 190,000 NH households
    - » 35% of PSNH's generation mix
  - Meets or exceeds all environmental regulations
    - » 20 years of progress guided by state and federal clean power laws (NH Clean Power Act, RGGI, Mercury Law)

Merrimack Station is Running Better than Ever

PSNH customers have invested millions over the years to upgrade equipment and maintain Merrimack Station in top operating condition.

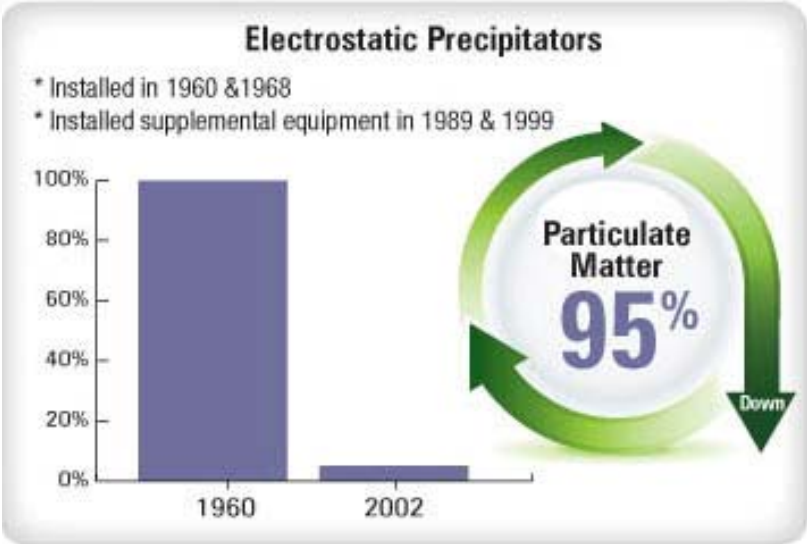


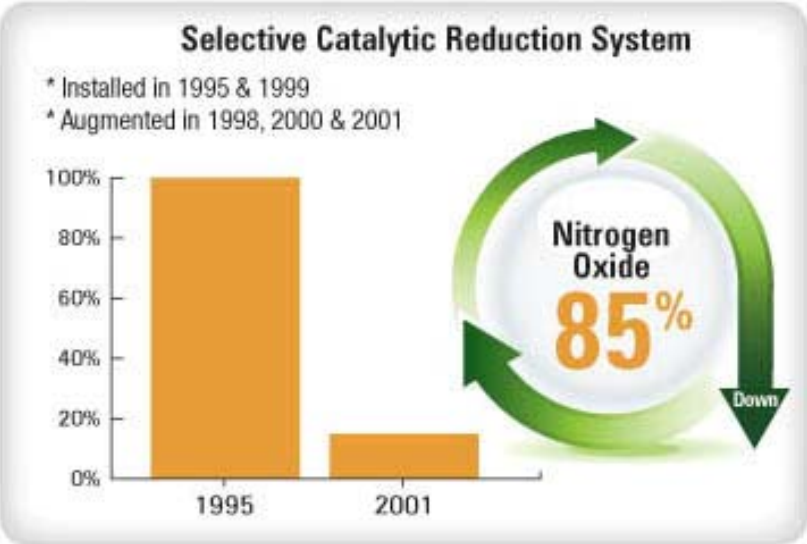
New Hampshire's Blueprint for Lowering Emissions: The 2002 Clean Power Act

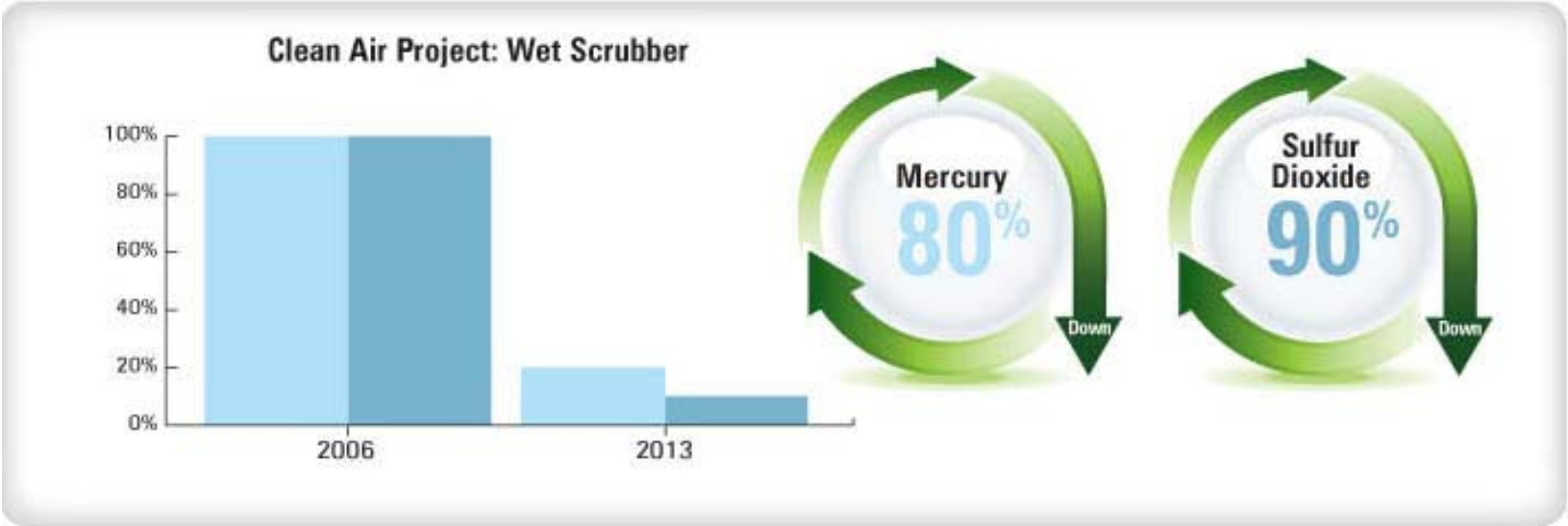
	NO_X	**85% Reduction – 1995/2000** Achieved through installation of groundbreaking Selective Catalytic Reduction system
	Mercury	**80% Reduction or Better – 2013 or sooner** Required under the Mercury law that was passed in 2006
	SO_X	**90% Reduction or Better – 2013 or sooner** A benefit of the Mercury law that was passed in 2006
	CO_2	**Stabilized emissions through 2014:** **10% reduction from 2015 – 2018** RGGI legislation passed in 2008

Ground-breaking emissions reductions achieved through forward-looking legislation, careful implementation, and staying the course.

Emissions Control Technologies Installed at Merrimack Station: 20 Years of Progress



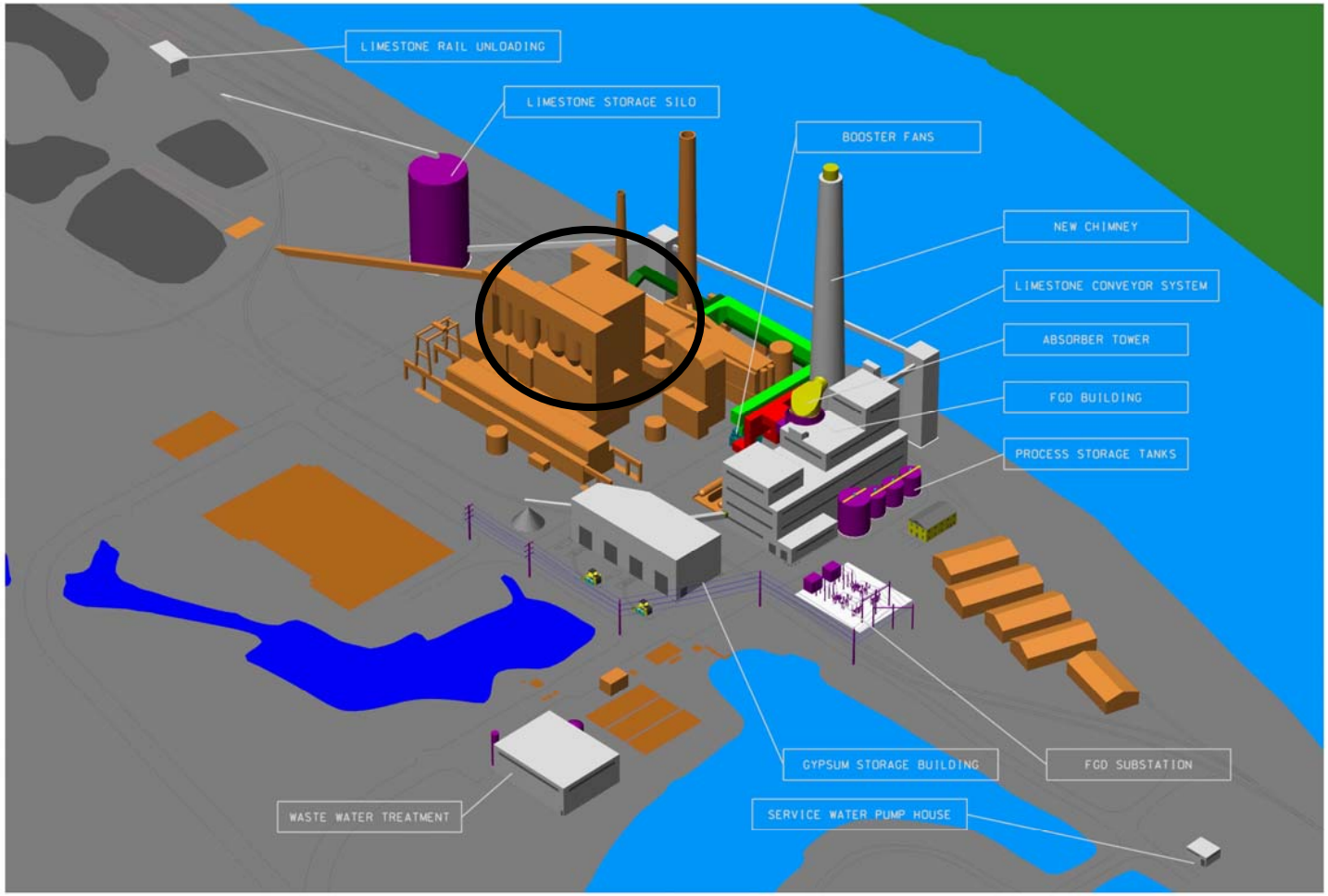




Status of the Clean Air Project

- In a 2006 law, the NH Legislature mandated that a scrubber be installed as soon as possible, but no later than July 2013
- Even without the state law, the scrubber will be needed to meet impending federal emissions requirements
- PSNH is currently halfway through the six-year project
- $230 million (over half of the cost to engineer and build the scrubber) has been spent or contractually committed
  - This cost will have to be recovered from PSNH customers whether or not the scrubber installation is completed

Understanding the Scope of the Clean Air Project
Merrimack Station: 2012



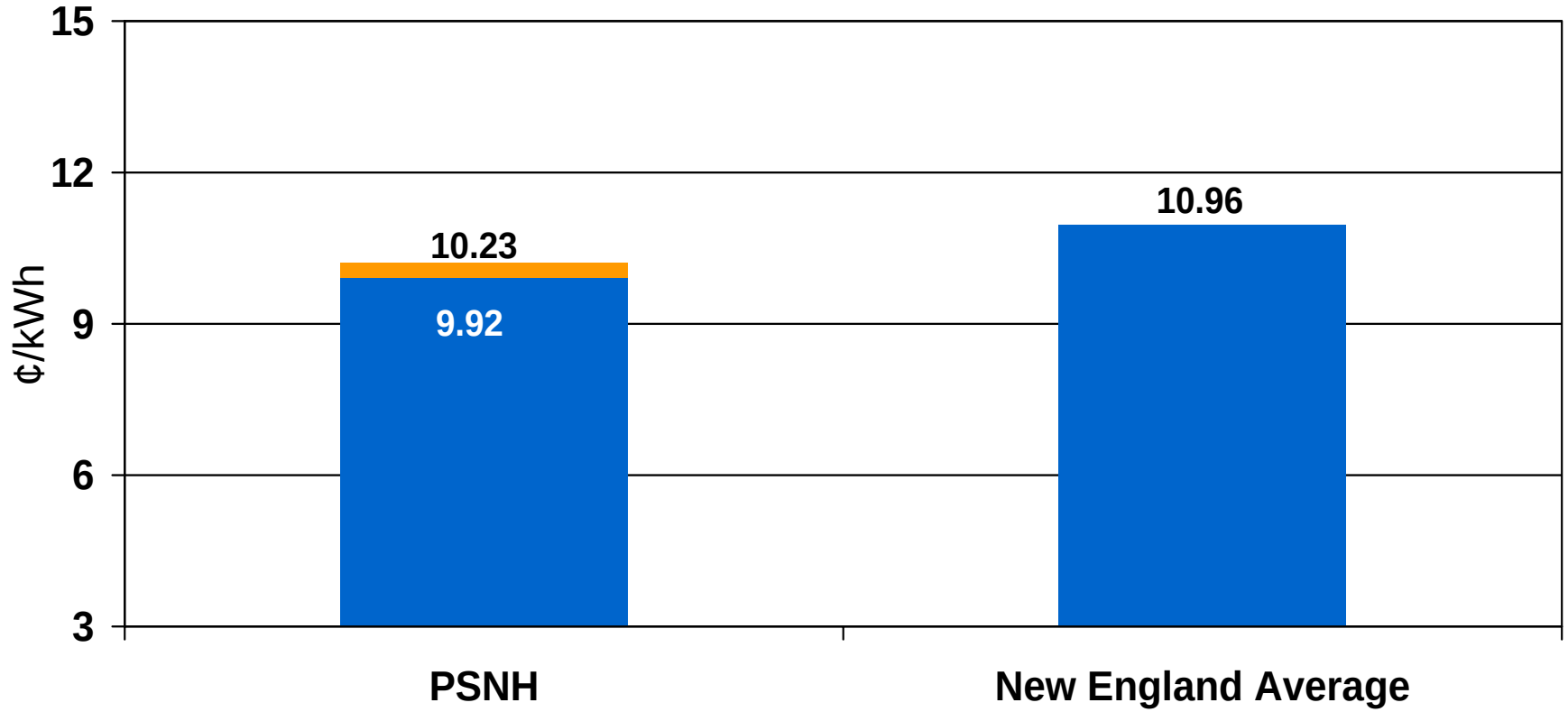
Project Schedule

Project	2006	2007	2008	2009	2010	2011	2012
NH Mercury Reduction Act							
Preliminary Engineering							
Program Manager Hired							
Detailed Engineering							
Major Contracts Awarded							
Major Permitting							
Preliminary Site Prep.							
Major Construction (underway)							
Testing & Commissioning							
In Service							

COST

With the Scrubber, PSNH's Energy Rate Will Remain Below the New England Average

Upon completion, the Clean Air Project will add an average of about 3/10's of one cent to PSNH's Energy Charge.



Energy Rate as of January 1, 2009

The total PSNH energy charge, if the cost of the Clean Air Project was in PSNH's rates today

Major Cost Components

- FGD (flue gas desulfurization)
- Chimney
- Material handling system
- Waste water treatment facility
- Program Manager
- Balance of plant (e.g., duct work, electrical)
- Site work (e.g., ground work, foundations)
- NU labor
- Financing, insurance, etc.

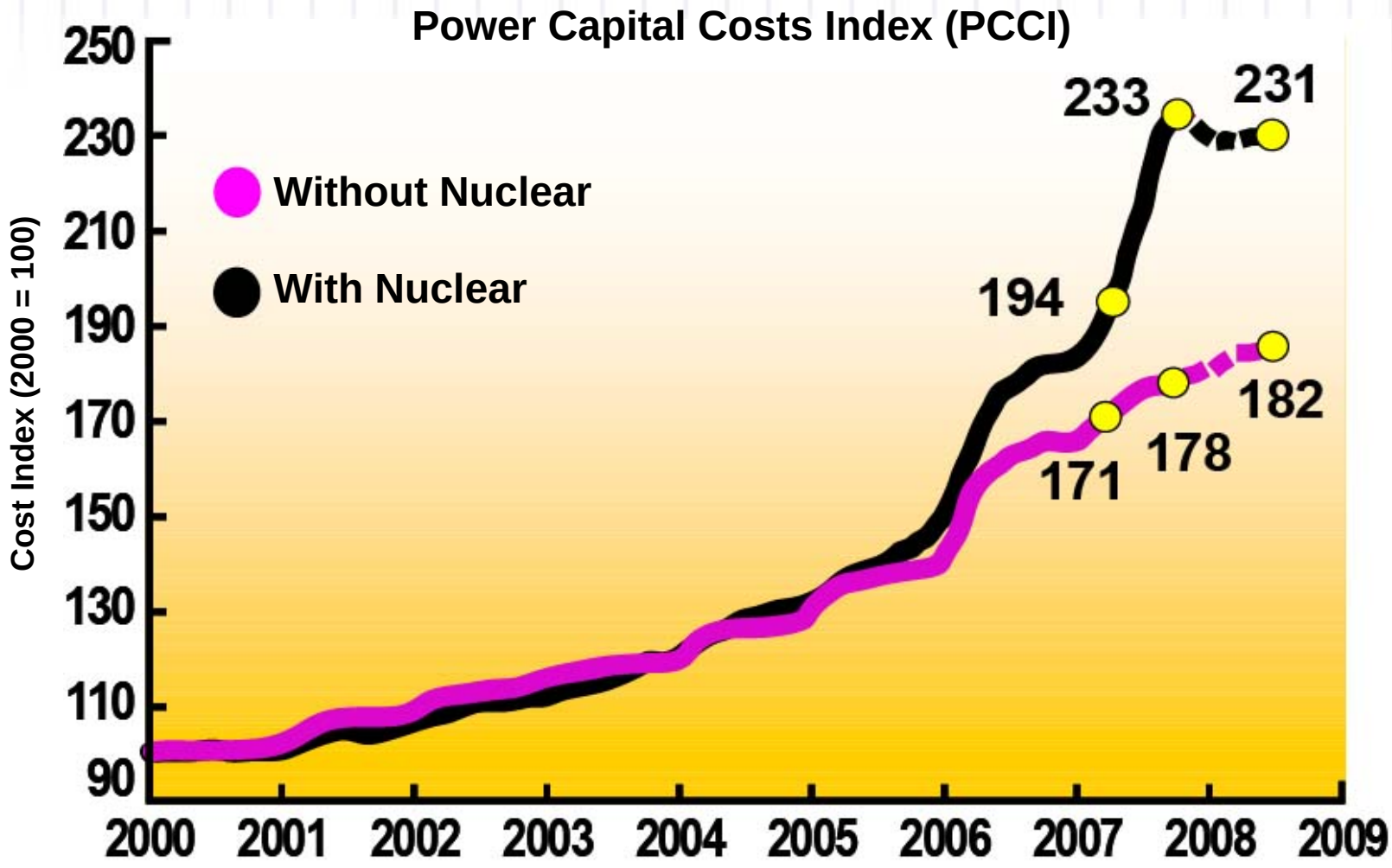
2005 / 2008 Cost Comparison

Project Components	2008 (firm price contracts)	2005 (initial estimates)
5 Major Contracts • Scrubber system, chimney, material handling system, wastewater treatment facility, program manager	**$213M**	$149M
Balance of Contracts and Materials • Ductwork, foundations, booster fans and motors, electrical, site work, etc.	**$135M**	$48M
Owners Costs • Project financing, insurance, NU labor, and overhead costs	**$80M**	$35M
Escalation and Contingency	**$29M**	$18M
TOTAL	**$457M**	$250M

Three Major Drivers of Cost Increase

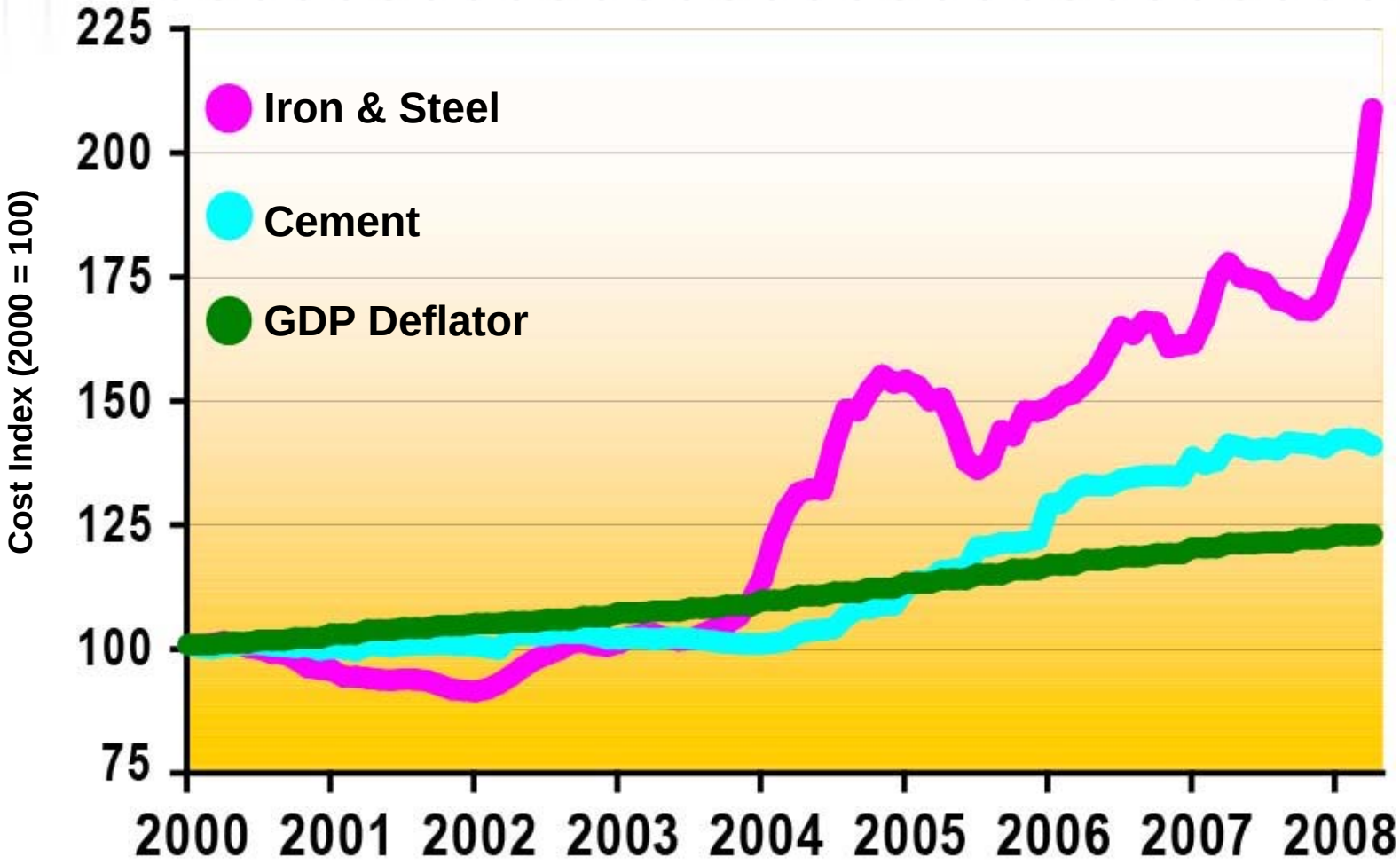
- **Economic and Commodity Volatility**
  - Significant cost increases reflective of national and world economy
  - Increased financing costs
- **Site Specific Factors**
  - Scrubber must guarantee 85% mercury reduction
  - Two power generation units of differing size must connect into one scrubber system
- **Progression from Initial Estimate Phase to Design Phase**
  - Firm price performance-based contracts with vendor guarantees have replaced initial estimated pricing
  - Majority of project design completed, replacing preliminary engineering used to determine initial estimates

Capital Costs Increased Significantly



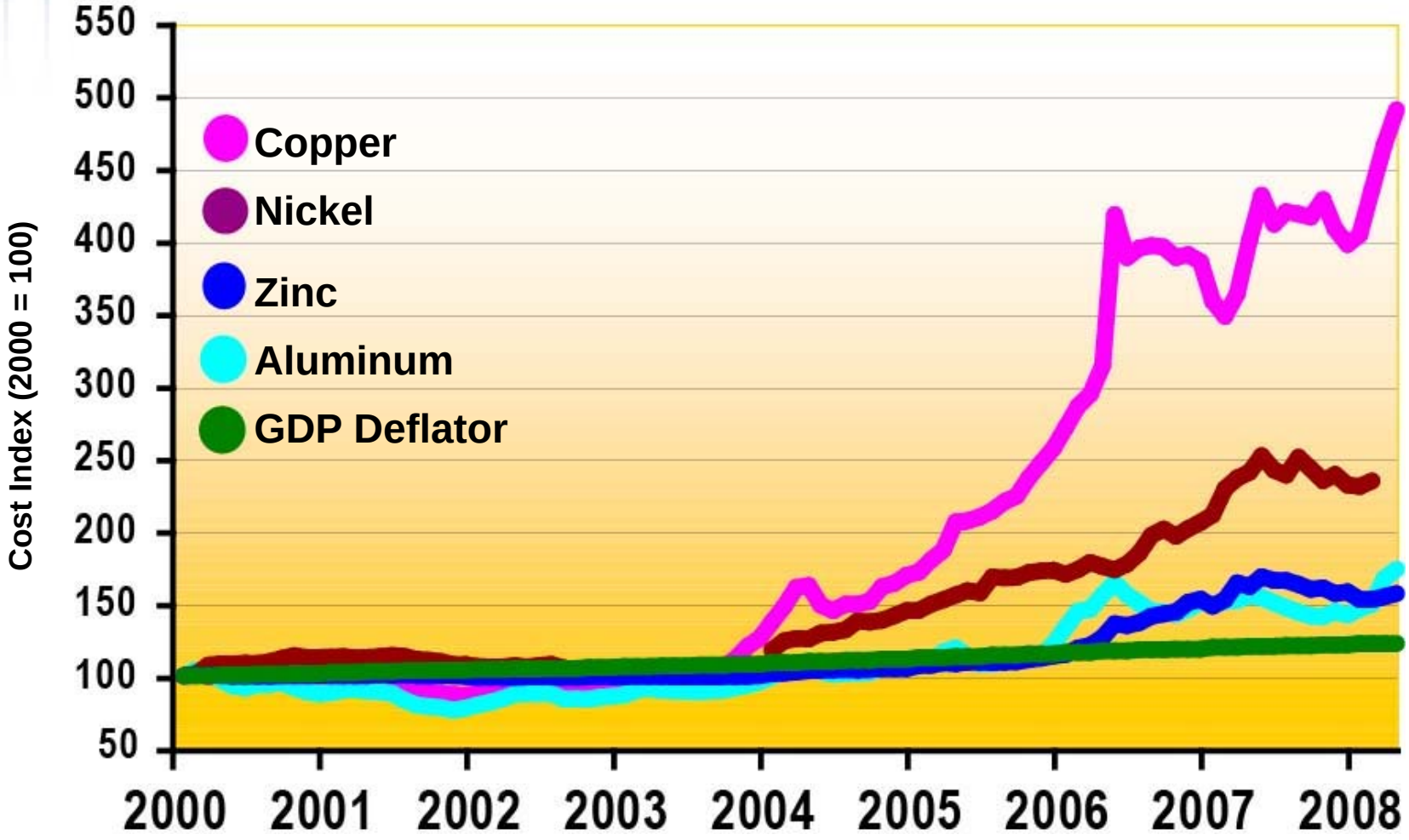
Source: Cambridge Energy Research Associates. 71023-12

Primary Construction Costs



Source: Derived from Bureau of Labor Statistics Data and Bureau of Economic Analysis Data

Secondary Construction Costs



Source: Derived from Bureau of Labor Statistics Data and Bureau of Economic Analysis Data

Overview of Cost Increase: From Estimate to Implementation

2005: $250 million

- Preliminary estimate for generic scrubber
- Requirements for aggressive 85% mercury reduction and 2013 completion date were not yet established by Legislature
- Based on study performed by national engineering firm Sargent & Lundy, with additions for contingencies by PSNH
- Reflects market conditions in early 2005
- Reflects inability to forecast the highly volatile global market environment that emerged between 2005 and 2008

2008: $457 million

- Confirmed cost for a scrubber that is required to reduce mercury emissions by 85% (one of the first in the nation)
- Includes guarantee from vendors for 85% mercury reduction
- Based on highly detailed engineering specs and firm price contracts for major components
- Reflects realities of market conditions in 2008 (including the cost of financing)
- Comparable with other multiple-unit scrubber installations now occurring elsewhere in the country
  - Reaffirmed by independent firm Power Advocate, Inc. in March of 2009

PSNH's Approach Is Designed to Reduce Customer Risk

- Cost risks for major components put on vendors, not customers
  - Obtained firm price contracts for "critical path" components with long lead times
  - Developed strict performance criteria, and required performance guarantees from vendors
- At every step of the way, we have affirmed pricing to ensure it is in line with marketplace
  - Independent firms retained to provide market analysis and price benchmarking in 2005, 2006, 2007, 2008, and 2009
  - Confirmed project costs are consistent with market prices for projects of similar scope and size
- Delayed subcontracts when possible to take advantage of opportunities for better price negotiations

Customer Cost Safety Nets

- PSNH has legally binding, firm price contracts in place for major components of project
- When the project is complete, the NH Public Utilities Commission will scrutinize every dollar spent on the project before any money can be recovered from customers through PSNH's rates
- PSNH customers (esp. commercial customers) can switch to a different energy supplier at any time to avoid paying costs associated with the scrubber
- The bottom line:
  - Installation of the scrubber at $457M continues to be a better option for PSNH customers than purchasing replacement energy in the open market

PROJECT BENEFITS

Project Benefits

Clean Air Project
Merrimack Station

$$$

- **Rates:** PSNH customers avoid paying approx. $1 billion in stranded and replacement energy costs over 15 years
- **NH Jobs:** 400+
- **Local Economy:** Up to $50M annual benefit
- **Taxes & Fees:** $5 million annually to NH
- **Passenger Rail:** Freight rail to MK Station financially underpins the proposed passenger rail system

Environment

- Guaranteed mercury and sulfur dioxide reductions
- Meets all state and federal emissions requirements
- MK Station one of the cleanest coal plants in the nation

Energy

- Reliable, 24/7 electricity output
- Energy security when other fuels are in short supply
- Certainty as renewable energy sources are developed

SENATE BILL 152

Impact of Senate Bill 152

- No bill is necessary to understand the cost change outlined in earlier slides
- The only alternative to installing the scrubber is to NOT install the scrubber
  - *$457M for scrubber is not transferrable to other clean energy projects*
- Without the scrubber, Merrimack Station will be out of compliance with state and federal laws, which would lead to a shutdown of the plant
- PSNH customers could be on the hook for $300 million in stranded costs, with nothing to show for it
  - $230M for scrubber costs already committed
  - $63M for undepreciated cost of Merrimack Station in 2013

What Is the Harm in a 90-Day Study?

