



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

**Science, Technology and Energy Committee**  
**HB 1673 - An Act Relative to Mercury Emission Reduction**

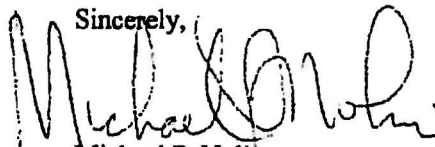
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by July 1, 2013. The use of this technology not only reduces mercury very efficiently (greater than 90% in most applications), but it is highly effective in removing sulfur dioxide (SO<sub>2</sub>) and small particles. This co-benefit of reducing three pollutants simultaneously with the same equipment reduces implementation costs by allowing PSNH to significantly reduce purchasing SO<sub>2</sub> 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 SO<sub>2</sub> 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

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## News Release

# Agreement Reached on Mercury and Sulfur Emissions From State's Coal-Fired Power Plants

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Concord, NH. Nov. 9, 2005\*\*\*\*\*After several months of negotiation, government leaders, conservation groups, and the state's largest electric utility have reached an agreement to mandate significant reductions in mercury from coal-fired power plants in New Hampshire.

Sponsored by Representative Larry Ross (R-Peterborough), chairman of the House Science, Technology, and Energy Committee, and co-sponsored by at least a half a dozen legislators from both parties, the proposed measure, if passed, would require technology be installed to remove at least 80 percent of the mercury from the state's coal-fired power plants and reduce sulfur emissions upwards of 90 percent.

"The proposed law will help preserve the environmental quality of New Hampshire, which is of direct economic importance, while allowing the state to have a diverse energy mix and maintain reasonable costs for consumers," said Representative Ross.

The proposed law goes further than the proposed federal mercury rule. Under the federal measure, utilities with coal-fired power plants would have to meet a 70 percent target removal for mercury by 2018. Bob Scott, director of the state's Air Resources Division at the Department of Environmental Services and one of the stakeholders involved in the negotiations notes, "This proposal is a win-win situation for both the environment and the economy. It is the successful culmination of a collaborative process involving government leaders, the regulated community, and environmental groups."

"By reducing mercury emissions, the measure will have a positive influence on our state's wildlife," noted Joel Harrington, Vice President of Policy for New Hampshire Audubon and one of the stakeholders involved in the negotiations. "And, by decreasing the emissions of sulfur, which contributes to acid rain, this proposal will positively affect our state's forests and help facilitate ecosystem recovery."

The agreement would prohibit Public Service of New Hampshire from participating in a proposed federal mercury cap and trade system, but provides incentives to achieve reductions before 2013 and to maximize the removal capability of the control technology beyond 2013. To accomplish this, the company has agreed to install wet scrubber

technology, which is a proven commercially available technology that is capable of achieving mercury and sulfur removal of 80 percent or more.

"This initiative is truly a model New Hampshire solution," said Gary Long, PSNH president and chief operating officer. "By implementing this plan we will achieve a rarity – a significant improvement in air quality at a small cost to our customers. And, importantly, Merrimack Station will continue its important role as a key producer of economically-priced electricity for our customers in New Hampshire."

Signing on to the consensus agreement are the state's two largest environmental groups: New Hampshire Audubon and the Society for the Protection of New Hampshire Forests. The agreement has also been endorsed by the New Hampshire Lakes Association, a stakeholder organization, and the New Hampshire Timberland Owners Association.

The agreement was shepherded over the summer by the NH Department of Environmental Services; the NH Office of Energy and Planning; New Hampshire Audubon; and New Hampshire Lakes Association.

Specifically, it proposes to do the following:

Remove 80 percent of the mercury from PSNH's Schiller and Merrimack Stations by the year 2013, which is in line with a bill introduced in the last legislative session.

PSNH will install wet scrubber technology at Merrimack Unit 1 and Merrimack Unit 2 no later than July 1, 2013. Scrubber technology is one of the best technologies on the market to significantly remove mercury. The scrubber technology addresses a multi-pollutant strategy by reducing other emissions, in particular sulfur, a pollutant that causes regional haze leading to respiratory illnesses such as asthma.

PSNH will submit all necessary applications for permits within one-year of passage of the proposed bill.

After the scrubber technology is installed and once a consistent level of mercury reduction is achieved, that level of removal will be sustained into the future.

With this bill all mercury and sulfur reductions will be accomplished on-site at PSNH coal-fired power plants. The previously considered legislation allowed the company to utilize alternative off-site mitigation measures to meet the mercury reduction targets.

Other Contacts:

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Rep. Larry Ross, Chair, House Science, Technology, & Energy Comm.

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*PSNH is New Hampshire's largest electric utility, generating and distributing clean electricity for more than 475,000 homes and businesses in an environmentally friendly manner. Each year, PSNH supports dozens of forest protection, energy conservation, and environmental organizations through both financial contributions and generous employee volunteerism. PSNH is proud of its commitment to the environment and willingness to create innovative solutions to environmental issues.*

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Date: April 11, 2006  
Time: 3:40 P.M.  
Room: LOB RM 102

The Senate Committee on Energy and Economic Development held a hearing on the following:

HB 1673-FN      relative to the reduction of mercury emissions.

Members of Committee present:

- Senator Odell
- Senator Letourneau
- Senator Boyce
- Senator Bragdon
- Senator Burling

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The Chair, Senator Bob Odell, opened the hearing on HB 1673-FN and indicated that anyone who wishes to speak today to please make sure you have signed up, because when we get done the sign up list, that will be it. And the second part of it is that, I know people feel strongly about this bill, both ways. I hope you'll be collegial with everyone. And third, if you could limit your comments to new information, not previously stated by predecessors, speakers, I would appreciate it very much. With that I'll call on the sponsor of the bill, Representative Larry Ross to introduce the bill.

Representative Larry Ross, Hillsborough, District 3:      Thank you, Mr. Chairman and members of the Committee.

Senator Bob Odell, D. 8:      Good afternoon Representative Ross.

