



**Public Service
of New Hampshire**

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Public Service Company of New Hampshire
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A Northeast Utilities Company

Stephen R. Hall
Rate & Regulatory Services Manager

July 3, 2012

By Electronic Mail Only

Douglas L. Patch
Orr & Reno Professional Association
One Eagle Square, P.O. Box 3550
Concord, NH 03302-3550

**Re: DE 11-250; Public Service Company of New Hampshire
Investigation of Scrubber Costs and Cost Recovery**

Dear Attorney Patch:

I enclose Public Service Company of New Hampshire's responses to the First Set of Data Requests of TransCanada in the above-captioned proceeding.

Very truly yours,

A handwritten signature in cursive script that reads "Stephen R. Hall".

Stephen R. Hall
Rate & Regulatory Services Manager

Enclosure

cc : Discovery Service List (by electronic mail only)

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-01
Dated: 06/04/2012
Q-TC-001
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

(Originally numbered TC-01, Q-TC-001 in the Temporary Rates portion of this docket) Please provide copies of all economic analyses relied on by PSNH in its decision to install a flue gas scrubber at Merrimack Station.

Response:

PSNH objects to this question as it is based upon a faulty premise. Notwithstanding this objection, PSNH responds as follows:

PSNH was required by law (RSA 125-O: 11-18) to install a wet flue gas desulfurization system at Merrimack Station as soon as possible. ("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, l) The law is not discretionary.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-01
Dated: 06/04/2012
Q-TC-002
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

(Originally numbered TC-01, Q-TC-002 in the Temporary Rates portion of this docket) Please provide all fuel price forecasts available to PSNH at the time of its initial decision to construct the flue gas scrubber at Merrimack Station.

Response:

PSNH objects to this question as it is based upon a faulty premise. Moreover, the information requested is irrelevant to the subject of this proceeding. Notwithstanding this objection, PSNH responds as follows:

See the response to TC-01, Q-TC-001.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-01
Dated: 06/04/2012
Q-TC-003
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

(Originally numbered TC-01, Q-TC-003 in the Temporary Rates portion of this docket) Please identify which of the fuel forecasts in question 2, above, were relied on by PSNH in its decision to install a flue gas scrubber at Merrimack Station.

Response:

PSNH objects to this question as it is based upon a faulty premise. Moreover, the information requested is irrelevant to the subject of this proceeding. Notwithstanding this objection, PSNH responds as follows:

See the response to TC-01, Q-TC-001.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-01
Dated: 06/04/2012
Q-TC-004
Page 1 of 1

Witness: No Witness
Request from: TransCanada

Question:

(Originally numbered TC-01, Q-TC-004 in the Temporary Rates portion of this docket) Please provide all fuel price forecasts available to PSNH at the time of development of Gary A. Long's letter dated September 2, 2008 to Ms. Debra A. Howland Re: Docket No. DE 08-103.

Response:

PSNH objects to this question because the information requested is irrelevant to the subject of this proceeding.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-01
Dated: 06/04/2012
Q-TC-005
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

(Originally numbered TC-01, Q-TC-005 in the Temporary Rates portion of this docket) Please identify all individuals at PSNH or its affiliates, or any consultant to PSNH, responsible for conducting economic analyses related to PSNH's decision to install a flue gas scrubber at Merrimack Station.

Response:

PSNH objects to this question as it is based upon a faulty premise. Notwithstanding this objection, PSNH responds as follows:

See the response to TC-01, Q-TC-001.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-01
Dated: 06/04/2012
Q-TC-006
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

(Originally numbered TC-01, Q-TC-006 in the Temporary Rates portion of this docket) Please provide a copy of any document provided to any elected or appointed government official in New Hampshire related to its position on achieving legislative approval for "An ACT relative to the reduction of mercury emissions" that took effect on June 8, 2006.

Response:

PSNH was a member of a collaborative group that supported the passage of HB 1673. See the legislative record for HB 1673 which contains the testimony of Terrance Large and Donna Gamache of PSNH as well as that of former DES Air Resources Director Robert Scott in support of the bill. See also the attached information responsive to query.

Merrimack Station Mercury Collaborative Plan

*A New Hampshire Clean Air Leadership
Initiative To Reduce Mercury at
Merrimack Station in Bow, NH*

November 2005

10/05 IAW

The Plan: Collaborative Effort to Reduce NH Mercury Emissions

- ❖ **Focuses on installing technology at PSNH's Merrimack Station to reduce a minimum of 80% of the mercury in coal no later than 2013**
- ❖ **Provides incentives for PSNH to pursue mercury emissions reduction before 2013**
- ❖ **The emissions control technology will also reduce on-site SO₂ emissions by 90+%**
- ❖ **The \$250 million cost of the emissions technology would largely be off-set by PSNH not having to purchase SO₂ credits annually**
- ❖ **No trading allowed to meet the minimum 80% removal standard**
- ❖ **Maximizes the environmental benefit for NH residents, while effectively minimizing the financial impact on PSNH customers**
- ❖ **The plan is a result of a collaborative process of NH organizations. It is supported by a diverse coalition**

Support for the Plan is Growing

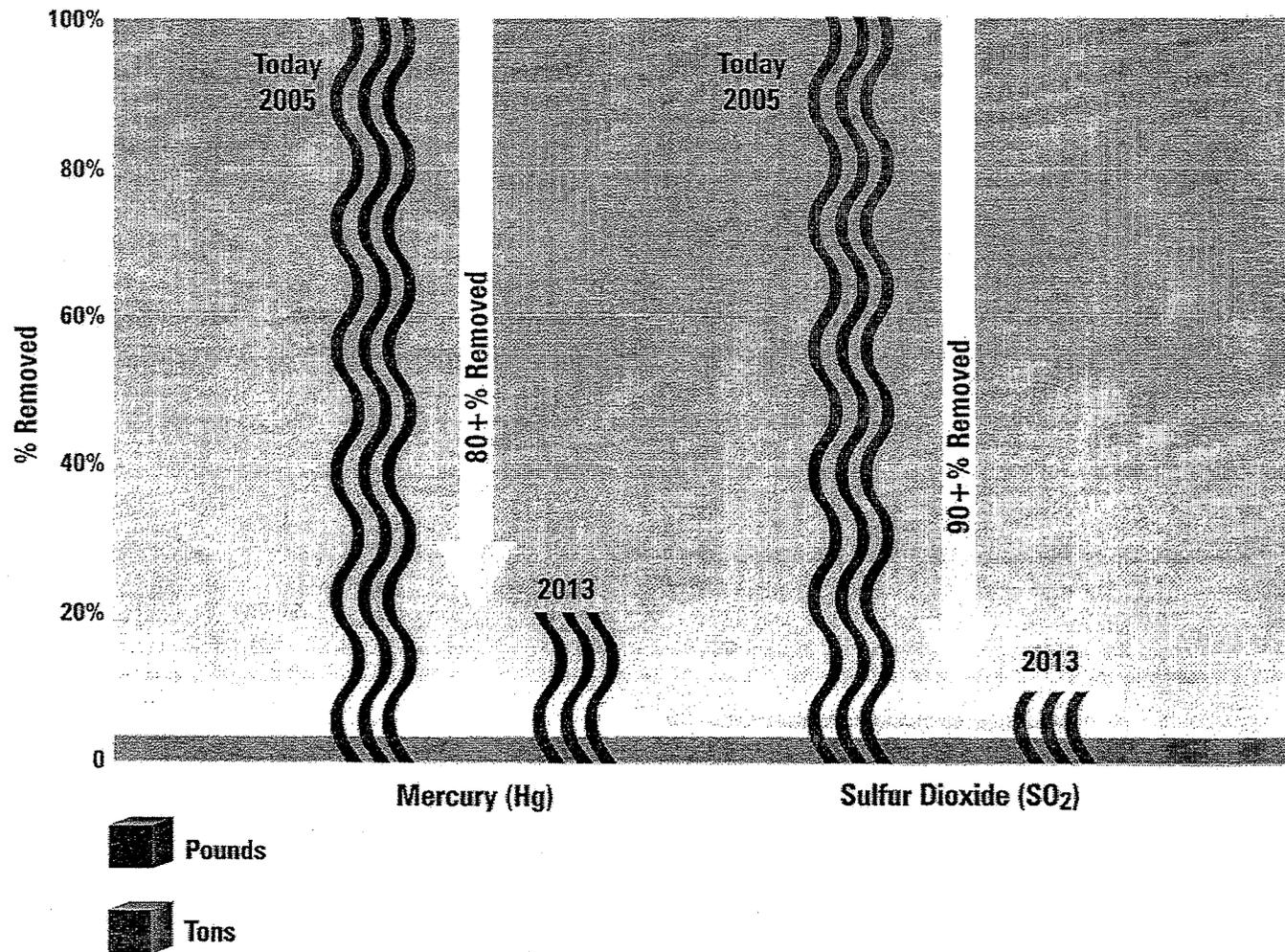
In August 2005, a small group of interested organizations began to discuss creative approaches to reducing mercury emissions. Organizations and NH Legislators that developed the plan include:

- NH Department of Environmental Services
- NH Office of Energy & State Planning
- NH Lakes Association
- NH Audubon Society
- PSNH
- Representative Larry Ross (R-Peterboro)
- Representative Naida Kaen (D-Lee)