- What a study will **NOT** do:
  - Change the cost of the scrubber
  - Change Merrimack Station's fuel source
  - Provide accurate forecasts for the price of oil, gas, coal, or financing rates
  - Tell you what federal regulations will be passed and when
  - Tell you how much renewable energy NH will build, where it will be located, and when it will be in service
  - Accurately predict the future
- What a study **will** do:
  - Invite lengthy speculation and create momentum to not install the scrubber
  - Set Merrimack Station on the path to a shutdown

What Is the **Benefit** of a 90-Day Study?

- The study cannot change the price of the scrubber
- It cannot transfer the $457M scrubber cost to other energy projects
- If the study *supports* the scrubber installation, it is redundant and not needed
- The only logical purpose for performing a study is to create momentum to derail the scrubber installation

Voting in favor of SB 152 is voting to shut down Merrimack Station.

The Bridge to
NH’s Clean Energy Future

PSNH is Pursuing a Portfolio of Strategies to Advance Clean Energy in New Hampshire

Enhance and Expand Energy-Efficiency Programs

- Revise programs to meet modern needs
- Double investment in efficiency programs
- Goal of quadrupling energy savings for PSNH customers by 2025

Significantly Cut Emissions at Existing Power Plants

- Install scrubber at Merrimack Station
- Pilot alternative energy sources at PSNH facilities
- Increase efficiency at existing hydro plants

Invest in Renewable Energy Projects

- Small-scale projects (e.g. solar panels)
- Commercial-scale renewable power plants
- Import hydro power from Canada
- Provide transmission to connect customers with renewable energy sources

Conclusions

- **The Scrubber Project is NH's Bridge to a Renewable Energy Future**
- In the short-term, it is unrealistic to think that we can depend on new renewable energy sources in NH to replace the power produced by existing fossil fuel plants
- It is important to make our existing power plants cleaner and more efficient because they still provide most of our energy at the lowest cost
- Shutting down Merrimack Station would create needless economic harm to our state at a time when NH citizens are fighting every day to keep their jobs
- We implore you to vote NO to Senate Bill 152 -- *Voting in favor of SB 152 is voting to shut down Merrimack Station.*

Clean Air Project

Merrimack Station

Merrimack Station Clean Air Project

- PowerAdvocate, Inc.
  - Premier provider of supply-chain and sourcing solutions to energy companies
  - Direct experience on over 20 different FGD projects with 9 different companies in the past 5 years
- Merrimack Station Cost Estimate
  - 19 benchmark wet FGD projects were compared to Merrimack Station
  - Owner's costs and site specific factors were analyzed to make it "apples to apples"
  - Benchmark projects were escalated to 2012 dollars (Merrimack Station's projected in-service date)
  - Merrimack per kW cost of $580 is within both the benchmark range ($272-$704/kW) and median cost ($517/kW) of the other wet FGD projects
- Project Sourcing Process and Contracting Terms
  - A procurement strategy and competitive bid process were used to ensure cost controls for customers
  - Performance guarantees and cost risks were transferred to the key suppliers to provide customer cost protection
- Cost Savings Opportunities Exist
  - Market volatility and dropping commodity prices provide near term savings opportunities
    - $6M (35%) foundation contract savings
  - Other savings opportunities exist

PowerAdvocate

Public Service of New Hampshire

780 N. Commercial Street, Manchester, NH 03101

Public Service Company of New Hampshire
P. O. Box 330
Manchester, NH 03105-0330
(603) 634-3000
(603) 634-2213

longga@psnh.com

The Northeast Utilities System

Gary A. Long
President and Chief Operating Officer

September 2, 2008

Ms. Debra A. Howland
Executive Director and Secretary
New Hampshire Public Utilities Commission
21 Fruit Street
Concord, New Hampshire 03301

Re: ***Docket No. DE 08-103***
Public Service Company of New Hampshire
Merrimack Station Scrubber Project
Request for Information

Dear Secretary Howland:

Pursuant to the Commission's Secretarial Letter, dated August 22, 2008, Public Service Company of New Hampshire ("PSNH" or the "Company") provides this response to the Request for Information regarding the legislatively mandated installation of wet flue gas desulphurization technology ("scrubber" technology) at Merrimack Station, to be installed as soon as possible but in no case later than July 2013. We have enclosed an original and six copies of PSNH's response.

This filing demonstrates that following the installation of the scrubber, Merrimack Station will continue to be a vital base-load source for reliable and affordable power in the State of New Hampshire, and will have the added benefit of being among the cleanest coal-burning plants in the nation. PSNH is confident that up to the initiation of this inquiry, it was diligently pursuing and complying with the legal mandates contained in 2006 N.H. Laws, Chapter 105, the mercury emissions reduction law ("Scrubber Law"), by moving forward rapidly with the installation of scrubber technology at Merrimack Station.

As required by the Commission's Request for Information, PSNH is providing a memorandum of law, project status report, and response to specific economic inquiries. This information will serve to support the legislature's finding that the installation of the scrubber at Merrimack Station ("the scrubber project" or "Clean Air Project") is "in the public interest of the citizens of New Hampshire and the customers of the affected sources." RSA 125-O:11, VI. The legislature, in reaching its conclusion that the scrubber installation is in the public interest, did

not limit itself to economic considerations, but rather performed a careful balancing of the costs and the ensuing benefits to the public health, welfare, economy, and environment (including improved air quality and the protection of natural resources)—benefits which contribute to sustaining the vibrancy of the State and its citizens as a whole. As part of its inquiry, the Commission must review and comply with the General Court's Statement of Purpose and Findings (RSA 125-O:11) as well as the larger statutory context as delineated in the Findings and Purpose of the Multiple Pollutant Reduction Program (RSA 125-O:1)("the Clean Power Act") in which these societal prerogatives are prioritized.

PSNH has a long history of collaboration with state policymakers and the resolution of difficult and challenging environmental issues. We are proud of our consistently proactive environmental stewardship which includes: installation of the first-in-the-nation utility-owned selective catalytic reduction system at Merrimack Station Unit 2 in 1995 and Unit 1 in 1999 to capture NOx emissions; the successful, internationally lauded conversion of a fossil-fuel unit (Schiller Unit 5) in our fleet to a wood-burning facility; our vigorous collaboration on, and crafting of, the first-in-the-nation groundbreaking four-pollutant bill, the Clean Power Act, RSA Chapter 125-O; and now, the aggressive installation of a scrubber system at Merrimack Station to significantly reduce mercury and sulfur dioxide emissions in compliance with the Scrubber Law. At its core, the Scrubber Law is an environmentally motivated law which will result in improvements to air quality. With the Clean Air Project, PSNH will capture, at a minimum, 80% of the mercury entering its coal-fired power boilers which otherwise could be released to the atmosphere. Additionally, the scrubber technology will remove more than 30,000 tons of SO2 emissions each year. These significant environmental benefits were viewed by the legislature as critical goals, in the public interest, to be accomplished on an accelerated basis.

The Scrubber Law is itself another example of PSNH's willingness to work with state policymakers in resolving critical issues. It is the product of a lengthy collaborative effort that PSNH spearheaded along with the Governor's Office, the Office of Energy and Planning, the Department of Environmental Services, and a number of legislators and environmental groups. (See the legislative history included in PSNH's Memorandum of Law.) The legislature, recognizing that the Scrubber Law represented the delicate balancing of numerous interests, found the law in its entirety to be in the public interest, as it has plainly and clearly stated within the law itself, and, in fact, further determined to protect the integrity of the statutory language with a finding emphasizing the non-severability of the law's provisions. (RSA 125-O:11, VIII: "The mercury reduction requirements set forth in this subdivision represent a careful, thoughtful balancing of cost, benefits, and technological feasibility and therefore the requirements shall be viewed as an integrated strategy of non-severable components.")

The Clean Air Project is a vast and complex engineering and craft labor challenge that is in progress and will take another four years to complete. At its peak, and in addition to the engineering and management support services, the project will require the efforts of more than 300 union craft workers. PSNH has reached a written accord with organized labor leadership to utilize union labor on this project to ensure the availability of critical skilled craft workers and to prioritize work safety on the job. In a recessionary national economy, the importance of this

project to craft labor in terms of steady in-state employment cannot be over-emphasized—one more example of an important public interest.

Because of its size and complexity, the Clean Air Project must be an extremely well managed, carefully orchestrated project, and must firmly adhere to critical milestones established in the overarching project schedule which will control the work of numerous contractors and subcontractors. PSNH has already completed a number of critical milestones to ensure project success, as further detailed in this filing.

At this juncture, PSNH has diligently gone through competitive bidding processes for each major "island" of work and has proceeded to negotiate fixed-price contracts with selected vendors. The contracts for the scrubber itself and for the new chimney stand ready to be finalized and executed; the contract for the waste-water treatment facility and site preparation are in final negotiations. Any delay in issuing these contracts will be a major setback for this project and will result in additional costs to our customers. Contractors and their subcontractors are only willing to hold fixed prices for an abbreviated period of time given the rapid escalation of the prices of raw materials and their need to lock in shop time well in advance for the manufacturing of components. If any one of PSNH's major contractors is unwilling to hold prices or contractual terms or to extend the deadline for execution of contracts, the scrubber project schedule has the potential to be irreparably disrupted and harmed. This is because the nature of the scrubber project and the site layout require the sequential completion of many of the construction islands (for example, consider the new chimney: the foundation work must be done in non-winter months, followed by the construction of the chimney "shell" which must be completed in order for the area surrounding the chimney or "drop zone" to be released before other work can proceed for obvious safety reasons). As a result, this means that even a short delay now will have a domino effect and a greater than day-for-day impact on the entire project with the likely result of significant additional costs to the project.

We are mindful of the legislature's mandate that the scrubber project proceed on an accelerated basis and refer the Commission, once again, to the Statement of Purpose and Findings, as well as the legislative history (see PSNH's Memorandum of Law). Any delay in this project will result in added costs, while, conversely, an accelerated schedule will save money. Shaving six months to a year off the project timeline saves significantly on AFUDC costs, avoids escalation in costs of materials and labor, and will result in early compliance credits for PSNH's customers (Economic Performance Incentives, RSA 125-O:16). We respectfully ask the Commission's assistance in complying with the law by expediting the resolution of this inquiry.

It should surprise no one that the costs of this project have increased significantly over the original preliminary estimates made in late 2004-2005. On May 15, 2008, the *Wall Street Journal* reported on the escalation in prices of commodities due to unrelenting global demand--steel prices, just five months into the new year, were already up 40-50% for the year; coking coal and scrap steel, key ingredients in steelmaking, had soared 100%; along with a 71% increase in iron ore prices--all of which are "part of a broader surge in raw-materials prices amid tight supplies and soaring global demand, fueled in part by the rapid industrialization of India, China and other developing nations." However, the cost increases involved in a plant modification are

dwarfed by the costs of constructing a new plant which have more than doubled in recent years. According to the Cambridge Energy Research Associates, “the construction of new generating capacity that would have cost $1 billion in 2000 would cost $2.31 billion if construction began today” with most of that increase occurring since 2005. (*Wall Street Journal*, May 27, 2008.) PSNH would like to emphasize: time is money in this market.

Merrimack Station’s continued operation ensures that New England has continued fuel diversity and energy security. The New England region is already highly reliant on natural gas, and subject to its high price volatility and the vagaries of the natural gas market, as a fuel source for the power generation sector. Even so, there is very limited activity, and to this point in time, very unsuccessful efforts, to add new base-load power generation to the New England grid. As the economy remains difficult, and credit markets tight, the ability to site, permit, finance, and construct new base-load generation has become nearly impossible. Preservation of the key existing base-load generation resources like Merrimack Station, while maintaining its positive economics for customers, is critical to the region’s future. This is particularly true in the case of Merrimack Station which provides not only low-cost energy but has a remarkable record of reliability characterized by record-breaking periods of lengthy continuous operation (in 2004, Merrimack Unit 1 and Merrimack Unit 2 both outperformed previous station operation records—Merrimack Unit 1 ran continuously 122 days and Merrimack Unit 2 ran 147 days). In addition, in 2007, Merrimack Station produced more energy than it ever has in its decades of operation. Clearly, the Station is functioning extremely well, as a direct result of strategic equipment repairs and replacements, well executed maintenance work, well performed operations activities, a dedicated workforce, and a strong and experienced management team.

Beyond the benefits PSNH's operation of Merrimack Station provides to customers in terms of lower electric energy prices and reliability to the New England electric grid, it should be recognized that the operation of Merrimack Station is a significant contributor to the local and state economy—another fact supporting the legislature’s public interest finding. Merrimack Station employs approximately 100 highly skilled and dedicated employees in what has become an increasingly limited "manufacturing" sector of our state's economy. In addition, there is significant company support staff for the Station. During annual outages and construction projects, the number of jobs provided increases substantially. PSNH, through its operation of Merrimack Station, contributes annually $758,000 in state utility/property taxes and $2.7 million in local property taxes. This in-state support to the economy reaches beyond wages and tax benefits and extends to the large quantity of materials and supplies and services for which PSNH contracts to operate and maintain the facility on an annual basis.

PSNH has met every environmental challenge head on and met or exceeded expectations in achieving environmental benefits, all of which have been in the public interest. Today, the challenge is mercury—a challenge we are striving to meet. With the installation of a scrubber at Merrimack Station, PSNH will maintain and enhance its standing as the lowest emitting coal-fired power generator in the region. We are excited about this project and the positive impact it will have on our environment. We remain confident that this can be achieved while continuing to provide economic, reliable base-load power for our customers over the period of the scrubber's operation.

PSNH urges the Commission to act expeditiously to resolve this inquiry so that PSNH may resume the commitment of capital and manpower necessary to install the scrubber technology at its Merrimack Station as mandated by law. PSNH stands ready and willing to keep the Commission up to date on the status and progress of the Clean Air Project once we are able to proceed in accordance with the law.

Sincerely,

Gary A. Long

Gary A. Long
President and Chief Operating Officer

THE STATE OF NEW HAMPSHIRE
before the
PUBLIC UTILITIES COMMISSION

Public Service Company of New Hampshire
Merrimack Station Scrubber Project
Request for Information

Docket No. DE 08-103

Report

In its Secretarial Letter dated August 22, 2008 in this docket, the Commission notified Public Service Company of New Hampshire (PSNH) that it was conducting an inquiry into the status of PSNH's efforts to install a wet flue gas desulphurization system (scrubber technology) at Merrimack Station in Bow. Installation of the scrubber (the "Clean Air Project") is mandated by RSA 125-O:11 through 18 (the "Scrubber Law") to achieve reductions in mercury emissions. The Commission directed PSNH to file, by September 12, 2008:

I. a comprehensive status report on its installation plans;

II. a detailed cost estimate for the project;

III. an analysis of the anticipated effect of the project on energy service rates; and

IV. an analysis of the effect on energy service rates if Merrimack Station were not in the mix of fossil and hydro facilities operated by PSNH.

This report provides the information concerning PSNH's scrubber installation project (the Clean Air Project) requested by the Commission's secretarial letter.

I. SCRUBBER STATUS

PSNH is moving rapidly forward with the Clean Air Project to comply with the Scrubber Law's mandate to achieve significant reductions in mercury emissions at the coal-burning electric power plants in the state as soon as possible. RSA 125-O:11, I. Unless further delayed, PSNH will meet the statutory installation deadline of July 1, 2013, and is striving to have the scrubber operational sooner than that deadline. The scope of the Clean Air Project will encompass planning and design; schedule and cost development; oversight of multiple competitive bidding processes for engineering; equipment and system procurement, selection of contractors, contract negotiations and execution; sequential construction management of the various project components and interfaces, followed by the integration of those components into a functioning system; and operational start-up activities. All work on the Clean Air Project will be performed with safety as a high priority. To date, PSNH has spent approximately $10 million on the Clean Air Project.

A. Activities Performed during 2006

1. Merrimack Station began investigating operational changes at the facility that would provide the necessary flexibility in the design and engineering of a scrubber system. The catalyst replacement program on the previously installed selective catalytic reduction systems was reviewed and updated to accommodate operating requirements of a new scrubber and potentially improve the overall performance of the equipment.

2. Merrimack Station revised, tested and modified its ash handling operations and capabilities to provide necessary options for ash management in order to maximize unit operations when a new scrubber is installed.

3. Initial engineering was completed by Sargent and Lundy ("S&L") based upon information provided in 2005. S&L also evaluated a number of equipment options integral to the scrubber project and completed a layout of the project. Budgetary quotes and lead times were solicited from major scrubber vendors, also during 2005.

4. General specifications for the scrubber island, material handling system and the chimney were provided to PSNH by S&L to further develop project requirements. To complement this preliminary engineering work, site visits to the other scrubber installations were completed by PSNH/Merrimack Station personnel.

5. Preliminary work in support of the temporary air permit application was completed including emissions netting calculations and suggested modeling protocol.

6. Water quality testing was completed to define and identify appropriate sources for make-up water to the scrubber system.

7. Electrical work was reviewed with PSNH transmission and distribution divisions to outline the power requirements for the new scrubber system. A two phase approach was defined. Plans were made to relocate and upgrade an existing, old construction yard in order for the land to be used for construction power for the scrubber system. A new substation will be installed to power the scrubber operations.

8. Also in preparation for the scrubber installation, an unused oil tank was removed from the north side of the plant. This space will eventually house portions of the material handling system required by the scrubber project.

9. A study of the Merrimack property's south yard was performed to ensure an adequate layout area for the necessary equipment and building surrounding the scrubber. A number of contractor facilities in the south end of the plant, as well as the existing training facility, were identified for relocation.

10. A portion of the southern-most yard was cleared to make room for a new warehouse building. Although a separate effort from construction of the scrubber project itself, it

was necessary to complete this work prior to the extensive construction and labor effort that will be underway during the construction of the scrubber islands. Preliminary engineering, design, surveying and permitting for this new warehouse were completed.

11. A number of appropriate purchasing and procurement efforts were completed including contract options and strategy analysis and vendor lists for scrubber manufacturers and architect/engineers.

12. Engineering efforts included review of the latest equipment options, equipment integration capabilities, and mercury capture capabilities.

13. Also initial investigation into gypsum disposal and sale opportunities was pursued with various wallboard manufacturers.

B. Activities Performed during 2007

1. Merrimack Station continued operational changes at the facility that would provide the necessary flexibility to accommodate the design and engineering of a scrubber system. The station worked to modify boiler combustion temperatures. Tube shields were removed from the boiler reheater to increase heat transfer and improve steam temperatures.

2. The station's south yard was cleared for the new warehouse on schedule. This new warehouse will initially house displaced inventory from existing warehouse buildings. The building permit application was submitted on May 17, 2007. Preliminary design of the building was completed.

3. PSNH went out to bid for the Program Manager for the Clean Air Project on May 15, 2007. URS Washington Division ("URS") was hired in October 2007 following lengthy contract negotiations.

4. PSNH submitted a Temporary Air Permit application for the Clean Air Project with NHDES on June 6, 2007. An emissions netting calculation and determination of a stack height consistent with good engineering practice ("GEP") were required information to support the Temporary Air Permit application submittal. Necessary air dispersion modeling services were contracted for and have begun.

5. The first legislative update, as required annually by RSA 125-O:13, IX was completed on June 26, 2007. PSNH is required to report on the progress, status, and cost of complying with the provisions of the scrubber law to the legislative oversight committee on electric utility restructuring, and the chairpersons of the house science, technology and energy committee and the senate energy and economic development committee,. A brief summary of that first update follows:

- Engineering
    i. Specifications developed for key components
    ii. Possible site plan layouts developed
    iii. Equipment options identified
    iv. Vendor lists and contacts established
    v. Industry impact of high number of scrubber installations analyzed
- Commercial and Purchasing
    i. Contract strategy determined and approved
    ii. Program Manager specification written
    iii. Program Manager out to bid
- Permits and Approvals
    i. Temporary Air Permit Application submitted to NHDES-ARD June 7, 2007
    ii. Town of Bow presentations and submittals underway
    iii. Company financing approvals initiated
- Site work
    i. Existing oil tank removal completed
    ii. Site surveys completed
    iii. South Yard studies completed

C. Activities Performed during 2008 to date

1. Construction of the major components of the Clean Air Project has been broken down into the engineering, procurement, and construction of four major work islands which include the scrubber, chimney, waste water treatment facility, and material handling system. Construction must occur on a sequential basis. Of these islands, the chimney and scrubber require completion first for safety reasons given the physical orientation of the equipment and constraints of the site. Following foundation work, the chimney "shell" construction must precede all work because of the necessity of preserving a "drop zone" or area around the chimney for evident safety reasons. As a result of these sequential construction requirements, both the scrubber island and chimney specifications were prioritized and sent out to bid first, vendor bid proposals were received, bid proposals were reviewed to identify the lowest evaluated bidder and negotiations with lowest evaluated bidders were undertaken. The negotiations are in final stages on both contracts and the contracts were expected to be executed this week; however, as a result of the initiation of this inquiry, such contracts must await the Commission's action in this inquiry. The material handling system and waste water treatment system followed with specifications sent out to bid, bid proposals received and evaluated, and negotiations well under way. Contracts will be finalized in short order and will be ready to execute in the near-term.

2. A second annual legislative update was completed on June 18, 2008. The status of the scrubber installation and mercury reductions was reported on to the legislative oversight committee on electric utility restructuring, and the chairpersons of the house science, technology and energy committee and the senate energy and economic development committee. A summary of that update follows:

- Engineering
    i. Project's components
    ii. Specifications developed for 4 key components
- Commercial and Purchasing
    i. Program Manager hired Sept 2007
    ii. Scrubber Island and Chimney proposals are in negotiations
    iii. Vendor Proposals requested and received for Wastewater Treatment Facility and Material Handling System
- Review, Permits and Approvals
    i. NHDES – May 12 presentation
    ii. Temporary Permit expected October 2008
    iii. Town of Bow –Local permitting
    iv. Regional Planning Commission
- Site work
    i. Existing oil tank removed
    ii. Site surveys and studies completed
    iii. Warehouse construction underway
    iv. On-site engineering facilities completed
- Schedule and Costs
    i. Tie-ins: MK#1 Fall 2012, MK#2 Spring 2013
    ii. Project costs will be updated with review of major equipment bids

3. It was reiterated at this update that PSNH was focused on expediting the schedule; and with two major equipment islands in negotiations, it would soon be known to what extent the critical path of this project could be potentially shortened. These negotiations would also provide updated costs associated with a new timeline.

4. As referenced earlier, negotiations with the scrubber island and chimney are now in their final phase. Recently completed boiler implosion, burner management and electrical supply studies are being reviewed. Multiple meetings have been attended in the Town of Bow focusing on local permitting requirements and also addressing any Regional Impact considerations. With that, public outreach and education meetings have been conducted and/or scheduled with a variety of organizations, such as the Southern New Hampshire Planning Commission, the Town of Pembroke, Town of Hooksett, etc.

5. Finally, air modeling is being completed with current engineering and equipment design information and proposed site orientation. Drafting of the Temporary Air Permit continues by the New Hampshire Department of Environmental Services (NHDES) Air Division.

D. Schedule Status

1. As the project has moved forward steadily, PSNH has obtained more detailed information from major equipment and system suppliers, and has adjusted the schedule accordingly. The current optimized schedule shows that completion of the Clean Air Project in 2012 is

possible if there are no additional delays. PSNH's efforts are now focused on an early completion, as required by RSA 125-O:11, I. The early completion date is attributable to PSNH's diligence in complying with the Scrubber Law's mandates as rapidly as reasonably possible. Early completion will be beneficial to customers because AFUDC will be reduced, customers will benefit from early reductions credits provided by the Scrubber Law's Economic Performance Incentives at RSA 125-O:16, and, most importantly, mercury and sulfur oxide emissions will be reduced. In addition, by finalizing fixed price contracts and locking in prices, additional escalation of commodities can be avoided to some extent.

2. An early completion date is predicated on successful completion of a number of critical activities on a timely basis. These activities include obtaining permits to proceed with construction in the Fall of 2008 from the Town of Bow, and the receipt of a Temporary Air Permit from the New Hampshire Department of Environmental Services in the Fall of 2008. Moreover, procurement of engineering services and equipment must proceed on an aggressive schedule. Even a short delay at this time could trigger a six to eight month delay in completion of the project because foundation construction work must commence in the Fall of 2009. If foundation construction work is not completed in the Fall of 2009, the work will have to be delayed until the Spring of 2010 because it cannot be performed during winter months. This illustrates the valid concern that even a brief delay has the potential for creating a domino effect on project schedule with far more than a day-for-day delay.

3. The schedule is aggressive and has only a small tolerance for unpredictable delays due to inclement weather, equipment delivery problems, resolving engineering or design problems, or start-up and testing problems. Consequently, any delays caused by regulatory actions or other unanticipated events could jeopardize PSNH's ability to adhere to the schedule. Any such delay would increase the cost of the project.

E. Engineering Status

1. URS has overall responsibility to develop the cost and schedule, subject to PSNH's review and approval.

2. The initial estimated cost of the project was based on a Sargent & Lundy estimate performed in 2005. There have been significant increases in the cost of raw materials, steel, labor, and energy, since this estimate was made, as noted by the *Wall Street Journal* in a May 27, 2008 article entitled "Costs to Build Power Plants Pressure Rates" (Atch 1) and echoed by the FERC's Office of Enforcement's report to the FERC Commissioners on Increasing Costs in Electric Markets, presented on June 19, 2008 (Atch 2). URS has more current information and experience with this type of work, and they developed a revised estimated project cost based on their experience with such projects and on bids received from the four major system vendors (Scrubber, Stack, Material Handling, and Waste Water Treatment Islands).

3. Approximately 60% to 70% percent of the revised project cost is now based on firm contracts or firm bids PSNH has received. Only small system and interconnection field systems (electrical, ductwork, piping, yard work, etc.) have yet to be finalized by bids. If bids in hand are not acted on in a timely manner, such delay in execution of contracts can and will result in a delay in project completion and higher costs.

4. URS has 30 engineers currently working on the project in the following areas:
    a. Electrical engineering
    b. Civil engineering
    c. Structural engineering
    d. Controls
    e. Fire Protection
    f. Estimators
    g. Schedulers
    h. Draftsmen.

5. URS's efforts are approaching peak workload. This is a critical time in their efforts and any upset will create risk of delay and added cost.

6. Current work activities include site preparation, planning, and design. Once the shovel is in the ground, construction activities will go on for approximately four years. Because there will be more than 300 people working on the project at peak periods, the work must be carefully planned and performed. Construction will be performed by union craft labor, and an organized labor National Maintenance Agreement has been executed to ensure availability of workers and eliminate the potential for labor disputes as well as to prioritize safety on the job.

7. Parts lay-down and storage areas must be developed, site trench layout for electrical and piping systems need to be designed, and contractor parking and access paths need to be built.

F. Current Procurement and Construction Activities

1. PSNH has been actively engaged in negotiating contracts for various aspects of the project. PSNH has completed bid evaluations for the waste water treatment system and material handling system and those contracts are under negotiation. Bidding is currently in progress for items like the construction power electrical switching panel, booster fans and motors, and a new electrical substation.

2. Negotiations are about to be finalized on the scrubber and chimney. However, as noted in the Motion to Accelerate Schedule filed with the Commission on August 25th, PSNH and its corporate parent, Northeast Utilities, cannot continue to commit additional dollars to the scrubber project until the Commission determines its actions in this inquiry. PSNH will initiate discussions with various bidders and contractors to seek ways to continue to allow limited critical path work to proceed, if possible. However, as stated above,

escalating costs for global commodities such as steel and cabling make it likely that any delay in the receipt of Commission action will increase the cost of the project.

3. PSNH has also been designing and procuring equipment for the two substations that will be constructed to support the project. One substation is replacing an existing substation and will eventually be used for construction and a second larger substation will be needed to provide power to the scrubber once it is operational.

4. Site drawings have been developed to show new gates, new access roads, the construction guard house, office trailer locations, new parts lay-down and storage locations, security, and first aid locations. Work is progressing on soil borings to support foundation design, site surveys are being conducted for general equipment locations, and extensive underground surveying is being performed to locate all buried items.

5. Other current activities include developing specifications for booster fans and duct work, designing yard fire protection systems, conducting noise studies, and performing electrical usage studies. Myriad other tasks are also currently being performed in order to successfully complete the project.

G. Permitting Activities

1. The permitting activities began with submittal of the Temporary Air Permit application submitted to NHDES on June 7, 2007. NHDES has indicated that it will facilitate the permitting process however possible and has offered to provide a staff liaison to assist.

2. Other permitting activities have occurred over the last six months and are ongoing. Most notably, PSNH must receive approval from the Town of Bow. PSNH currently expects to receive the necessary approvals within the next few months.

II. PROJECT COST ESTIMATE

A. PSNH, in consultation with URS, has developed a revised project cost estimate of $457 million. This cost equates to approximately $830 per kW for all of the "affected sources" subject to the emissions limitations of the Scrubber Law (RSA 125-O:12, I) or $1,054 per kW installed for Merrimack Station alone. This estimate includes the cost of the project, project management costs, AFUDC, indirect costs, and contingency. Confidential Attachment 3 hereto provides a detailed breakdown of project costs.

B. The current project cost estimate is in-line with recently published information on other multiple unit scrubber installations occurring elsewhere in the country. SNL Financial reported in their July 8, 2008 edition that the Wisconsin PSC had given verbal authorization for Wisconsin Energy Corp to proceed with its plans to install Scrubber and Selective Catalytic Reduction technologies to its Oak Creek units 5-8, a total of 525 MW's of existing Coal fired generating capacity at a cost of $774 Million. While this cost includes the addition of two emissions reduction technologies, the installed cost equates to $1,474 per kW at Oak Creek.

III. EFFECT OF CLEAN AIR PROJECT ON ENERGY SERVICE RATES

A. PSNH has assured the cost of energy produced by Merrimack Station will remain lower cost for customers than reasonable potential alternatives, even when the costs of the Clean Air Project are included. An analysis consisting of a detailed net present value of revenue requirements including capital and operating costs over the expected 15 year depreciation life of the scrubber demonstrates the continued economics of installing the scrubber provides this assurance. The spreadsheets which contain this analysis are included as Attachment 4 to this filing.