Representative Ross:      I'm glad to be here today and if you don't mind I would like to give you just a little background on how we got here today with HB 1673-FN. And, first of all I would like to thank the members of the Senate, that about one year ago sent SB 128 to the House was insurance. That bill came over and as you know was retained by the Science, Technology and Energy Committee for further study and I can assure you that it received plenty of study and plenty of emphasis in the Committee. A lot of work was going into it and primarily the outcome of the Committee deliberations of SB 128 were that with everything that was going on in the energy environment at that time, it makes sense to

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split it because there are two parts to it, carbon dioxide and the mercury bill. And about that time REGIE came in. So it makes sense that we ought to try to make sure that what was in the bill in the form of what was coming down the pike, was the regency of gas use. And this other Committee put that out and based on the assumption that we would be addressing this greatly in the future, and we are doing that as we speak today.

And that left the mercury side of the bill. And the Committee recognized that the Senate put a lot of work into that bill, but also recognized that there was a very limiting time constraint. As a matter of fact, many of you perhaps participated in this so-called "midnight amendment," when we tried to fix it and get it over to the House as quickly as possible, and we appreciate the fact that we had all of that to work with to begin with. But the Committee was faced with a choice if we were to work on the bill and amend it, then where does it go? There would be probably significant revisions to the bill; as it turns out they are pretty significant revisions. It was pretty well assumed that the bill would go back to the Senate for concurrence, and quite possibly end up in a Committee of Conference. And there was a problem for some of the members of the Committee that there would not be a full and public hearing in the Senate on the amendment. And so for that reason a course of action that derived was to recommend ITL on SB 128 and use that as the genesis for a new bill, 1673. And that is essentially how we got here today with HB 1673.

Over the summer last year, a lot of developments took place. First of all, many of the stakeholders who were part of SB 128 were asked to participate in stakeholders' meetings to suggest revisions to the old SB 128, and that happened. We had a very good group of folks, including the Governor's office, the Governor's Office of Energy and Planning, Public Service of New Hampshire, Department of Environmental Services, environmental organizations and the office of Consumer Advocate I believe was involved. And they worked over a long period of time and finally just in time for their submission of LSR's last fall, came forward with a draft bill because we had killed 128, a draft bill 1673, which is the basis for what we're considering here today.

I'd like to comment on the support schedule. You'll notice along with some sponsors and co-sponsors that are ... that were interested in this bill and signed on to co-sponsor it during this process. But more importantly is the coalition of support that has evolved. It's been both parties, Democratic and Republican, Senate and the House, House leadership from the Speaker down to the Minority Leader, who again, the Governor's office, very, very strong support on both sides of the General Court and both sides of the political process.

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But what we came out with was I think I've best described as a very reasonable bill, with the primary objective of removing mercury from the environment. And we heard lots of testimony about the effects of mercury and the hot spots in some areas of the state.

A bill which provides for a reasonable reduction in mercury, at a reasonable cost, and I will say it's reasonable and affordable. In a reasonable period of time, by a reasonable group of people, and that bill calls for reduction of mercury of at least eighty percent by the year 2013, and that's only seven years from now and that cost of over two hundred million dollars, depending on whether we talk about our current year or 2013 ...

Senator Robert K. Boyce, D. 4: Mr. Chairman, could we suspend a moment.

Senator Bob Odell, D. 8: Yeah.

Senator Robert K. Boyce, D. 4: Could we either have the door closed or have somebody go clear the hallway? I can barely hear him.

Representative Ross: At a cost of over two hundred million dollars in current ... I lost my train of thought.

Senator Robert K. Boyce, D. 4: Sorry.

Representative Ross: That's okay. By the installation of two methods of technology, one in the short term and the near term of mercury reduction in a near timeframe. We have the technology that's referred to as the "Sobin" technology and as many of you know, he owns a facility. Public Service of New Hampshire at this time are working with the DOE, Department of Energy, in a pilot program to ... and they have received a grant to do that of around two and a half million dollars, and that's why Public Service of New Hampshire ... and they're developing a five million dollar project to develop mercury reduction and capabilities with this activated carbon injective technology over the next two years, so that we should be able to see significant reductions in mercury within a two year timeframe. And by significant, we had an experience last summer with another experiment where they, a vendor ... that perhaps Representative Maxfield might of characterized properly, but I won't repeat terminology, and it was not a very good outcome. But with this experiment with the Department of Energy and really professionals, and they do pilot programs and these kinds of programs throughout the country on many different kinds of power plants.

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The Representative from the DOE testified to the Committee that it's possible to achieve fifty to seventy percent reductions in mercury using the Sobin technology.

The other form of technology involves the installation of scrubbers in the stacks of the two plants in Merrimack, Unit I and Unit II. It has been shown that this scrubber technology, in some cases has achieved mercury reductions of ninety percent. The bill calls for at least eighty percent and that's tied to the economics of the bill, the availability of vendors, guarantees that might be required in order to finance this project. And so, with the combinations of the two technologies, one short-term and the scrubbers longer term, I've used just some hypothetical number. If the mercury inputs to the plant say were a hundred pounds per year, as derived from testing the coal, and if the mercury in that coal can be reduced by activated carbon injection as it goes through the process by fifty percent, we're down to fifty pounds of mercury. And if in fact, then the scrubbers are installed and they can reduce eighty percent, we've taken another forty pounds away, and so we're right there at ninety percent, and we fully expect that they'll do better in both cases.

Now, with regard to the timeframe, we have access to some pretty sharp folks on the Science, Technology and Energy Committee, and the one who is Representative Itse who makes a living in the emissions control technology arena. And we asked Representative Itse, with his background, and Representative Chase who's a member of the Committee to coordinate on developing the project schedule for the completion of the installation of the scrubbers; and if I could hand those out?

**Please see submission of Representative Larry Ross entitled, "Merrimack Station - Unit 1 and Unit 2, Scrubber and Auxiliary Systems Schedule," attached hereto and referred to as Attachment #1.**

They looked at this extensively and basically what it says, if you have to go through the steps that are listed on the side in a reasonable manner, in order to spend two hundred and fifty million dollars over seven years, than this is the chart that's critical. The red lines are a critical path. And that means that one has to be done before another in a reasonable timeframe. And the best we could do is admit to 2013.