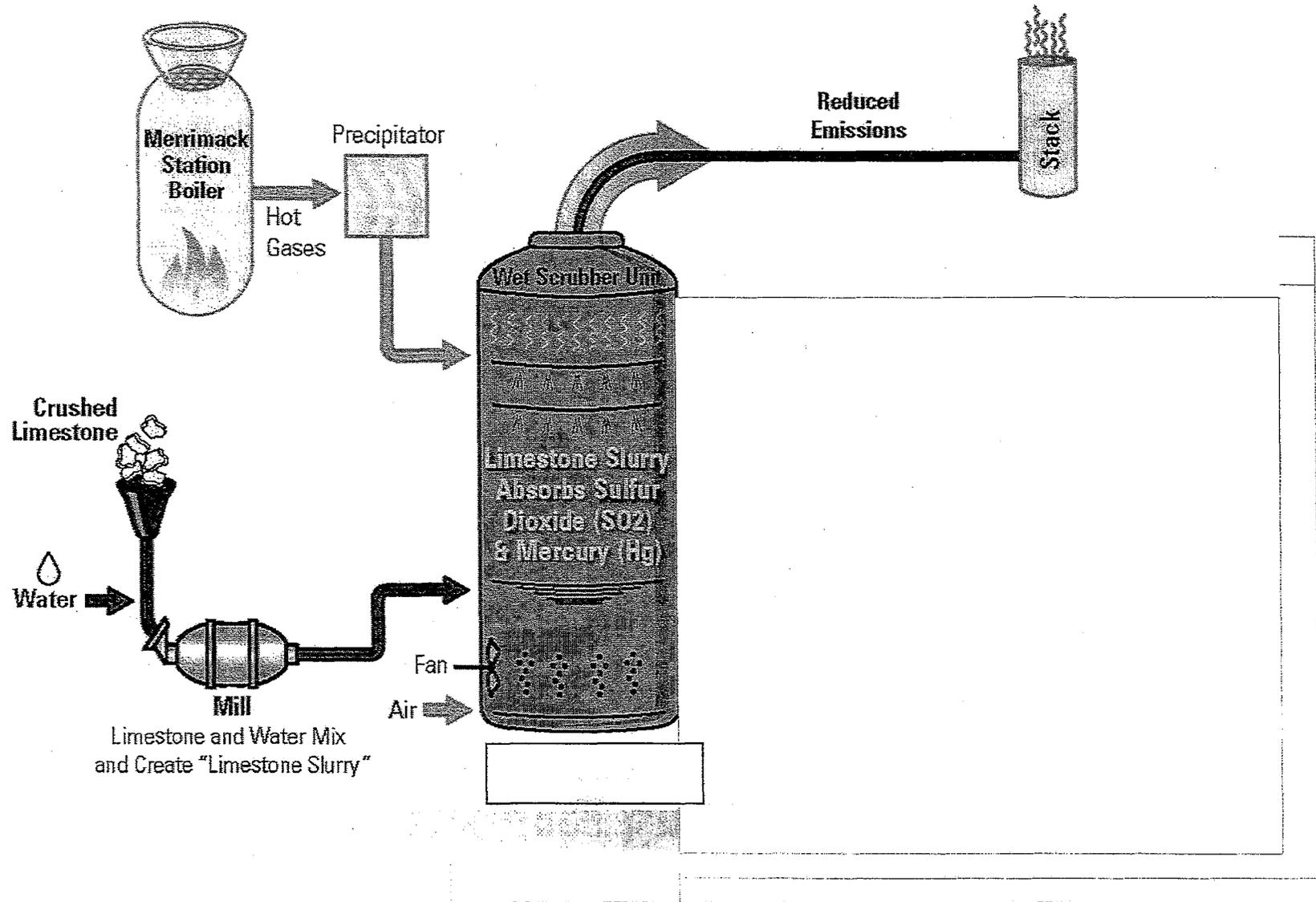
Technology Investment is at the Core of the Plan

- ❖ PSNH will install “wet scrubber” technology at Merrimack Station to reduce mercury emissions
- ❖ Scrubber technology is commercially available and has a proven track record for reducing SO₂ emissions
- ❖ Installation of this technology could cost as much as \$250 million
- ❖ The cost of this investment would be substantially off-set by reducing the amount of SO₂ credits purchased annually to meet federal and state clean air requirements
- ❖ Scrubber technology would be installed and operating no-later-than July 2013

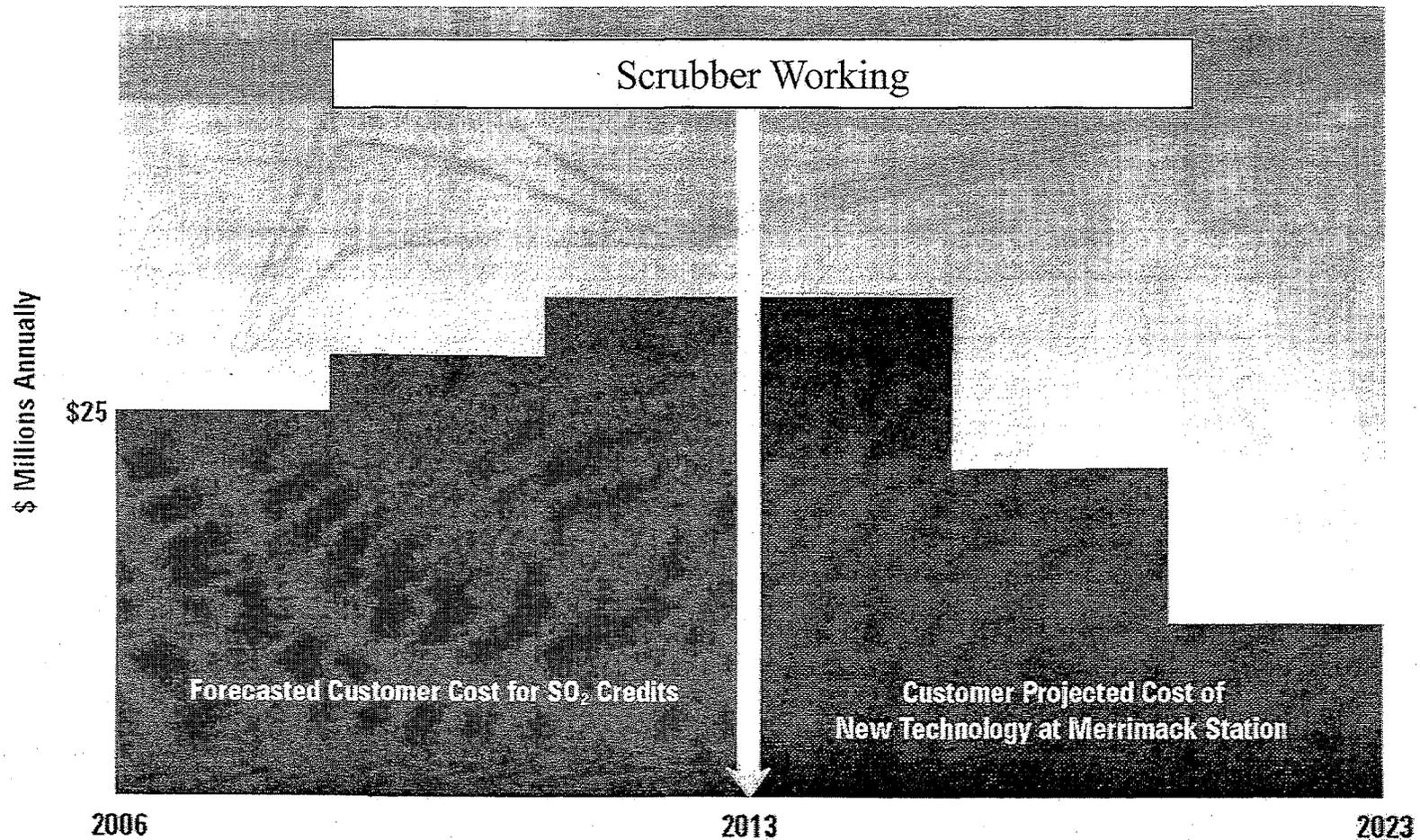
New Technology at Merrimack Station Reduces Emissions



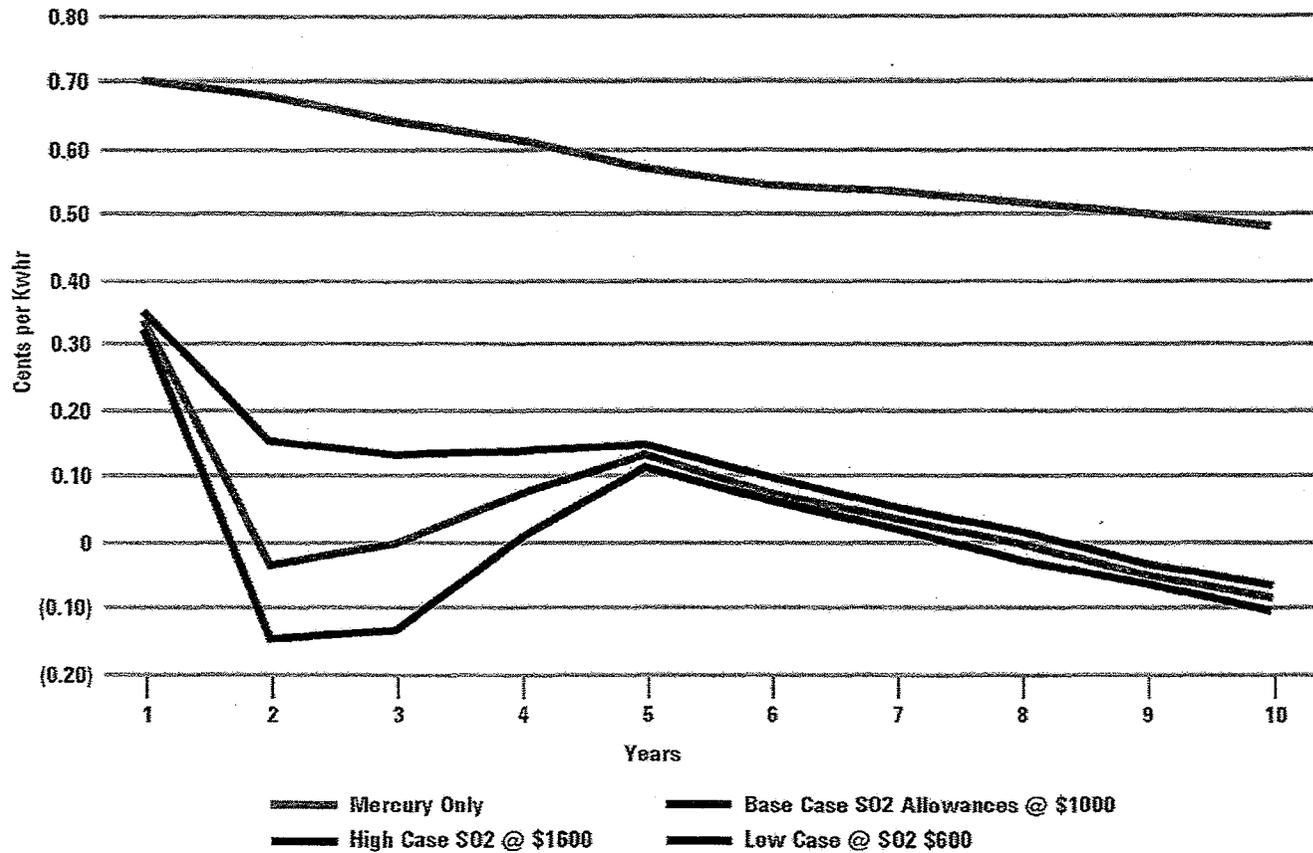
Wet Scrubber Technology for Merrimack Station