B. The primary assumptions used as inputs to the revenue requirements analysis include:

Capital cost: $457M
Capital structure: 47.23% Equity, 52.77% Debt
Assumed Return on Equity: 9.81% (PSNH's current allowed ROE on generation)
In-Service Date: July 1, 2012
Coal cost: $4.82 per Million BTU escalated at 2.5% per year for the period of the analysis
RGGI or equivalent CO2 allowance cost: $7 per ton escalated at 2.5% per year for the period of the analysis

Utilizing these inputs produced the following summary results:
First year bus bar cost: $94.55/MWh
Levelized (15 year) bus bar cost: $99.28/MWh

C. Using the 2012 - 2027 average bus bar cost, the effect that the Clean Air Project will have on energy service rates is estimated to be approximately one-third of a cent per kWh (1/3¢/kWh). In the first year of operation, the year with the highest cost impact due to the highest value of undepreciated plant, absent any rate-smoothing initiatives, the impact on energy service rates is estimated to be approximately one-half cent per kWh (1/2¢/kWh).

D. Sensitivity analyses were conducted to test the impact of changes to each of the key assumptions (capital cost, coal cost and equivalent CO2 allowance cost) on the overall bus bar cost of Merrimack Station. These sensitivity analyses indicated the economics of the project are most sensitive to variations in the future price of coal, and far less sensitive to variations in the capital cost or equivalent CO2 allowance cost.

IV. EFFECT ON ENERGY SERVICE RATES IF MERRIMACK STATION IS RETIRED

A. The Commission's Secretarial Letter requires "an analysis of the effect on energy service rates if Merrimack Station were not in the mix of fossil and hydro facilities operated by PSNH." Three alternatives were chosen for this analysis. These comparison cases included analyses over the time frame of 2012 through 2027 of the following options:

1. Purchase of energy and capacity to replace the equivalent of Merrimack Station through a "Cost of Service" contract with new base load coal fired generating station;

2. Purchase of energy and capacity to replace the equivalent of Merrimack Station through a "Cost of Service" contract with a new combined cycle natural gas fired generating station; and

3. Purchase of energy and capacity to replace the equivalent of Merrimack Station through market purchases.

B. The 2012 through 2027 analysis period was chosen to coincide with the anticipated 15 year depreciable life of the scrubber, as defined in the base case. Cost of service style contracts, though not routinely in place in ISO-New England at this time, provided a presumed floor for total operating costs for a new coal or natural gas fired unit, employing a presumed "regulated return" and debt/equity ratio consistent with the PSNH values used in the base case, of operating with the scrubber.

C. PSNH undertook a data review of energy trade press and publications to determine current estimates of newly proposed coal and natural gas combined cycle generating stations.

1. For recently proposed coal plants, PSNH found references to the Virginia City Hybrid facility (Attachment 5). This is a 585 MW fluidized bed facility with a currently reported capital cost of $1.8 billion. A net present value of revenue requirements model was created that employed this capital cost, the PSNH capital structure and anticipated ROE, and for the sake of consistency, coal price and equivalent CO2 allowance cost assumptions consistent with those used in the scrubber analysis. FERC has estimated significantly higher costs for construction of new coal generation, as set forth in Attachment 2.

2. For recently proposed combined cycle natural gas plants, PSNH found references to the Middletown Kleen plant, a 620 MW plant with a currently reported financing of $985 Million (Attachment 6). This cost is consistent with the FERC estimated cost of new generation contained in Attachment 2.

D. For future market conditions, PSNH examined the forward market for natural gas delivered to New England and applied a "heat rate" factor to translate the raw delivered fuel cost to electrical energy. To the energy cost derived from these calculations, an adder was applied for ISO-NE capacity value, which would be required to replace the lost capacity value existing with the operation of Merrimack Station.

E. In the market purchase and combined cycle natural gas scenarios, a year 2012 price of $11 per MMbtu was used as the first year price of natural gas. This value was escalated at a rate 2.5% per year for future years of the analysis.

F. The results of these analyses indicated that the new coal and new combined cycle natural gas plants would have bus bar costs of about $135 per MWhr. For the market purchase alternative the sum of the energy and capacity costs resulted in a total cost per MWhr value of $107.10. To this amount, PSNH calculated and added a recovery of the estimated $63 Million of stranded assets (undepreciated plant and inventories) that would exist at Merrimack Station over a period of five years (as required by RSA 369-B:3-a). The overall cost of a market purchase plus retirement scenario produced a levelized bus bar cost of $107.83/MWhr, which is nearly 15% higher than the cost calculated to operate Merrimack Station in the first year after completion of the Clean Air Project.

G. From these results, PSNH has computed that the average net effect on energy service rates if Merrimack Station is retired and replaced by market purchases would be 0.73 cents/kWh of additional costs to customers over the period of 2012 through 2027.

H. Comparison and sensitivity analyses were conducted using the scrubber and market purchase plus retirement scenarios. Under the base case assumptions the scrubber scenario produced a nominal benefit to customers of $583 Million; $132 Million benefit on a net present value basis, over the depreciable life of the scrubber. Additional net present value benefit of $34.2 Million is attributable to customers associated with the scrubber, as the charges for stranded assets are avoided in the scenario where the scrubber is installed and the station continues to operate.

I. As a result of these analyses, PSNH has concluded that installation of the scrubber, and continued operation of Merrimack Station is the best economic alternative for the benefit of its customers.

CONCLUSION

PSNH has historically provided Clean Air Project status reports to the Legislature and the committees having oversight responsibilities for this project, NHDES, Office of Consumer Advocate, and this Commission; we continue to be ready and willing to meet with the Commission Staff and OCA to discuss the Clean Air Project whenever requested.

PSNH urges the Commission to act promptly in this docket so that the project work can resume without further delay. PSNH is at a critical juncture in the project since some contract work is on hold, while other contracts are not being executed pending the outcome of the Commission's inquiry. Any delay to the project will increase its cost and therefore result in higher costs to customers once the project is in service.

Attachment 1

The Wall Street Journal

Costs to Build Power Plants Pressure Rates

By REBECCA SMITH

May 27, 2008; Page B3

Construction costs for power plants have more than doubled since 2000, according to new index data to be released Tuesday, and inflationary pressures will continue to put the squeeze on electricity prices.

The findings are bad news for consumers and utilities alike, and help explain why power-plant development has become something of a quagmire in the U.S. -- with no type of plant emerging as a reasonably priced option that can meet rising demand for electricity.

The analysis comes in the form of a price index from Cambridge Energy Research Associates Inc., a research and consulting firm in Massachusetts that is a unit of IHS Co. Similar to the consumer-price index, it calculates the cost of building new power plants based on the cost of materials and other factors.

"Costs for labor, materials, equipment and design and engineering -- all are up," said Candida Scott, senior director of cost and technology for CERA. As a result, the cost of building new plants is up 19% from a year ago and up 69% from 2005.

The skyrocketing price tag comes as the world is roiled by surging electricity demand and as it weathers various supply disruptions, some caused by what appear to be changing weather patterns.

In all, CERA says, the construction of new generating capacity that would have cost $1 billion in 2000 would cost $2.31 billion if construction began today.

According to the index, all types of power plants are feeling the pinch. Components and construction materials for nuclear power plants scored the biggest run-up in costs, up 173% -- nearly tripled -- since 2000. Most of that increase has taken place since 2005. Costs for turbines used to generate wind power more than doubled, at 108%, and natural gas-fueled and coal-fired plants saw their capital costs nearly double, up 92% and 78%, respectively.

If anything, the index likely minimizes the rising cost of building power plants, because it doesn't factor in financing costs, and it doesn't include fuel costs. But as prices for coal, natural gas and uranium have risen, they have put added pressure on the operating costs of many companies, and those increases are pushing up electricity prices, too.

The upshot, Ms. Scott said, is that prudent utility regulators should make sure they are basing future decisions on data that are updated frequently, because even calculations less than a year old can be dangerously out of date.

One practical consequence of the inflationary pressures is that they make it harder for plant developers, such as utilities, to lock in prices as part of big projects. The longer the time period involved in construction, the bigger the risks inherent in any fixed-price contracts. Instead of paying for "time and materials," many firms are seeking contracts in which prices are tied to various indexes.

In some states, utilities are rolling out big programs to install millions of "smart" electric meters in the belief they will help cut electricity consumption and reduce the need for new power plants. Oncor, a big utility in Texas, last week said it plans to install three million advanced meters on homes and small businesses, giving consumers a tool to help get a handle on electricity use.

The CERA report underscores the tough choices facing utilities and regulators. Both are interested in finding the technology that will be most affordable.

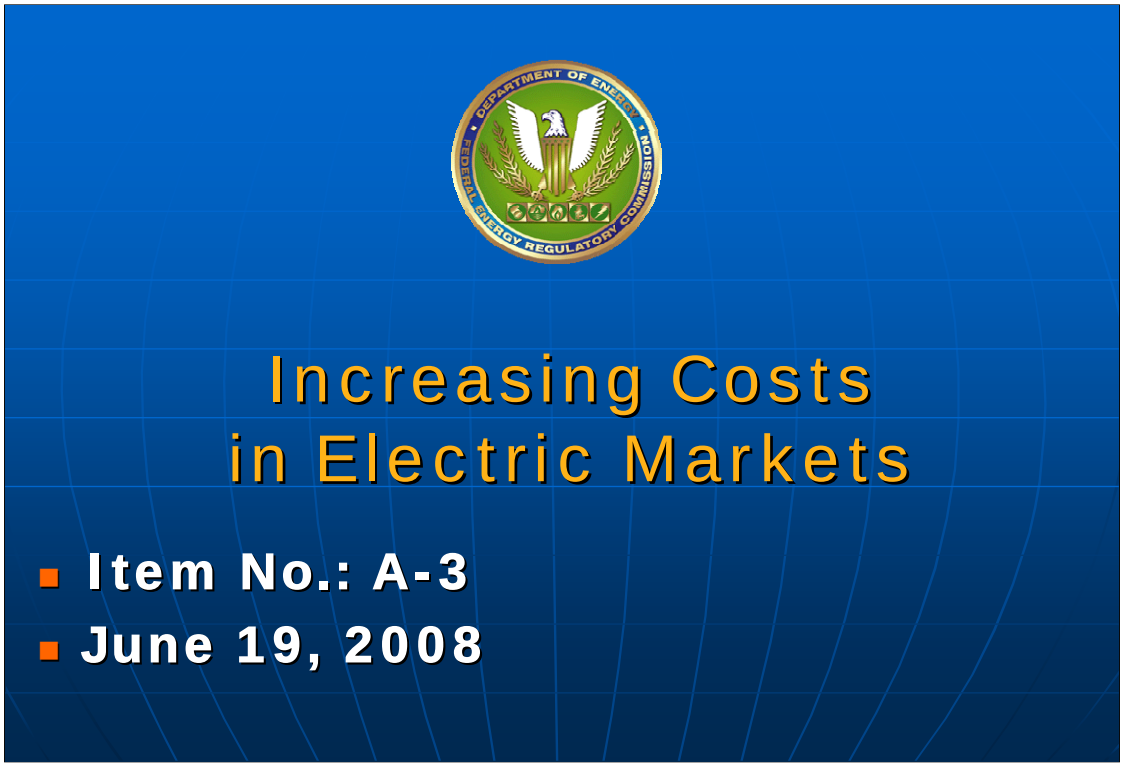
That is especially difficult, since big power plants often remain in service 40 to 60 years.
One commodity whose cost has risen markedly is steel, a important material for building both power-plant structures and power-generating equipment. The cost of iron ore, needed to make steel, rose about 10% in 2007 but has surged 65% in recent months. Shortages of coking coal, also needed to make steel, have been another problem in Australia, a big export country. CERA said steel costs could rise 40% to 60% this year.

A weak dollar also is a factor, since roughly 30% of equipment needed by the U.S. power industry comes from outside the U.S.

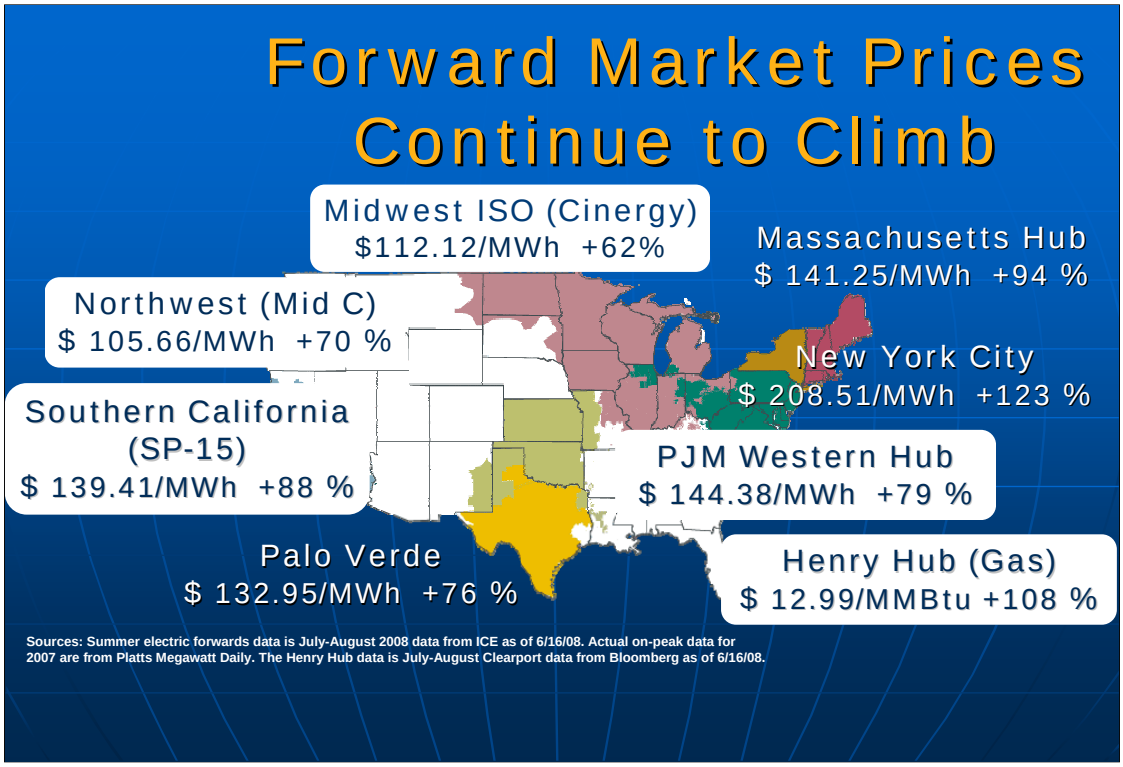
The analysis is of interest because it is difficult to get solid cost data until after plants have been built. Even then, data aren't always available.

Attachment 2

FERC's Office of Enforcement's Report to the FERC Commissioners on Increasing Costs in Electric Markets, presented on June 19, 2008

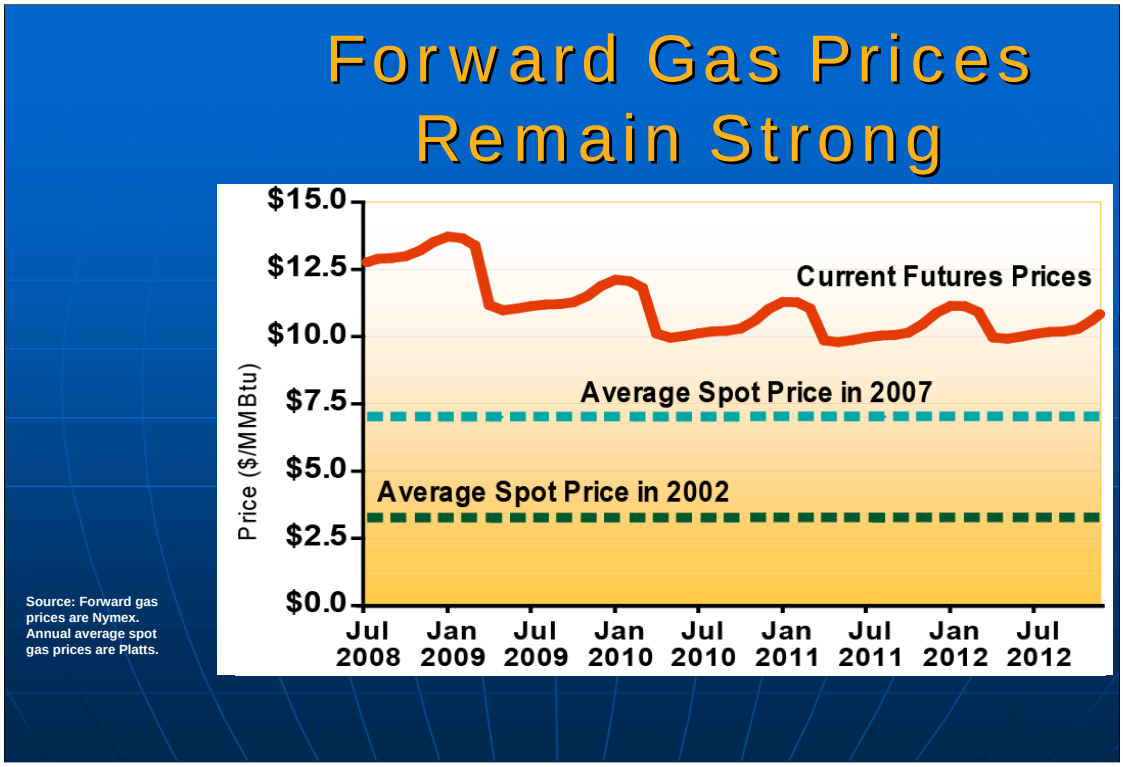


Mr. Chairman and Commissioners, good morning. I am here to present the Office of Enforcement's assessment of likely electricity costs in coming years. This presentation will be posted on the Commission's Web site today.

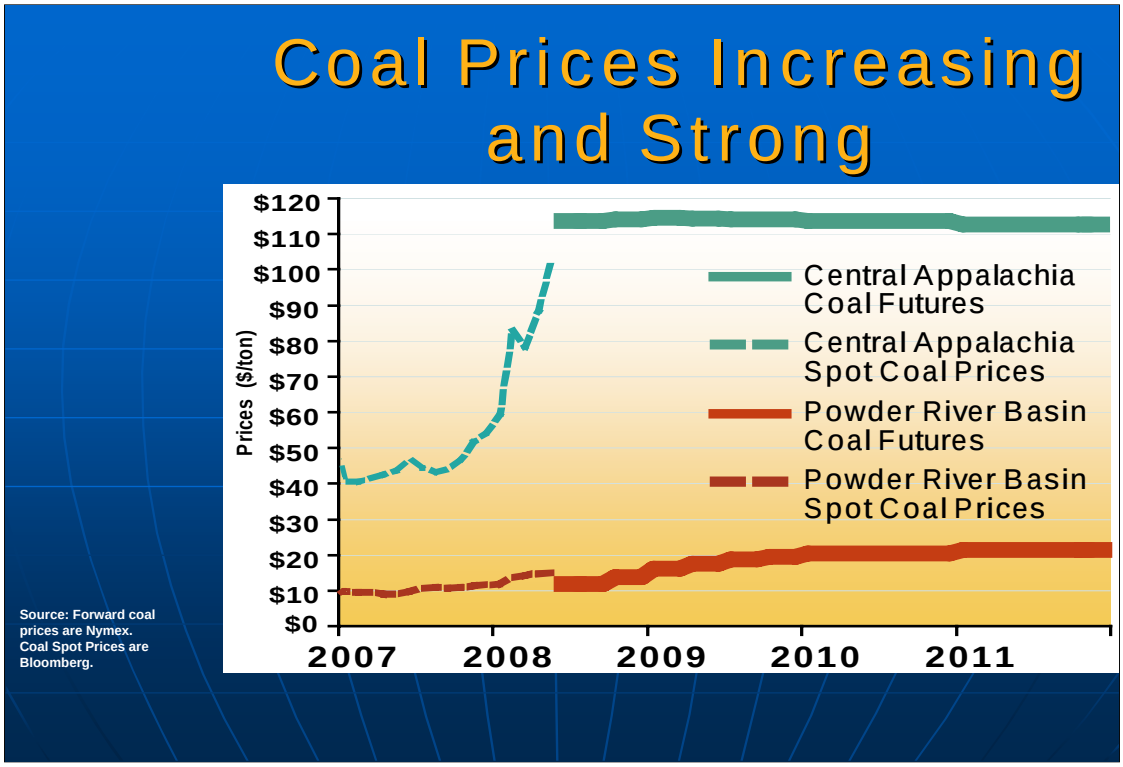


At last month's meeting, we reported that forward market prices for electric power are much higher than the prices we actually experienced last year. This trend is universal around the country. The slide shows the increases in forward prices for July and August as of this week. They have risen further during the last month as natural gas prices have continued to rise.

There is little reason to believe that this summer is unusual. Rather, it may be the beginning of significantly higher power prices that will last for years. The purpose of this presentation is to explain why that is so. The two major factors pushing the costs of electric generation higher are increased fuel costs and increased cost for new construction. These factors affect all parts of the country. That is, higher future prices are likely to affect all regions.



The primary reason for the electric power price increases this year is high fuel prices. All current market indications suggest that they will remain high. Let's look at natural gas, which often determines prices because it is so frequently on the margin. The slide shows futures prices for the next few years. The futures prices are somewhat lower for 2009 than for 2008. Even so, they are a good deal higher for all years than the prices people actually paid last year, and they are much higher than the prices many of us remember from earlier in the decade. The implication is that markets anticipate continuing high prices, even though they know that the United States has seen a significant increase in domestic natural gas production over the last year and a half. The anticipation of further high prices makes more sense when one considers the likely increase in gas demand for generation and the global nature of competition for LNG.



Natural gas is not the only important fuel in setting electric power prices. Coal still powers half of all power produced in the U.S. In some markets – the Midwest and the Southeast, for example – coal is often on the margin and plays a major role in setting average prices over time. The slide shows that the price of one key form of coal – Central Appalachian coal - has risen rapidly over the last year. Forward markets show continuing high prices for Central Appalachian coal for the next three years. This reflects, in part, the growing global market for coal and the relatively weak US dollar. Coal imports are becoming more costly and coal exports more profitable, both of which contribute to higher prices in the United States.

I should mention that other coal prices behave somewhat differently from Central Appalachian coal. For example, a majority of the overall cost for Powder River Basin coal comes from transportation rates and can be more difficult to see. Nonetheless, the implication of the prices we can see is that electric power prices are likely to increase even where coal is on the margin. This may take place somewhat differently from the way natural gas price increases flow through into power prices. Generally, companies buy coal under fairly long term contracts, so there may be a lag before the higher prices show their full effects. But the effects are coming.

Net Natural Gas Generation by Region
(TWh)

Region	2000	2007	Difference
Northeast	66.3	103.9	37.6
RFC	41.0	64.5	23.5
SERC	86.9	150.5	63.6
FRCC	42.0	96.7	54.7
ERCOT	155.9	163.3	7.4
Midwest	44.2	62.8	18.5
WECC-Rockies and SW	28.1	77.6	49.5
WECC-CA and NW	115.4	129.7	14.4

Source: Derived from Energy Velocity (differences due to rounding).

While both natural gas and coal prices have increased rapidly, natural gas is increasingly important in every region of the country. The slide shows that even in regions where coal has historically dominated – most noticeably in SERC– natural gas usage has grown substantially since 2000, up 63.6 TWh in 2007, more than in any other region. Noticeable increases also occurred in FRCC, which has flexibility to burn either gas or oil at many facilities, and also in the Rockies and Southwest where demand continues to grow considerably.

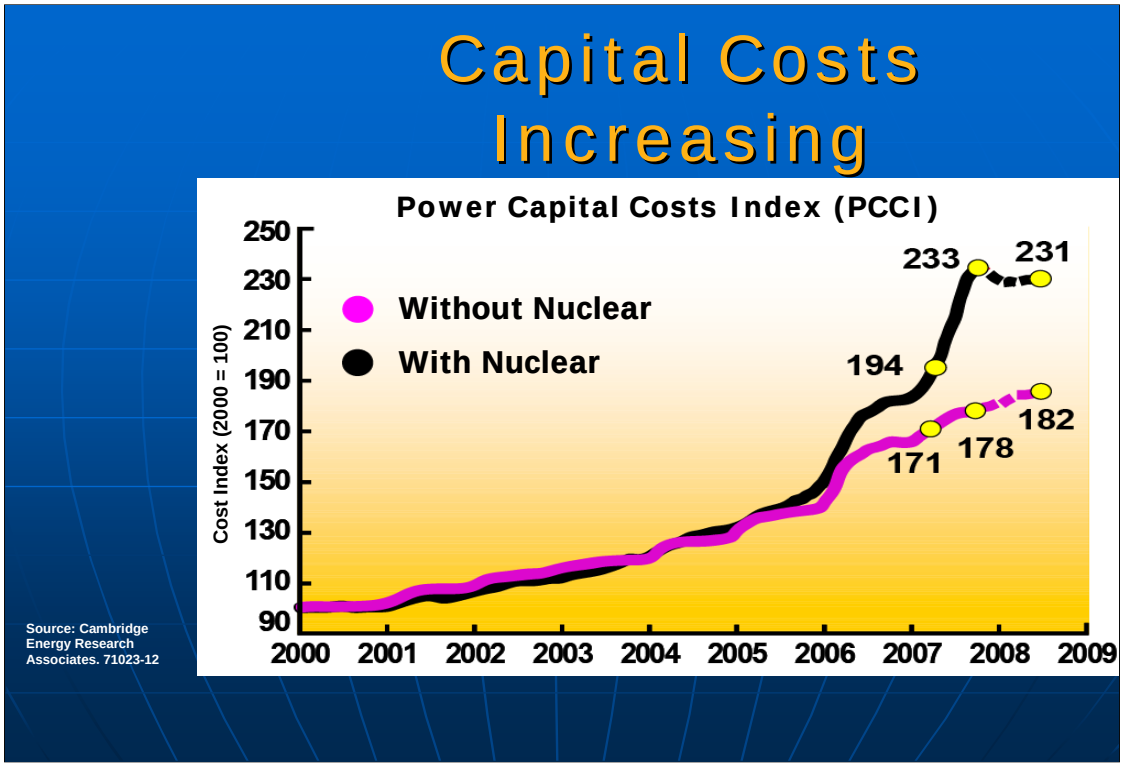
NERC Net Load Projections through 2016

Region	Total Difference (GW)	Percent Change
Northeast	9.7	17
RFC	23.2	13
SERC	28.2	14
FRCC	7.1	15
ERCOT	14.7	24
Midwest	17.2	21
WECC-Rockies and SW	7.6	25
WECC-CA and NW	10.9	10
Total	108.8	14

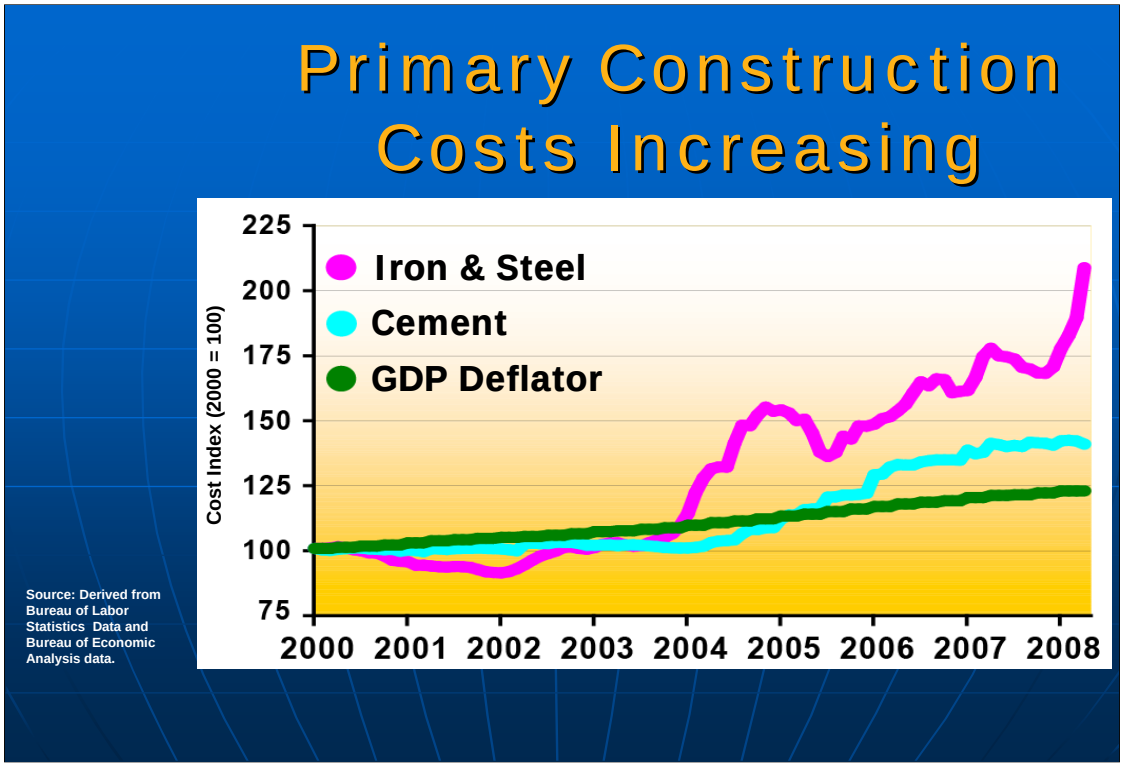
Source: Derived from NERC 2007 Long Term Reliability Assessment, Oct. 2007 and NERC data request, June 2008.

The second major factor that will put upward pressure on electric power prices is the increasing cost of new construction. This effect is particularly important because the country is entering a period when we will need to make substantial new investments, especially in generation.