And once you start trying to squeeze that in, then you start jeopardizing the availability of equipment, rates on loans that are required, increased risk perhaps, or strikes, or competition for the Stuber technology, waiting periods, delivery times and all of those things, so that 2013, as I

indicated is a very reasonable timeframe to expect this project to be completed. Then there was also a question about the early emissions we needed before 2013, and of course that's where the carbon technology comes from. We fully expect that there will be significant reductions within the two year window, at the end of the two years, that's when that project is scheduled for completion.

There was some concern about not locking in some specific amount during that two year period, but, like I tried to indicate, that we have really an eternal program that's been proven in other places. These plants are unique. We don't know exactly what those numbers will be and we thought it was inappropriate to try to legislate given that technology and the state of the art.

With regard to the testimony that indicated that we could do more than ninety percent. I'll refer back to SB 128, which had ninety percent in it, but it also included mitigation, and by mitigation, then if there could be reductions off-site, which could be counted against that ninety percent; whether it be cleaning out mercury in the traps of laboratory sinks or whether it's thermometer programs, or any other way that could be applied towards the ninety percent. So in effect, we were talking about eighty-two percent on-site is the number I recall.

The most important thing, or one of the most important things in addition to the alleviation of a public health concern, was the reduction of sulfur dioxide which is accomplished by the same scrubbers that we would work with, up to ninety percent. And why is that important? It's because right now Public Service of New Hampshire is having to buy credits, SO<sub>2</sub> credits, which are an important part of the factors which caused acid rain and those kind of things. Is that ... Public Service of New Hampshire is having to buy credits, right now, to comply with federal and state regulations for reduction in sulfur dioxide. It doesn't mean it's being reduced now. It just means that the rate payers are having to pay to buy compliance so that the ninety percent reduction in SO<sub>2</sub> ... that's a heck of a cost avoidance. It's estimated to become at least twenty or thirty million dollars a year that the rate payers don't have to pay. And that's really a double bonus, we get the mercury reductions, we get the SO<sub>2</sub> reductions, we don't have to buy SO<sub>2</sub> credits and that cost avoidance can be used to alleviate the costs of the two hundred million dollars that we're talking about.

So then there was the question of, "What are we doing with mercury credits?" Everybody agreed that we didn't want to be in a CAP A Program with mercury however if possible, within our current regulations for the DES to credit manager up to ... to be able to convert mercury credits to SO<sub>2</sub> credits. And some folks object to that because it looks like we're



subsidizing some plants perhaps in Indiana or Illinois, but I'd like to point out that nobody is going to be selling those credits. They're going to be accumulated and it will further reduce our need to buy credits to be in compliance. That is additional cost avoidance. And if we don't recognize the value of those credits in that manner, I believe the rate payers are leaving millions of dollars on the table if we can't take advantage of it.

So in a nutshell, I would ask you to favorably consider the work that's going into SB 128, and as you've all been to 1673, and to favorably consider, "ought to pass" on the bill that you have before you today. Because, as I indicated, it's been worked out, with a consensus of stakeholder bipartisan, as strong as it's worded and it's a reasonable reduction, and it's a conservative reduction at a reasonable cost, and affordable cost, in a reasonable period of time.

Thank you, Mr. Chairman. I'll answer questions.

Senator Bob Odell, D. 8: Thank you, Representative Ross. Thank you for your testimony. Questions for Representative Ross? Senator Letourneau.

Senator Robert J. Letourneau, D. 19: Could you ... you talked about eighty percent reduction. Could you put that in terms of how much mercury that really involves, or how many pounds of stuff is going in the air?

Representative Ross: I believe the numbers that were floating around with SB 128 was in the order of one hundred and twenty-four pounds of mercury a year. And at eighty percent of that would be the net outcome of, whether it was one twenty-eight and at eighty-two percent of the (inaudible), so eighty percent plus, in this case ... so eighty percent of one twenty-four.

Senator Robert J. Letourneau, D. 19: I think he figured that we'd do the math. Thank you.

Senator Bob Odell, D. 8: Any other questions? If not, thank you, very much for being here and I want, I think, been involved in, as its been mostly as an observer for the past year or so. I commend you and those that you work with for coming together and bringing what I think in the legislative process is a ... gives us credibility and stature and that is to build consensus. No one in a democracy is always happy when they go home, and it's a business of compromise, and you've been a great leader in bringing that consensus and that compromise to us.

Representative Ross: Mr. Chairman, I think the credit goes to the Committee. Thank you.

Senator Bob Odell, D. 8: Thank you. Thank the Committee on our behalf. I'm going to call on Senator Martha Fuller Clark.

Senator Martha Fuller Clark, D. 24: Senator Odell, I signed in support of the bill, but I don't need to speak.

Senator Bob Odell, D. 8: Oh, okay.

Senator Martha Fuller Clark, D. 24: Thank you.

Senator Bob Odell, D. 8: All right. And I'll call on Representative Jay Phinizy.

Representative Jay Phinizy: Good afternoon Mr. Chairman, members of the Committee.

Senator Bob Odell, D. 8: Welcome to the Committee.

Representative Jay Phinizy: For the record, I'm Jay Phinizy and I represent Acworth, Charlestown and Langdon in Sullivan County. I'm co-sponsor of this bill and I signed up in support of the bill, however I have reservations and I would like to speak to some of those reservations. I've made observations on where I think the bill could be improved even further. In the spirit of compromise, I think it's important that this Committee look at these recommendations and suggestions.

At the outset, what I'd like to do is I'd like to discuss this almost as if it were a contract and an agreement between a company and the state. And, in essence, that's what it will be over the next few years. Once we get into this contract and agreement the base will be tied. Some people would sell, well, we can quite possibly change these terms of agreement later on, but I don't think that will allow to be favorable to the company or to the people. So therefore, what I'd like you all to do now, over the next couple weeks, is look very hard at this bill, and look very hard at some of the ramifications that it may have. You'll be hearing from someone in testimony a little later on today regarding a proposed amendment or suggest the recommendations for an amendment, and I basically, wholeheartedly support some of these recommendations because I think they have great value.