The Costs Of The Scrubber Technology Would Be Largely Offset By Reduced Purchase of SO₂ Credits



Credit for SO₂ Reductions Will Significantly Reduce Customer Cost



The Plan Includes Incentives for Maximizing Mercury Reductions After Scrubber Installation

- ❖ The plan includes incentives for PSNH to maximize the mercury reduction capabilities of the technology after 2013
- ❖ The plan establishes over-compliance credits for mercury removal achievements above 80%
- ❖ The plan proposes that these credits be banked for future use or converted to SO₂ credits to offset the cost to customers

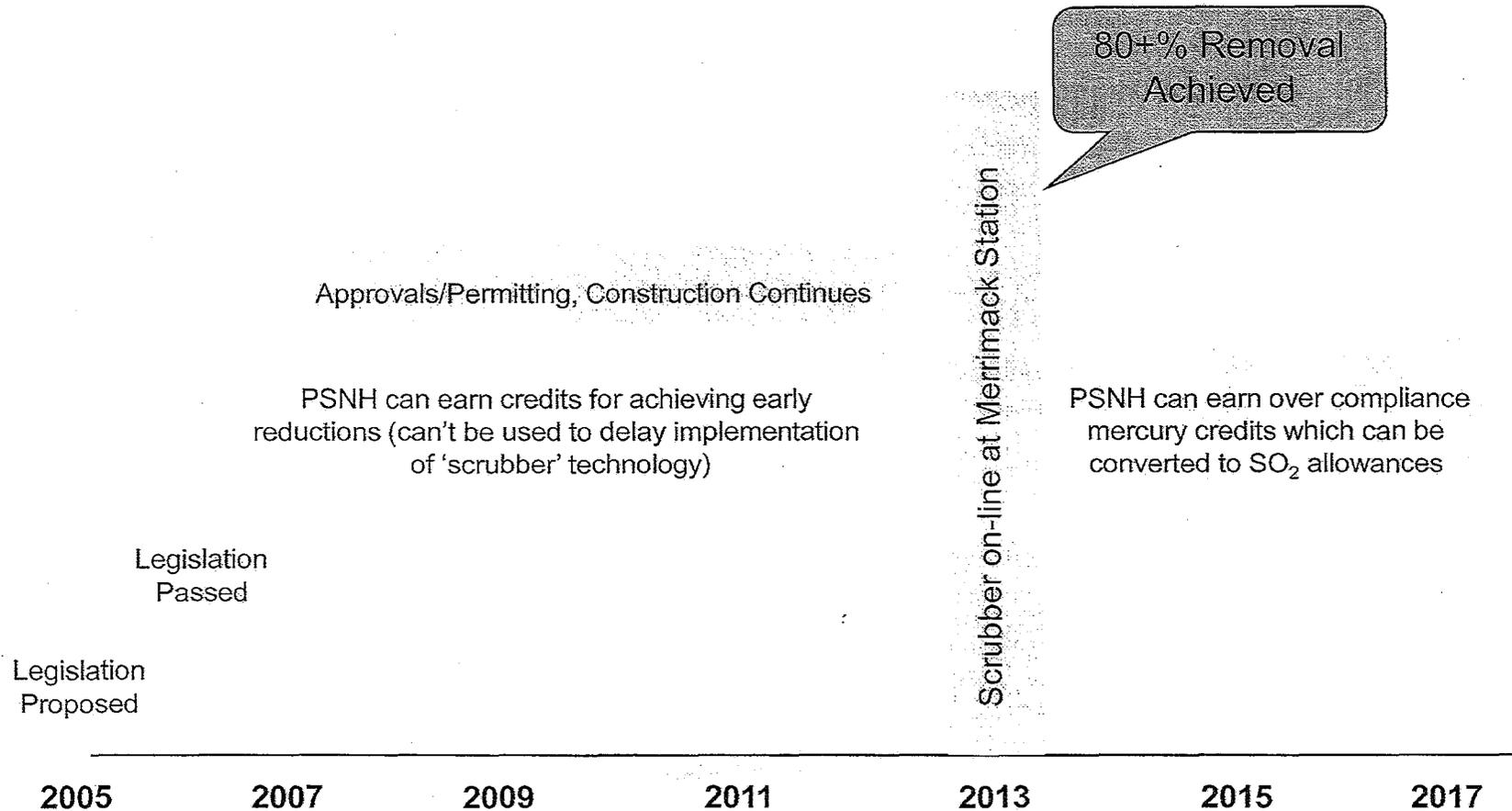
The Plan Offers Incentives for Early Mercury Reductions

- ❖ A “credit system” will be established for mercury reductions achieved from when the bill becomes law to July 1, 2013
- ❖ Importantly, early emission reduction credits may not be used to delay the scrubber installation
- ❖ The earlier mercury reductions are made, the higher the value of the credits
- ❖ Prior to scrubber installation, other mercury reduction strategies will be tested and/or implemented to achieve mercury removal while scrubber technology is being designed, permitted and constructed
- ❖ Once the scrubber is installed, the early reduction credits can be converted to over-compliance credits where they can be banked or converted to SO₂ allowances

Key Comparisons

<p>Senate Bill 128</p>	<ul style="list-style-type: none"> ❖ Reductions to a total of 24 pounds emitted, achieved by July 2013 with opportunities for off-site reductions
<p>US EPA Guidelines</p>	<ul style="list-style-type: none"> ❖ Target removal of 70%; no incentives for early reductions ❖ Federal compliance date of 2018 ❖ Cap & trade system in place, with potential for purchase of credits for compliance
<p>Collaborative Plan</p>	<ul style="list-style-type: none"> ❖ 80% removal of Mercury by 2013 with incentives for earlier reductions ❖ Incentives for PSNH to maximize reduction capabilities of the technology beyond 2013 ❖ Over-compliance credits established for mercury removal above 80% ❖ All reductions achieved on-site; no purchase of credits permitted for compliance

The Plan Framework: Proposed Mercury Emissions Reduction Timeline



A New Hampshire Clean Air Leadership Initiative at Merrimack Station

1. Merrimack Station Fact Sheet
2. What is Mercury & Sulfur Dioxide?
3. Mercury Initiatives at Merrimack Station
4. Merrimack Station Mercury Collaborative Plan
 - a. The Plan
 - b. Early Mercury Reductions Incentives
 - c. Maximizing Mercury Reductions
 - d. Developers & Supporters of the Plan
 - e. Wet Scrubber Technology is at the Core of the Plan
 - f. New Technology Reduces Emissions
 - g. Key Comparisons
5. News Releases
 - a. Gary Long – Reducing Mercury Emissions; Let's Do It Right
6. FAQs



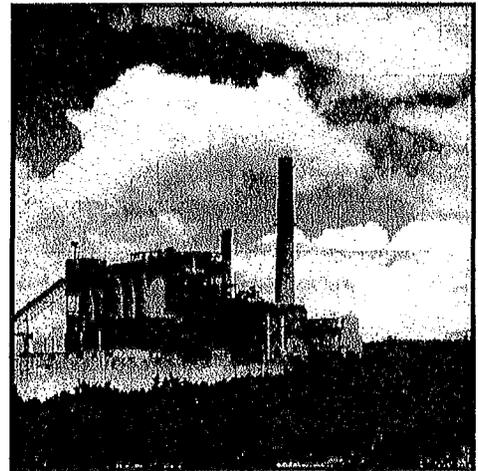
**Public Service
of New Hampshire**

**Merrimack Station
Bow, New Hampshire**

Fact Sheet

PSNH's Merrimack Station is an important base load plant, operating 24/7 to meet customers' electrical demand in New Hampshire.

Creative environmental initiatives at Merrimack Station have earned the company numerous awards-including the Governor's Award for Pollution Prevention in 1996, and the U.S. environmental Protection Agency's Environmental Merit Award in 1996 and again in 1999.



Facts at a Glance:

- Electric Output: 478 Megawatts of power
- Supplies power to about 190,000 residential, commercial and industrial customers
- Began commercial operation in 1968
- Operates on two primary coal-fired steam turbines (Unit One - 113 MW; Unit Two - 320 MW); also home to two combustion turbines, utilized only during periods of great power demand
- Environmental improvement initiatives - Investment of almost \$50 million since 1989

Environmental Initiatives and Improvements:

Although they also have significant operating costs, these improvements have enabled the station to significantly lower its emission of certain pollutants. For example, Merrimack Station now has the lowest NOx (nitrogen oxide) emission rate of any utility coal-fired power plant in all of New England.