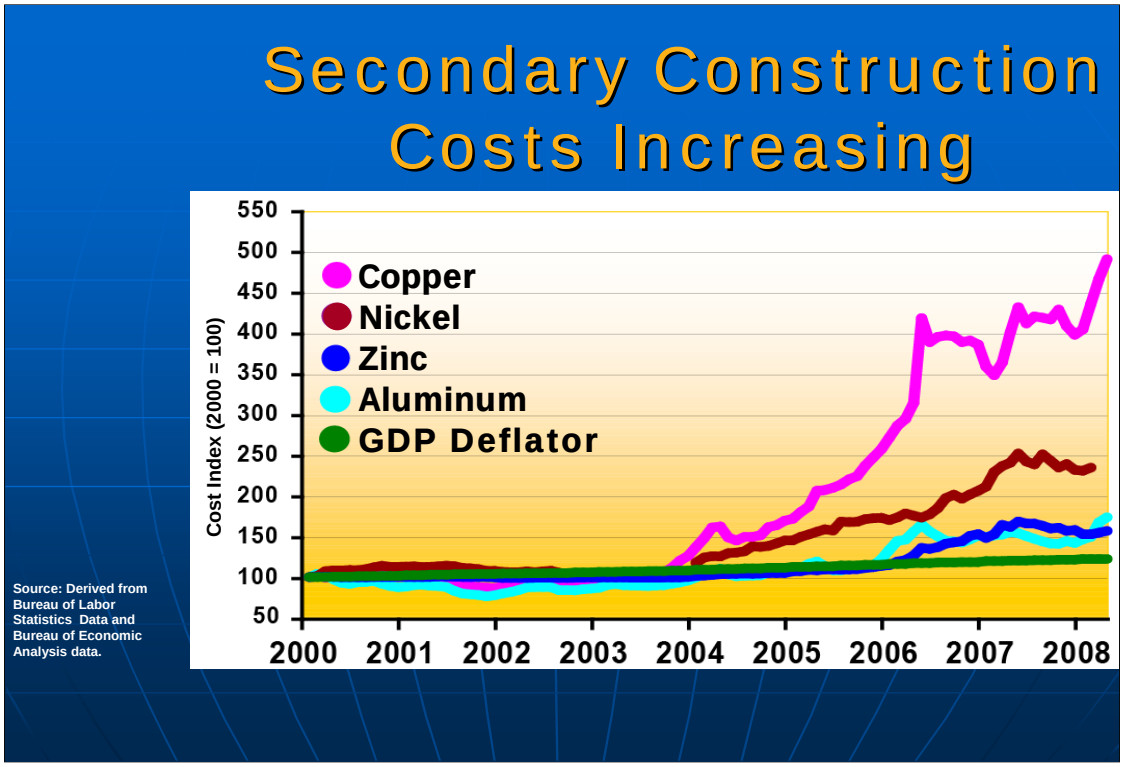
Natural gas fueled most of the last great wave of generation investment, which occurred between 1995 and 2004. In recent years, demand in most regions has gradually caught up with the capacity built around 2000. Looking forward, demand will continue to grow, and the need for new capacity will become ever more acute and ever more widespread. The slide shows NERC's expectation of peak net load growth in different regions for the next 10 years. We at the Commission are not in the business of forecasting, so I would just say this: There are legitimate reasons to be unsure about exactly how much new generation the country will need in the coming years. For one thing, higher prices will themselves discourage some power demand. Nonetheless, a significant level of demand increase seems virtually inevitable. So will be the need to build more capacity.



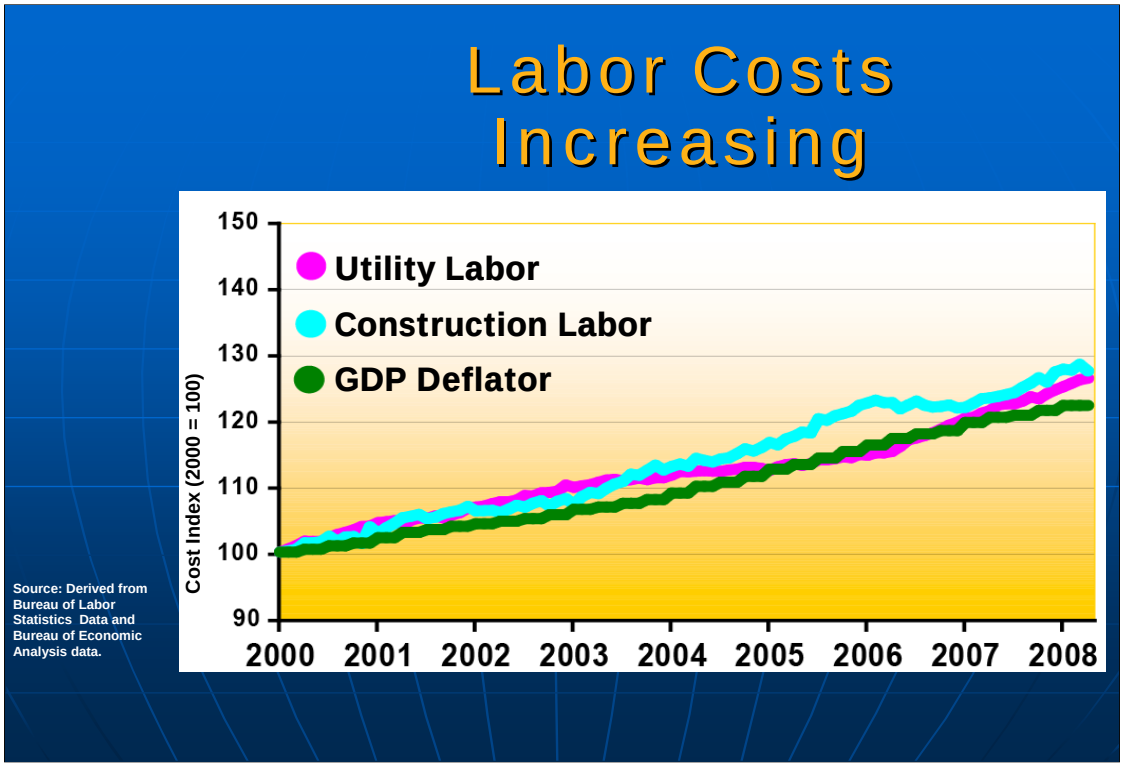
The need for new generation is important because new construction is becoming more expensive – quite aside from fuel price increases. Cambridge Energy Research Associates – CERA – produces an index of costs for the main inputs that go into building new generating plants. The slide shows how that index has almost doubled since 2003. The increase in nuclear plant inputs has risen even faster. Much of this cost increase results from rising global demand for basic materials. Part of it also comes from shortages of people to do key engineering and construction jobs. In any case, the implication is that, we will pay more, not less, for the next round of construction.



Let's look at some of the reasons that CERA's index is rising so rapidly. The slide shows two of the primary construction materials for electric generating plants – concrete is on the blue line and iron and steel on the red line. As you can see, the prices of both have been rising recently – especially steel, which is now more than twice as expensive as it was four years ago. Rising costs for iron and steel will also affect fuel prices for the power industry. For example, natural gas wells and pipelines both use substantial amounts of steel, so natural gas costs will also reflect rising iron and steel prices.

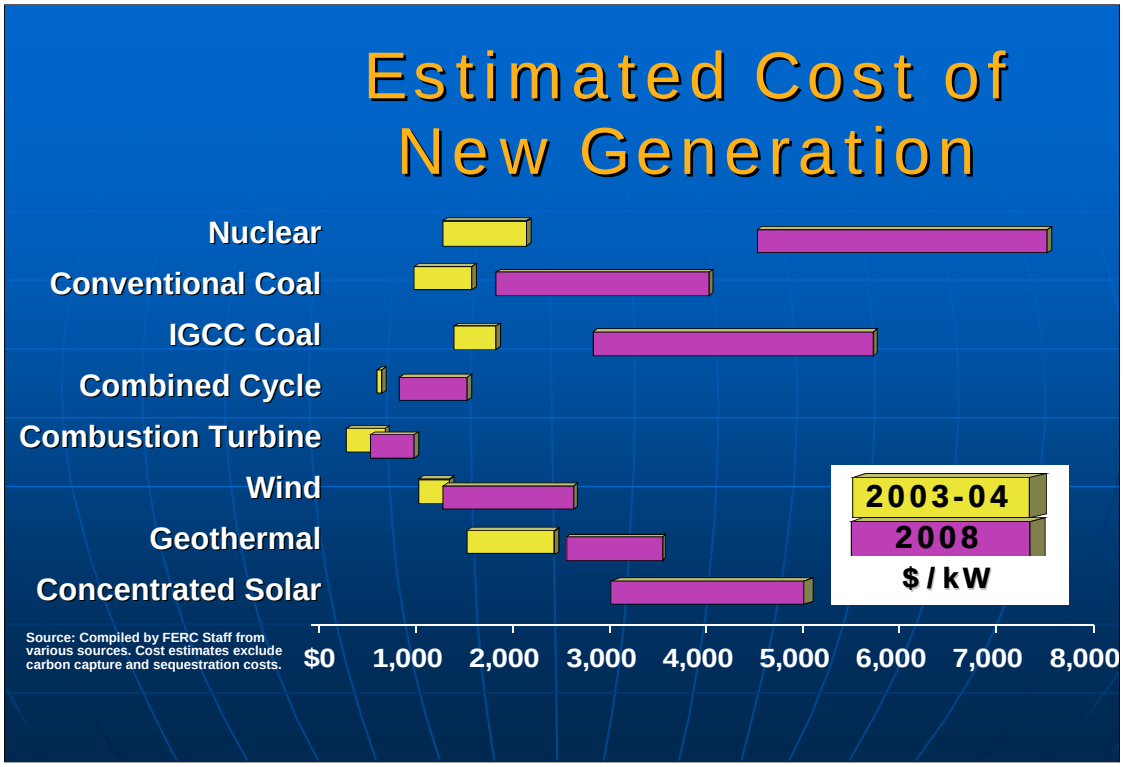


Of course, new generating plants require many other basic commodities. The slide shows the pricing for four key metals that go into generators. As you can see, all of these metals are increasing in price. The one that stands out is copper, up more than five times over the past four years. Indeed, copper is now so valuable there are reports of copper thieves cutting live cables to steal the metal.



Labor costs are also increasing. Perhaps the most frequently cited labor shortage is that for nuclear engineers. It has been a full generation since the nation built its last nuclear plant. Most of the engineers who worked on those plants are near retirement – and many have moved on to other occupations. In fact, the labor shortages are more widespread than just nuclear engineers. The slide shows that there has been about a 27% nominal change in average hourly earnings for both construction labor generally and for non-construction utility labor since 2000, outpacing inflation by over 4% for the same period.

In practice, the American labor market is quite responsive to market forces, so short-term labor shortages tend to be self-correcting over the mid-term. Still, there is no quick way to force several years of education into six months, or decades of experience into a year or two.



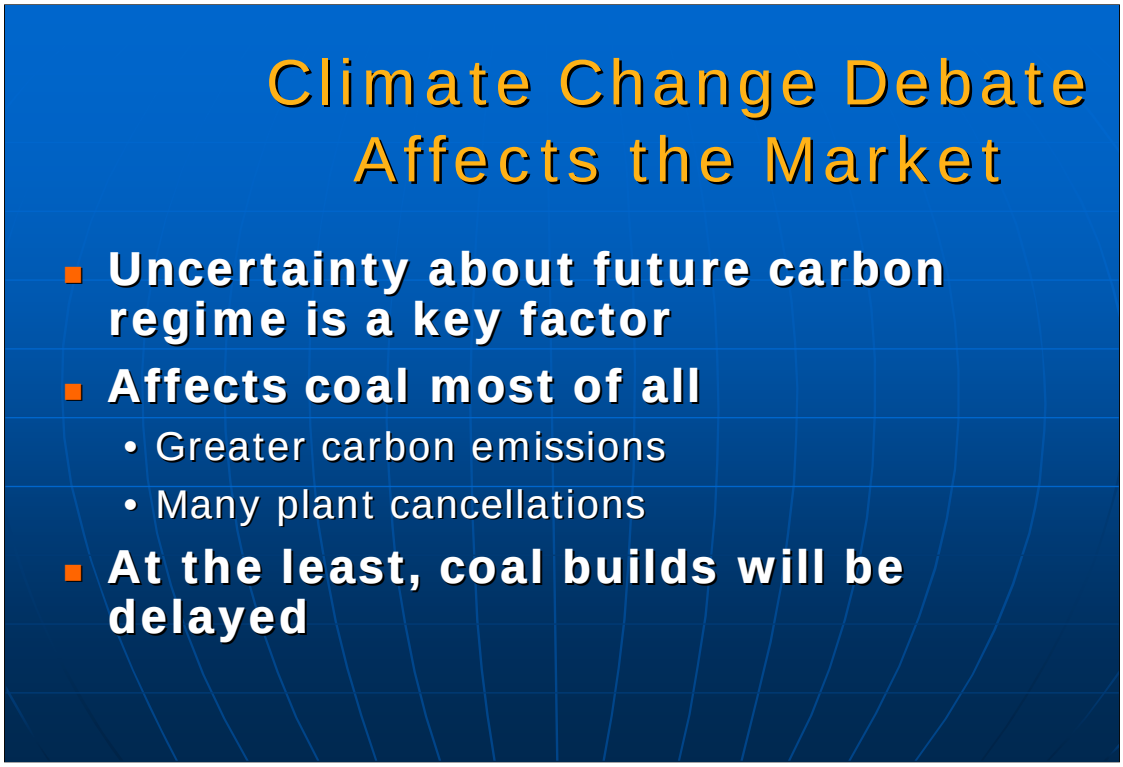
What do all these cost increases mean for the cost of building a new generating plant?

No one knows precisely. It's difficult to get consistent and trustworthy numbers about plant costs, both because they are commercially sensitive and because the assumptions behind them vary greatly. The numbers reflected on the slide come from a variety of sources and include different assumptions about, for example, location or exactly what facilities are included in the estimate. To take one example: Two recent nuclear procurements in South Carolina and Georgia produced cost estimates of $5,100 and $6,400 per kW, respectively, for the same technology. We have been told that most of the difference may be due to different uses of Allowances for Funds Used during Construction – AFUDC.

Despite the difficulties in being precise, the slide represents a good general indication of how capital costs have been changing. If anything, the cost estimates may be lower than the final costs of projects, if input costs continue to rise.

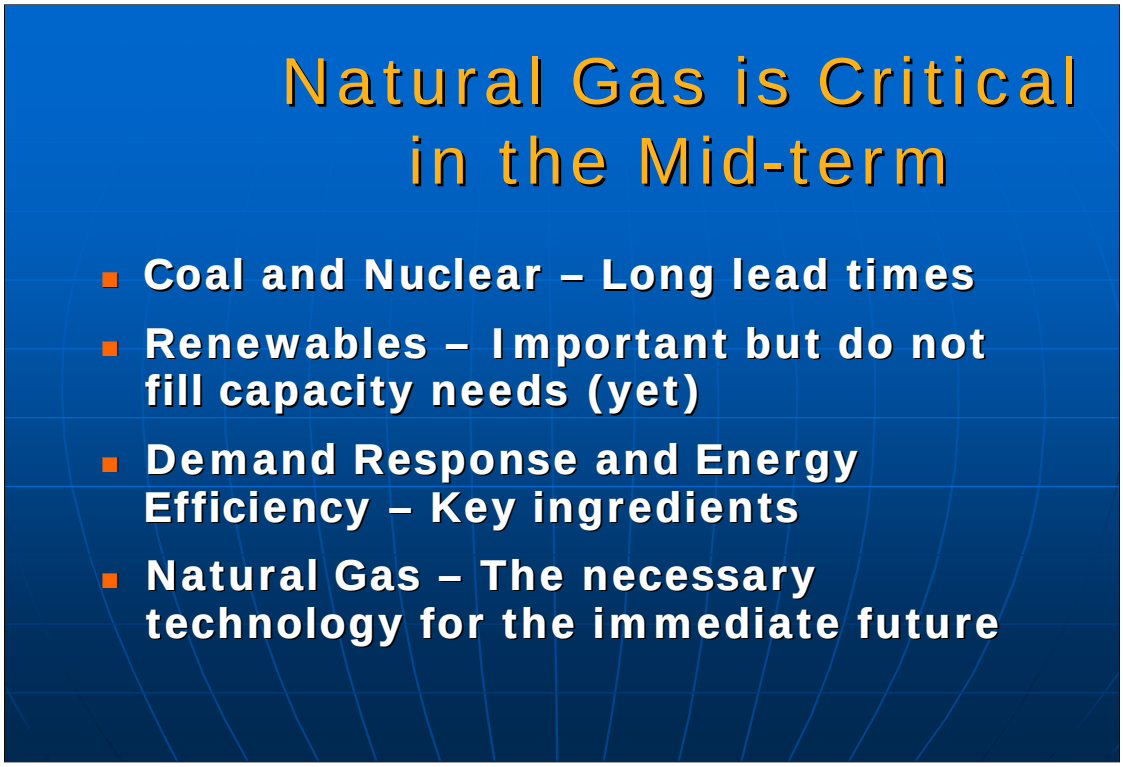
It's also important to remember that these cost estimates cover only capital costs. They do not include fuel costs, which as we've seen earlier will be a large factor for both natural gas and coal-fired plants. To the extent that plants do not have major fuel costs - they may be more competitive over their life cycles than would be suggested just looking at the capital costs. That would affect renewables and, to a degree, nuclear plants.

Similarly, these estimates generally do not include a full accounting of major risk factors, especially those affecting coal and nuclear plants. Both of these technologies have long lead times. That increases the chance that market conditions will change before they are complete and adds to the financial risk of building them. Nuclear plants also have risks associated with both decommissioning and waste fuel disposal. And coal plants have risks associated with the future treatment of greenhouse gases. Of course, relatively new technologies like wind and the new approaches to nuclear also have some risks, simply because they do not have the same track record of more mature technologies.



Climate change has become an increasingly urgent national issue. The debate over how to address carbon dioxide emissions is lively and has already affected how companies think about investments. Until recently, rising natural gas prices made coal plants attractive. However, the national uncertainty about carbon policy has made investing in coal plants more risky. Without carbon capture or sequestration, coal unit emit about four times as much carbon as natural gas combined cycle units per MWh. Since January 2007, 50 coal plants have been canceled or postponed. Only 26 remain under construction.

Whatever the eventual result of the climate change debate, costs of producing power from both coal and natural gas are likely to increase. Moreover, as long as future climate change policy is unclear, market participants will have a considerable disincentive to invest in coal plants. Even when the issues are resolved, it remains an open question how competitive coal-fired generation will be, and it would take another four to eight years to build new coal-fired capacity.



Over the long run, the nation can meet its increasing need for generation in several ways. But for the next few years, the options are more limited, and natural gas will be crucial.

The lead times for both nuclear and coal units mean that they will not supply a significant amount of new capacity for nearly a decade.

Most people expect renewables to supply an increasing proportion of the nation's power. For the next few years, wind will almost certainly account for a large share of generation investment and will account for a growing share of overall generation. Wind power has no fuel costs, and so will generally operate when available. However, wind is a variable, weather-dependent resource. As a result, it will not make up as strong a share of the Nation's capacity needs over the next few years. Other renewables are becoming more competitive. Geothermal power is already an important resource in the west, and concentrated solar is becoming economically attractive in desert areas like the Southwest. But these sources are likely to remain relatively small in the national picture over the next few years.

Both demand response and energy efficiency will be important – I'll talk more about them on the next slide – but they are unlikely to eliminate the need for new capacity.

Overall, the most likely outcome is that natural gas will continue to be the leading fuel for new capacity over the next half decade. For example, the consulting firm, Wood Mackenzie estimates that in a carbon constrained environment, gas consumption for power will increase by 69 % by 2017. That's in addition to the 55% increase we've seen since 2000.

Over the years, we have learned repeatedly that people respond to prices. In the case of electric power, this is likely to take several forms.

First, there is likely to be more demand response. In the simplest terms, high prices at peak will lead some customers – both businesses and others – to prefer to save their money rather than use power. In fact, the first round of demand response may be both the cheapest and fastest way to improve capacity margins on many systems. The best cost estimates for the first rounds of demand response suggest that it should be available for about $165/kW, far less than any generation side options. The results of ISO-NE's first Forward Capacity Market auction last year corroborates the economic importance of demand response - 7.4 % of the accepted bids were for demand response. However, there are impediments that limit the full use of demand response. For example, most customers do not have the option to respond directly to real-time prices. As a result, they are unlikely to reduce peak consumption as much as they might prefer to if they could take advantage of the price.

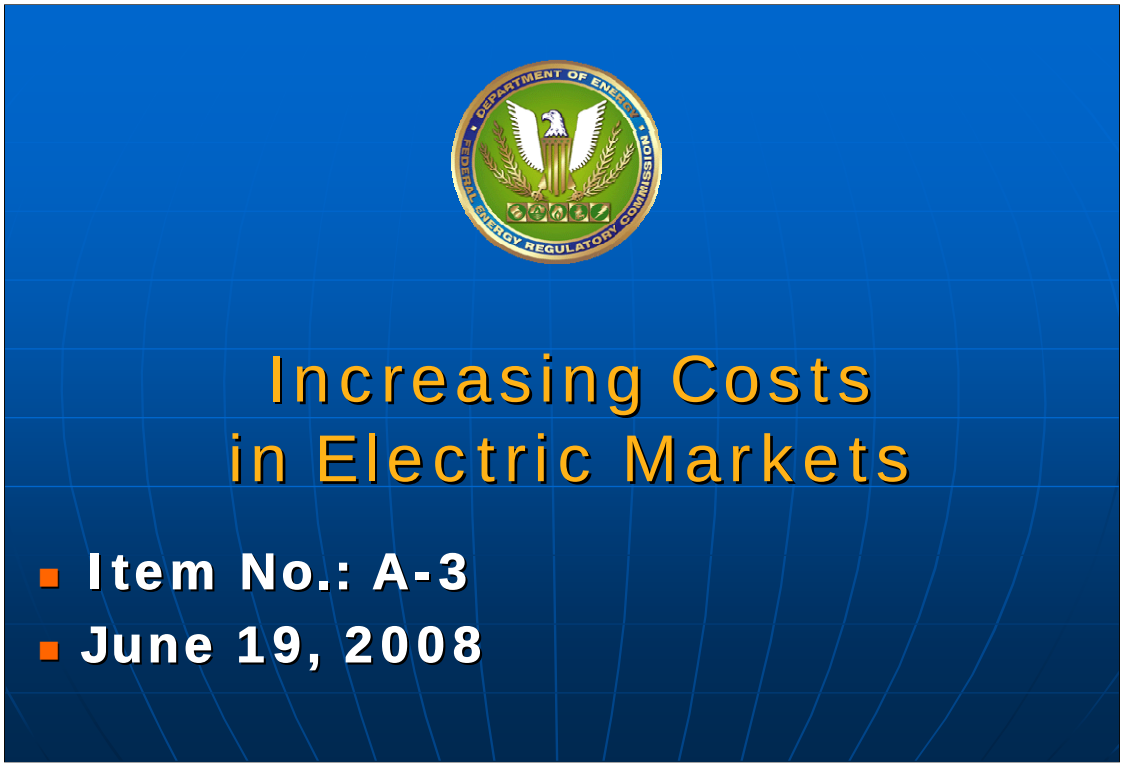
Second, customers are likely to be more energy efficient. While few customers see real-time prices, most get an average price over a month. As a result, high prices give them considerable incentive to reduce their overall consumption of power – though no more at peak than at other times. That is, energy efficiency is essentially a substitute for baseload capacity, while demand response is a substitute for peaking capacity. Energy efficiency is also likely to be economically important. Cost estimates show that the first round of energy efficiency may be available for about 3 cents/kWh. At

Continued on next page

Continued from previous page

current prices, supplying that same kWh from a combined cycle gas plant would cost 9 cents just for the fuel. Adding to the likelihood of greater energy efficiency is that many states have adopted fairly strong energy efficiency standards.

Third, innovators see higher prices as an opportunity. By the nature of things, it's hard to predict what innovations will succeed. The electric industry has a number of technologies that might take off – including concentrating solar power, hydrokinetic power, and vehicle to grid technologies. In addition, distributed generation is becoming more important, and may continue to do so for both cost and emissions reasons In other newly competitive industries, such as telecoms and natural gas, innovations have produced large changes, sometimes quickly. Given continuing high electric prices, the electric power industry may see similar results.



That concludes our presentation. We welcome comments and questions.

Confidential Attachment 3

Detailed Project Cost Breakdown

Confidential attachment filed pursuant to "Motion for Protective Order" pursuant to the Commission's August 22, 2008 Secretarial Letter