Right now, if you look at the bill, one of the things that I've found problematic with it, and there's some things that I like very much agree with this bill, but one of the things that I find problematic with it is the

way they essentially bundle the mercury tabulations. And you'll see on Page 2, the Section 125-O:12 Definitions; and they talk about affected sources, and that's in line 10. And then we talk about base line mercury emissions, and that's on Line 12. And you'll see here it says, "Baseline emissions means the total annual mercury emissions from all of the affected sources, calculated in accordance with RSA 125:O:14.

In essence, the way I read this bill and the way I'd like to see it changed is be to calculated but calibrate in view of the emissions on a plant-by-plant basis. And I think that's critically important. Therefore, I think what you do is you get a far better reading from the situation. You'd find out that you'd have a far better analysis of just exactly how one plant is doing versus the other, which is Schiller versus Bow and Merrimack. There is a change in here that I do agree with wholeheartedly and the Chairman of the Science and Technology Committee and I did agree to this change and that's on Page 3 and its Line 24. And it talks about the reporting by June 30, 2007 and annually thereafter. And I think this is an excellent idea because essentially what this does is that it essentially keeps tabs of what's going on with the progress of this entire installation process. However, I would like to see that shortened. And I think it would make more sense to have that on a semi-annual basis. That way, if there seems to be problems, the legislature and the state can react more quickly than on an annual basis. One of the problems I do have with that however, is that once we enter into this agreement, and once the plant essentially or the company starts dealing with specific items and specific installation procedures than essentially, I don't think there's any turning back. That leads me to the next point.

I think that the deadlines are way too far out. And the reason I think that they are way too far out is that, and I'll refer to the EPA Report, as well as other people would refer to, quite simply some of the other states that are at hand. Right now, if you look at this bill and if you look at an out of sight of controlled mercury emissions from 2/05 electric utility boilers and it's an EPA Air Pollution Prevention Control Division in court, it states specifically, and it lists various different kinds of retrofit and technology to be able to put onto this system, essentially says, that if you applied what they call "Selective Catalytic Reduction," which I believe this plant already has, the major plant, an FGG of PM of mercury control system, that these installations could prepare within three to four years. So when we enter into this contract and when you start to deal with this issue, what I really think is more important is that we need to keep a very short time line and then we allow that time line to be relaxed, if necessary, if we find that there are technical problems. Consistent with that, the current bill also speaks to some very, very specific technology requirements, and I do agree with the activating carbon injection system, however, I think what probably would make far greater sense is if this

bill were to follow the same format as 128 and merely talk about requiring the company to come into, what we call reduction compliance, and allow them to be very specific and deal with that kind of technology without us basically mandating this specific technology. I think it's very important that we don't micro-manage. I would sight the most recent Maryland bill. And I'll give you a quote there. And I think it's something that we ought to follow. It says, "a person that owns, leases, operates or controls an effective facility that are subject to the requirements of this statute may determine how best to achieve and collect the emissions requirements under subsection A, B and C." In essence what they're saying is they rely on the company to make the best business decisions. They do not rely on this legislature regardless of whether it's an individual or committee or a group of people and a midnight amendment suggesting any kind of specific control technology. I think this is a very important thing to take into consideration when we review this bill.

Further on down the line I look at the question of credits. I am very concerned about mixing even the mercury credits with the other credits. I think that we have to be very careful about that. There will also be other people to speak to that issue.

In closing, what I would like to say is that yes, I will support this bill and yes, I will support it and I will agree with it in the long run. However I think we can go further and I think we can compromise and come out with a far better product. We're a teacher right now at writing the final report. I would probably give this report or this term paper a C+. I think quit frankly, this Committee and the legislature can do a whole lot better. I think we can come out with a B+ term paper or B+ report, and I believe that it's up to you all to take this and look at it even further.

And one of the things that concerns me about extending the time line entirely too far out is whether or not we really come into compliance in a reasonable amount of time and whether or not we will come into far greater costs further down the line. If we turn around and allow too far an extension into the future, the costs will be far greater and this gets into, what I consider a very, very important factor, which is an increased cost to the ratepayer. And I think that's something that you have to be very considerate and concerned about. If we allow this in essence to come into production, oh let's say in 2013, the cost of installation over that period of time could be passed off to the rate payers. So I think we have to look at that.

Now, looking at you at this table, essentially three of us, including myself, right now we've probably suffered when it comes to increased rates. Probably two of you will have constituents that will suffer if we don't get mercury and SO<sub>2</sub> emissions reduction sooner. So I think we

have to look at much tighter deadlines. I think you have to say to yourself, it's much better to set a very tight deadline, get into a contractual agreement and a very tight closed manner. And if there are technical problems, allow that agreement to extend a little bit. And I think that's important strictly for the protection of the individuals of the state and your constituents.

One of the things in the Maryland bill that I would have a little focus on, and I'd be glad to leave a copy of the Maryland bill, is it has some good aspects, this is something that I really actually agree with Representative Ross. I think you should focus on essentially putting in a study committee that would basically look at, and I'll read the section in the Maryland bill. It says, "the Department of Environment shall contract with an academic institution in the state for a study of whether there will be adverse impacts on the state economy or the liability of the state's energy supply and the cost of energy for consumers as a result of the state's entry into a continued participation in the regional greenhouse gas initiative." Now they say, of course, among mid-atlantic and northeastern states. I think this is important that you attach a study to this bill so that we keep the whole regional greenhouse initiatives, the costs and the necessity alive. To me that's a very important factor. This is not just a mercury bill. This is an air pollution bill.

With that I thank you. I've tried to condense a fair amount of what I wanted to say and I'd be glad to take any questions.

Senator Bob Odell, D. 8: Representative Phinizy, thank you very much. Any questions? Senator Letourneau.

Senator Robert J. Letourneau, D. 19: Representative Phinizy, could you tell me how much mercury is falling on New Hampshire right now, currently? Do you have that ... any idea?

Representative Phinizy: No, I couldn't tell you that. How much actual mercury is falling on New Hampshire? I can tell you that it was estimated out of the Bow/Merrimack plant there were about one hundred and twenty-five pounds.