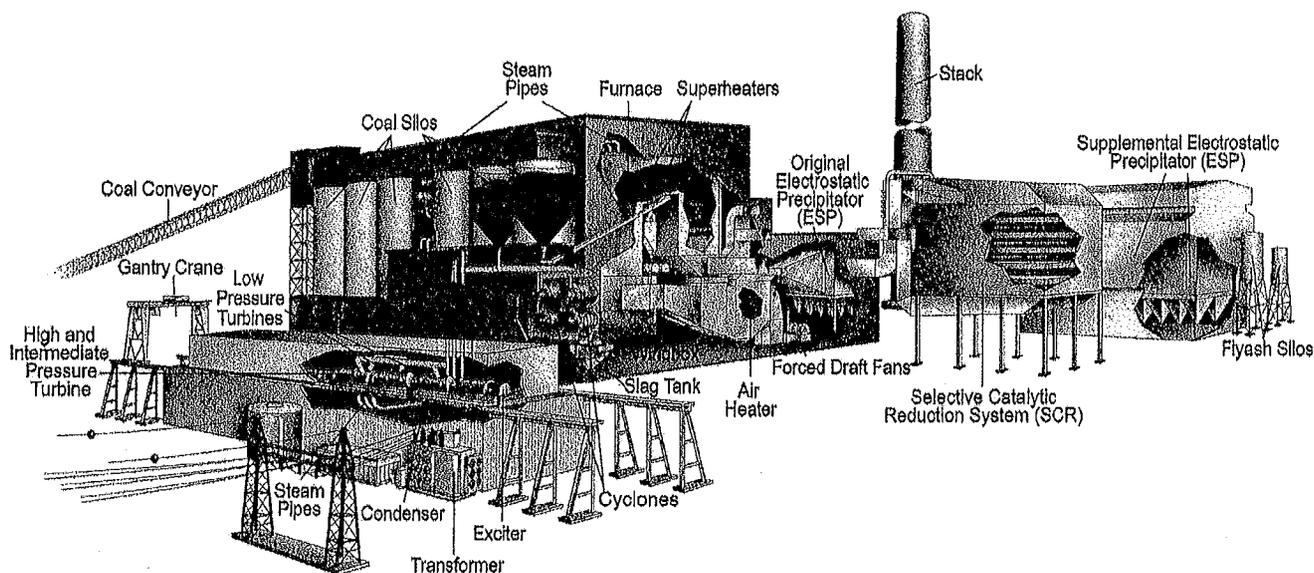
- 1989** Installed an additional electro static precipitator (ESP) on Unit One, resulting in no visible emissions.
- 1995** Began Unit Two Selective Catalytic Reduction (SCR) system operation, resulting in a 65 percent reduction in NOx emissions. Merrimack Station became the first utility coal-fired plant in the US to install an SCR system.
- 1995** Installed a Selective Non-Catalytic Reduction (SNCR) system on Merrimack Station Unit One - resulting in a significant reduction in NOx emission.
- 1998** The early installation of additional catalyst material in the existing Unit Two SCR system, resulted in an 85 percent reduction of NOx emissions. The reduction was of critical importance in a decision by the US EPA not to require automobile tailpipe emission testing in New Hampshire.
- 1999** Installed an SCR system on the Unit One boiler, resulting in an 85 percent reduction of nitrogen oxides (NOx) emissions - equivalent to the removal of 700,000 automobiles from New Hampshire roads. As a result of this installation, NOx emissions from Merrimack

November 2005

Station are in compliance with the EPA's NO_x standards for new power plants, including gas plants.

- 1999 An additional ESP on Unit Two became operational, resulting in reduction of particulate emissions to 0.02 lbs/mmBTU. This is better than the U.S. EPA's particulate and opacity (smoke density) standards for new plants, including gas plants.
- 2003 Installed upgraded turning vanes for the Unit Two Selective Catalytic Reduction (SCR) system, further reducing NO_x emissions.
- 2002 Upgraded the original ESP on Unit One, resulting in a greater reduction of particulate emissions.
- 2002 Upgraded the original ESP on Unit Two, resulting in a greater reduction of particulate emissions.

The Inner Workings Of A Power Plant Making energy at Merrimack Station – Unit Two



Station Environmental Awards

- 2004 Northeast Utilities 2003 Environmental Leadership Award for significantly reducing the emission of Sulfur Dioxide (SO₂).
- 1999 US EPA Environmental Merit Award for Unit One NO_x emission-reduction that resulted from the installation of a second Selective Catalytic Reduction system at Merrimack Station.
- 1996 Edison Electric Institute (EEI) Special Distinction Award for collaboration with government agencies and environmental groups to develop an ozone-reduction strategy to meet the Clean Air Act.
- 1996 US EPA Environmental Merit Award for installation of Unit Two SCR, and for corrosion-reduction system.
- 1996 New Hampshire Governor's Award for Pollution Prevention for installation of Unit Two SCR.



**Public Service
of New Hampshire**

What Is Mercury?

Mercury (Hg) is a naturally occurring element that humans can neither create nor destroy. It enters the environment by normal breakdown of minerals in rocks and soil through exposure to wind and water.

Natural sources of mercury come from volcanoes, oceans, forest fires and other naturally occurring events. Manmade sources include combustion, energy production and incineration.

Mercury is used in medical instruments, electrical equipment and consumer products.

Trace amounts of mercury are found in coal. It accumulates in fish and aquatic species. The greatest exposure to humans is through eating fish, not through inhalation.

What is Sulfur Dioxide?

Sulfur dioxide (SO₂) is produced from the burning of fossil fuels. It is a colorless gas or liquid with a strong odor. It is a common air pollutant that is emitted by coal burning power plants. When the coal is burned, the sulfur dioxide is released into the air. If there is moisture in the air, the sulfur dioxide dissolves into the moisture creating acid rain.

PSNH Mercury Control Initiatives

- Mercury-in-coal analyses (1999, 2002-2003)
- Mercury stack testing at Merrimack and Schiller Stations (2003)
- Technical and economic feasibility study at Merrimack Station (2004)
- Additional Mercury stack testing at Merrimack Station (2004)
- Carbon injection pilot project at Merrimack Station (Summer 2005)
- Application submitted for US Department of Energy Project (Fall 2005)
- Proposed for legislation, 'Wet Scrubber' technology that will reduce Sulfur Dioxide (SO₂) emissions by more than 90 percent and Mercury (Hg) emissions by more than 80 percent (Fall 2005)

Merrimack Station Mercury Collaborative Plan

*A New Hampshire Clean Air Leadership
Initiative To Reduce Mercury at
Merrimack Station in Bow, NH*

November 2005

Summary Overview

The Plan: Collaborative Effort to Reduce NH Mercury Emissions

- Focuses on installing technology at PSNH's Merrimack Station to reduce a minimum of 80% of the mercury in coal no later than 2013
- Provides incentives for PSNH to pursue mercury emissions reductions before 2013
- The emissions controlled technology would also reduce on-site sulfur dioxide (SO₂) emissions by at least 90+%
- The \$250 million cost of the emissions technology would largely be off-set by PSNH not having to purchase SO₂ credits annually
- No trading allowed to meet the minimum 80% removal standard
- Maximizes the environmental benefit for NH, while effectively minimizing the financial impact on PSNH customers
- The plan is a result of a collaborative process of NH organizations. It was developed by a diverse coalition, including:
 - NH Department of Environmental Services
 - NH Office of Energy & State Planning
 - NH Lakes Association
 - NH Audubon Society
 - PSNH
 - Representative Larry Ross (R-Peterboro)
 - representative Naida Kaen (D-Lee)

The Plan Offers Incentives for Early Mercury Reductions

- Prior to scrubber installation, other mercury reduction strategies will be pursued to achieve mercury removal while scrubber technology is being designed, permitted and constructed
- A "credit system" will be established for early mercury reductions achieved from when the bill becomes law to July 1, 2013

- Importantly, early emission reduction credits may not be used to delay the scrubber installation
- The earlier mercury reductions are made, the higher the value of the credits
- Once the scrubber is installed, the early reduction credits can be converted to over-compliance credits where they can be "banked" or converted to SO2 allowances

The Plan Includes Incentives for Maximizing Mercury Reductions

- The plan includes incentives for PSNH to maximize the mercury reduction capabilities of the technology after 2013
- The plan establishes over-compliance credits for mercury removal achievements above 80%
- The plan proposes that these credits be banked for future use or converted to SO2 credits to offset the cost to customers

Support for the Plan is Growing

The plan is the result of a collaborative process of NH organizations starting early summer 2005. Organizations and NH Legislators supporting the plan include:

- NH Department of Environmental Services
- NH Lakes Association
- NH Audubon Society
- PSNH
- Society for the Protection of NH Forests
- Representative Larry Ross (R-Peterboro)
- Representative Naida Kaen (D-Dover)