Attachment 4

DETAILED NET PRESENT VALUE OF REVENUE REQUIREMENTS

Detailed Net Present Value of Revenue Requirements

Rate Base Calculation

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Scrubber Only Incremental Costs																							
RateBase Build																							
Cumulative Capital	$ 871,913	$ 2,734,966	$ 44,061,397	$ 145,377,133	$ 310,955,865	$ 407,418,024	$ 457,221,069	$ 457,221,069	$ 457,221,069	$ 457,221,069	$ 457,221,069	$ 457,221,069	$ 457,221,069	$ 457,221,069	$ 457,221,069	$ 457,221,069	$ 457,221,069	$ 457,221,069	$ 457,221,069	$ 457,221,069	$ 457,221,069	$ 457,221,069	$ 457,221,069
Accumulated Book Depr	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,240,702	$ 45,722,107	$ 76,203,512	$ 106,684,916	$ 137,166,321	$ 167,647,725	$ 198,129,130	$ 228,610,535	$ 259,091,939	$ 289,573,344	$ 320,054,748	$ 350,536,153	$ 381,017,558	$ 411,498,962	$ 441,980,367	$ 457,221,069	$ 457,221,069
Net Book Value	$ 871,913	$ 2,734,966	$ 44,061,397	$ 145,377,133	$ 310,955,865	$ 407,418,024	$ 441,980,367	$ 411,498,962	$ 381,017,558	$ 350,536,153	$ 320,054,748	$ 289,573,344	$ 259,091,939	$ 228,610,535	$ 198,129,130	$ 167,647,725	$ 137,166,321	$ 106,684,916	$ 76,203,512	$ 45,722,107	$ 15,240,702	$ -	$ -
Working Capital							$ 366,918	$ 731,914	$ 750,314	$ 769,178	$ 788,516	$ 808,340	$ 828,664	$ 849,499	$ 870,859	$ 892,756	$ 915,205	$ 938,219	$ 961,812	$ 985,999	$ 1,010,794	$ 1,036,214	$ -
Month end Fuel Inventory							$ (71,563)	$ (293,407)	$ (300,742)	$ (308,260)	$ (315,967)	$ (323,866)	$ (331,963)	$ (340,262)	$ (348,768)	$ (357,488)	$ (366,425)	$ (375,585)	$ (384,975)	$ (394,599)	$ (404,464)	$ (414,576)	$ (424,940)
Nox/Sox							$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
M&S inventory							$ 6,693,835	$ 5,850,483	$ 5,007,132	$ 4,163,781	$ 3,320,429	$ 2,477,078	$ 2,069,326	$ 1,782,000	$ 1,782,000	$ 1,782,000	$ 1,782,000	$ 1,782,000	$ 1,782,000	$ 1,782,000	$ 1,782,000	$ 1,782,000	
ADIT	$ -	$ -	$ -	$ -	$ -	$ -	$ 24,537,531	$ 44,247,660	$ 63,759,539	$ 83,088,529	$ 102,247,799	$ 91,988,368	$ 81,583,723	$ 71,045,204	$ 60,484,739	$ 49,923,908	$ 39,363,442	$ 28,802,611	$ 18,242,145	$ 7,681,314	$ (2,879,152)	$ (7,343,702)	$ (5,711,606)
RateBase End of Year	$ 871,913	$ 1,803,439	$ 23,398,181	$ 94,719,265	$ 228,166,499	$ 359,186,944	$ 424,432,026	$ 373,540,293	$ 322,714,723	$ 272,072,322	$ 221,599,927	$ 200,546,528	$ 180,074,244	$ 159,856,568	$ 139,948,482	$ 120,041,087	$ 100,133,659	$ 80,226,939	$ 60,320,203	$ 40,414,192	$ 20,508,184	$ 9,747,340	$ 5,286,665
Average Rate Base	$ 871,913	$ 1,803,439	$ 23,398,181	$ 94,719,265	$ 228,166,499	$ 359,186,944	$ 440,826,548	$ 398,986,160	$ 348,127,508	$ 297,393,522	$ 246,836,125	$ 211,073,228	$ 190,310,386	$ 169,965,406	$ 149,902,525	$ 129,994,784	$ 110,087,373	$ 90,180,299	$ 70,273,571	$ 50,367,197	$ 30,461,188	$ 15,127,762	$ 7,517,003
Revenue Requirements																							
Pre-tax Capital Return	$ -	$ -	$ -	$ -	$ -	$ -	$ 23,952,745	$ 43,358,612	$ 37,831,702	$ 32,318,340	$ 26,824,168	$ 22,937,743	$ 20,681,405	$ 18,470,475	$ 16,290,203	$ 14,126,789	$ 11,963,412	$ 9,800,071	$ 7,636,767	$ 5,473,503	$ 3,310,277	$ 821,982	$ -
Depreciation	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,240,702	$ 30,481,405	$ 30,481,405	$ 30,481,405	$ 30,481,405	$ 30,481,405	$ 30,481,405	$ 30,481,405	$ 30,481,405	$ 30,481,405	$ 30,481,405	$ 30,481,405	$ 30,481,405	$ 30,481,405	$ 30,481,405	$ 15,240,702	$ -
O&M	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,976,112	$ 5,936,638	$ 6,085,884	$ 6,238,886	$ 6,395,739	$ 6,556,539	$ 6,721,387	$ 6,890,384	$ 7,063,635	$ 7,241,246	$ 7,423,329	$ 7,609,995	$ 7,801,360	$ 7,997,543	$ 8,198,665	$ 8,404,851	$ -
Fuel			$ -	$ -	$ -	$ -	$ (397,570)	$ (1,630,037)	$ (1,670,788)	$ (1,712,558)	$ (1,755,372)	$ (1,799,256)	$ (1,844,237)	$ (1,890,343)	$ (1,937,602)	$ (1,986,042)	$ (2,035,693)	$ (2,086,585)	$ (2,138,750)	$ (2,192,219)	$ (2,247,024)	$ (2,303,200)	$ (2,360,780)
Emmisions Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ (8,867,412)	$ (29,775,129)	$ (30,519,507)	$ (28,647,698)	$ (22,838,582)	$ (20,065,325)	$ (20,566,958)	$ (21,081,132)	$ (21,608,161)	$ (22,148,365)	$ (22,702,074)	$ (23,269,626)	$ (23,851,366)	$ (24,447,650)	$ (25,058,842)	$ (25,685,313)	$ (26,327,446)
Property Tax	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
Subotal Revenue Requirements	$ -	$ -	$ -	$ -	$ -	$ -	$ 32,904,577	$ 48,371,489	$ 42,208,696	$ 38,678,375	$ 39,107,358	$ 38,111,106	$ 35,473,000	$ 32,870,788	$ 30,289,479	$ 27,715,034	$ 25,130,378	$ 22,535,260	$ 19,929,416	$ 17,312,581	$ 14,684,481	$ (3,520,977)	$ (28,688,225)
Percentage of Year In-Service	$ -	$ -	$ -	$ -	$ -	$ -	50%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	50%	0%
Existing Plant With Capital Adds																							
RateBase Build																							
Cumulative Capital		$ 188,935,000	$ 232,935,000	$ 241,935,000	$ 250,935,000	$ 259,935,000	$ 268,935,000	$ 277,935,000	$ 286,935,000	$ 295,935,000	$ 304,935,000	$ 313,935,000	$ 322,935,000	$ 331,935,000	$ 340,935,000	$ 349,935,000	$ 358,935,000	$ 367,935,000	$ 376,935,000	$ 385,935,000	$ 394,935,000	$ 403,935,000	$ 412,935,000
Accumulated Book Depr		$ 140,727,000	$ 149,245,701	$ 159,564,403	$ 171,683,104	$ 185,601,805	$ 201,320,507	$ 218,839,208	$ 236,357,909	$ 253,876,611	$ 271,395,312	$ 288,914,014	$ 302,032,715	$ 313,935,000	$ 322,935,000	$ 331,935,000	$ 340,935,000	$ 349,935,000	$ 358,935,000	$ 367,935,000	$ 376,935,000	$ 385,935,000	$ 393,135,000
Net Book Value		$ 48,208,000	$ 83,689,299	$ 82,370,597	$ 79,251,896	$ 74,333,195	$ 67,614,493	$ 59,095,792	$ 50,577,091	$ 42,058,389	$ 33,539,688	$ 25,020,986	$ 20,902,285	$ 18,000,000	$ 18,000,000	$ 18,000,000	$ 18,000,000	$ 18,000,000	$ 18,000,000	$ 18,000,000	$ 18,000,000	$ 18,000,000	$ 19,800,000
Working Capital		$ 3,457,356	$ 3,543,790	$ 3,632,385	$ 3,723,194	$ 3,816,274	$ 3,911,681	$ 4,009,473	$ 4,109,710	$ 4,212,453	$ 4,317,764	$ 4,425,708	$ 4,536,351	$ 4,649,760	$ 4,766,004	$ 4,885,154	$ 5,007,283	$ 5,132,465	$ 5,260,776	$ 5,392,296	$ 5,527,103	$ 5,665,281	$ 5,806,913
Month end Fuel Inventory		$ 19,159,000	$ 28,112,102	$ 28,112,102	$ 28,112,102	$ 28,112,102	$ 28,112,102	$ 28,814,904	$ 29,535,277	$ 30,273,659	$ 31,030,500	$ 31,806,263	$ 32,601,419	$ 33,416,455	$ 34,251,866	$ 35,108,163	$ 35,985,867	$ 36,885,513	$ 37,807,651	$ 38,752,843	$ 39,721,664	$ 40,714,705	$ 41,732,573
Nox/Sox		$ 22,920,000	$ 18,336,000	$ 13,752,000	$ 9,168,000	$ 4,584,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
M&S inventory		$ 3,181,728	$ 5,523,494	$ 5,436,459	$ 5,230,625	$ 4,905,991	$ 4,462,557	$ 3,900,322	$ 3,338,088	$ 2,775,854	$ 2,213,619	$ 1,651,385	$ 1,379,551	$ 1,188,000	$ 1,188,000	$ 1,188,000	$ 1,188,000	$ 1,188,000	$ 1,188,000	$ 1,188,000	$ 1,188,000	$ 1,188,000	$ 1,306,800
ADIT			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
RateBase End of Year		$ 96,926,084	$ 139,204,684	$ 133,303,543	$ 125,485,817	$ 115,751,561	$ 104,100,833	$ 95,820,492	$ 87,560,165	$ 79,320,354	$ 71,101,571	$ 62,904,342	$ 59,419,606	$ 57,254,214	$ 58,205,870	$ 59,181,316	$ 60,181,149	$ 61,205,978	$ 62,256,428	$ 63,333,138	$ 64,436,767	$ 65,567,986	$ 68,646,286
Average Rate Base		$ 96,926,084	$ 118,065,384	$ 136,254,114	$ 129,394,680	$ 120,618,689	$ 109,926,197	$ 99,960,662	$ 91,690,328	$ 83,440,260	$ 71,101,571	$ 62,904,342	$ 59,419,606	$ 57,254,214	$ 58,205,870	$ 59,181,316	$ 60,181,149	$ 61,205,978	$ 62,256,428	$ 63,333,138	$ 64,436,767	$ 65,567,986	$ 68,646,286
Revenue Requirements																							
Pre-tax Capital Return	$ -	$ 10,533,149	$ 12,830,398	$ 14,807,003	$ 14,061,575	$ 13,107,871	$ 11,945,896	$ 10,862,922	$ 9,964,169	$ 9,067,617	$ 7,726,748	$ 6,835,939	$ 6,457,246	$ 6,221,928	$ 6,325,347	$ 6,431,350	$ 6,540,004	$ 6,651,374	$ 6,765,529	$ 6,882,537	$ 7,002,470	$ 7,125,402	$ 7,459,927
Depreciation	$ -	$ 10,599,000	$ 8,518,701	$ 10,318,701	$ 12,118,701	$ 13,918,701	$ 15,718,701	$ 17,518,701	$ 17,518,701	$ 17,518,701	$ 17,518,701	$ 17,518,701	$ 13,118,701	$ 11,902,285	$ 9,000,000	$ 9,000,000	$ 9,000,000	$ 9,000,000	$ 9,000,000	$ 9,000,000	$ 9,000,000	$ 9,000,000	$ 7,200,000
O&M	$ -	$ 28,043,000	$ 28,744,075	$ 29,462,677	$ 30,199,244	$ 30,954,225	$ 31,728,081	$ 32,521,283	$ 33,334,315	$ 34,167,672	$ 35,021,864	$ 35,897,411	$ 36,794,846	$ 37,714,717	$ 38,657,585	$ 39,624,025	$ 40,614,625	$ 41,629,991	$ 42,670,741	$ 43,737,509	$ 44,830,947	$ 45,951,721	$ 47,100,514
Fuel	$ -	$ 118,776,109	$ 159,028,012	$ 159,028,012	$ 159,028,012	$ 159,028,012	$ 159,028,012	$ 163,003,713	$ 167,078,805	$ 171,255,775	$ 175,537,170	$ 179,925,999	$ 184,423,739	$ 189,034,333	$ 193,760,191	$ 198,604,196	$ 203,569,301	$ 208,658,533	$ 213,874,996	$ 219,221,871	$ 224,702,418	$ 230,319,979	$ 236,077,978
Emmisions Costs		$ -	$ -	$ -	$ -	$ -	$ 31,624,387	$ 32,414,996	$ 33,225,371	$ 45,363,357	$ 46,497,441	$ 47,659,877	$ 48,851,374	$ 50,072,658	$ 51,324,475	$ 52,607,587	$ 53,922,776	$ 55,270,846	$ 56,652,617	$ 58,068,932	$ 59,520,656	$ 61,008,672	$ 62,533,889
Property Tax	$ -	$ 3,304,000	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600
Subotal Revenue Requirements	$ -	$ 171,255,257	$ 212,507,786	$ 217,002,993	$ 218,794,132	$ 220,395,409	$ 253,431,677	$ 259,708,215	$ 264,507,961	$ 280,759,724	$ 285,688,524	$ 291,224,127	$ 293,032,506	$ 298,332,522	$ 302,454,198	$ 309,653,757	$ 317,033,306	$ 324,597,344	$ 332,350,483	$ 340,297,450	$ 348,443,091	$ 356,792,374	$ 363,758,908
Total New Plant With Scrubber																							
Revenue Requirements																							
Pre-tax Capital Return	$ -	$ 10,533,149	$ 12,830,398	$ 14,807,003	$ 14,061,575	$ 13,107,871	$ 35,898,641	$ 54,221,534	$ 47,795,871	$ 41,385,957	$ 34,550,916	$ 29,773,682	$ 27,138,650	$ 24,692,404	$ 22,615,549	$ 20,558,140	$ 18,503,416	$ 16,451,445	$ 14,402,296	$ 12,356,039	$ 10,312,748	$ 7,947,384	$ 7,459,927
Depreciation	$ -	$ 10,599,000	$ 8,518,701	$ 10,318,701	$ 12,118,701	$ 13,918,701	$ 30,959,404	$ 48,000,106	$ 48,000,106	$ 48,000,106	$ 48,000,106	$ 48,000,106	$ 43,600,106	$ 42,383,690	$ 39,481,405	$ 39,481,405	$ 39,481,405	$ 39,481,405	$ 39,481,405	$ 39,481,405	$ 39,481,405	$ 24,240,702	$ 7,200,000
O&M	$ -	$ 28,043,000	$ 28,744,075	$ 29,462,677	$ 30,199,244	$ 30,954,225	$ 34,704,192	$ 38,457,921	$ 39,420,199	$ 40,406,559	$ 41,417,603	$ 42,453,950	$ 43,516,233	$ 44,605,101	$ 45,721,220	$ 46,865,271	$ 48,037,954	$ 49,239,986	$ 50,472,101	$ 51,735,053	$ 53,029,613	$ 54,356,572	$ 47,100,514
Fuel	$ -	$ 118,776,109	$ 159,028,012	$ 159,028,012	$ 159,028,012	$ 159,028,012	$ 158,630,442	$ 161,373,675	$ 165,408,017	$ 169,543,218	$ 173,781,798	$ 178,126,343	$ 182,579,502	$ 187,143,989	$ 191,822,589	$ 196,618,154	$ 201,533,608	$ 206,571,948	$ 211,736,246	$ 217,029,653	$ 222,455,394	$ 228,016,779	$ 233,717,198
Emmisions Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ 22,756,975	$ 2,639,868	$ 2,705,865	$ 16,715,659	$ 23,658,860	$ 27,594,552	$ 28,284,416	$ 28,991,526	$ 29,716,314	$ 30,459,222	$ 31,220,703	$ 32,001,220	$ 32,801,251	$ 33,621,282	$ 34,461,814	$ 35,323,359	$ 36,206,443
Property Tax	$ -	$ 3,304,000	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600	$ 3,386,600
Subotal Revenue Requirements	**Levelized-2012-2027**	**NPV**	$ 171,255,257	$ 212,507,786	$ 217,002,993	$ 218,794,132	$ 220,395,409	$ 286,336,254	$ 308,079,704	$ 306,716,657	$ 319,438,099	$ 324,795,883	$ 329,335,234	$ 328,505,507	$ 331,203,310	$ 332,743,677	$ 337,368,791	$ 342,163,685	$ 347,132,604	$ 352,279,899	$ 357,610,031	$ 363,127,573	$ 353,271,396	$ 335,070,683
NPV Gross Revenue Requirements	$323,475,945	$2,405,312,572						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Less Market Energy	$325,874,918	$2,423,150,928		$273,109,197	$273,109,197	$273,109,197	$273,109,197	$283,537,003	$290,625,428	$297,891,064	$305,338,340	$312,971,799	$320,796,094	$328,815,996	$337,036,396	$345,462,306	$354,098,864	$362,951,335	$372,025,119	$381,325,747	$390,858,890	$400,630,362	$410,646,122	$420,912,275
Less Market Capacity	$23,089,319	$171,688,284		$17,957,400	$20,500,500	$21,746,100	$20,085,300	$18,891,600	$19,151,100	$19,566,300	$20,085,300	$20,656,200	$21,175,200	$21,694,200	$22,887,900	$24,600,600	$26,313,300	$27,974,100	$29,686,800	$31,399,500	$33,060,300	$34,773,000	$36,485,700	$38,146,500
NPV Net Revenue Requirements	($25,488,292)	($189,526,641)	2012	$ (78,558,811)	$ (76,606,704)	$ (76,061,165)	$ (72,799,088)	$ (16,092,349)	$ (1,696,824)	$ (10,740,706)	$ (5,985,542)	$ (8,832,116)	$ (12,636,060)	$ (22,004,689)	$ (28,720,986)	$ (37,319,229)	$ (43,043,372)	$ (48,761,750)	$ (54,579,315)	$ (60,445,347)	$ (66,309,159)	$ (72,275,790)	$ (93,860,425)	$ (123,988,092)
	($17,763,560)	($132,086,833)	2008																					
Busbar Cost, Prior	$88.99		52.56	65.22	66.60	67.15	67.64	77.78	79.71	81.18	86.17	87.68	89.38	89.93	91.56	92.83	95.04	97.30	99.62	102.00	104.44	106.94	109.50	111.64
Busbar Cost, Scrubber	$10.29		0.00	0.00	0.00	0.00	-67.64	10.10	14.85	12.95	11.87	12.00	11.70	10.89	10.09	9.30	8.51	7.71	6.92	6.12	5.31	4.51	-1.08	-8.80
Busbar Cost, Total	$99.28		52.56	65.22	66.60	67.15		87.88	94.55	94.13	98.04	99.68	101.08	100.82	101.65	102.12	103.54	105.01	106.54	108.12	109.75	111.45	108.42	102.84
cents			0.000	0.000	0.000	0.000	-6.764	1.010	1.485	1.295	1.187	1.200	1.170	1.089	1.009	0.930	0.851	0.771	0.692	0.612	0.531	0.451	-0.108	-0.880

Attachment 5

SNLi article, July 1, 2008

SNLi

SNLFinancial

<<Return to Previous Page

Power & Coal - Infrastructure Development

Dominion starts construction on Virginia clean coal plant

July 01, 2008 8:14 AM ET

By Adnan Munawar

Dominion Virginia Power said June 30 it began construction on the 585-MW Virginia City Hybrid clean coal plant in Wise County, Va.

Construction of the plant is scheduled to take four years, Dominion said.

The plant is part of Dominion Virginia Power's response to a projected growth in demand for electricity of 4,000 MW from its customers by 2017.

The Virginia Department of Environmental Quality issued the necessary air permits following the unanimous approval June 25 by the State Air Pollution Control Board. The Virginia State Corporation Commission approved the $1.8 billion project on March 31.

The circulating fluidized bed unit will use coal and up to 20% biomass for its fuel. The station will provide nearly 1,000 jobs during construction and require a permanent staff of more than 75 people once it begins operating, the company said.

Dominion Virginia Power is the trade name of Virginia Electric and Power Co., a subsidiary of Dominion Resources Inc.

Attachment 6

SNLi article, June 26, 2008

SNLi

SNLFinancial

<<Return to Previous Page

Power & Natural Gas - Operations and Strategy

EIF raises financing to build 620-MW Kleen plant in Connecticut

June 26, 2008 2:16 PM ET

By Jay Hodgkins

Energy Investors Funds Group on June 26 said its United States Power Fund II LP and United States Power Fund III LP have raised construction financing for the Kleen Energy Systems LLC power plant in Middletown, Conn., known as Middletown Kleen.

The financing totaled $985 million of senior secured bank loans and a revolving credit facility, the company said. EIF said it is the majority owner of the project, with the balance owned by White Rock Holdings Associates LLC.

Goldman Sachs & Co. acted as joint lead arranger and sole book runner for senior secured loans raised to help finance the construction of the project. The bank loans were rated as investment grade at BBB- by Fitch Ratings, EIF said.

"With this construction financing in place, we're able to build a first-class power plant to serve the people of Connecticut," said William Corvo of Kleen Energy Systems. "This plant will provide clean, economical power to an area in need of new power generation."

Construction of the project began in February and is expected to be completed in mid-2010, EIF said. The project will be operated by Itochu Corp. subsidiary North American Energy Services and will be managed by Power Plant Management Services.

The Kleen plant will be a 620-MW, combined-cycle natural gas-fired facility. The project won a competitive request for proposals process run by the state of Connecticut and has entered into a 15-year capacity agreement with Northeast Utilities subsidiary Connecticut Light and Power Co. for the electricity produced by the plant.

The project has also finalized a multiyear tolling agreement, EIF said.

THE STATE OF NEW HAMPSHIRE
before the
PUBLIC UTILITIES COMMISSION

Public Service Company of New Hampshire
Merrimack Station Scrubber Project
Request for Information

Docket No. DE 08-103

MEMORANDUM OF LAW

Pursuant to the Commission's Secretarial Letter dated August 22, 2008, Public Service Company of New Hampshire ("PSNH" or the "Company") provides this Memorandum of Law concerning the legal mandate placed on the Company by the General Court to install a wet flue gas desulphurization system ("scrubber technology") at PSNH's Merrimack Station in Bow.

On June 8, 2006, "AN ACT relative to the reduction of mercury emissions," 2006 N.H. Laws Chapter 105 (the "Scrubber Law") took effect. By that law, the General Court imposed an unmistakable legislative mandate for PSNH to install and have operational scrubber technology to control mercury emissions at Merrimack Units 1 and 2 no later than July 1, 2013. RSA 125-O:13, I. Three years earlier, in 2003 N.H. Laws, Chapter 21, the legislature had enacted RSA 369-B:3-a. RSA 369-B:3-a authorizes PSNH to modify its generation assets upon a finding that such modifications are "in the public interest of retail customers of PSNH to do so." In its Secretarial Letter, the Commission requested this Memorandum of Law to address "the nature and extent of the Commission's authority relative to the Merrimack Station scrubber project" in light of the statutory requirements contained in RSA 125-O:11, *et seq.*, and RSA 369-B:3-a.

Subject to acknowledged constitutional limitations, the regulation of utilities and the setting of appropriate rates to be charged for public utility products and services is the unique province of the legislature. *Duquesne Light Co. v. Barasch*, 488 U.S. 299, 313 (1989); *The Minnesota Rate Cases*, 230 U.S. 352, 433 (1913); *LUCC v. Public Serv. Co. of N.H.*, 119 N.H. 332, 340 (1979). The Public Utilities Commission ("PUC") derives its authority from powers delegated by the legislature. *Appeal of Richards*, 134 N.H. 148, 158 (1991).

The "nature and extent of the Commission's authority" has been clearly set forth in numerous New Hampshire Supreme Court decisions. *Petition of Boston & Maine Railroad*, 82 N.H. 116 (1925); *State of New Hampshire v. New Hampshire Gas & Electric Co.*, 86 N.H. 16 (1932); *H.P. Welch Co. v. State*, 89 N.H. 428 (1938); *Blair and Savoie v. Manchester Water Works*, 103 N.H. 505 (1961); *State v. New England Telephone & Telegraph Co.*, 103 N.H. 394 (1961); *Appeal of Public Service Co.*, 122 N.H. 1062 (1982). *See also, The Manchester Press Club v. State Liquor Comm'n*, 89 N.H. 442 (1938).

As early as 1925, the Court held:

> ***The public service commission is an agency of limited powers and authority.*** While the legislature may delegate to such an agency certain of its own powers and authority, ***the exercise of such delegation does not extend beyond expressed enactment or its fairly implied inferences.*** The establishment of such an agency is of a special rather than general character, and ***power and authority not granted are withheld***.

Boston & Maine Railroad, *id.* at 116 (emphases added).

The Court, citing to this 1925 precedent, re-affirmed the limited authority of the PUC in *Appeal of Public Service Co.*:

> The PUC is a creation of the legislature and as such is endowed with ***only*** the powers and authority which are ***expressly granted or fairly implied by statute***. *Petition of Boston & Maine Railroad*, 82 N.H. 116, 116, 129 A. 880, 880 (1925). ***Consequently, the authority of the PUC…is limited to that specifically delegated or fairly implied by the legislature and may not be derived from other generalized powers of supervision.***

Appeal of Public Service Co., *id.* at 1066 (emphases added).

Recently, the Commission itself noted these restrictions on its power and authority. In *Re RCC Minnesota, Inc.*, 88 NH PUC 611 (2003), discussing the Commission's authority to regulate cellular carriers, the Commission found:

> The New Hampshire Supreme Court has held that "[t]he PUC is a creation of the legislature and as such is endowed with only the powers and authority which are expressly granted or fairly implied by statute." *Appeal of Public Service Company of New Hampshire*, 122 NH 1062, 1066 (1982). Consequently, ***the Commission must look to its statutory authority to determine whether it has jurisdiction*** over cellular providers. RSA 362:6 expressly states that it does not. A cellular provider is not a public utility, and its "services shall not be subject to the jurisdiction of the public utilities commission pursuant to this title." RSA 362:6. ***We therefore must conclude that the Commission does not have jurisdiction over any cellular carrier because the New Hampshire legislature specifically removed cellular carriers from the jurisdiction of this Commission***.

Re RCC Minnesota, Inc., at 615 (emphases added). *See also, Re Congestion on the Telephone Network Caused by Internet Traffic*, 89 NH PUC 173, 175 (2004) ("It is a well-established principle that this Commission possesses only those powers that are granted to it by the legislature.")

These precedents clearly and consistently note that "the regulation of utilities…is the unique province of the legislature"; the Commission "derives its authority from powers delegated by the legislature"; "[t]he…commission is an agency of limited powers and authority"; and, "the authority of the PUC…is limited

to that specifically delegated or fairly implied by the legislature and may not be derived from other generalized powers of supervision." These holdings detail the limits of the Commission's authority and form the bases for any discussion concerning the nature and extent of the Commission's authority relative to the Merrimack Station scrubber project.

The Scrubber Law, codified at RSA 125-O:11 through 125-O:18, is clear, straightforward, and unambiguous in its mandate, as set forth in the first words of the statute:

> ***Statement of Purpose and Findings. The general court finds that:***
>
> ***I. It is in the public interest to achieve significant reductions in mercury emissions at the coal-burning electric power plants in the state as soon as possible.*** The requirements of this subdivision will prevent, at a minimum, 80 percent of the aggregated mercury content of the coal burned at these plants from being emitted into the air by no later than the year 2013. ***To accomplish this objective, the best known commercially available technology shall be installed at Merrimack Station no later than July 1, 2013.***

RSA 125-O:11, I (emphases added).

The General Court provided unequivocal notice of the Scrubber Law's intent in eight such findings in the law's ***Statement of Purpose and Findings***:

> I. ***It is in the public interest to achieve significant reductions in mercury emissions at the coal-burning electric power plants in the state as soon as possible.*** The requirements of this subdivision will prevent, at a minimum, 80 percent of the aggregated mercury content of the coal burned at these plants from being emitted into the air by no later than the year 2013. ***To accomplish this objective, the best known commercially available technology shall be installed at Merrimack Station no later than July 1, 2013.***
>
> II. ***The department of environmental services has determined that the best known commercially available technology is a wet flue gas desulphurization system, hereafter "scrubber***

> ***technology," as it best balances the procurement, installation, operation, and plant efficiency costs with the projected reductions in mercury and other pollutants from the flue gas streams of Merrimack Units 1 and 2.*** Scrubber technology achieves significant emissions reduction benefits, including but not limited to, cost effective reductions in sulfur dioxide, sulfur trioxide, small particulate matter, and improved visibility (regional haze).
>
> III. ***After scrubber technology is installed at Merrimack Station,*** and after a period of operation has reliably established a consistent level of mercury removal at or greater than 80 percent, the department will ensure through monitoring that that level of mercury removal is sustained, consistent with the proven operational capability of the system at Merrimack Station.
>
> IV. To ensure that an ongoing and steadfast effort is made to implement practicable technological or operational solutions to achieve significant mercury reductions prior to the construction and operation of the scrubber technology at Merrimack Station, the owner of the affected coal-burning sources shall work to bring about such early reductions and shall be provided incentives to do so.
>
> V. ***The installation of scrubber technology will not only reduce mercury emissions significantly but will do so without jeopardizing electric reliability and with reasonable costs to consumers.***
>
> VI. ***The installation of such technology is in the public interest of the citizens of New Hampshire and the customers of the affected sources.***
>
> VII. Notwithstanding the provisions of RSA 125-O:1, VI, the purchase of mercury credits or allowances to comply with the mercury reduction requirements of this subdivision or the sale of mercury credits or allowances earned under this subdivision is not in the public interest.
>
> VIII. ***The mercury reduction requirements set forth in this subdivision represent a careful, thoughtful balancing of cost, benefits, and technological feasibility and therefore the requirements shall be viewed as an integrated strategy of non-severable components.***

RSA 125-O:11 (emphases added).

The Scrubber Law's mandate that a scrubber shall be installed at Merrimack Station is detailed in the statutory provisions contained in its "Statement of Purpose

and Findings." In RSA 125-O:13, I, the General Court unequivocally requires PSNH to install a scrubber at Merrimack Station within a set timeframe:

> I. ***The owner [PSNH] shall install and have operational scrubber technology to control mercury emissions at Merrimack Units 1 and 2 no later than July 1, 2013. The achievement of this requirement is contingent upon obtaining all necessary permits and approvals from federal, state, and local regulatory agencies and bodies; however, all such regulatory agencies and bodies are encouraged to give due consideration to the general court's finding that the installation and operation of scrubber technology at Merrimack Station is in the public interest.*** The owner shall make appropriate initial filings with the department and the public utilities commission, if applicable, within one year of the effective date of this section, and with any other applicable regulatory agency or body in a timely manner.

(Emphasis added).

The General Court could not be clearer regarding the purpose and intent of the Scrubber Law. ***PSNH shall install a scrubber at Merrimack Station as soon as possible***. This mandate is binding not just on PSNH, but also on the Commission. As noted earlier, "the authority of the PUC…is limited to that specifically delegated or fairly implied by the legislature and may not be derived from other generalized powers of supervision." *Appeal of Public Service Co., supra,* 122 N.H. at 1066. In the Scrubber Law, the General Court has:

I. Found that "It is in the public interest to achieve significant reductions in mercury emissions at the coal-burning electric power plants in the state as soon as possible."

II. Mandated that scrubber "technology shall be installed at Merrimack Station no later than July 1, 2013."

III. Found that "the best known commercially available technology is a wet flue gas desulphurization system, hereafter 'scrubber technology,' as it best balances the procurement, installation, operation, and plant efficiency costs with the projected reductions in mercury and other pollutants from the flue gas streams of Merrimack Units 1 and 2."

IV. Found that "Scrubber technology achieves significant emissions reduction benefits, including but not limited to, cost effective reductions in sulfur dioxide, sulfur trioxide, small particulate matter, and improved visibility (regional haze)."

V. Found that "The installation of scrubber technology will not only reduce mercury emissions significantly but will do so without jeopardizing electric reliability and with reasonable costs to consumers."

VI. Found that "The installation of such technology is in the public interest of the citizens of New Hampshire and the customers of the affected sources."

VII. And declared that "The mercury reduction requirements set forth in this subdivision represent a careful, thoughtful balancing of cost, benefits, and technological feasibility and therefore the requirements shall be viewed as an integrated strategy of non-severable components."

The Scrubber Law does not delegate authority to the Commission to second-guess the mandates and findings of the General Court. There is absolutely no implication within the Scrubber Law that the mandate to install a scrubber at Merrimack Station as soon as possible can be delayed, conditioned, or eliminated in its entirety, by the Commission.

Interpretation of the Scrubber Law is not difficult. Just a few days ago, the Supreme Court issued its most recent holdings on statutory interpretation:

> We are the final arbiters of the legislative intent as expressed in the words of the statute considered as a whole. *State v. Langill*, 157 N.H. ___, ___ (decided April 4, 2008). We begin by examining the language of the statute, *State v. Whittey*, 149 N.H. 463, 467 (2003), and ascribe the plain and ordinary meaning to the words used, *Langill*, 157 N.H. at ___. We interpret legislative intent from the statute as written and will not consider what the legislature might have said or add language that the legislature did not see fit to include. *Id.* We also interpret a statute in the context of the overall statutory scheme and not in isolation. *Id.* If a statute is ambiguous, however, we consider legislative history to aid our analysis. *Whittey*, 149 N.H. at 467. Our goal is to apply statutes in light of the legislature's intent in enacting

> them, and in light of the policy sought to be advanced by the entire statutory scheme. *Id.*

State v. Dansereau, ___ N.H. ___ (August 15, 2008, *slip op.* at 2); *See also, Oulette v. Town of Kingston,* ___ N.H. ___ (August 15, 2008, *slip op.).*

In the case of the Scrubber Law, the overall statutory scheme includes not just the contents of 2006 N.H. Laws 105, but the entirety of RSA Chapter 125-O, the state's Multiple Pollution Reduction Program. Enacted during the 2002 legislative session as "AN ACT relative to additional emissions reductions from existing fossil fuel burning steam electric power plants," (2002 N.H. Laws, Chapter 130), RSA 125-O:1 contains additional findings by the General Court that are part of the overall statutory scheme leading to the Scrubber Law. The Legislature's findings include: a finding that "scientific advances have demonstrated that adequate protection of public health, environmental quality, and economic well-being - the 3 cornerstones of New Hampshire's quality of life - requires additional, concerted reductions in air pollutant emissions." RSA 125-O:1, I; a finding "that protecting New Hampshire's high quality-of-life environment by reducing air pollutant emissions returns substantial economic benefit to the state through avoided health care costs; greater tourism resulting from healthier lakes and improved vistas; more visits by fishermen, hunters, and wildlife viewers to wildlife ecosystems, and a more productive forest and agricultural sector." RSA 125-O:1, IV; a finding "that aggressive further reductions in emissions of sulfur dioxide (SO2), oxides of nitrogen (NOx), mercury, and carbon dioxide (CO2) must be pursued." RSA 125-O:1, III; and, a finding "that substantial additional reductions in emissions of SO2, NOx, mercury, and CO2 must be required of New Hampshire's existing fossil fuel burning steam electric power plants.." RSA 125-O:1, V.

When viewed with the Supreme Court's stated goal of applying statutes in light of the legislature's intent in enacting them, and in light of the policy sought to be advanced by the entire statutory scheme, there is no doubt what was intended by passage of the Scrubber Law. The public interest findings of the General Court in RSA 125-O:1 overwhelmingly dictate the policy objectives; the Scrubber Law was intended to expeditiously implement these objectives via installation of the scrubber as quickly as possible.

The language of the Scrubber Law is clear. Ascribing the "plain and ordinary meaning to the words used" in the Scrubber Law leaves no doubt that the General Court has mandated installation of a scrubber at Merrimack Station as soon as possible. The intent of the Scrubber Law is obvious and apparent from the statute as written. The overall statutory scheme and the policy sought to be advanced is obvious and unwaivering: "The mercury reduction requirements set forth in this subdivision represent a careful, thoughtful balancing of cost, benefits, and technological feasibility and therefore the requirements shall be viewed as an integrated strategy of non-severable components."