Senator Robert J. Letourneau, D. 19: But we already heard that.

Representative Phinizy: I understand that.

Senator Robert J. Letourneau, D. 19: I'm wondering how much mercury is coming from the plants in Ohio and Illinois and Michigan?

Representative Phinizy: Well I happen to be ... if I can't ...

Senator Robert J. Letourneau, D. 19: They don't have any trouble zones?

Representative Phinizy: Well I'm not going to speak to that issue. What I'm going to speak to is what's important locally. And I happen to think that mercury does not travel to the degree that the other high flying gases travel. I think that's very important we install mercury scrubbers. I do support that part of the bill that says, "Let's put that technology on now." What I would like you all to do is look very closely to make sure that that technology continues to run throughout the life of it. That it's not shut down in a year or two. I think that's a critically important aspect.

How much mercury is coming from the mid-west? Frankly that's between you and fence post, and that's not important; it's how much mercury we're generating here. That's critically important. Right now, the plant, the Bow Plant generates a phenomenal amount of mercury. And those two plants now reduce their mercury production, which would be the Penacook Plant and the Claremont Plant. They will essentially, in the next few years, be down, I think to fifteen to twenty pounds.

Senator Bob Odell, D. 8: Senator Bragdon.

Senator Peter E. Bragdon, D. 11: Thank you, Mr. Chairman. Good afternoon.

Representative Phinizy: Good afternoon Senator.

Senator Peter E. Bragdon, D. 11: I think I saw something in the bill ... I understand your concern about stretching out the time frame, but I thought I saw something earlier about some economic incentive or incentives for Public Service to do this a little faster, increase credits or such as that. Aren't there incentives in this bill to at least encourage them to move along a little faster if they can?

Representative Phinizy: Well, of course there are incentives to encourage it, but right now, I went on line and I basically did a little bit of an analysis of the company. Right now the company is losing money. Although their annual gross asset, annual gross revenue is something like seven and a half billion dollars. They are at a loss mode. So if you take a company this entire package, because it's not just Public Service of New Hampshire, it's Northeast Utilities, you take it as an entire package, they may make a financial value judgment that says that they may want to put that off because they may find that it may save them money in the long run. So I don't have a lot of faith in what I call

economic incentives per say, I have a greater faith in a much ... this is why I really like SB 128. Senate Bill 128 said, we'll do "X" in a certain amount of time and you reduce it at least by "Y" amount of pounds of mercury. And if you can't, well then we'll basically go back to the drawing board and see what's achievable. And you see to me, that makes a great deal more sense in giving economic incentives. I just think it ... we don't meddle with business and they don't meddle with us. You know, I get very nervous about giving credits and incentives. Thank you.

Senator Bob Odell, D. 8: Any other questions? If not, thank you very much. And I'll call on Senator Maggie Wood Hassan.

Senator Margaret Wood Hassan, D. 23: Good afternoon.

Senator Bob Odell, D. 8: Good afternoon Senator Hassan.

Senator Margaret Wood Hassan, D. 23: Thank you, Mr. Chairman, members of the Committee for hearing my testimony. Mine is also going to be divvied because I think there are people in this room who can talk about the technical details of this bill far better than I can. But I do want to tell you why I'm here. I'm in support of the bill for two reasons.

One, because I think it represents excellent and hard work by the Science and Technology Committee of the House and it is a solid compromise. And that is one of the things we are in the business of doing here, is listening to each other and moving forward as we can, as we work together and learn to accommodate each other's concerns.

The second reason I'm in favor of this bill, and the thing that I have relied upon in getting me to the point where I support this bill in this hearing today, is the representations by PSNH that they will, in fact, engage in early mercury reduction technology. They have applied for the DOE Grant, they have received the DOE Grant, and I believe they are committed to working with alternative technologies to start reducing mercury sooner, rather than later. That is extraordinarily important to me. One of the things that brings me here is the fact that my Senate District, Senate District 23, and I forgot to say for the record, I'm Maggie Hassan from Senate District 23. (Laughter.) So there we are. Which are Exeter and nine surrounding towns. Is that my district sits in a mercury hot spot. To respond a little bit to Senator Letourneau, I don't doubt that some mercury comes from other places, but I also know that when you look at the maps of hot spots in this state, it is very clear that we are downwind from power plants. And, I hear on a regular basis, as I was just discussing in the Environment Committee, from the folks in my district who I would call and I consider myself one of the mercury moms.

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We don't know entirely what mercury does, we do know it is an enormous health concern for our constituents, particularly those who are dealing with the booming epidemic of autism in this state. And I don't know whether there will be evidence to ever suggest that mercury from power plants contributes to autism, we don't know the science yet. We do know that probably children with autism have a genetically disposition to be vulnerable to combinations of chemicals that most of the rest of us tolerate. And with that in mind, I think mercury reduction sooner, rather than later is a health imperative, just the way reducing lead became an health imperative for the generation too before us.

PSNH I think, understands this. I think they have made public representations that they are committed to early mercury reduction. I am concerned that the aggregate reduction that is being measured in this bill may not be monitoring the seacoast power plants quite the way they should be, and I look forward to working with PSN&H on that further, because I think frankly that that's an area of concern for my area of the state. But we made progress by moving forward a step at a time as we are able to, but we can come to an agreement about how this is a very important issue. And I think that this is a terrific step forward. Thank you.

Senator Bob Odell, D. 8: Thank you very much for your testimony. Questions? Senator Letourneau.

Senator Robert J. Letourneau, D. 19: More of a comment. Thank you Senator Hassan for testifying and I agree with you. I hope you didn't mistake what my comments were.

Senator Margaret Wood Hassan, D. 23: No I didn't.

Senator Robert J. Letourneau, D. 19: Is that we're doing everything we can here in this state to reduce mercury, but we're not doing ... being much ... as the rest of us.

Senator Margaret Wood Hassan, D. 23: And thank you for your comment. I didn't misinterpret that. I will let you know that as the Representative to the NCSL Environment Committee, I am trying to do my bit for New England when I advocate in those meetings to Ohio and the other mid-west states about cleaning up their mercury.