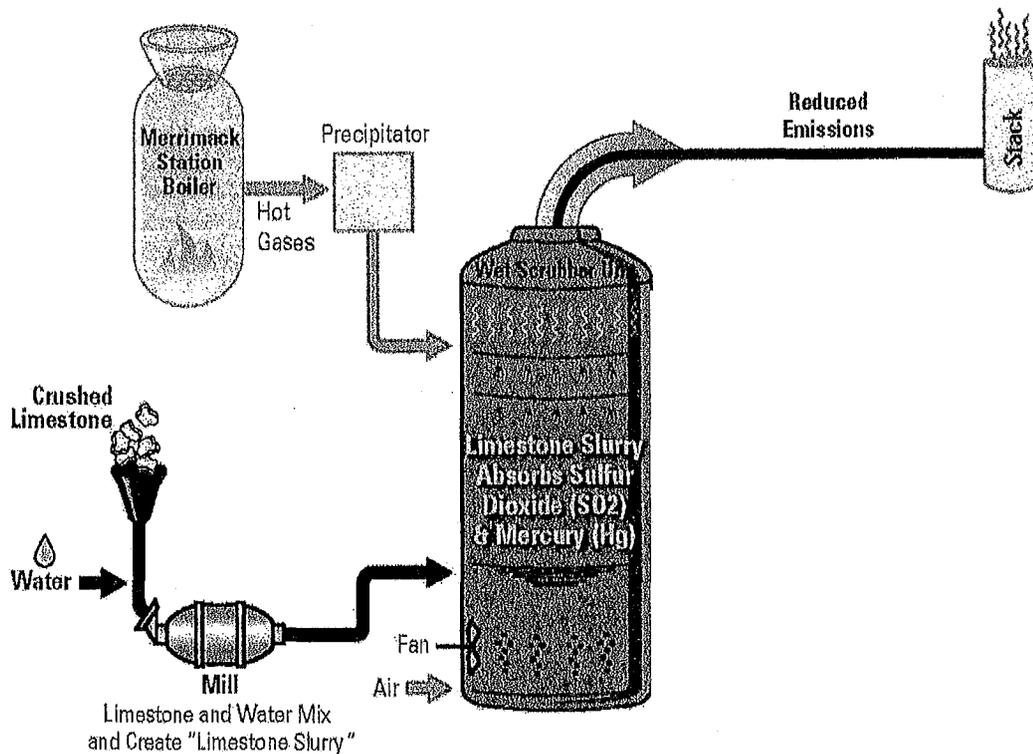
Technology Investment is at the Core of the Plan

- PSNH will install "wet scrubber" technology at Merrimack Station to reduce mercury emissions
- Scrubber technology is commercially available and has a proven track record for reducing SO₂ emissions
- Installation of this technology could cost as much as \$250 million
- The cost of this investment would be substantially off-set by reducing the amount of SO₂ credits purchased annually by PSNH to meet federal and state clean air requirements
- Scrubber technology would be installed and operating no-later-than July 2013

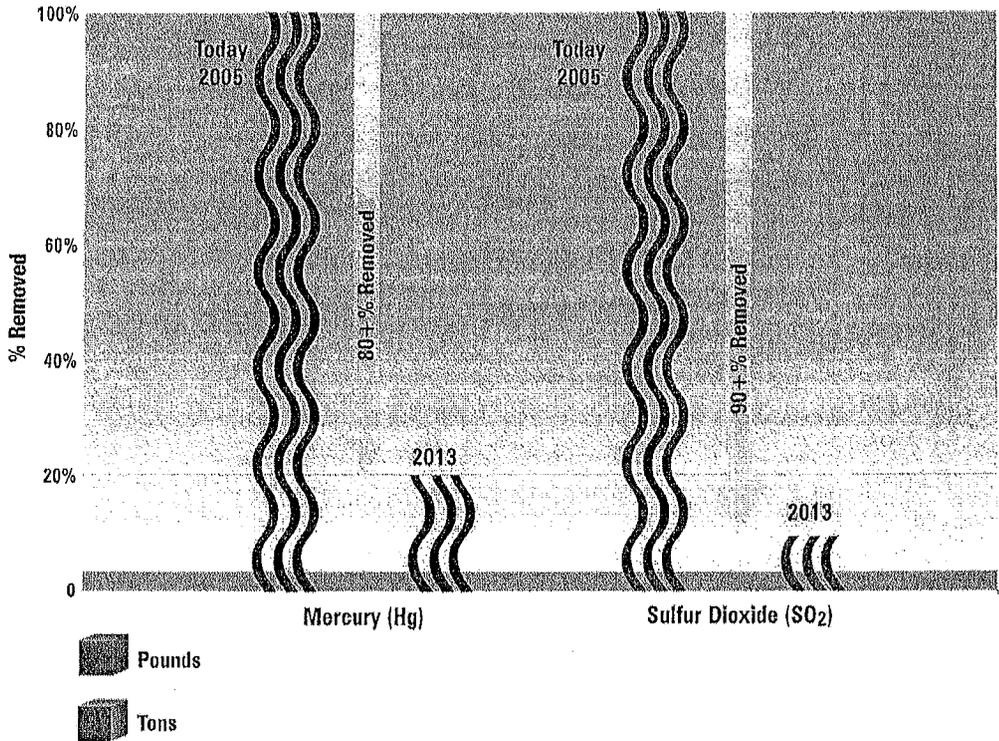
Wet Scrubber Facts

- Wet Scrubber technology is commercially available with a proven track record for reducing sulfur dioxide (SO₂) emissions
- Hot gases from the Merrimack Station boiler will travel through the Precipitator into the Wet Scrubber Unit
- Crushed limestone and water are milled to create a 'slurry' that absorbs SO₂ & Mercury (Hg) within the Wet Scrubber unit reducing emissions going to the stack
- Wet Scrubber technology removes over 90 percent of the SO₂ and over 80 percent of the Hg

Wet Scrubber Technology for Merrimack Station



New Technology For Merrimack Station Dramatically Reduces Emissions



Key Comparisons

<p style="text-align: center;">Senate Bill 128 (Introduced in January 2005)</p>	<ul style="list-style-type: none"> • Sets compliance date of 2013 • Reductions to a total of 24 pounds emitted, achieved by July 2013 with opportunities for off-site reductions
<p style="text-align: center;">US EPA Mercury Guidelines (Introduced in March 2005)</p>	<ul style="list-style-type: none"> • Sets compliance date of 2018 • Target removal of 70%; no incentives for further reductions • Proposes national cap & trade system for mercury by 2013, with potential for purchase of credits for compliance
<p style="text-align: center;">Mercury Collaborative Plan (Introduced in November 2005)</p>	<ul style="list-style-type: none"> • Sets compliance date of 2013 • Requires PSNH to an 80% reduction of Mercury emissions with incentives for earlier reductions • Incentives for PSNH to maximize reduction capabilities of the SO₂ reduction technology beyond 2013 • Over-compliance credits established for Mercury reduction above 80% • All reductions achieved on-site; no purchase of credits permitted for compliance

Reducing Mercury Emissions – Let's Do It Right

By Gary A. Long

The New Hampshire Legislature is considering a mercury reduction initiative that could increase electric rates substantially for PSNH customers. As written, NH Senate Bill-128 could add hundreds of millions of dollars to our energy production costs, and greatly diminish the fuel diversity and economical energy provided by our Merrimack Station in Bow.

The good news is that we believe that there *are* ways to achieve significant reductions in mercury emissions at our coal plants while minimizing rate impacts on our customers, maintaining a diversified fuel mix, and positioning New Hampshire to have future energy costs lower than other New England states.

We would do this by using the same collaborative approach we used to develop broad support for the passage in 2002 of the celebrated New Hampshire Clean Power Act, and previous successful efforts to achieve significant emissions reductions.

Unfortunately, SB-128 is not the result of collaboration, but instead embraces a deeply flawed approach to reducing mercury, and would set in law targets and timelines that are unachievable.

Mercury is a naturally occurring compound that is released globally by volcanic eruptions and by everyday activity that involves combustion of fuels. It is estimated that 60 percent of the mercury deposition in the U.S. comes from overseas – carried by wind patterns from industrial complexes as far away as China. Like many other emissions, mercury is also

deposited in New Hampshire from industrial sources in the Ohio River Valley and other areas.

The State of New Hampshire estimates that about 650 pounds of mercury are emitted annually in the state from multiple sources. PSNH's two coal-fired plants emit about 130 pounds annually, about 19 percent of the state's total annual emissions. SB-128 focuses on PSNH power plants for reductions; other sources, which collectively emit more than 80 percent of the state's annual mercury emissions, are not addressed.

In 2002, PSNH, the State of New Hampshire, environmental groups and others made a commitment to reduce mercury emissions as part of the New Hampshire Clean Power Act. All parties agreed to let the U.S. Environmental Protection Agency (EPA) take the lead in setting reduction targets, given that there were *no* federal standards yet regulating mercury emissions at power plants. The Clean Power Act also states that trading programs should be an integral part of any NH initiative to reduce mercury emissions.

Trading involves setting up a marketplace for buying and selling mercury credits -- recognizing that mercury deposition in NH also comes from out-of-state sources. Trading programs have been successfully used to significantly and *economically* reduce other emissions, including those causing smog.

In March, the EPA issued new mercury regulations for US coal plants. The rule would require PSNH to reduce its annual mercury emissions by more than 60 percent by 2018 -- from 130 pounds to 50 pounds. The EPA also proposes to establish a national "cap and trade" system on mercury emissions to help achieve the reduction targets cost-effectively.

As written, SB-128 is much more aggressive. It requires PSNH to reduce its annual mercury emissions to 50 pounds by 2009, and then to 24 pounds by 2013. Also, SB-128 does *not* allow participation in any trading programs, nor does it encourage the company's participation in alternative mercury mitigation initiatives such as recycling household items containing mercury.

Without alternative mitigation and trading, the only option left to the company to meet the bill's reduction targets is experimental technology.

The fact is that there is *no* commercially available technology for coal-fired power plants which has been proven to achieve the mercury reductions required by SB-128. There are technologies available to reduce mercury emissions from coal-fired power plants', however; real questions exist as to whether any of these technologies alone can achieve the reductions called for in SB-128.

PSNH will implement a pilot program this summer at Merrimack Station to test the effectiveness of one mercury reduction technique, using carbon injection.

PSNH is willing to do its part to reduce mercury, provided it is a realistic plan and considers the impact on our customers' rates. I am hopeful that the Legislature will have the wisdom to reach for policies that balance the needs of its citizens, while positioning the state for a prosperous future.

Gary A. Long is president and chief operating officer of Public Service of New Hampshire.

FAQs

Who was involved in developing the plan?