The Supreme Court has also discussed the importance of the General Court's use of the word "shall," as used in the Scrubber Law. (A scrubber "***shall*** be installed at Merrimack Station no later than July 1, 2013." RSA 125-O:11, I. The requirements of the Scrubber Law "***shall*** be viewed as an integrated strategy of non-severable components." RSA 125-O:11, VIII. "The owner ***shall*** install and have operational scrubber technology to control mercury emissions at Merrimack Units 1 and 2 no later than July 1, 2013." RSA 125-O:13, I. "Total mercury emissions from the affected sources ***shall*** be at least 80 percent less on an annual basis than the

baseline mercury input, as defined in RSA 125-O:12, III, beginning on July 1, 2013." RSA 125-O:13, II. In *State v. Johanson*, 156 N.H. 148, 151 (2007), the Court noted:

> "The use of the word 'shall' is generally regarded as a command; although not controlling, it is significant as indicating the intent that the statute is mandatory. This is especially so where the purpose of the statute is to protect private rights." *McCarthy v. Wheeler*, 152 N.H. 643, 645, 886 A.2d 972 (2005).

Similarly, in *City of Rochester v. Corpening*, 153 N.H. 571, 574 (2006) the Court held:

> "The intention of the Legislature as to the mandatory or directory nature of a particular statutory provision is determined primarily from the language thereof." *Appeal of Rowan*, 142 N.H. 67, 71, 694 A.2d 1002 (1997) (quotation and citation omitted). The general rule of statutory construction is that "the word 'may' makes enforcement of a statute permissive and that the word 'shall' requires mandatory enforcement." *Town of Nottingham v. Harvey*, 120 N.H. 889, 895, 424 A.2d 1125 (1980).

As recently as July 25th of this year, the Supreme Court reiterated this principle of statutory construction. Discussing the Legislature's use of the word "shall" in RSA 402-C:34, the Court cited to *Rowan, supra,* and held that "having used the word 'shall,' the legislature is presumed to have intended setoff under RSA 402-C:34 to be mandatory rather than discretionary." *In the Matter of the Liquidation of The Home Insurance Company*, ___ N.H. ___, *slip op. at* 10 (July 25, 2008).

The use of the word "shall" in the Scrubber Law emphasizes the Legislature's intent that installation of a scrubber at Merrimack Station is "commanded" and is "mandatory." Indeed, within the Scrubber Law, the General Court used the word "shall" sixty times! There can be no doubt of the mandatory and unequivocal direction expressed in the Scrubber Law.

When the Scrubber Law is analyzed using the Supreme Court's statutory interpretation rules, the General Court's meaning, intent, and command is clear. If there was any ambiguity, which there is not, the Court has indicated that legislative history would be used to aid in the statute's analysis. The Scrubber Law's legislative history is equally clear and unambiguous:

> **SCIENCE, TECHNOLOGY AND ENERGY**
>
> HB 1673-FN, relative to the reduction of mercury emissions.
>
> MAJORITY: OUGHT TO PASS WITH AMENDMENT. MINORITY: OUGHT TO PASS WITH AMENDMENT.
>
> Rep. Roy D. Maxfield for the Majority of Science, Technology and Energy: ***This bill provides for at least an 80% reduction of mercury emissions from coal-fired power plants by requiring the installation of a scrubber technology no later than July 1, 2013 and provides economic incentives for earlier installation timeframes and greater reduction in emissions.*** The committee amendment provides for annual progress reports from Public Service of New Hampshire (PSNH) and also cost recovery language. ***This legislation is a result of months of collaborative work by PSNH, the Department of Environmental Services, the Governor's office, multiple environmental groups, members of the committee and other stakeholders.*** The scrubber technology not only will reduce mercury by at least 80%, it will dramatically reduce SO2 emissions. ***Our committee held multiple work sessions and all had an opportunity to present their views.*** A comprehensive review of the timeframe was conducted by two members of the committee who concluded that the 2013 date is appropriate. ***It is in the best interests of PSNH to achieve early reductions for mercury*** and they are proceeding with a US Department of Energy (DOE) grant to accomplish this objective. ***This bill has consensus support from the Governor and stakeholders, and has wide bipartisan support in the General Court. The bill achieves the primary objectives of reasonable reductions, in a reasonable timeframe, at a reasonable cost to electricity users.*** Vote 13-2.
>
> Rep. Gene F. Andersen for the Minority of Science, Technology and Energy: ***The bill provides for significant mercury reductions from facilities operated by Public Service of New Hampshire (PSNH) by 2013.*** Some testimony indicated that an optimal permit

> and construction schedule could provide a 2011 completion for mercury removal equipment; thereby providing the necessary and desired reductions of mercury and other pollutants during that two year period. ***The minority felt the 2011 date should be utilized for implementation of the mercury reduction requirement*** and provide for extensions beyond that date if and only if PSNH was unable to complete by 2011 due to circumstance beyond its control.

House Calendar, Vol. 28, No. 22, February 17, 2008, p. 1280 (emphases added).

Moreover, the Analysis accompanying the Scrubber Law reads:

> **ANALYSIS**
>
> This bill provides for an 80 percent reduction of mercury emissions from coal-burning power plants by requiring the installation of scrubber technology no later than July 1, 2013 and provides economic incentives for earlier installation and greater reductions in emissions.

2006 N.H. Laws, Chapter 105.

The Scrubber Law's legislative history and Analysis echo the mandates found in the plain language of the law itself - - the bill requires the installation of scrubber technology no later than July 1, 2013. The only difference of opinion between the legislative majority and minority was on the schedule for the mandated installation of the scrubber - - the minority wanted the scrubber installed earlier - - a goal that is being materially hindered by the Commission's creation of this docket.

The Secretarial Letter states that there is "a potential conflict between" the Scrubber Law and RSA 369-B:3-a. PSNH finds no such conflict. The Scrubber Law uses plain and ordinary words which mandate that a scrubber "shall be installed at Merrimack Station no later than July 1, 2013." RSA 369-B:3-a, enacted during the 2003 legislative session, reads:

> 369-B:3-a Divestiture of PSNH Generation Assets. The sale of PSNH fossil and hydro generation assets shall not take place before April 30, 2006. Notwithstanding RSA 374:30, subsequent to April 30, 2006, PSNH may divest its generation assets if the commission finds that it is in the economic interest of retail customers of PSNH to do so, and

> provides for the cost recovery of such divestiture. ***Prior to any divestiture of its generation assets, PSNH may modify or retire such generation assets if the commission finds that it is in the public interest of retail customers of PSNH to do so***, and provides for the cost recovery of such modification or retirement.

(Emphasis added).

The "potential conflict" noted in the Secretarial Letter appears to be whether PSNH is required to obtain a Commission finding under RSA 369-B:3-a that the modification of Merrimack Station by the installation of a scrubber "is in the public interest of retail customers of PSNH" before such installation may proceed. As noted in *Appeal of Pinetree Power, Inc.*, 152 N.H. 92, 97 (2005), "By the plain language of the statute [RSA 369-B:3-a], the public interest standard for modification is broader than just economic interests." The General Court has weighed and ruled on the broader public interest and found that the Scrubber Law's requirements "represent a careful, thoughtful balancing of cost, benefits, and technological feasibility…." RSA 125-O:11, VIII.

Due to the mandatory language and express findings of the General Court contained in the Scrubber Law, there is no need nor authority for the Commission to render an additional and duplicative public interest finding under RSA 369-B:3-a prior to the installation of the scrubber. Any such proceeding under RSA 369-B:3-a would be held to determine only one thing - - whether it is "in the public interest of retail customers of PSNH" to modify Merrimack Station by installation of a scrubber. ***That precise finding has already been made by the General Court*** - - "The installation of [scrubber] technology is in the public interest of the citizens of New Hampshire and the customers of the affected sources." RSA 125-O:11, VI. As the General Court has already made the requisite RSA 369-B:3-a finding, the

Commission lacks authority to contravene this Legislative finding and there is no need for a separate and redundant Commission finding. Such a reading of the law is consistent with General Court's express statements of purpose and findings contained in the Scrubber Law. Statutes are to be interpreted "not in isolation, but in the context of the overall statutory scheme." *State v. Farrow,* 140 N.H. 473, 475 (1995); *Appeal of Ashland Elec. Dept.*, 141 N.H. 336, 340 (1996); *Pinetree Power, id.* at 96.

By finding that "The installation of [scrubber] technology is in the public interest of…the customers of [PSNH]," the General Court has removed from the Commission any authority to reach a contrary finding. Recall, "the authority of the PUC…is limited to that specifically delegated or fairly implied by the legislature and may not be derived from other generalized powers of supervision." *Appeal of Public Service Co., id.* The General Court has not delegated authority to the Commission to determine whether installing a scrubber at Merrimack Station is in the public interest, nor is such authority fairly implied. That public interest finding has been made, and is clearly and definitively embodied in the law.

It should be noted that two of the sponsors of the Scrubber Law were also sponsors of 2003 N.H. Laws, Chapter 21, the law creating RSA 369-B:3-a. Senators Green and Odell both sponsored Senate Bill 170 during the 2003 legislative session and House Bill 1673-FN during the 2006 legislative session. It is inconceivable that these two Senators would sponsor legislation in 2006 finding that installation of scrubber technology at Merrimack Station is in the public interest of PSNH's customers (the precise finding required in their earlier 2003 law), yet would delegate to the Commission the authority and duty to make (or contradict) that same finding.

Any other reading of the interplay between the Scrubber Law and RSA 369-B:3-a would create the very conflict implied in the Secretarial Letter. In the event that there was a conflict between two statutes, the Supreme Court has held:

> When a conflict exists between two statutes, the later statute will control, especially when the later statute deals with a subject in a specific way and the earlier enactment treats that subject in a general fashion. 2A C. D. Sands, Sutherland Statutes and Statutory Construction § 51.05 (4th ed. 1973). However, as we noted in *Ingersoll v. Williams*, 118 N.H. 135, 138, 383 A.2d 1119, 1121 (1978), decided this day, implied repeal of former statutes is a disfavored doctrine in this State. *See also State v. Miller*, 115 N.H. 662, 348 A.2d 345 (1975); *Opinion of the Justices*, 107 N.H. 325, 221 A.2d 255 (1966). The party arguing a repeal by implication must demonstrate it by evidence of convincing force. *Opinion of the Justices, id.* at 328, 221 A.2d at 257. If any reasonable construction of the two statutes taken together can be found, this court will not find that there has been an implied repeal. *State v. Miller supra; Public Serv. Co. v. Lovejoy Granite Co.*, 114 N.H. 630, 325 A.2d 785 (1974).

Board of Selectmen of Merrimack v. Planning Board of Merrimack, 118 N.H. 150 (1978).

More recently the Court re-affirmed this principle:

> "It is a well-recognized rule of statutory construction that where one statute deals with a subject in general terms, and another deals with a part of the same subject in a more detailed way, the latter will be regarded as an exception to the general enactment where the two conflict." *State v. Bell*, 125 N.H. 425, 432, 480 A.2d 906 (1984). We also note that RSA 161:4, VI was enacted in 1991, while RSA chapter 151-E was enacted in 1998. "When a conflict exists between two statutes, the later statute will control, especially when the later statute deals with a subject in a specific way and the earlier enactment treats that subject in a general fashion." *Petition of Public Serv. Co. of N.H.*, 130 N.H. 265, 283, 539 A.2d 263 (1988) (quotations omitted), appeal dismissed, 488 U.S. 1035, 109 S. Ct. 858, 102 L. Ed. 2d 983 (1989).

Bel Air Associates v. Dept. of Health and Human Services, 154 N.H. 228, 233 (2006).

Of the two laws in question, the Scrubber Law is the later statute, enacted during the 2006 legislative session versus the 2003 enactment for RSA 369-B:3-a. In addition, RSA 369-B:3-a deals with undefined, potential modifications of PSNH's

generation assets in a general way. The Scrubber Law contains specific findings and mandates. In accordance with the Court's holding in *Bel Air Associates*, the explicit directions provided in the Scrubber Law must be regarded as controlling over the general RSA 369-B:3-a enactment.

The instant situation is similar to the facts facing the Supreme Court in *Petition of Public Service Co. of N.H.,* 130 N.H. 265 (1988), cited in *Bel Air*, *supra*. In *Petition of Public Service Co. of N.H.*, the Court dealt with the power of the Commission to grant PSNH an emergency rate increase per RSA 378:9 during the construction of the Seabrook nuclear plant despite the enactment of the so-called "anti-CWIP" law, RSA 378:30-a. The Court noted that the emergency rate statute "grants the commission broad discretionary powers." *Petition of PSNH* at 283. "The anti-CWIP statute, on the other hand, restricts the commission's discretionary powers in the ratemaking process." *Id*. The Court then held:

> The one statute grants the commission general ratemaking powers under emergencies, and the other, enacted after the first, restricts the commission's discretion when determining rates. "When a conflict exists between two statutes, the later statute will control, especially when the later statute deals with a subject in a specific way and the earlier enactment treats that subject in a general fashion." *Board of Selectmen v. Planning Bd.*, 118 N.H. 150, 152, 383 A.2d 1122, 1124 (1978). RSA 378:30-a was enacted after the emergency statute. The anti-CWIP statute is unconditional in its prohibition, and makes no exceptions for emergencies.

Id.

Once again, PSNH faces a situation involving the enactment of a more recent, specific statute and an older statute of general application. Like the anti-CWIP law, the Scrubber Law, enacted after RSA 369-B:3-a, restricts the Commission's discretion. It also deals with the subject of modifying Merrimack

Station by the installation of a scrubber in a specific way, versus the general supervisory authority found in the earlier statute. Under the Court's holding in *Petition of PSNH*, the Scrubber Law's mandate for the installation of a scrubber at Merrimack Station and finding of such action to be in the public interest are controlling and binding upon the Commission.

The legislative mandates contained in the Scrubber Law are made even more apparent when the Scrubber Law is compared to the language in RSA Chapter 362-C, "Reorganization of Public Service Company of New Hampshire." As in the Scrubber Law, RSA Chapter 362-C begins with a legislative "Declaration of Purpose and Findings." RSA 362-C:1. Notably, the RSA 362-C:1 findings include a grant of authority to the Commission:

> …the public utilities commission should be authorized to determine whether a proposed agreement relating to the reorganization of Public Service Company of New Hampshire and, upon receipt of required regulatory approvals, the acquisition of Public Service Company of New Hampshire by Northeast Utilities, would be consistent with the public good and whether the rates for electric service to be established in connection with the reorganization are just and reasonable and should be approved.

RSA 362-C:1, IV. In RSA Chapter 362-C, the General Court specifically delegated authority to the Commission to make a determination whether the cited agreement "would be consistent with the public good." RSA 362-C:3. In the Scrubber Law, no such delegation of authority to the Commission is included; the General Court itself has determined that installation of a scrubber "is in the public interest of the citizens of New Hampshire and the customers of the affected sources." Had the Legislature intended to delegate such authority to the Commission, it certainly knew how to do so, as it had done in the past in RSA Chapter 362-C for another

matter involving the Commission's regulatory authority concerning PSNH. *See also*, *Cannata v. Town of Deerfield*, 132 N.H. 235, 243 (1989) (…the legislature knew how to include real property in a definition when it intended to do so.); *Barry v. Amherst*, 121 N.H. 335, 339 (1981) (The express language of RSA 36:23 (Supp. 1979) demonstrates that the legislature knew how to provide for automatic approval when that was its intention.).

PSNH notes that in a recent e-mail, the Commission's former general counsel, citing to RSA 125-O:13, I, indicated that the General Court's findings in the Scrubber Law were not binding upon the Commission, but were only to be afforded "due consideration." The complete wording of RSA 125-O:13, I, reads:

> I. The owner shall install and have operational scrubber technology to control mercury emissions at Merrimack Units 1 and 2 no later than July 1, 2013. The achievement of this requirement is contingent upon obtaining ***all necessary permits and approvals*** from federal, state, and local regulatory agencies and bodies; however, ***all such regulatory agencies and bodies are encouraged to give due consideration to the general court's finding that the installation and operation of scrubber technology at Merrimack Station is in the public interest. The owner shall make appropriate initial filings with the department and the public utilities commission, if applicable***, within one year of the effective date of this section, and with any other applicable regulatory agency or body in a timely manner.

For all the reasons set forth earlier, the Scrubber Law eliminates any need for a Commission determination under RSA 369-B:3-a; it is just not applicable and is not a necessary approval. Indeed, the creation of any such proceeding before the Commission (including the instant proceeding) would frustrate the General Court's specific finding that "It is in the public interest to achieve significant reductions in mercury emissions at the coal-burning electric power plants in the state as soon as possible." RSA 125-O:13, I. Any delays in the project will cause increases in the

ultimate price tag to be borne by PSNH's customers as costs of materials and labor continue to escalate, AFUDC continues to accrue, and the possibility to achieve early emissions reduction credits under RSA 125-O:16 evaporates. In the only other proceeding held under RSA 369-B:3-a, a total of 16 months elapsed between PSNH's initial filing and the achievement of a final, unappealable decision. NHPUC Docket No. DE 03-166, *PSNH Petition for Authority to Modify Schiller Station; Pinetree Power, id*. It is inconceivable that the General Court intended to subject the scrubber project to delays arising from a similar proceeding, given the "significant emissions reduction benefits, including but not limited to, cost effective reductions in sulfur dioxide, sulfur trioxide, small particulate matter, and improved visibility (regional haze)" (RSA 125-O:11, II) and incentives (that would benefit PSNH's retail customers) provided for early completion of the scrubber (RSA 125-O:16).

Notwithstanding the clarity of the mandate and intent of the Scrubber Law, if any ambiguity in the meaning of RSA 125-O:13, I, remained, the principles of statutory construction established by the Supreme Court, *supra*, would be applied. Recall the Court's direction in *Dansereau, supra*:

> We also interpret a statute in the context of the overall statutory scheme and not in isolation. If a statute is ambiguous, however, we consider legislative history to aid our analysis. Our goal is to apply statutes in light of the legislature's intent in enacting them, and in light of the policy sought to be advanced by the entire statutory scheme.

(Internal citations omitted).

The "overall statutory scheme" set forth in RSA 125-O:13, "Compliance," is clear, when these remaining provisions of that section are considered:

I. ***The owner shall install and have operational scrubber technology*** to control mercury emissions at Merrimack Units 1 and 2 ***no later than July 1, 2013.***

II. ***Total mercury emissions from the affected sources shall be at least 80 percent less*** on an annual basis than the baseline mercury input, as defined in RSA 125-O:12, III, beginning on July 1, 2013.

IV. If the net power output (as measured in megawatts) from Merrimack Station is reduced, ***due to the power consumption requirements or operational inefficiencies of the installed scrubber technology***, the owner may invest in capital improvements at Merrimack Station that increase its net capability…

V. Mercury reductions achieved ***through the operation of the scrubber technology*** greater than 80 percent shall be sustained insofar as the proven operational capability of the system, as installed, allows.

VI. The purchase of mercury emissions allowances or credits from any established emissions allowance or credit program shall not be allowed for compliance with ***the mercury reduction requirements of this chapter***.

VII. If the mercury reduction requirement of paragraph II is not achieved in any year after the July 1, 2013 implementation date, and ***after full operation of the scrubber technology***,….

VIII. If the mercury reduction requirement of paragraph II is not achieved by the owner in any year after the July 1, 2013 implementation date ***despite the owner's installation and full operation of scrubber technology***….

IX. The owner shall report by June 30, 2007 and annually thereafter, to the legislative oversight committee on electric utility restructuring, established under RSA 374-F:5, and the chairpersons of the house science, technology and energy committee and the senate energy and economic development committee, on ***the progress and status of complying with the requirements of paragraphs I and III, relative to achieving early reductions in mercury emissions and also installing and operating the scrubber technology including any updated cost information.*** The last report required shall be after the department has made a determination, under paragraph V, on the maximum sustainable rate of mercury emissions reductions ***by the scrubber technology.***

RSA 125-O:13 (emphases added).

There can be no mistake that in enacting the Scrubber Law the Legislature intended that scrubber technology ***shall*** be installed at Merrimack Station. Without installation of the scrubber, the entirety of RSA 125-O:13 is made ineffective, as the provisions contained therein all anticipate and are based upon the mandated scrubber installation. Since the "goal is to apply statutes in light of the legislature's intent in enacting them, and in light of the policy sought to be advanced by the entire statutory scheme," (*Dansereau, id.*), there can be no doubt regarding the meaning of the Scrubber Law.

The "necessary permits and approvals" referenced in RSA 125-O:13, I, do not include a proceeding under RSA 369-B:3-a. Examples of such "necessary permits and approvals" include zoning laws, building permits, Federal Aviation Administration approvals, environmental permits, and the like, all of which PSNH is in the process of obtaining in a timely manner. The mandate to install a scrubber, and the General Court's finding that such installation is in the public interest of PSNH's retail customers, does not dictate ***how*** the scrubber is installed, just that it ***must*** be installed. PSNH is still required to ensure that the scrubber design meets traditional safety, environmental, and other building standards. *Cf.*, RSA 674:30, which provides that a public utility "may petition the public utilities commission to be exempted from the operation of any local ordinance, code, or regulation enacted under this title [LXIV]." RSA 674:30, III. This statute continues "The public utilities commission, following a public hearing, ***may*** grant such an exemption if it decides that the present or proposed situation of the structure in question is reasonably necessary for the convenience or welfare of the public…." *Id.* Note that

the Legislature made such a grant of exemption permissive, by use of the word "may" instead of "shall" - - it is such determinations to which "regulatory agencies and bodies are encouraged to give due consideration to the general court's finding that the installation and operation of scrubber technology at Merrimack Station is in the public interest."

The nature and extent of the Commission's authority concerning the scrubber project is set forth in the Scrubber Law itself. RSA 125-O:18, "Cost Recovery" states in part, "If the owner is a regulated utility, the owner shall be allowed to recover all prudent costs of complying with the requirements of this subdivision in a manner approved by the public utilities commission." The section continues by specifying that during ownership and operation of Merrimack Station by PSNH, "such costs shall be recovered via the utility's default service charge." By this section, the General Court has clearly established the Commission's role and authority regarding the scrubber project. When the scrubber project is completed, the Commission has the authority to review the prudence of PSNH's design and installation of the scrubber. The Commission does not have the authority to second-guess the General Court's decision mandating the installation of the scrubber.

Until the scrubber project is finished, the General Court has reserved to itself the power and authority to oversee the project. This reservation of authority is found in RSA 125-O-13, IX:

> The owner shall report by June 30, 2007 and annually thereafter, to the legislative oversight committee on electric utility restructuring, established under RSA 374-F:5, and the chairpersons of the house science, technology and energy committee and the senate energy and economic development committee, on the progress and status of complying with the requirements of paragraphs I and III, relative to achieving early reductions in mercury emissions and also installing

> and operating the scrubber technology including any updated cost information. The last report required shall be after the department has made a determination, under paragraph V, on the maximum sustainable rate of mercury emissions reductions by the scrubber technology.

Such a reservation of authority by the General Court concerning the progress, status, and cost of complying with the Scrubber Law is yet another clear indication of the law's intent to negate the need for a RSA 369-B:3-a proceeding in this matter.

PSNH is confident that up to the initiation of the instant proceeding, it was diligently pursuing and complying with the legal mandates contained in 2006 N.H. Laws, Chapter 105, the Scrubber Law, by moving forward rapidly with the installation of scrubber technology at Merrimack Station. The legal mandates and requirements of the statute are set forth in plain and ordinary language, clearly expressing the legislature's intent and the policy sought to be advanced by the entire statutory scheme. This statutory scheme limits the powers and authority of the Commission concerning the installation of scrubber technology at Merrimack Station to a determination of the manner for the recovery of all prudent costs of complying with the requirements of this law.

PSNH urges the Commission to expeditiously act in this inquiry so that the Company may resume the commitment of capital and manpower necessary to install a wet flue gas desulphurization system ("scrubber technology," RSA 125-O:12, V) at its Merrimack Station as mandated by law.

Respectfully submitted this 2nd day of September, 2008.

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE

By:_____

Robert A. Bersak
Assistant Secretary and Assistant General Counsel
Public Service Company of New Hampshire
780 N. Commercial Street
Manchester, NH 03101-1134

603-634-3355
Bersara@PSNH.com

CERTIFICATE OF SERVICE

I certify that on this date I caused the attached Memorandum of Law to be served pursuant to N.H. Code Admin. Rule Puc 203.11.

September 2, 2008

THE STATE OF NEW HAMPSHIRE
before the
PUBLIC UTILITIES COMMISSION

Public Service Company of New Hampshire
Merrimack Station Scrubber Project
Request for Information

Docket No. DE 08-103

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE'S
MOTION FOR PROTECTIVE ORDER
RE: BID AND CONTRACT INFORMATION

Pursuant to RSA 91-A:5,(IV)(Supp.) and N.H. Code Admin. Rules Puc § 203.08, Public Service Company of New Hampshire ("PSNH" or the "Company") hereby requests protective treatment for certain information requested in the Commission's Secretarial Letter of August 22, 2008. In that letter the Commission requested that PSNH supply, *inter alia,* "a comprehensive status report on its installation plans, a detailed cost estimate for the project, and an analysis of the effect on energy service rates if Merrimack Station were not in the mix of fossil and hydro facilities operated by PSNH." A portion of this information is confidential, commercial, or financial information exempted from public disclosure under RSA 91-A:5.

In support of its Motion for Protective Order, PSNH says the following:

1. In order to prepare a comprehensive status report and a detailed cost estimate for the project, PSNH must rely on the results of progress made to date in preparing the different portions of the scrubber project for the commencement of construction efforts. There are several "islands" of work which are being negotiated with bidders before a final contract is executed for each portion of the project. These areas of the project are still in various stages of bidding or negotiations with bidders, contractors and subcontractors. The bids offered have all been made under a strictly confidential request for proposal process in order to protect the information from public disclosure. Even final contract terms and designs have been designated by the bidders and contractors as proprietary and subject to confidentiality terms to be included in the final agreements. Conclusions and summaries of data can be

made publicly available; however, the specific data contains information that is confidential, commercial, or financial information which the Commission may protect from public disclosure under RSA 91-A:5, IV.

2. If this information were to be made public, the contractors' proprietary information would be available to their competitors damaging their future ability to bid competitively on other contracts. Many vendors may withdraw from this project altogether if they cannot rely on customary business practices which include maintaining the confidentiality of contract terms. PSNH may have difficulty in attracting potential contractors in the future if there is a perception that their bids or confidential contract terms will be publicly disclosed.

3. The Commission must use a balancing test in order to weigh the importance of creating an open record of this proceeding with the harm from disclosure of confidential, financial or competitive information. "Under administrative rule Puc 204.06, the Commission considers whether the information, if made public, would likely create a competitive disadvantage for the petitioner; whether the customer information is financially or commercially sensitive, or if released, would likely constitute an invasion of privacy for the customer; and whether the information is not general public knowledge and the company takes measures to prevent its' dissemination." *Re Northern Utilities, Inc.,* 87 NH PUC 321, 322, Docket No. DG 01-182, Order No. 23,970 (May 10, 2002). Contracts with suppliers and confidential bidding information are routinely granted confidential treatment by the Commission. *Unitil Energy Systems,* 91 NH PUC 145, 150 (2006).

4. The limited benefits of publicly disclosing the information requested in the status report on the project's detailed cost estimate do not outweigh the harm done by disclosing the information. The ability to finalize contracts with vendors for this project and future projects may be jeopardized.

WHEREFORE, PSNH respectfully requests the Commission to issue an order preventing the public disclosure of the detailed cost estimate for the project, and to order such further relief as may be just and equitable.

Respectfully submitted this 2nd day of September, 2008.

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE

By:_____

Robert A. Bersak
Assistant Secretary and Assistant General Counsel
Public Service Company of New Hampshire
780 N. Commercial Street
Manchester, NH 03101-1134

603-634-3355
Bersara@PSNH.com

CERTIFICATE OF SERVICE

I certify that on this date I caused the attached Motion for Protective Order to be served pursuant to N.H. Code Admin. Rule Puc 203.11.

September 2, 2008

ROBERT BERSAK
PUBLIC SVC OF NEW HAMPSHIRE
780 N COMMERCIAL ST
PO BOX 330
MANCHESTER NH 03105-0330

ALLEN DESBIENS
PUBLIC SERVICE COMPANY OF NEW HAMI
780 N COMMERCIAL ST
PO BOX 330
MANCHESTER NH 03105-0330

GERALD M EATON
PUBLIC SERVICE COMPANY OF NEW HAMI
780 N COMMERCIAL ST
PO BOX 330
MANCHESTER NH 03105-0330

STEPHEN R ECKBERG
OFFICE OF CONSUMER ADVOCATE
21 SOUTH FRUIT ST STE 18
CONCORD NH 03301

MEREDITH A HATFIELD
OFFICE OF CONSUMER ADVOCATE
21 SOUTH FRUIT ST STE 18
CONCORD NH 03301

RORIE HOLLENBERG
OFFICE OF CONSUMER ADVOCATE
21 SOUTH FRUIT ST STE 18
CONCORD NH 03301-2429

KEN E TRAUM
OFFICE OF CONSUMER ADVOCATE
21 SOUTH FRUIT ST STE 18
CONCORD NH 03301-2429

Docket #: 08-103-1 Printed: September 02, 2008

FILING INSTRUCTIONS: **PURSUANT TO N.H. ADMIN RULE PUC 203.02(a)(1)**

WITH THE EXCEPTION OF DISCOVERY, FILE 7 COPIES (INCLUDING COVER LETTER) WITH:

DEBRA A HOWLAND
EXEC DIRECTOR & SECRETARY
NHPUC
21 S. FRUIT ST, SUITE 10
CONCORD NH 03301-2429

PURSUANT TO N.H. ADMIN RULE 203.09 (d), FILE DISCOVERY

DIRECTLY WITH THE FOLLOWING STAFF

RATHER THAN WITH THE EXECUTIVE DIRECTOR

LIBRARIAN
NHPUC
21 S. FRUIT ST, SUITE 10
CONCORD NH 03301-2429

BULK MATERIALS:

Upon request, Staff may waive receipt of some of its multiple copies of bulk materials filed as data responses. Staff cannot waive other parties' right to receive bulk materials.

NHPUC
21 S. FRUIT ST, SUITE 10
CONCORD NH 03301-2429

AMANDA NOONAN
CONSUMER AFFAIRS DIRECTOR
NHPUC
21 S. FRUIT ST, SUITE 10
CONCORD NH 03301-2429

Docket #:
Printed: 9/2/2008

Merrimack Station Clean Air Project
Cost Estimate Analysis

March, 2009

Power Advocate, Inc.
179 Lincoln Street
Boston, MA 02111
Tel: 857.453.5700
Fax: 857.453.5656
www.poweradvocate.com

Executive Summary

As part of PowerAdvocate's analysis of the Project Cost Estimate for Merrimack Station's Clean Air Project (CAP), we conducted a thorough review of the market conditions associated with capital construction projects and retrofit scrubber projects. Our analysis was focused on:

- The normalization of the $/kW cost, in order to accurately compare the cost of this project with other wet scrubber projects.
- The importance of considering the project's risk mitigation strategy in conjunction with the overall cost control technique in order to develop a comprehensive project cost management assessment.
- The considerable opportunities for Public Service of New Hampshire (PSNH) to capitalize on current favorable market conditions with the un-awarded project subcontracts.