Senator Robert J. Letourneau, D. 19: Thank you.

Senator Bob Odell, D. 8: Other questions? If not, thank you very much. I'll call on Representative Gene Andersen.

Representative Gene Andersen, Grafton/11: I am Representative Gene Andersen and I represent Lebanon. I speak in favor of the bill. However, I do take issue with the time line. I have one, just a quick copy, a black and white of a handout that you were handed out earlier by Chairman Ross.

**Please refer to documents submitted by Representative Ross, attached hereto and referred to as Attachment 1.**

I'm in construction, and I'll get into that a little bit further. Chairman Ross said that this is a reasonable time line and there are individuals on the Committee, including Mr. Itse and Mr. Chase; Representative Chase who developed this time line. Representative Itse apparently sells process equipment, Representative Chase was a surgeon.

I have thirty-one years in construction working on large scale projects. I am not an engineer, but my title is engineer and I ..... the engineer for the Tobin Bridge in Boston and Ralph Cote's work for seven years. I've worked on a lot of projects. I'm just going to name a few of them because I think they relate directly to the work involved here, and I'm going to also mention the time line and the money because it also relates.

I was a project superintendent for SD Warren Paper Machine, No. 2 (inaudible). It was a \$1.2 billion dollar project which would be over \$2 billion dollars in today's dollars. The project started in 1989. It produced paper in 1990. That is just over one year. Okay? I also was project superintendent, Dartmouth Hitchcock Medical Center, \$228 million dollar project; ground breaking 1988, patients October 1991. Casco Cape Bridge, \$130 million dollar project, three year construction, one mile long bridge, second longest base fields span in the world, unique project, three years to traffic. I did work on the MWRA project and I also managed quality control for Cronings for approximately sixty percent of the Cronings in the I-93 tunnel section of the central artery. I have worked on those, as well as numerous other projects.

Now, when I saw this schedule that we have here, it's pretty much unlike any other project that I've ever seen. And so I mentioned it to Committee at that time, my experience with SD Warren Paper Machine because I think that was particularly relevant again. In today's dollars, \$2 billion dollar project completed in almost one year.

So here's what I heard. Permit process takes so long and we can't do anything until the permit process is completed. What DES advises is the permit process could be completed in shorter period of time such as six months. I was advised that we could cut back the time and extensions could be given to PSNH if they went over that time. PSNH was concerned

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about the PUC as they said that they'd have to justify these delays by ... I kind of would think that that would be the whole point of the PUC, that they would have to justify those delays. And I have no doubt that if the permitting process was held up, that you and the legislature as well as PUC would fill those extensions.

Another thing I heard, banks won't lend the money until permits are in place so nothing can happen until permits are in place. PSNH is a regulated utility. We're not talking about somebody going out and getting money off the street here. In this bill they have ... the fact is that they're going to get their money back on this. Now, on almost every project of any large scale today it's done from a design build standpoint, including things even like the central artery. The reason for that is that cost of money is so incredibly expensive. So, if you look at this schedule here, you'll see that we've gone ahead ... we're getting the permit ... and I'm ready to start doing scrubber engineering after we get a permit. Obviously on any project that I'm familiar with, engineering goes ahead of almost anything and we're about ready to start the project when we get the permits.

Now, another thing that we heard was that there's a backup due to the demand on these scrubbers. Well actually about a third of the power companies have received these scrubbers between 2000 and 2005. So we're in the process mode right now and the work that is in process now, a lot of it will be completed by 2011 or 2013.

Now you heard Representative Phinizy talk about Maryland earlier. Maryland is going to start requiring scrubbers for technology that will do the work on all of their equipment. So we may in fact be in the lull in engineering and in getting started up on this project when we put this thing out. We may be up against the wall, against many people right now while things are in the process.

Now, it's such a large project that the area would be overwhelmed. This is a very small project, estimated at about \$270 million dollars. I think if you were to look at the City of Boston, which is much bigger than Concord, obviously, however as an MWRA project that was an essential artery and there was also the airport expansion, as well as going ahead and throwing in (inaudible) and all of that time and everything, in a very compressed period of time.

I work for a (inaudible) and Community firm company. Fifty percent of the engineers who worked in Boston five years ago are now gone. That's how these projects should of bulked up. So, it is a very small project.

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Now when I mentioned to Representative Itse that this project with SD Warren cost \$1.2 billion and \$2 billion in today's dollars, he said, "I'm sure that that was probably the only project going on at the time." Now in my experiences in construction, that's where I felt that he was a little unaware of how things work in construction. The way things work in construction is everything happens in an industry all at one time. Okay.

The paper mills were very big at that time. As a matter of fact, at the time the \$1.2 million dollar expansion was going on, major expansion that IP and GA George ... Specific with had a (inaudible) took a seventeen story boiler there, Great Northern was expanding and even James Ruther, the owner at Berlin at that time, had about a \$170 million dollar expansion going on, which would probably be pretty much equivalent to this in today's dollars. Now, the people who do this kind of work are the same kind of people who do those would also work on that project.

Another thing I heard was there would not be enough cranes to do the job. To which I said, "Call Camrino Crane, you could have three hundred of them up here right away." Now I think any of you that worked in ... that saw the central artery project, saw that there were tons of cranes down there; they are all gone, they are all looking for a place to go. Now in fairness to Public Service of New Hampshire I ask their lobbyist, I said, "Cranes?" And the lobbyist said, "I'm not sure where that came from, we probably have a crane from Schiller that we could pull over." Now scrubbers don't require a large crane compared to putting in boilers in the first place. So the cranes is definitely not a problem.

So I think that these are the things you have to think about. Right now this work is in the process. Engineering is out there, this is not a unique engineering system. There are about five engineering firms that do design, about five engineering companies that do building. The paper mills, there's essentially only one company in the America, AHOIT, or you have to go outside. So this is not a difficult construction project.

I think the other thing I'd like to just make one comment on. When you think about these things, remember that we built more battleships in World War II than have been built, since before, or ever since. That's how much construction happens in this country. And that's how fast it moves around. And with that I'll take any questions that I might.