The proposal to use a wet scrubber system was developed during the summer of 2005 by a small group of interested parties which worked collaboratively to find a mercury reduction method which would achieve the desired goal while minimizing the economic impact on customers. The group included: the NH Office of Energy and Planning; the NH Department of Environmental Services; members of the Legislature; the New Hampshire Audubon Society; the New Hampshire Lakes Association; and PSNH.

How does a wet-scrubber system work?

A wet scrubber system utilizes crushed limestone and water to create a "slurry" which interacts with and absorbs sulfur dioxide and mercury within the flue gas system, prior to the emission stage.

How do you know a wet-scrubber system will work at Merrimack Station?

Wet scrubber technology has been utilized for years as a primary method to reduce the emission of sulfur dioxide (SO₂) emissions. In addition, the technology has more recently proven to successfully reduce mercury (Hg) emissions. The history of this technology indicates that it will successfully reduce sulfur and mercury emissions at Merrimack Station?

Why hasn't a wet scrubber system been installed earlier at Merrimack Station?

Merrimack Station has successfully complied with all state and federal environmental regulations to date through a variety of investments and projects. Emission reduction regulations are becoming more stringent and challenging, in turn impacting the evolution of emission reduction technologies and the costs associated with utilizing those technologies or, if available, the purchase of compliance credits. It makes sense from both environmental and business perspectives to now develop a wet scrubber system at Merrimack Station

Why was an 80 percent reduction of mercury selected as a target – can more mercury reduction be achieved?

Yes, more mercury reduction can be achieved. The proposal suggests and anticipates incentives for both interim reduction of mercury emissions, prior to the 2013 startup of a wet scrubber system – and additional mercury emission reduction following the startup. The mercury removal target of 80 percent is in line with the overall goal which was developed by the Legislature as part of its initial proposal, Senate Bill 128.

Why was 2013 selected as the 'start up' of the new technology? Can anything be done in the meantime to reduce mercury emissions?

The original legislative proposal, SB128, set July, 2013 as a target date to achieve a significant reduction of mercury at Merrimack Station. The date makes sense for the wet scrubber proposal, given that it will require significant time for design, permitting, site work and construction. In the meantime, the proposal outlines incentives to encourage interim reductions of mercury through other means, including carbon injection technology.

What will be the cost of the project be?

It is estimated that the project will require a capital investment of up to \$250 million and annual operating expenses of about \$10 million. As a regulated utility, PSNH must receive authorization from the NH Public Utilities Commission before making any such investment.

How will the project costs be paid?

If the New Hampshire Public Utilities Commission (NHPUC) approves the project, the costs will be recovered from customers through PSNH rates. Importantly, many of these costs will be offset by a reduction in the number of related emission reduction credits which must now be purchased by PSNH. Currently, PSNH spends about \$20 million per year on sulfur dioxide credits, and the price of those credits is expected to increase. The proposal anticipates a significant reduction in the required purchase of SO₂ credits, thereby offsetting project costs.

Will there be additional employees hired as a result of the project?

Yes. The new system will require some additional fulltime employees to be added to Merrimack Station's current workforce of 100 employees.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-01
Dated: 06/04/2012
Q-TC-007
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

(Originally numbered TC-01, Q-TC-007 in the Temporary Rates portion of this docket) Please identify any individual employed by or otherwise compensated by PSNH to work on its behalf to achieve legislative approval for "An ACT relative to the reduction of mercury emissions" that took effect on June 8, 2006.

Response:

The enactment of 2006 N.H. Laws, Chapter 105, "AN ACT relative to the reduction of mercury emissions" involved a collaborative effort which included the legislature, the NH DES, environmental organizations, and the Company, among others. Individuals employed by or otherwise compensated by PSNH who directly participated in those collaborative efforts include Donna Gamache and Terrance Large. Other Company employees were involved in providing information to those directly involved in the collaborative effort.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-01
Dated: 06/04/2012
Q-TC-008
Page 1 of 1

Witness: No Witness
Request from: TransCanada

Question:

(Originally numbered TC-01, Q-TC-008 in the Temporary Rates portion of this docket) Please provide detail about how much PSNH spent on outside lobbyists who assisted PSNH during the 2006 legislative session.

Response:

PSNH objects to this response as the information requested is not relevant to the subject of this proceeding. Moreover, any lobbying costs incurred by PSNH are recovered "below the line" and thus are not included as part of the costs sought to be recovered by PSNH in this proceeding.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-01
Dated: 06/04/2012
Q-TC-009
Page 1 of 1

Witness: **No Witness**
Request from: **TransCanada**

Question:

(Originally numbered TC-01, Q-TC-009 in the Temporary Rates portion of this docket) Please provide a copy of any document provided to any elected or appointed government official in New Hampshire related to its position opposing legislative approval for Senate Bill 152 and House Bill 496 in 2009.

Response:

PSNH objects to this question as the information sought is not relevant to the subject of this proceeding; i.e., recovery of the prudent costs of complying with the legislative mandate contained in 2006 N.H. Laws, Chapter 105, "AN ACT relative to the reduction of mercury emissions."

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-01
Dated: 06/04/2012
Q-TC-010
Page 1 of 1

Witness: **No Witness**
Request from: **TransCanada**

Question:

(Originally numbered TC-01, Q-TC-010 in the Temporary Rates portion of this docket) Please identify any individual employed by or otherwise compensated by PSNH to work on its behalf to oppose legislative approval for Senate Bill 152 and House Bill 496 in 2009.

Response:

PSNH objects to this question as the information sought is not relevant to the subject of this proceeding; i.e., recovery of the prudent costs of complying with the legislative mandate contained in 2006 N.H. Laws, Chapter 105, "AN ACT relative to the reduction of mercury emissions."

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-01
Dated: 06/04/2012
Q-TC-011
Page 1 of 1

Witness: No Witness
Request from: TransCanada

Question:

(Originally numbered TC-01, Q-TC-011 in the Temporary Rates portion of this docket) Please provide detail about how much PSNH spent on outside registered lobbyists who assisted PSNH during the 2009 legislative session.

Response:

PSNH objects to this response as the information requested is not relevant to the subject of this proceeding. Moreover, any lobbying costs incurred by PSNH are recovered "below the line" and thus are not included as part of the costs sought to be recovered by PSNH in this proceeding. See NH Code Admin. Rule Puc 310. In addition, lobbying reports required by RSA Chapter 15 are publicly available from the Secretary of State.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-01
Dated: 06/04/2012
Q-TC-012
Page 1 of 1

Witness: **No Witness**
Request from: **TransCanada**

Question:

(Originally numbered TC-01, Q-TC-013 in the Temporary Rates portion of this docket) How did PSNH account for the probability that Merrimack Station could be required to implement closed cycle cooling at the station in its analyses of the economics of installing a flue gas scrubber, given consideration of regulatory experiences at other regional and national energy generation facilities?

Response:

PSNH objects to this question as the information sought is not relevant to the subject of this proceeding; i.e., recovery of the prudent costs of complying with the legislative mandate contained in 2006 N.H. Laws, Chapter 105, "AN ACT relative to the reduction of mercury emissions." In addition, the question requires speculation regarding future regulatory actions of NHDES and/or USEPA.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-01
Dated: 06/04/2012
Q-TC-013
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

(Originally numbered TC-01, Q-TC-014 in the Temporary Rates portion of this docket) Please provide all documents exchanged between PSNH and the U.S. Environmental Protection Agency from 2006 to the present related to the Merrimack Station discharge permit.

Response:

The information requested is publically available from the U.S. EPA. The administrative record regarding the draft NPDES permit for Merrimack Station is available on-line from the U.S. EPA at <http://www.epa.gov/region1/npdes/merrimackstation/>.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-01
Dated: 06/04/2012
Q-TC-014
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

(Originally numbered TC-01, Q-TC-015 in the Temporary Rates portion of this docket) Did PSNH give any consideration to whether to seek a variance from the mercury emission reduction requirements of RSA 125-0 as authorized under RSA 125-0:17 ?

Response:

PSNH objects to this question, as it is based upon a faulty and erroneous interpretation of the law. Notwithstanding this objection, PSNH responds as follows:

There was no need for PSNH to seek any variance from NHDES under either RSA 125-O:17 sections I or II, because, I. the scrubber was successfully placed into service prior to the statutorily mandated date of July 1, 2013 (RSA 125-O:13, I); and, II. an alternative reduction requirement was not necessary as the scrubber meets all of the statutorily mandated emissions reduction requirements set forth in RSA 125-O:13.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-01
Dated: 06/04/2012
Q-TC-015
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

(Originally numbered TC-01, Q-TC-016 in the Temporary Rates portion of this docket) If the response to question 15 is in the negative, please state the basis for your response.

Response:

See the response to TC-01, Q-TC-014.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-01
Dated: 06/04/2012
Q-TC-016
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

(Originally numbered TC-01, Q-TC-017 in the Temporary Rates portion of this docket) If the answer to question 15 is in the affirmative please explain the process which PSNH used to decide whether to seek the variance, which employees of PSNH were involved in such decision, and provide any and all correspondence, working papers and documents related to such consideration.

Response:

See the response to TC-01, Q-TC-014.



The State of New Hampshire
Department of Environmental Services



Michael P. Nolin
 Commissioner

January 12, 2006

The Honorable Lawrence C. Ross, Chairman
 New Hampshire House of Representatives
 Science, Technology and Energy Committee
 Legislative Office Building, Room 304
 Concord, New Hampshire 03301

Re: HB 1673 - An Act Relative to Emission Reduction Standards as Required by the Clean Power Act

Dear Chairman Ross and Members of the Committee:

Thank you for the opportunity to provide testimony in support of HB 1673 which seeks to reduce mercury emissions from affected fossil fuel burning power plants within New Hampshire. In accordance with the requirements of RSA 125-O, the *"Multiple Pollutant Reduction Program"*, the New Hampshire Department of Environmental Services (DES) made a recommendation to the Legislature on March 31, 2004 to place a cap on mercury emissions from these facilities.