This report is an updated version of a previous effort: in July of 2008 PowerAdvocate (PA) produced a report for PSNH stating that the normalized costs for the Merrimack Station CAP were in line with other comparable wet scrubber projects. The report evaluated the unique site specific factors including engineering, Balance of Plant (BOP), Flue Gas Desulphurization (FGD), and Material Handling (MH) considerations and how they affect the overall project cost. Compensating for these site specific uniqueness factors allowed for an "apples to apples' comparison of other comparable scrubber projects.

In this most recent review, PowerAdvocate believes that the levelized $/kW cost ($580/kW) for Merrimack Station is reasonably in line with other comparable wet scrubber projects. This cost becomes further in line compared to other similar wet scrubber projects when their project costs are adjusted (escalated) to 2012 dollars.

Although PowerAdvocate has not reviewed the contracts currently in place for Merrimack Station, PSNH presented an overview of the risk mitigation included in their commercial terms. According to PSNH, these contracts have technical and commercial terms that are legally protected from being divulged to protect the interests of the suppliers' technical and commercial details. As indicated by PSNH, they deliberately negotiated risk mitigating terms by establishing fixed price contract costs to guarantee a cost controlled project. This strategy was determined to be in the best interest of their customers by managing cost risks while still providing a competitive bid process. Another key issue was to insure that the operational reliability of Merrimack Station did not suffer from the CAP.

The recent economic downturn is providing opportunities for PSNH to reduce portions of the budgeted estimate produced by URS in 2008. As PSNH proceeds with executing contracts for the remainder of the Merrimack Station CAP, they will enjoy these favorable market conditions. Proof of these savings has already been realized in the foundations contract that was executed in February 2009, at $6 Million less than the URS 2008 estimate.

Despite the financial crisis that is rattling the US and global economies, the long term demand for global energy infrastructure remains strong. For example, to meet the US demand, over $900B in investment is needed for scheduled projects over the next 15 years. While the economic crisis has weakened the short term levers, the basic need to upgrade existing and build new infrastructure to meet growing electricity demand means that the underlying fundamentals remain solid. PowerAdvocate believes that the near future provides

a critical opportunity for active utility procurement groups to exploit a near-term softening in commodity prices.

Taking into consideration all the factors laid out in this review, we are able to conclude that (a) the costs associated with the Merrimack Station CAP remain reasonably in line with expected construction costs for a project of this scope and scale and on a site with similar conditions to the Merrimack site and (b) the owner has taken prudent measures in selecting its preferred suppliers and contractors and to mitigate risks that, absent such mitigation, could have further increased project costs.

I. PowerAdvocate Background

Founded in 1999 and headquartered in Boston, PowerAdvocate is a premier provider of supply-chain and sourcing solutions to energy companies. The company combines its broad knowledge of current day best-in-class information, innovative technology, and expert services to equip our clients with a sustainable competitive advantage. Our innovative, market-proven approaches help our customers achieve operational excellence and accelerate bottom-line results. Today, PowerAdvocate's technologies and services play an integral role at a large number of Fortune 500 utility and energy companies, as well as a growing number of investment and financial services companies.

PowerAdvocate provides technology, information and services to reduce costs, mitigate risks, and improve operational performance. Our Energy Intelligence Platform (EIP) – Spend, Cost, Market and Sourcing Intelligence – was designed specifically for energy firms and focuses on providing visibility into supply-market conditions to make more informed procurement decisions. Our EIP and market expertise deliver:

- Deep market intelligence about global suppliers
- Insights into regional supply market conditions on items and categories
- Detailed and comprehensive information on cost drivers
- Forecasts on commodity, component and facility supply/demand dynamics
- Visibility into project costs

PowerAdvocate tracks industry escalation of normalized capital across the industry while continually monitoring commodity and equipment markets and their drivers in order to evaluate client sourcing and supply chain strategies. Currently more than 880 indices are dynamically tracked to measure the sensitivity and impact that commodity and labor price changes have upon project or budgetary costs. This knowledge, which resides on our Energy Infrastructure Intelligence Group (EIIG), is used to benchmark unique project cost against industry averages on a regular basis. Leveraging this market knowledge and PowerAdvocate’s data and tools helps to ensure our clients that their contract price is fair and reasonable given current market conditions.

In the last 5 years, PowerAdvocate has participated in over 20 different FGD projects with 9 different customers. The data-driven and fact-based approach we bring to owners has been instrumental in enabling them to better evaluate target cost estimates and realize project savings. Our solutions seek to highlight opportunities, validate and make recommendations on approaches, and deliver results that typically lower total cost, mitigate risks and improve performance.

PowerAdvocate employs several environmental project subject matter experts within the Energy Infrastructure Intelligence Group. The majority of their time is dedicated to tracking market conditions that affect our clients’ environmental projects while ensuring that knowledge is organized and disseminated properly throughout the company.

Benchmarking Methodology

For every benchmarking exercise that PowerAdvocate conducts we rely heavily upon our industry knowledge and the data that we have compiled, from both our own project experience and publicly available information. Every attempt is made to normalize the dataset to similarly scoped projects so they can be compared on an "apples to apples" basis.

The benchmarking information that we have prepared for this report has been normalized, to the greatest extent possible, to similar flue gas desulphurization projects. However, there are other site specific factors that affect project cost that are more difficult to quantify without extended first hand observation, which can vary significantly from project to project based on the FGD size and constraints of the site. For example, Owner's Costs have been removed or excluded from all project costs presented. These costs vary greatly from project to project, and while there is no definitive list of costs in this category, we have attempted to normalize it by excluding or removing the following costs from all of the projects presented:

- Permits & Licensing (other than construction permits)
- Land Acquisition / Rights of Way Costs
- Economic Development
- Project Development Costs
- Legal Fees
- Site Security
- Owner's Engineering / Project & Construction Management Staff
- Furnishings for new Offices or Warehouses
- Financing Costs

The in-service dates for the projects referenced in this report range from 2008 to 2012. These project costs include the escalation associated with respective project timelines and projected in-service dates. In an effort to normalize all project costs to the same date they have been adjusted based on PowerAdvocate's experience-based annual price escalation index and forecast to the in-service date of Merrimack Station's Clean Air Project.

II. Site Specific Factors

Most FGD projects exhibit substantial economies of scale when absorber size reaches approximately 550MW. These economies of scale begin to diminish for absorber of greater than 1200MW. Per-kilowatt costs for capacities that are less than this 550MW benchmark increase sharply; it is not uncommon to find a per-kilowatt cost for a 200MW absorber to be over twice the per-kilowatt cost of a 600MW absorber.

Based on the 2008 estimate provided by URS (Estimate), the direct cost per kilowatt for the installed Wet FGD (WFGD) is approximately $775/kW based upon a nominal station capacity of 458MW. PowerAdvocate analyzed site unique or project specific attributes and applied adjustment factors to bring the scope of Merrimack's CAP more in line with other wet scrubber projects. This approach allowed for a more realistic "apples to apples" comparison. Through this comparison, PowerAdvocate determined that a levelized cost for the CAP is approximately $580/kW, or a 25% reduction from per-kW cost of $775. This adjusted cost is based upon applying impact percentages (i.e. FGD Impact percentage = 10%) to the Estimate cost components for each of the site specific components, which were then totaled and subsequently subtracted from the Estimate resulting in the levelized $/kW. These impact percentages were formulated based on inputs from the PSNH project team and PowerAdvocate market data.

The adjusted cost falls within the benchmark range for projects of this size as shown below in Table 3 and Figure 1. Market data and PowerAdvocate indices (Figure 2.) indicate that construction costs for wet FGD systems in the US have risen dramatically over the past several years and are currently in the range between $250/kW and $654/kW (median $476/kW) for similar sized systems.

The following table shows the factors that were considered:

Site Specific Component	Significant Impact?	Discipline/Subsystem Affected
Mercury Scrubber	Yes	BOP Engineering/FGD
Asymmetrical Units to Single Absorber	Yes	BOP/FGD
Station Site Constraints	Yes	BOP/MH
All-Subcontract Construction Basis	Yes	BOP Construction
Foundations	No	N/A
Limited Highway Access	No	N/A
Pressurized Cyclone Boiler	Yes	BOP Engineering

Table 1 CAP site specific analysis components

Further explanation of the methodology utilized in determining the costs, as detailed in Table 2, is described below. This list is not considered all-inclusive; a conservative approach to this analysis was employed due to the fact that not all design variations in other comparable projects could be quantified. Table 2 quantifies the site specific components with significant cost impact and demonstrates a new levelized project and $/kW cost.

Mercury Scrubber
Merrimack's CAP is designed specifically for Mercury (Hg) removal with an added benefit of further reducing SO_2 emissions. Most WFGD scrubbers in use and under construction today are designed primarily for SO_2 capture. The design differences for this type of approach include additional Hg oxidation controls/consideration, increased surface area of absorber bed, and increased contact time with flue gas to allow for full reaction. This scrubber technology conforms to the requirements mandated by the passing of House Bill 1673-FN, an act passed by the state of NH for the reduction of mercury emissions in May 2006.

Asymmetrical Units Combining into a Single Scrubber
This is the largest design difference between Merrimack Station's absorber and majority of similar sized systems in the industry. Since Unit 2 is over twice the power of Unit 1, the flows and capacities of the duct and induced draft system are different. In addition there are design aspects of balancing unequal flows into the same duct channel that set this project apart from many others.

Station Site Constraints
Merrimack Station is located on the Merrimack River in central New Hampshire. The eastern edge of the main plant is bounded by the river and there are several railroad spurs cutting North-South across the station's footprint. In addition, the Material Handling (MH) design is slated to extend from the coal yard to the North, down the East side of the power block to the absorber building to the Southeast. This will require construction of components for the MH and other systems to occur directly above a rail spur.

All-Subcontract Construction Basis
The CAP will be constructed without any direct hire labor from the Engineer Procure Construct Manager (EPCm). All aspects of the project will be completed in Contract Packages utilizing a General President's Project Maintenance Agreement (GPPMA) or National Maintenance Agreement (NMA) with primarily local union personnel. This approach simplifies management for PSNH but increases the likelihood of mark-ups associated with multiple layers of subcontractors. However, PSNH feels this approach provides higher accountability on contracts, stronger product guarantees, and better warranties which help mitigate extra cost risks.

Pressurized Cyclone Boiler
Both coal combustion units at Merrimack Station are of the pressurized cyclone type. This type of combustor can produce higher temperatures and flows than similar pulverized coal combustors. Due to these operating characteristics, further engineering is required to ensure proper long-term operation.

Each of these factors contributes to the "uniqueness" of the CAP project when compared to a more standard Wet FGD system. When these attributes are summarized and used to levelize the per-kilowatt cost, Merrimack Station's CAP is more in line with other projects of similar size and scope, as demonstrated in Table 3, Projected Completion Costs by $/kW and Figure 1, Levelized Cost for Projects of Comparable Size.

Design Difference	Cost Impact?	URS Engineering Impact %	BOP[1] Impact %	FGD Impact %	MH Impact %	Comments
WFGD Scrubber for Hg vs. SO_2	Y	0%	5%	10%	0%	Additional absorber engineering and construction needs
Asymmetrical Boilers Feeding Single Absorber	Y	10%	8.5%	5%	0%	More complex duct and flow design / two units into one absorber
Station Site Constraints	Y	5%	5%	0%	10%	Construction over railroad, confined area for MH
All Subcontract Construction Basis	Y	0%	3.9%	0%	0%	Remove 21% markup from applicable estimate items[2]
Foundations	N	0%	0%	0%	0%	Foundations appear to be of relatively typical design
Limited Highway Access	N	0%	0%	0%	0%	Interstate 93 is relatively close via small secondary roads
Pressurized Cyclone Boiler	Y	5%	0%	0%	0%	Increased flow and temperature considerations
Total Impact %		20%	22.4%	15%	10%	
Total Direct Cost Estimate						**$354,931,538**
New Total						**$265,973,250**
Equalized $/kW						**$580**

Table 2 Merrimack Station Design Differences from a Standard WFGD for SO_2 Removal

1. BOP value is made up of direct BOP costs excluding home office engineering
2. The BOP estimate was analyzed for URS's 21% subcontract markup factor. This markup ($6.3M) was removed from applicable items and the percentage factor calculated based on actual costs.

Other FGD Retrofits	Capacity (MW)	Project Cost[1] ($)	$/kW	Number of Units[2]	In Service Year
Project 1	600	$150,000,000	$250	1	2009

Project 2	557	$148,000,000	$266	1	2008
Project 3	446	$141,400,000	$317	1	2009
Project 4	364	$121,600,000	$334	1	2010
Project 5	556	$188,000,000	$338	1	2008
Project 6	556	$189,000,000	$340	1	2008
Project 7	576	$218,900,000	$380	1	2009
Project 8	305	$127,900,000	$419	1	2009
Project 9	576	$263,800,000	$458	1	2009
Project 10	390	$185,600,000	$476	1	2009
Project 11	416	$198,000,000	$476	1	2009
Project 12	550	$261,700,000	$476	1	2009
Project 13	571	$280,400,000	$491	1	2009
Project 14	363	$209,800,000	$578	1	2009
Project 15	405	$234,100,000	$578	1	2009
Merrimack Station Levelized	**458**	**$265,973,250**	**$580**	**2**	**2012**
Project 16	320	$195,100,000	$610	1	2009
Project 17	500	$304,900,000	$610	1	2009
Project 18	350	$228,900,000	$654	1	2010
Project 19	386	$250,000,000	$648	1	2009
Merrimack Station	**458**	**$354,931,538**	**$775**	**2**	**2012**

Table 3 Projected Completion Costs by $/kW

1. Project costs have been levelized to the greatest extent possible, but certain aspects of projects that PowerAdvocate was not involved with may or may not be included, due to the proprietary nature of this information. Owner's costs, as described in Benchmarking Methodology have also been excluded from this cost.
2. Number of combustion units feeding a single absorber.

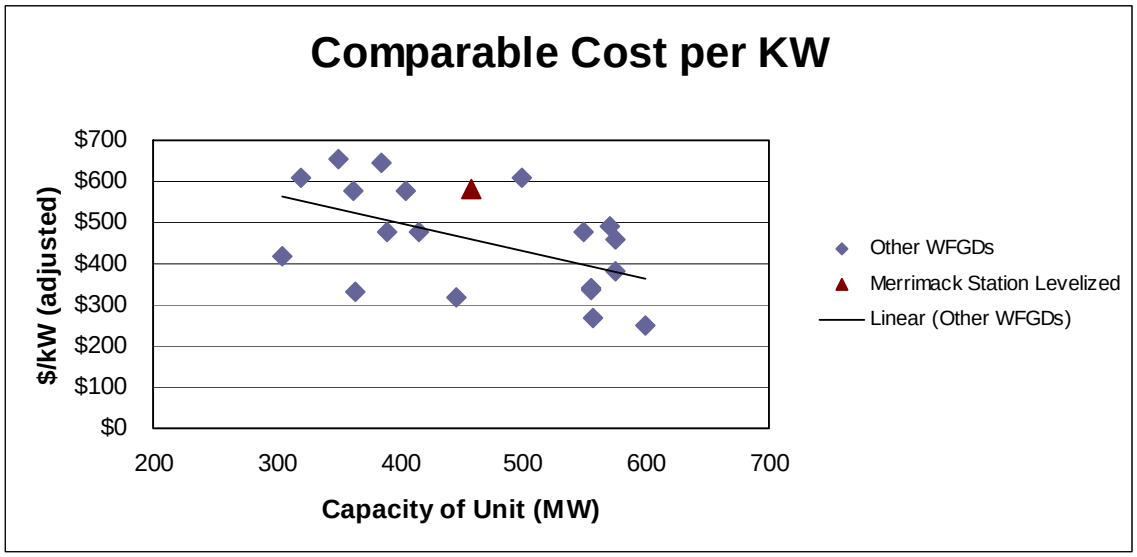


Figure 1. Levelized Costs for Projects of Comprable Size

III. Capital Construction Project Market Trends[1]

PowerAdvocate Cost Indices Product uses a proprietary bottom-up cost-tracking methodology ranging from individual commodities up to facilities and business units. This tiered bottom-up methodology is summarized below.

- **Commodities** – PowerAdvocate's tiered approach starts with a database of more than 880 publicly available indices from various third-party and government sources. We track costs for commodities ranging from steel and copper to lumber, concrete, labor, and more.
- **Items** – More than 740 common utility items (such as distribution transformers or LV switchgear) are mapped against their commodity cost elements.
- **Demand Factor** – The underlying costs are important – but prices can often move based on fluctuations in demand. To account for market conditions, Cost Indices includes a demand factor based on PowerAdvocate's proprietary market intelligence.
- **Subcategories** – Utility items are aggregated into subcategories for a view into a facility or business unit's constituent parts.
- **Categories** – Cost indices roll up subcategories to create broad categories, such as labor, engineered equipment, and bulk materials, for higher level analysis across categories.
- **Facilities or Business Units** – PowerAdvocate provides a facility-level view that tracks historical costs and trends, and forecasts escalations for future prices.

PowerAdvocate has utilized this cost tracking model to create a model of a 500MW retrofit FGD Scrubber project, in order to forecast industry trends. The PowerAdvocate Spring 2009 Cost Intelligence forecast is displayed in Figure 2. PowerAdvocate uses a qualitatively based probabilistic forecast methodology that draws on supply market constraints and demand components in a robust, quantifiable format. Our forecasts are checked against historical volatility models and macro-level econometric ratios. The end product is a "probability cone" that represents PowerAdvocate's view of potential future price trends with associated probabilities. The middle line represents the median forecast, there is an 85% chance the actual cost will fall below the upper bound, and there is an 85% chance the actual costs will land above the lower bound. Therefore, there is a 70% chance the actual cost will fall within the "probability cone."

The costs associated with a Retrofit Scrubber Project showed a year on year decline in price of 0.4%. The bulk of this declined occurred in the last 2 quarters of 2008 when there was a 4.8% drop, driven by falling commodity prices and a lack of regulatory clarity.

Any new, more stringent standards would naturally push costs higher and are incorporated into both our median and upper bound forecast as is a consideration of commodity price volatility. Our lower bound forecast assumes that economic considerations are given precedent over environmental concerns so that stricter emission regulations are not quickly brought forward in the new Congress. This consideration coupled with the possibility of continued commodity price declines could result in substantially lower scrubber costs going forward.

[1] PowerAdvocate PADatasource Market Report, Construction Cost Indices for the US Power Market Spring 2009

Overall, PowerAdvocate forecasts a 2.8% annual increase in costs over the next five years, as shown in Figure 2. This is lower than our previous forecast due to revised assumptions around steel escalation and, importantly, taking into account the changes to CAIR and CAMR regulations. The upper probability bound indicates a 7.1% increase is possible per year. On the other side, the lower probability cone projects an average annual decrease of 1.2% through 4Q2013.

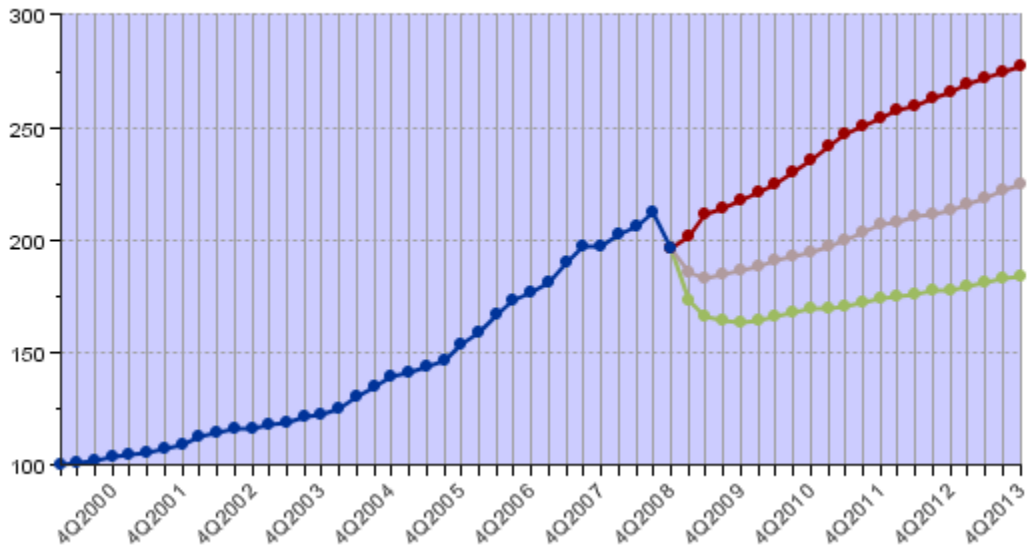


Figure 2 PowerAdvocate 500MW Wet FGD Forecast

When the escalation forecast factor of 2.8% is applied to the other FGD retrofits with earlier in service dates (2008 thru 2010), the Adjusted Project Costs ($) and Adjusted $/kW increase. The newly calculated $/kW, as shown below in Table 4 and Figure 3, result in an increased median $/kW that is more in line with Merrimack Station's levelized cost ($580/kW). Prior to the escalation adjustment, the comparable projects ranged between $250/kW and $654/kW (median $476/kW); following the escalation adjustment, the comparable projects ranged between $272/kW and $704/kW (median $517/kW), representing an 8.6% increase in the median $/kW. This escalation adjustment further demonstrates that Merrimack Station's CAP's cost estimate is more in line with similar wet scrubber projects.

Other FGD Retrofits	Capacity (MW)	Project Cost ($)	$/kW	Number of Units	In Service Year	Adjusted Project Cost ($)[1]	Adjusted $/kW[2]
Project 1	600	$150,000,000	$250	1	2009	$162,956,093	$272
Project 2	557	$148,000,000	$266	1	2008	$165,285,279	$297
Project 3	446	$141,400,000	$317	1	2009	$153,613,277	$344
Project 4	364	$121,600,000	$334	1	2010	$128,504,934	$353
Project 5	556	$188,000,000	$338	1	2008	$209,956,975	$378
Project 6	556	$189,000,000	$340	1	2008	$211,073,768	$380
Project 7	576	$218,900,000	$380	1	2009	$237,807,258	$413
Project 8	305	$127,900,000	$419	1	2009	$138,947,228	$456
Project 9	576	$263,800,000	$458	1	2009	$286,585,449	$498
Project 10	390	$185,600,000	$476	1	2009	$201,631,005	$517
Project 11	416	$198,000,000	$476	1	2009	$215,102,042	$517
Project 12	550	$261,700,000	$476	1	2009	$284,304,063	$517
Project 13	571	$280,400,000	$491	1	2009	$304,619,256	$533
Merrimack Station Levelized	**458**	**N/A**	**N/A**	**2**	**2012**	**$265,973,250**	**$580**
Project 14	363	$209,800,000	$578	1	2009	$227,921,255	$628
Project 15	405	$234,100,000	$578	1	2009	$254,320,142	$628
Project 16	320	$195,100,000	$610	1	2009	$211,951,558	$662
Project 17	500	$304,900,000	$610	1	2009	$331,235,418	$662
Project 18	350	$228,900,000	$654	1	2010	$241,897,858	$691
Project 19	386	$250,000,000	$648	1	2009	$271,593,488	$704
Merrimack Station	**458**	**$354,931,538**	**$775**	**2**	**2012**	**$354,931,538**	**$775**

Table 4 Adjusted Projected Completion Costs by $/kW

1. Project cost in 2012 dollars (Merrimack Station in service year) Costs based on PowerAdvocate's forecast of 2.8% escalation in prices per year
2. $/kW in 2012 dollars

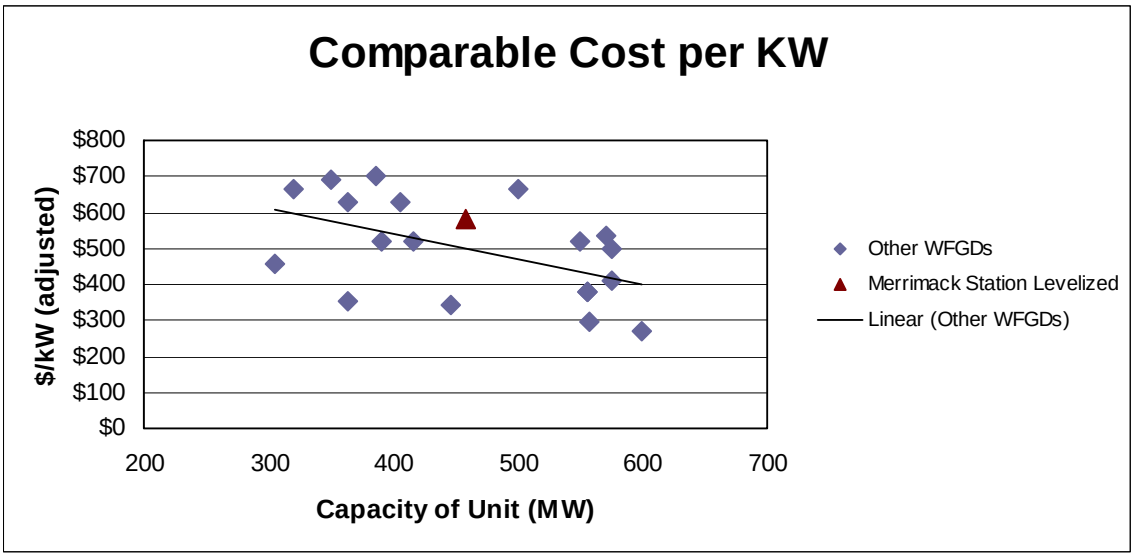


Figure 3 Adjusted $/kW for Projects of Comparable Size

III. Sourcing Process

While PowerAdvocate was not directly involved in the procurement and approval process on this project, based on our experience with prior, unrelated PSNH projects and based on our conversations with members of PSNH project team, we believe that a competitive procurement process with prudent corporate oversight was utilized in an effort to obtain competitive pricing for the project and to mitigate significant project risks. PSNH has described their approach as a multi-faceted process which includes checks and balances to ensure proper oversight from project inception through project completion. Important steps in the process, including vendor bidding, vendor selection, vendor negotiation, and contract award are submitted for approval through several oversight boards and committees. These panels are comprised of a large cross section of several departments such as, treasury, internal audit, finance, legal, etc. Utilizing multiple inputs from these key stakeholders strengthens the analysis and procurement process while helping to ensure PSNH is abiding by its corporate obligations to its customers.

All of the major contracts associated with the Merrimack Station CAP were conducted through a comprehensive and competitive bidding process. All major bids conducted to date involved multiple qualified vendors, and also occurred in a time which can be considered a buyers market. Negotiations for most of the major contracts resulted in significant savings due to the movements in the market in the second half of 2008 and start of 2009. None of these contracts executed to date are the result of sole or single sourcing.

IV. Commercial Contract Terms

The stand alone project cost does not tell the whole "cost" story: risk mitigation and risk sharing with contractors is extremely important. For example, a low-cost project in which the owner retains significant commercial risk has the potential to be more costly than a higher-cost project in which significant risk is transferred to the suppliers and contractors.

Although we have not reviewed the specific contracts due to strict confidentiality agreements between PSNH and the contractors, the owner has provided a high-level and general sense of the key areas of commercial risk mitigation under the project contracts. Set forth below is a summary of the description provided by the owner of the commercial terms relating to Cost, Performance, Schedule, and Warranty and our insights on how these terms mitigate risk so that the risk transfer can be considered as part of the total cost calculation:

Cost Risk

The major equipment contracts are fixed price contracts. Therefore, the supplier has retained most of the risk if the ultimate cost of manufacturing and delivering the equipment is higher than expected. The price certainty that comes with a fixed price contract reduces the risk that the ultimate cost of the equipment will be different than set forth in the contract (barring force majeure-type circumstances, for example). At least one of the equipment contracts contains an escalation/de-escalation provision based on the price movement for certain commodities. Given the broad decrease in commodity prices since the equipment contracts were signed (generally in late 2008), there is a substantial likelihood that the price under the relevant contracts will be reduced.

The major engineering program and construction management contract with PSNH's Program Manager is a cost-reimbursable, Target Price contract with incentives (if the project's actual cost comes in below the Target Price) and reduced fees (if the project's actual costs exceed the Target Price). It is our understanding that this contractor is not only putting fee at risk based on its own cost performance, but based on the cost performance of the project as a whole. In this way, the interests of the owner for a project that does not exceed budgets and the interests of the contractor with important project execution responsibilities are aligned. This insures that the engineering firm providing the direct support of PSNH's engineering and constructing management has cost and schedule as primary objectives, which is also in the best interests of PSNH's customers. This cost-reimbursable, Target Price contract approach is in use on several environmental retrofit projects in the United States.

Performance Risk

The major equipment contracts contain performance guarantees (as appropriate for the equipment in question) for mercury removal, SO_2 and SO_3 removal, noise, other stack emissions, gypsum quality, effluent quality, availability, auxiliary power consumption, and pressure drop, among others. With the exception of availability, pressure drop, and auxiliary power consumption, all performance guarantees must be met at the specified levels or the supplier has the obligation to "make right." Performance liquidated damages can be paid to "buy down" availability, pressure drop and auxiliary power consumption deficiencies. The "make right" obligation in contracts for similar projects is often limited to two or three performance guarantees, including the performance guarantees that are directly related to the removal levels mandated by law. In this case, it appears that the "make right" obligation extends to include additional performance guarantees. The Owner has obtained "make right" obligations with respect to these additional performance guarantees in order to increase the likelihood that the plant operates efficiently and effectively over time. The cost savings that can result from efficient and effective performance of the plant over the long term can be significant compared to the amount of any performance liquidated damages or to the additional cost that may have been included in the equipment contracts to pay for the additional risk transferred to the supplier through these guarantees and the associated "make right" obligation. These contract terms provide for commercially reasonable cost protection of the CAP, as well as performance guarantee protection and significantly strengthen the position of the owner in many areas. Any opening of these contracts to seek possible improvements would create potential risk of these strong terms becoming weakened and causing customer cost risk escalation.

The major program and construction management contract contains an incentive program that puts fee at risk in part based on project safety and performance.