Senator Bob Odell, D. 8: Any questions for the Representative? Seeing none, thank you very much for your testimony. I'll call on Representative Naida Kaen. Good afternoon.

Representative Naida Kaen, Strafford/7: Good afternoon. Thank you Mr. Chairman. For the record my name is Naida Kaen. I represent Lee,



Durham and Madbury, Strafford District 7. To begin with I want you to know that I'm not an engineer.

Senator Bob Odell, D. 8: Thank you.

Representative Kaen: But I've been on the Science, Technology and Energy Committee listening to engineers since 1995. I think what may have been slightly overlooked, and I just want to fill in a few gaps. Chairman Ross did an excellent job of representing what has happened and the deliberations in the Committee and around the table in order to come up with the current bill.

What perhaps has been overlooked is the role through the years that has been played by environmental organizations who force the issue, who publicize the issue for who we need some thanks and I hope you recognize that. On the other hand, I am in full support of this bill, as written. I think now that the parties have come together around the table, and come to a consensus that that role is over with, that we have achieved a consensus at this point and we should expedite. The sooner we do this for the people of the State of New Hampshire, the sooner we will begin those mercury and SO<sub>2</sub> reductions. And I simply, I will leave it at that, and if you have any questions, I'm not here to field any technical questions. My role has always been to put the whole thing in perspective.

I just ... one further note from a finance perspective. I do have a background in finance and accounting so I would urge you not to even consider extending a new time line. And my logic is this. It would increase the risk. This is a regulated utility; it may increase financing costs to the extent that the utility can claim that their risk is greater because we put additional pressure on them that their costs will go up. And who do the costs flow through to? The rate payers. We have to take that into consideration, that what we have here is a compromise that takes all the factors into consideration.

Senator Bob Odell, D. 8: Thank you. Any questions? If not, thank you very much for being here. I'll call on Representative ... Representative Theberge from Berlin signed in, in favor of the bill but did not wish to speak. I think I've got all the Senators and all the Representatives. I'll call on Alice Chamberlin from the Governor's office.

As you come up Ms. Chamberlin, I will note that Representative Peter Sullivan signed in, in support but did not wish to speak, and he wants the amendment for eighty percent reduction by 2009.

Senator Bob Odell, D. 8: Welcome.

Alice Chamberlin, Governor's Office: Good afternoon, Mr. Chairman and members of the Committee. My name is Alice Chamberlin and I would like to read a letter that is under my signature but on behalf of the Governor.

**Please see prepared testimony by Alice Chamberlin on behalf of the Governor's office, dated April 11, 2006, attached hereto and referred to as Attachment #2.**

Senator Bob Odell, D. 8: Thank you very much for your testimony.

Alice Chamberlin, Governor's Office: Any questions from the Committee?

Senator Bob Odell, D. 8: Questions? Seeing none, thank you very much.

Alice Chamberlin, Governor's Office: Thank you, I'll leave copies for the record.

Senator Bob Odell, D. 8: I'll call on Jared Teutsch from the New Hampshire Lakes Association. Good afternoon.

Mr. Jared A. Teutsch, Environmental Policy Director, New Hampshire Lakes Association: Good afternoon. Thank you, Mr. Chairman and members of the Committee. For the record, my name is Jared Teutsch, Policy Director for New Hampshire Lakes Association. I have another handout here for you as well. It's actually, it says, "Draft copy of a 2006 Section 303(d) Surface Water Quality List" from DES.

**Please see prepared testimony of Jared A. Teutsch, Environmental Policy Director, New Hampshire Lakes Association, dated April 11, 2006 and also see submission of the "Draft 2006 Section 303(d) Surface Water Quality List" from NH Department of Environmental Services, attached hereto and referred to as Attachment #3.**

The comment period ended March 31<sup>st</sup>. I'm not sure if it's ... it's no longer considered draft, it may actually be closed, and I'll pass that along as well. I also have a ... the representative for Trout Unlimited could not stay today, so they handed me their testimony, and I'll include that as well on behalf of them.

**Please see prepared testimony of Paul A. Doscher, National Leadership Council Representative for NH for the NH Council of**

**Trout Unlimited, dated April 11, 2006 submitted by Jared A. Teutsch for Mr. Paul A. Doscher attached hereto and referred to as Attachment #4.**

On behalf of New Hampshire Lakes Association, which represents over fifteen thousand (15,000) lake enthusiasts, we support this bill as written. Certainly we were a member at the table that supported this bill. We were there with PSNH, with DES, with Audubon, with Forest Society and many others that felt that the compromised approach was the best way to go. And I'll be very brief.

But what I do want to include is, I did highlight it for you in that Section and what it basically says is, "All surface water bodies in the State of New Hampshire are considered impaired." and that's over five thousand plus. That includes lakes and ponds, streams and rivers, all surface water bodies are considered impaired with mercury.

One other thing that I think this bill does very well is the removal of sulfur dioxide. And included in this report, and I don't have the report with me, but I can certainly provide the Committee a copy of the report. It's about one hundred and fourteen (114) pages long and includes all the public waters that are in there. There are waters that are impaired by just PH and obviously sulfur dioxide adds to acid rain deposition, which only adds to the problems with our public water, especially those that are teetering on the brink of acidity. So I do urge you to "ought to pass" this bill as written, and I'd be happy to take any questions.

Senator Bob Odell, D. 8: Thank you very much for your comments, and the letter and the background information. Any questions? Seeing none, thank you very much. I'll call on Joel Harrington, New Hampshire Audubon.

Mr. Joel M. Harrington, Vice President of Policy, Audubon Society of New Hampshire: Mr. Chairman, I have copies of my testimony.

Senator Bob Odell, D. 8: Okay. Good afternoon.

Mr. Harrington: Good afternoon Mr. Chairman and members of the Committee. My name is Joel Harrington. For the record, I'm Vice President of Policy for New Hampshire Audubon Society. As the states oldest New Hampshire based non-profit wildlife organization whose members and supporters include anglers, hunters, birdwatchers, and outdoor enthusiasts, we strongly support House Bill 1673, as written. For ninety-two years we have compiled some of the most extensive data relative to the health of our state's wildlife, including data that contributed to what we know today about levels of mercury in some of

New Hampshire's threatened and endangered species. Over the years, Audubon has helped draft the state's Endangered Species Act, the Clean Power Act of 2001, and now we've helped the legislature in drafting the legislation that stands before you.