Last year, the NH Senate passed SB 128 which contained similar mercury reductions as those contained in HB 1673. During committee hearings in the NH Senate and in the NH House, the public outcry and the expert testimony for controlling mercury emissions from our state's coal-fired power plants sent a clear message that significant mercury emission reductions must be made, but there were questions as how to best accomplish this task. Over the summer, PSNH in consultation with DES, performed tests with carbon injection control technology and researched the facility's ability to install wet scrubber technology. The results of this work led to the conclusion that while carbon injection can produce quick mercury emission reductions, the installation of the wet scrubber technology produces superior environmental benefits. HB 1673 is the product of months of discussions between Public Service Company of New Hampshire (PSNH), DES, the Office of Energy and Planning, the New Hampshire Governor's Office, and environmental groups that sought aggressive levels of mercury reductions while minimizing cost impacts on electrical ratepayers.

In order to best protect our citizens and environment from excess mercury emissions and to address the biological "hot spots" documented to exist within our state, we feel a successful mercury bill must meet three goals. First, it must reduce emissions as quickly as possible. Second, the chosen technology used must achieve the greatest mercury reduction technically feasible. And third, the technology must be implemented in a way that maintains our electrical reliability and affordability, without shifting production to upwind states.

HB 1673 meets these goals with the creative use of incentives and the aggressive application of technology. Early reduction will be achieved through additional testing of carbon injection technology with subsequent ongoing implementation on the most successful application of this technology. Critical to the success of this bill is the requirement that wet scrubber technology be installed on Merrimack Units 1 and 2

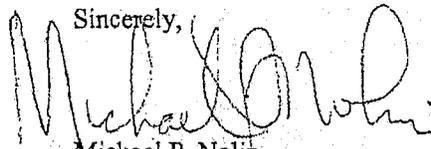
by July 1, 2013. The use of this technology not only reduces mercury very efficiently (greater than 90% in most applications), but it is highly effective in removing sulfur dioxide (SO₂) and small particles. This co-benefit of reducing three pollutants simultaneously with the same equipment reduces implementation costs by allowing PSNH to significantly reduce purchasing SO₂ emission allowances, saving greater than an estimated \$25 million per year (2005\$). Based on data shared by PSNH, the total capital cost for this full redesign will not exceed \$250 million dollars (2013\$) or \$197 million (2005\$), a cost that will be fully mitigated by the savings in SO₂ emission allowances. Finally, while the scrubber technology has been demonstrated to achieve higher levels of mercury reductions than initially called for in this bill, the bill contains a requirement that tightens the required reduction rate to the level that is actually achieved and is sustainable by the scrubber technology. Application of the requirements in this way reduces project risks while still achieving full environmental benefits.

Once completed, the mercury reduction requirements of HB 1673 should bring annual power plant emissions down to below 32 pounds per year and quite possibly below the 24 pound cap envisioned in the former SB 128. Further, HB 1673 is clearly more strict than the federal Clean Air Mercury Rule, that may have to be implemented here in New Hampshire with its own associated costs beginning in 2010, if no other alternative such as an enacted HB 1673 is proposed to EPA prior to November 2006. HB 1673 is consistent with state mercury programs in Connecticut, Massachusetts, New Jersey, and Indiana, as well as regional and national recommendations made by the State and Territorial Air Pollution Program Administrators and Association of Local Air Pollution Control Officials (STAPPA/ALAPCO), the Northeast States for Coordinated Air Use Management (NESCAUM), and the Ozone Transport Commission (OTC) for mercury Maximum Achievable Control Technology (MACT). Consistent with the amended SB 128, HB 1673 does not allow trading of mercury emission credits.

If passed, this bill will be technically challenging to implement because the existing configuration of the boilers, stacks, and air pollution control equipment at Merrimack Station does not easily lend itself to installation of additional equipment. Due to physical constraints, installation of additional equipment to optimally reduce mercury emissions would require major renovations. PSNH has worked hard to find creative solutions to these issues so that operations can be maintained while constructing and testing the required control equipment.

DES is committed to working with the Legislature to develop a prudent course of action to further reduce mercury emissions. Should any members have questions or need additional information regarding these recommendations, please feel free to contact Robert R. Scott, Air Resources Division Director, at 271-1088 or me at 271-2958.

Sincerely,



Michael P. Nolin
Commissioner

cc: HB 1673 Sponsors
Science, Technology and Energy Committee Members



**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) 634-2701

Hallsr@psnh.com

A Northeast Utilities Company

Stephen R. Hall
Rate & Regulatory Services Manager

June 29, 2012

By Electronic Mail Only

Douglas L. Patch
Orr & Reno Professional Association
One Eagle Square, P.O. Box 3550
Concord, NH 03302-3550

**Re: DE 11-250; Public Service Company of New Hampshire
Investigation of Scrubber Costs and Cost Recovery**

Dear Attorney Patch:

I enclose Public Service Company of New Hampshire's responses to the Second Set of Data Requests of TransCanada in the above-captioned proceeding.

Very truly yours,

A handwritten signature in cursive script that reads "Stephen R. Hall".

Stephen R. Hall
Rate & Regulatory Services Manager

Enclosure

cc : Discovery Service List (by electronic mail only)

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-02
Dated: 06/18/2012
Q-TC-001
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

Please provide copies of any and all documents that were used as the basis for the original scrubber cost estimate that PSNH provided to DES Commissioner Michael Nolin and that he referenced in his January 12, 2006 letter to the House Science, Technology & Energy Committee in support of HB 1673.

Response:

As stated in the September 2, 2008 submittal by PSNH to the Commission, the initial estimated cost of the project was based on a Sargent and Lundy estimate performed in 2005. Sargent and Lundy's effort culminated in a report dated March 2006. This report was filed in Docket No. DE 08-103 and is available for inspection at the Commission's offices as discussed in the Commission Staff's letter in this docket dated March 15, 2012.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-02
Dated: 06/18/2012
Q-TC-002
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

Please provide copies of any and all correspondence that PSNH had with DES that pertains to question #1 above.

Response:

There is no correspondence between PSNH and NHDES on scrubber costs.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-02
Dated: 06/18/2012
Q-TC-003
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

Please provide copies of any and all documents that PSNH or any of its employees, officials, representatives, agents or lobbyists provided to DES, any legislator or any state official to support the statement in DES Commissioner Michael Nolin's January 12, 2006 letter to the House Science, Technology & Energy Committee in support of HB 1673 to the effect that the costs of the scrubber will be fully mitigated by the savings in SO₂ emission allowances.

Response:

PSNH has never claimed that the cost of the scrubber will be fully mitigated by the savings avoided in the purchase of SO₂ emissions allowances.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-02
Dated: 06/18/2012
Q-TC-004
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

Is it true today that the costs of the scrubber project will be fully mitigated by the savings in SO₂ allowances ?

Response:

PSNH objects to this question, as it requires speculation. Notwithstanding this objection PSNH responds as follows:

It is impossible to predict what the value of SO₂ allowances will be in the future. It is true that the reduced costs to PSNH's customers by not needing to purchase SO₂ allowances will help mitigate scrubber costs. This benefit has changed over time as SO₂ allowance prices have decreased in recent years and will change in the future.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-02
Dated: 06/18/2012
Q-TC-005
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

If the costs of the scrubber project will not be fully mitigated by the savings in SO₂ allowances, please state in detail when PSNH first became aware that this would be the case.

Response:

Please see the response to TC-02, Q-TC-004.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-02
Dated: 06/18/2012
Q-TC-006
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

Please provide any and all documentation and correspondence that PSNH or any of its employees, officials, representatives, agents or lobbyists had with or provided to any and all state officials with regard to the fact that the costs of the scrubber project would not be fully mitigated by the savings in SO2 allowances.

Response:

Please see the response to TC-02, Q-TC-003 and Q-TC-004

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-02
Dated: 06/18/2012
Q-TC-007
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

Has the scrubber project brought the annual power plant emissions from Merrimack Station down to below 32 pounds per year ? If so, what capacity factor is associated with this level of reduction ?

Response:

PSNH objects to this question due to vagueness, as it does not specify what emissions it is referring to. Notwithstanding this objection, PSNH responds as follows:

The annual power plant emissions for 2011 as reported to the NHDES was 25,856.99 tons including particulate, SO₂, NO_x, CO, VOC_x, and RTAP emissions for Merrimack Unit 1 and Unit 2, Combustion Turbines 1 and 2, the emergency generator, emergency boiler, emergency cooling water and insignificant activities. The scrubber project was designed and installed to significantly reduce mercury and sulfur dioxide emissions on Merrimack Unit 1 and Unit 2 .

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-02
Dated: 06/18/2012
Q-TC-008
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

Has the scrubber project brought the annual power plant emissions from Merrimack Station down to below 24 pounds per year? If so, what capacity factor is associated with this level of reduction?

Response:

Please see the response to TC-02, Q-TC-007.

Witness: William H. Smagula
Request from: TransCanada

Question:

Did PSNH make an effort to test and implement practicable technological or operational solutions to achieve significant mercury reductions prior to the construction and operation of the scrubber technology at Merrimack Station ? If so, please provide a detailed explanation of any such solutions that were tested and/or implemented and any and all documentation associated with the testing and implementation of such solutions and the results of such solutions.

Response:

PSNH objects to the request on the basis that the materials requested are not relevant to the issue of this proceeding, to wit, the Company's prudence in achieving the mandate contained in RSA 125-O: 11, *et seq.* Moreover, given the lack of relevance of the question, it is overly broad and unduly burdensome to the extent it seeks "any and all documentation associated with the testing and implementation of such solutions and the results of such solutions.