Schedule Risk

The major equipment contracts contain schedule guarantees for document submittals, other key milestones, Mechanical Completion, and Substantial Completion (as appropriate for the equipment in question). Schedule liquidated damages would be paid for a failure to meet these schedule guarantees (subject to customary subcaps on total amount of liquidated damages). Schedule guarantees that have liquidated damages (as opposed to delayed payment) associated with them is customary in contracts for similar projects. We often see liquidated damages tied to document submittals and Substantial Completion, whereas a

failure to meet other milestones merely delays a payment. These contracts also contain payment terms that tie payment to progress with respect to specific milestones.

The major program and construction management contract contains an incentive program that puts fee at risk in part based on project schedule performance. It is our understanding that this contractor does not just put fee at risk based on its own schedule performance, but based on the project as a whole (even though, for example, an equipment manufacturer that is not under its direct control could be the cause for delay). The owner has again aligned the interests of this key contractor with the owner's overall project interests.

This CAP has a fully integrated schedule where all contracts are precisely planned to allow for a cost effective and efficient construction time table. As in most capital construction projects, delays in any area puts risk on the overall schedule. Avoiding project delays is a main objective of PSNH management; delays will result in increased overall project costs.

Warranty

The major equipment contracts contain warranty periods that are generally two years from Substantial Completion. In some cases, re-work can extend the warranty for up to one year from the completion of the re-work. We typically see warranty periods between one and two years, so this warranty period is on the longer end of the spectrum. The warranties cover defective design, workmanship and materials (as appropriate for the equipment in question). There are specific and harsher remedies for chronic failures compared to one-time deficiencies. In line with the commercial position reflected in the performance guarantees, owner has taken reasonable steps through these warranty provisions to ensure that "it gets what it paid for" and that it will have an efficient and effective plant for the long term.

Based on the description provided by owner and reflected above, it appears reasonable to conclude that owner has transferred substantial risk to its key suppliers and contractors at least in line with, and in some cases further than, what is customary in this market. While risk can never be eliminated, these commercial terms represent reasonable efforts to reduce the risk of large changes in cost from and after the effective date of the contracts and of additional costs resulting from deficient or delayed performance. This risk mitigation profile should be considered along side the project's overall cost estimate to develop the whole cost story.

V. Current Market Opportunities & Relevant Commodity Indices

The global financial crisis and economic slowdown have created a short-term procurement opportunity in the energy supply market. Recent months have seen a 20-40% decline in commodity prices, such as steel, etc. While there are no fire sale signs in the marketplace, the decrease in commodity prices and the indications of weakening demand for capital projects create an opening for discerning buyers.

The labor and commodity related indices listed below discuss forecasted effects on capial project costs over the next five years. It is important to note that labor indices typically enjoy steady increases year over year at or around 3% to 4%, depending on the level of skill. Commodity markets have been extremely volatile over the past year and reflect a market of uncertainty about future supply and demand. Labor and commodity indices are coupled together below to reflect their effects on a few major contracts still in need of execution by PSNH.

Ductwork Fabrication and Installation Contracts

Boilermakers

The demand for boilermakers in the power industry is driven primarily by the upgrades and maintenance of existing systems. Although installation of new equipment will also drive growth, its effect is minimal compared to the impact upgrades and maintenance have on the demand for boilermakers. Boilermakers are spread across many industries, and thus are susceptible to varying economic conditions, but boilermakers in the power industry are somewhat removed from this instability. Even during economic downturns, necessary repair and maintenance of the boilers used to generate power generally continues.

Steel

Between July 2008 and December 2008 the steel industry saw the price of steel drop approximately 48%. Prices continued to decline in January, despite production cuts by the steel industry. Steel mills responded to a downshift in demand by the construction, manufacturing, freight and transportation sectors by running at 40-45% utilization rates. Last year, steel plants were operating at close to 90% capacity. Some in the steel industry think that steel production may not rebound this year or next. Although steel production has been cut 20-35% at some mills, many in the US steel industry have indicated that if the global economy worsens, junior steel companies in China may export more steel to the US

Opportunity

The Boilermakers Index will remain at levels seen in 2008 Q2 through 2009 Q3, before increased infrastructure investment and President Obama's stimulus package boosts demand. The Iron & Steel Index however, has seen a sharp decline, approximately 52%, from 2008 Q2 to 2009 Q1. These two indices are leading indicators that now is the optimal time to execute a ductwork fabrication and ductwork installation contract. URS' estimate for these two contracts in 2008 exceeded $23 Million worth of project spend. With the sharp reduction in steel prices and the stagnate boilermaker market, PSNH is positioned well to command very competitive labor and fabrication contracts.

BOP Electrical Installation Contract

Electricians

The cost to contract with electricians has grown slightly more than other skilled labor positions, at 54% over the past nine years. Demand is rapidly outpacing supply for skilled electricians, especially in the power, oil and gas, and advanced technology markets. The need to reduce maintenance costs across the industrial and commercial sectors has led to increased demand for skilled electricians to install and maintain new automated control systems. However, reduced non-residential construction demand due to deteriorating economic conditions will likely alleviate upward wage pressure in the short term. Additionally, residential electricians looking to migrate to the non-residential sector may provide some supply relief.

Copper

Copper prices remain 55% below where they were a year ago, despite a 3% up-tick in January. This reflects a 162% increase in inventory build-up over 2008. These levels have not been seen in five years. In response, most of the major copper producers have cut back production, with the notable exception of the largest copper miner in the industry, Codelco of Chile. The majority of the blame for lower copper prices has been placed on further declines in US housing starts and commercial spending. Housing starts slid 15% while commercial spending dropped 3.6% (year-over-year) according to current US Census Bureau data. As a result of the decline in demand for copper wire and tube, some copper refiners have been rejecting shipments and tightening the supply chain in order to keep their inventories low.

Furthermore, copper demand has somewhat waned due to power generation project delays and cancellations that subsequently reduced demand for cabling, windings, and alloys. Five power projects were terminated in January as a result of a lack of financing and lower load growth caused by the slowing of the US economy.

Opportunity

The Electricians Index and the Copper Index have dropped from 2008 Q2 to 2009 Q1, approximately 5% and 73% respectively. Given the downturn in demand for electrical contractors and corresponding increase in supply coupled with the considerable drop in copper pricing, PSNH is positioned well to negotiate upcoming electrical contracts, specifically the BOP Electrical Installation contract. This contract was originally budgeted in URS' 2008 estimate for $9.1 Million.

BOP Mechanical Installation Contract

Pipefitters

The cost of pipefitter services has seen consistent growth over the past decade, at an average increase of 6% per year. Demand for pipefitters is loosely tied to the demand for industrial construction. Reduced construction demand due to project cancellations and deferments in the recessionary climate will likely reduce pipefitter demand in the short term. As the economy recovers at a hesitant pace, new projects will increase demand for pipefitter labor.

Opportunity

The pipefitter index highlighted above, tied with the aforementioned steel index presents another opportunity for PSNH to lower original budgeted project costs. The 52% decrease in steel between 2008 Q2 and 2009 Q1 coupled with the currently flat demand for pipefitters will allow PSNH significant bargaining power and the ability to direct contract savings. In this case, URS' original estimate for the BOP Mechanical Installation contract exceeded $7 Million.

Foundations Contract

Construction Services

Reductions in construction activity in the industrial sectors are reducing demand for construction services, while freeing up construction labor also qualified to work on maintenance projects. These factors are working to reduce pricing power for construction services companies, and will likely result in lower wage pressures and fringe benefits over the next few years. When deferred maintenance and infrastructure projects become necessary, demand for construction services will increase. However, residential workers looking to migrate to the non-residential sector and industrial workers still unemployed will continue to add additional supply within various trades.

Concrete

Over the past year, concrete pricing in the US has been somewhat stable. However, concrete margins have been squeezed as diesel costs rose during the summer, although over the second half of 2008 diesel prices dropped 51% due to lesser global demand helping concrete producers decrease their fuel surcharges.

Concrete is a local product and pricing differs from market to market because of varying material, fuel, and labor costs. Nationwide concrete production is expected to decrease by 5% over 2009 Q1 and will finish the year down 5.5% as the financial markets sell and relocate assets and prop up their balance sheets. Most of the new growth in the concrete industry over the next five years is expected come from government infrastructure projects, mainly in state roads and highways, public building and other public works projects.

Result

URS' original budgeted estimate for the foundations contract was approximately $17 Million; however, given the current market situations, PSNH realized approximately $6 Million in savings and signed an $11 Million contract for the foundations in February 2009. The contract saving is indicative of the market and is lower than the major indices listed above would have predicted. This example lends proof that the open contracts still in need of execution for the completion of Merrimack Station will have the potential to reduce budgeted estimates significantly more than the main market drivers dictate.

Appendix

Appendix 1: POWERADVOCATE Outlook

Energy Infrastructure Outlook

Despite the financial crisis that is rattling the US and global economies, the long term demand for global energy infrastructure remains strong. For example, to meet the US demand, over $900B in investment is needed for scheduled projects over the next 15 years. While the economic crisis has weakened the short term levers, the basic need to upgrade existing and build new infrastructure to meet growing electricity demand means that the underlying fundamentals remain solid. In China, projected energy usage alone is projected to grow 39% by 2020 to just over 3 trillion kilowatt-hours. In spite of the expected short-term dip in commodity and equipment pricing, the long-term projections remain consistent with the Power Advocate's August FALL 2008 released Cost Intelligence forecasts.

Views from the marketplace:

- Jeff Immelt, GE Chairman and CEO, recognized the financial opportunity in GE's 3rd Quarter Earnings Release: "If you got a 10% decrease in steel or aluminum or the other things we buy that's meaningful financially. I think some of our customers are in the same position."
- S&P believes that CapEx could be curtailed but adjustments are likely to come in the form of delayed construction of new generation rather than reduced or canceled expenditures.
- Moody's, however, believes that Investor-owned utilities are somewhat insulated from economic instability. Utilities are expected to maintain access to capital markets, despite a tightening credit environment.

Short-Term Opportunity Assessment

PowerAdvocate believes that the near future provides a critical opportunity for active utility procurement groups to exploit a near-term softening in commodity prices. An analysis of commodity prices and supply market reactions reveals the following:

- When commodity prices increase, equipment prices immediately increase – There is a fast upward response
- When commodity prices decrease, equipment prices lag approximately 18 months and there is a sticky downward response

Isolating two US economic recessionary periods as described in Figure 4 highlights the suppliers' sticky reaction to falling commodity prices. Equipment prices trail commodity costs decreases on average by 18 months. However, equipment prices are fast to adjust to rising commodity prices within a six month period. The current economic crisis for electric power industry is likely to subside over the next 12-18 months as demand for energy infrastructure grows. Commodity prices should rebound at an accelerated pace driven by the exacerbated capacity demands, leaving only a near-term opportunity for savvy utilities to take advantage of existing market conditions.

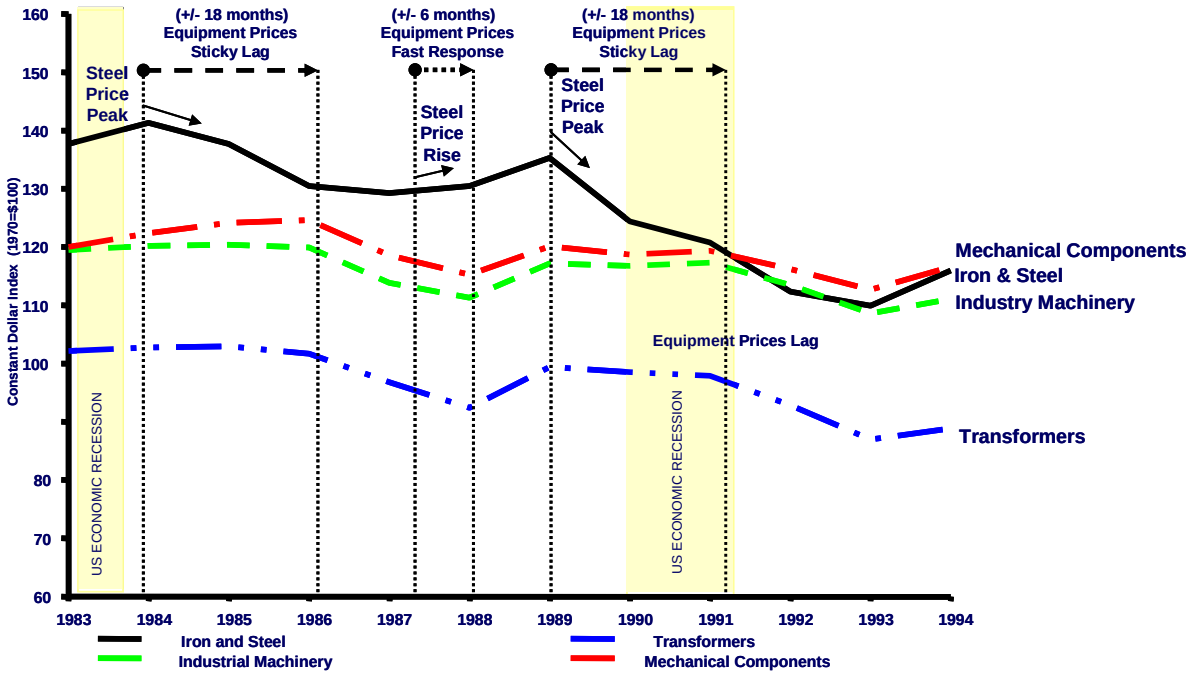
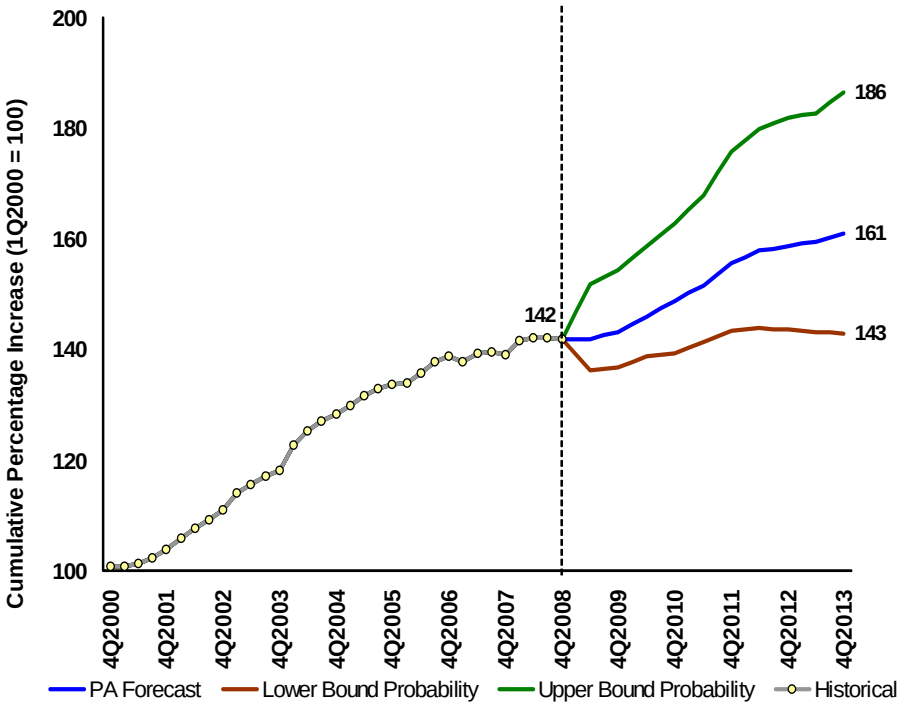
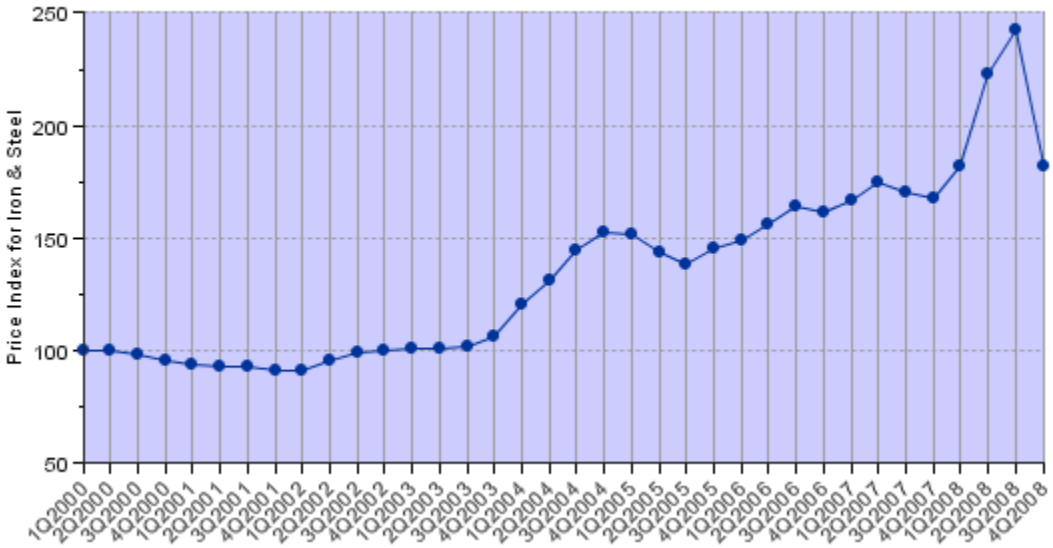


Figure 4. Commodity Pricing Trends and Equipment Pricing Lags 1983-1994

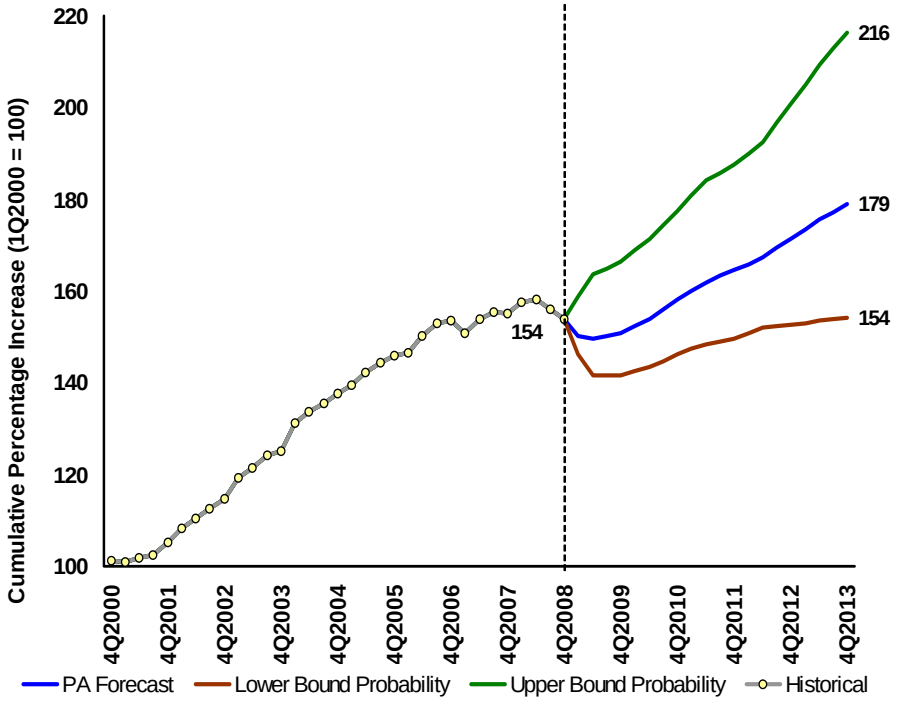
Appendix 2: POWERADVOCATE Relevant Indices and Forecasts



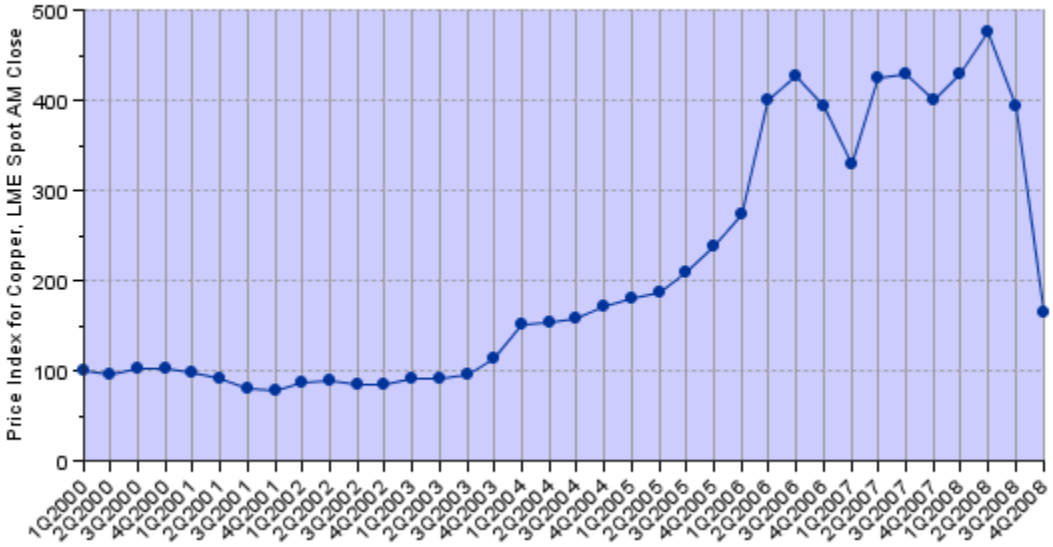
PowerAdvocate's Boilermakers Forecast



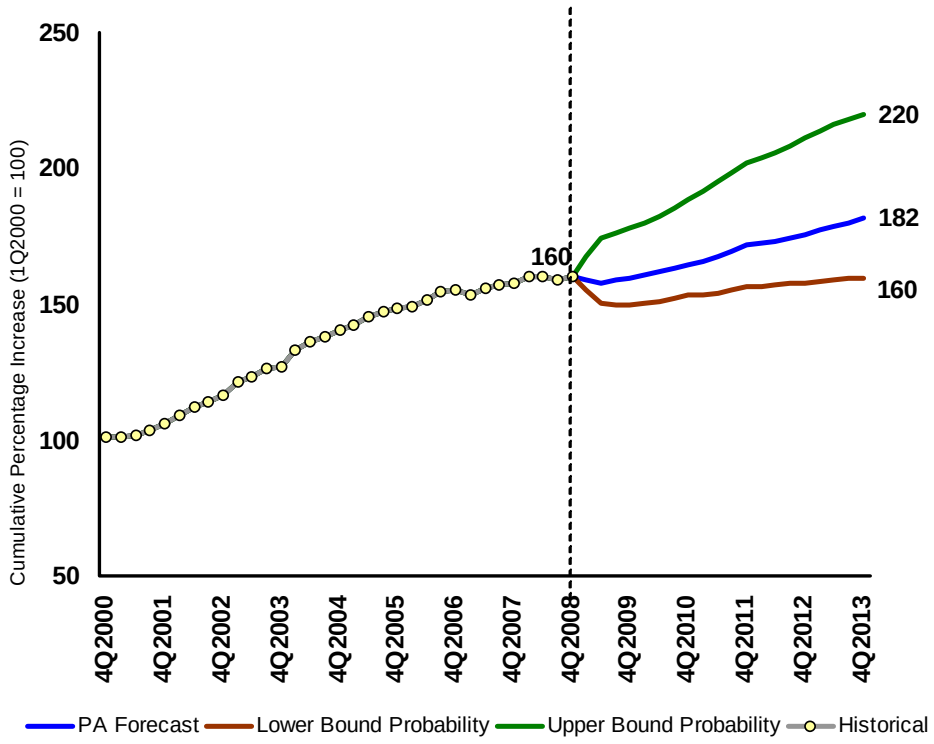
PowerAdvocate's Iron and Steel Index



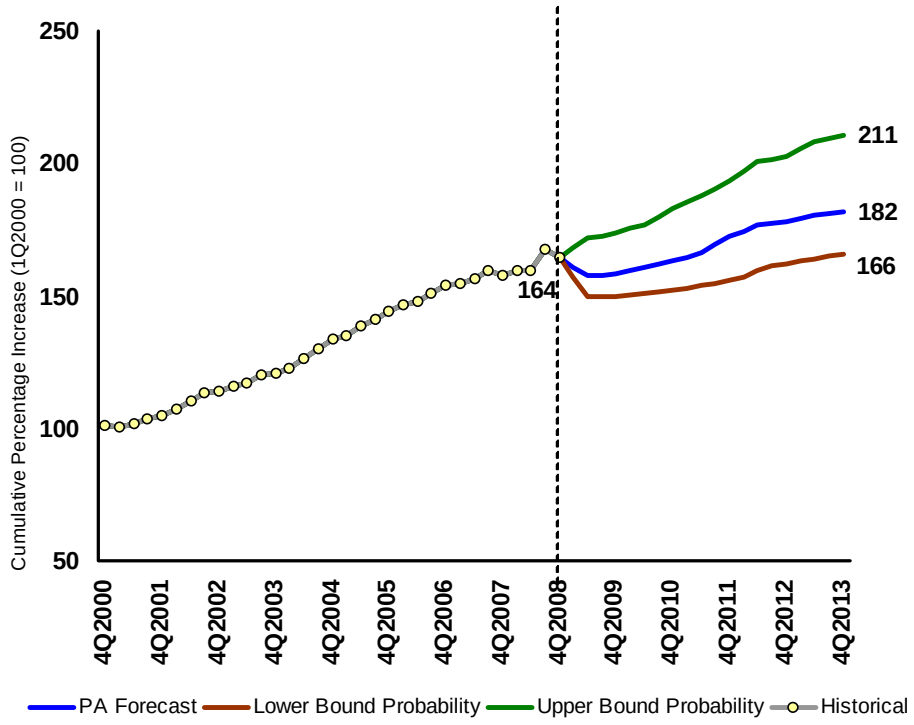
PowerAdvocate's Electricians Forecast



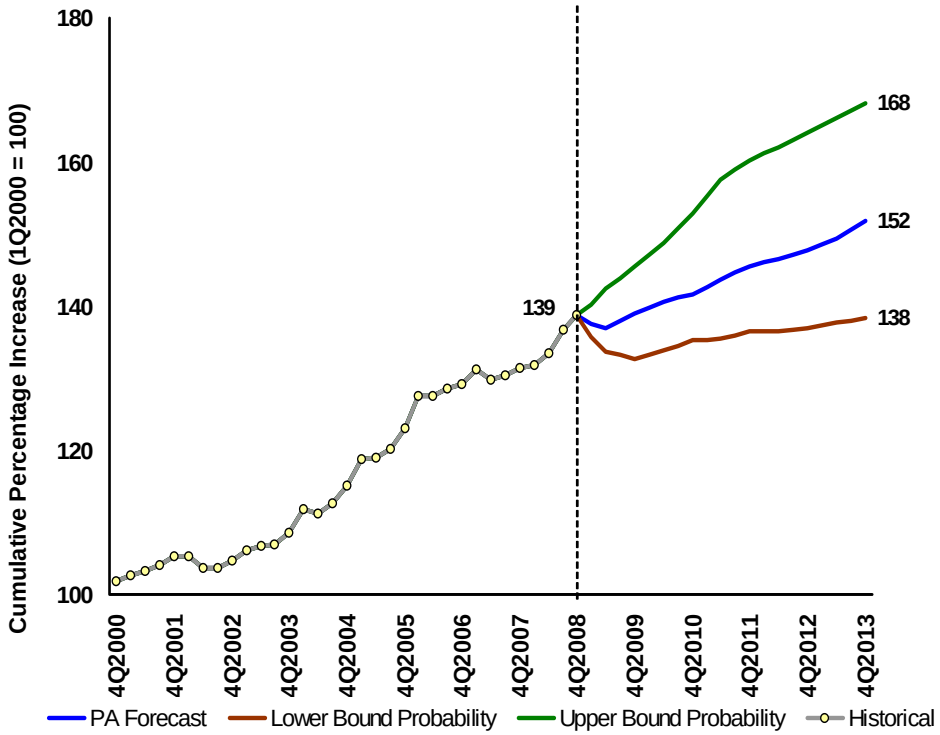
PowerAdvocate's Copper Index



PowerAdvocate's Pipefitter Forecast



PowerAdvocate's Construction Services Forecast



PowerAdvocate's Concrete Forecast

TITLE X
PUBLIC HEALTH

CHAPTER 125-O
MULTIPLE POLLUTANT REDUCTION PROGRAM

Mercury Emissions

Section 125-O:11

125-O:11 Statement of Purpose and Findings. – The general court finds that:

I. It is in the public interest to achieve significant reductions in mercury emissions at the coal-burning electric power plants in the state as soon as possible. The requirements of this subdivision will prevent, at a minimum, 80 percent of the aggregated mercury content of the coal burned at these plants from being emitted into the air by no later than the year 2013. To accomplish this objective, the best known commercially available technology shall be installed at Merrimack Station no later than July 1, 2013.

II. The department of environmental services has determined that the best known commercially available technology is a wet flue gas desulphurization system, hereafter ""scrubber technology," as it best balances the procurement, installation, operation, and plant efficiency costs with the projected reductions in mercury and other pollutants from the flue gas streams of Merrimack Units 1 and 2. Scrubber technology achieves significant emissions reduction benefits, including but not limited to, cost effective reductions in sulfur dioxide, sulfur trioxide, small particulate matter, and improved visibility (regional haze).

III. After scrubber technology is installed at Merrimack Station, and after a period of operation has reliably established a consistent level of mercury removal at or greater than 80 percent, the department will ensure through monitoring that that level of mercury removal is sustained, consistent with the proven operational capability of the system at Merrimack Station.

IV. To ensure that an ongoing and steadfast effort is made to implement practicable technological or operational solutions to achieve significant mercury reductions prior to the construction and operation of the scrubber technology at Merrimack Station, the owner of the affected coal-burning sources shall work to bring about such early reductions and shall be provided incentives to do so.

V. The installation of scrubber technology will not only reduce mercury emissions significantly but will do so without jeopardizing electric reliability and with reasonable costs to consumers.

VI. The installation of such technology is in the public interest of the citizens of New Hampshire and the customers of the affected sources.

VII. Notwithstanding the provisions of RSA 125-O:1, VI, the purchase of mercury credits or allowances to comply with the mercury reduction requirements of this subdivision or the sale of mercury credits or allowances earned under this subdivision is not in the public interest.

VIII. The mercury reduction requirements set forth in this subdivision represent a careful, thoughtful balancing of cost, benefits, and technological feasibility and therefore the requirements shall be viewed as an integrated strategy of non-severable components.

Source. 2006, 105:1, eff. June 8, 2006.