Subject to and without waiving this objection, PSNH responds as follows:

Yes. In 2002, PSNH began an effort to test lower sulfur coals and lower mercury coals due to the NH Clean Power Act and the Clean Air Act. In 2005, this effort took on additional focus as PSNH pursued testing with a company specializing in activated carbon injection (ACI). This effort resulted in poor mercury capture results of only 20%-40% capture. Subsequently, in 2006-2008, PSNH worked with two other expert firms to obtain a \$2.4 Million US Department of Energy grant to do a more expanded series of tests with various ACI trials in efforts to reduce mercury emissions. This very thorough effort also did not result in acceptable results since it only achieved intermittent peaks of 60% mercury removal with numerous unit operational compatibility concerns still unanswered.

The final report regarding that testing, which is available on the U.S. Department of Energy website at <http://www.netl.doe.gov/technologies/coalpower/ewr/mercury/control-tech/pubs/42780/42780%20Final%20Report%20Sept2009.pdf>, summarizes the results of the activated carbon injection testing at Merrimack Station Unit 2 from April 1, 2006 to April 2, 2008. See also the Jacobs Consultancy Report dated June 2011: New Hampshire Clean Air Project Due Diligence on Completed Portion Report, pp. 9-10.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-02
Dated: 06/18/2012
Q-TC-010
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

With reference to the response to Staff 1-12, RSA 125-O:13, IX provides: "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." Attached to the response to Staff 1-12 were a number of documents, some of which appeared to be one page filings, for example p. 28 of 28 entitled "PSNH Legislative Update – June 26, 2007". Are the pages provided by PSNH in this response all of the documents, including, but not limited to, cover letters and other attachments, that were actually provided to the legislature as required by this statute? If not, please provide all of those documents in the form they were submitted to the legislature. If they are all of the documents please explain clearly which documents were filed on which dates.

Response:

Yes, the documents provided in the referenced response are what was provided to the Legislature. These update documents to the Legislature are not considered formal filings and were typically presented as a discussion outline since verbal presentations accompanied each. The 2009 update was provided in June. The 2010 update was provided on June 29. The 2011 update was provided in written format on June 30 and as requested by the House Science Technology and Energy Committee Chairperson presented to the committee after it returned from its summer break.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-02
Dated: 06/18/2012
Q-TC-011
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

Did PSNH receive any federal funding or funding from any other sources in connection with the development of the scrubber project? If the answer is in the affirmative please provide detail as to how much and when it was received. Please also provide copies of any and all documents and correspondence related to the application for and awarding of such funding.

Response:

No funding from Federal or other governmental sources has been received or used in the development of the scrubber project.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-02
Dated: 06/18/2012
Q-TC-012
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

When did PSNH first become aware that the estimates of the cost to construct the scrubber project referenced in DES Commissioner Michael Nolin's January 12, 2006 letter to the House Science, Technology & Energy Committee in support of HB 1673 were no longer accurate and legitimate?

Response:

PSNH objects to the request on the basis that the use of the words "accurate and legitimate" is argumentative. Subject to and without waiving this objection, PSNH responds as follows:

PSNH became aware that estimates of costs to construct the scrubber were going to be larger than the preliminary estimates of \$250 Million in the second quarter of 2008. Once PSNH became convinced that a new project estimated cost of \$457 Million was the correct and updated estimate, the new estimate was disclosed in an SEC Form 10-Q filing dated August 7, 2008.

Public Service Company of New Hampshire
Docket No. DE 11-250

Data Request TC-02
Dated: 06/18/2012
Q-TC-013
Page 1 of 1

Witness: William H. Smagula
Request from: TransCanada

Question:

Please provide any and all documentation and correspondence that PSNH or any of its employees, officials, representatives, agents or lobbyists had with or provided to any and all state officials with regard to the change in the estimate referenced in the prior question.

Response:

The Commission Staff, the OCA and the Office of Energy and Planning were briefed on the updated cost. Subsequent to this update, PSNH responded to a Commission request for information on this topic, which was filed with the Commission on September 2, 2008. Copies of the filing are available in the docket book on the Commission's website.



The State of New Hampshire
Department of Environmental Services



Michael P. Nolin
 Commissioner

April 11, 2006

The Honorable Bob Odell, Chairman
 New Hampshire Senate
 Energy and Economic Development Committee
 Legislative Office Building, Room 304
 Concord, New Hampshire 03301

ATTACHMENT # 10

Re: HB 1673 - An Act Relative to Emission Reduction Standards as Required by the Clean Power Act

Dear Chairman Odell and Members of the Committee:

Thank you for the opportunity to provide testimony in support of HB 1673, which seeks to reduce mercury emissions from affected fossil fuel burning power plants within New Hampshire. HB 1673 is the result of several months of discussions between Public Service Company of New Hampshire (PSNH), DES, the Office of Energy and Planning, the New Hampshire Governor's Office, interested members of the General Court, and environmental advocacy organizations. DES's goal in these discussions was to seek aggressive levels of mercury reductions while minimizing cost impacts on electrical ratepayers. This bill achieves these goals, *and* provides additional environmental co-benefits of reduced local sulfur and particulate emissions.

While DES can appreciate the concerns some have expressed for greater reductions in a shorter timeframe, we remain steadfast that this bill represents a thoughtful balance of environmental and economic concerns. It delivers significant, yet practicably achievable reductions in a reasonable timeframe, and includes meaningful incentives for additional reductions beyond the bill's specified minimum and/or early action to reduce emissions. Eliminating flexibility in the required reductions and schedule will do little to provide actual environmental benefit, and yet may be detrimental to project financing. We believe this package of an aggressive, yet realistic reduction target/schedule and economic incentives achieves our goals for meaningful environmental benefit, maintaining electricity supply stability, and reducing financial risk and subsequent ratepayer impact.

If passed, this bill will be technically challenging to implement because the existing configuration of the boilers, stacks, and air pollution control equipment at Merrimack Station does not easily lend itself to installation of additional equipment. Due to physical constraints, installation of additional equipment to optimally reduce mercury emissions would require major renovations. PSNH has worked hard to find creative solutions to these issues so that operations can be maintained while constructing and testing the required control equipment. We feel that 2013 represents a practicably achievable goal given these constraints. The specified technology has the potential to achieve reductions well beyond the minimum requirement of 80% from all affected sources (including PSNH's Schiller Station units). However, the bill contains significant incentives and safeguards to ensure higher reductions if achievable.

This bill ultimately results from the requirements of HB 284 (passed in the 2002 session), commonly referred to as the New Hampshire Clean Power Act. In accordance with the requirements of RSA 125-O (as established by HB 284) the "Multiple Pollutant Reduction Program", the New Hampshire Department of Environmental Services (DES) made a recommendation to the Legislature on March 31, 2004 to place a cap on mercury emissions from these facilities. In response, last year, the NH Senate passed SB 128 which contained similar mercury reductions as those contained in HB 1673.

During committee hearings in both the Senate and in the House, the public outcry and the expert testimony for controlling mercury emissions from our state's coal-fired power plants sent a clear message that significant mercury emission reductions must be made. There were questions, however, as to how best to accomplish this task. Over the summer, PSNH in consultation with DES, performed tests with carbon injection control technology and researched the facility's ability to install wet scrubber technology. The results of this work led to the conclusion that while carbon injection can produce quick mercury emission reductions, the installation of the wet scrubber technology produces superior environmental benefits at a lower overall cost.

In order to best protect our citizens and environment from excess mercury emissions and to address the biological "hot spots" documented to exist within our state, we feel a successful mercury bill must meet three goals. First, it must reduce emissions as quickly as possible. Second, the chosen technology used must achieve the greatest mercury reduction technically feasible. And third, the technology must be implemented in a way that maintains our electrical reliability and affordability, without shifting production to upwind states.

HB 1673 meets these goals with the creative use of incentives and the aggressive application of technology. Early reduction will be achieved through additional testing of carbon injection technology with subsequent ongoing implementation on the most successful application of this technology. Critical to the success of this bill is the requirement that wet scrubber technology be installed on Merrimack Units 1 and 2 by July 1, 2013. The use of this technology not only reduces mercury very efficiently (potentially greater than 90% in most applications), but it is highly effective in removing sulfur dioxide (SO₂) and small particles. This co-benefit of reducing three pollutants simultaneously with the same equipment reduces implementation costs by allowing PSNH to significantly reduce purchasing SO₂ emission allowances. Based on data shared by PSNH, the total capital cost for this full redesign will not exceed \$250 million dollars (2013\$) or \$197 million (2005\$), a cost that will be fully mitigated by the savings in SO₂ emission allowances. Finally, while the scrubber technology has been demonstrated to achieve higher levels of mercury reductions than initially called for in this bill, the bill contains a requirement that tightens the required reduction rate to the level that is actually achieved and is sustainable by the scrubber technology. Application of the requirements in this way reduces project risks while still achieving full environmental benefits.

Further, HB 1673 is clearly more strict than the federal Clean Air Mercury Rule, that may have to be implemented here in New Hampshire with its own associated costs beginning in 2010, if no other alternative such as an enacted HB 1673 is proposed to EPA prior to November 2006. HB 1673 is consistent with state mercury programs in Connecticut, Massachusetts, New Jersey, and Indiana, as well as regional and national recommendations made by the State and Territorial Air Pollution Program Administrators and Association of Local Air Pollution Control Officials (STAPPA/ALAPCO), the Northeast States for Coordinated Air Use Management (NESCAUM), and the Ozone Transport Commission (OTC) for mercury Maximum

Achievable Control Technology (MACT). Consistent with the amended SB 128, HB 1673 does not allow trading of mercury emission credits.

DES is committed to working with the Legislature to develop a prudent course of action to further reduce mercury emissions. Should your committee members have questions or need additional information regarding these recommendations, please feel free to contact Robert R. Scott, Air Resources Division Director, at 271-1088.

Sincerely,

for Michael P. Nolin, Ass't. Comm.
for Michael P. Nolin
Commissioner

cc: HB 1673 Sponsors
Senate Energy and Economic Development Committee