I'd really like to thank the House Science, Technology and Energy Committee. And I would also like to thank the Senate for last year, for really setting the stage for this bill. If it wasn't for the Senate last year, I honestly believe we would not be here today. It really was the framework for why we are here. This has been a bill that's been two years in creation. It has been embedded through numerous experts, the Public Utilities Commission, the Department of Environmental Services, many environmental groups, experts across the region. This has been embedded for a long, long time. The time is now. We just waited too long. And to study this bill for another year has no benefit at all to the health of this state, and to the children and parents and wildlife that really depend on our state to clean up (inaudible).

I'd like to also thank Carl Johnson for sponsoring last year's legislation and also being willing to be co-sponsor to this year's legislation. I think that's a very important observation to be made for his support on this legislation. It represents a hard compromise that will result in significant reductions in mercury and sulfur emissions. For years we've been debating about how best to reduce harmful pollutants in New Hampshire's environment. This year may be our chance with the broad support enlisted on this legislation from both political parties and chambers of the General Court. From the state's two largest angling organizations, from the state's lakes' associations, wildlife organizations, the business organizations, the utility and the state's two conservation resource protection agencies. Ideally Mr. Chairman, no pollution is great for New Hampshire. And if we could feasibly and realistically get to that, I'd be one hundred percent behind it. But we have to be realistic about our approach and some may say ninety percent, some may say eighty-five percent, but we have to be ... we want to support a bill that is achievable and still be part of something and not be a part of something that just sounds good, but is not feasible.

In January, when the Governor made his state-of-the-state address and announced that he would like to see, this year, the legislature pass mercury reductions, there was a standing ovation by all members of the General Court. It was a clear sign, a clear indication of where we're headed in this state on this ... these two major pollutants, mercury and sulfur. This bill has been four months, this particular bill that you have before you, is four months in the making; three days a week, every week. I had no summer vacation and I don't think any stakeholder that was involved in this had a summer. We worked hard on this. And we sent

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graphs out to multiple parties, and it's not discount station groups, its businesses that are going to be affected heavily by a potential rate increase if there's any risk sharing in this. This is a bill that has the interest and respect of all members of the community.

I want to talk about the percentages. We have to be reminded in this bill, and I'm kind of jumping all over the place and going through it as my thoughts come to, but we have to be reminded that in this bill, to deal with the percentage we felt that there's an unknown as to where this ... what scrubber technology will achieve at Merrimack Station. There are a lot of reasons for that. The PSNH Bow Plant has something called a Cyclone Boiler. It is about ... I'm guesstimating maybe two or three in the country, maybe even less than that, which poses significant issues for this type of technology. And so the percentage that a lot of engineers from their company and that we talked to throughout the region, we think that it will achieve somewhere between eighty and ninety. So the low end number was put in here. However, after 2013, after a consistent rate above eighty percent has been achieved, that rate will be quote, "locked in," as the new compliance rate. It could be eighty-five percent, it could be ninety percent, in fact it may be, I don't, you know, think it will get to be above ninety percent, but it could be ninety-five percent. I mean who knows. But that lock in provision, I think it's a real critical point in this bill and it covers that higher percentage. This bill is more stringent than the federal rule. With all due respect to Representative Phinzy, he's saying EPA, but if you recall the EPA count out of their mercury for the last year got a seventy-five percent reduction by 2018. So I don't see how EPA's rule in any way is a model for what we should be doing here in New Hampshire.

I want to talk ... I'll also go on to the time line. And the time line here, someone said, well, let's look to other states. Other states have done, have an earlier time line so why don't we? Well, I'd like to direct you to my last page of testimony. What I've done is a state-by-state comparison of the six mercury laws in the nation. There's only six. And the point here is to look at caveat in each of these pieces of legislation. Let's take the first two, for example on the last page.

Connecticut - they wanted ninety percent, they have a ninety percent reduction by July 2008. It however, the caveat to that is that if we cannot meet the reduction, then the DEP can establish alternative emissions limits by twenty ten (2010). It's in their discretion now if the utility cannot meet it, then they just put an alternative emissions limit on that for compliance; sixteen seventy three (1673) doesn't have that.

Massachusetts - Everybody talks about Massachusetts. Massachusetts has an eighty-five percent reduction by '08 and a ninety-five percent

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reduction by 2012. The caveat: the law applies to eight coal-fired boiler units. I talked to the folks in Massachusetts yesterday. Four of these units were already meeting the eighty-five percent before the law was even put into place. And how are they doing it? They are utilizing carbon injection. Well we tried that last year, last year at Merrimack Station and we got less than a twenty percent reduction.

The fifth coal-fired unit, it uses early and off-site reductions. Well we don't have that here. And the sixth through eighth units, which is the infamous Brayton Point Plant has numerous existing controls already in place, a multipronged effort. But the thing is, before that state law was passed, and I don't want to go too long on this, there was years and years of testing, base-line measurements. There's actually a DOE study. There's sampling that took place; we are starting right from the beginning on that under this law.

So I just wanted to point that out and I don't think you have to, the devil is in the details on other states, and we don't have the devil in our details.

Finally, why is sulfur so important to this bill? Well sulfur binds, mercury binds with sulfur. And that's why it's important. It makes it actually a little bit more toxic when it binds. Sulfur is a major contributor to the regional haze, the respiratory illnesses in this state, and if you opened your paper last week, New Hampshire ranked number one in the nation for asthma. And I hear there may be some caveats even to that report. But we definitely rank amongst the highest in the nation for asthma rates. Sulfur causes particulate matter which is the cause to the respiratory illnesses, and nearly every week in the summer I get through my fax machine the air quality report saying, "Poor quality air days in New Hampshire." And that is one of the reasons why we have poor quality areas.

PSNH has built a plant and fortunately they don't like to hear the statistics, ranks thirty-seventh in the country ... out of eleven hundred coal power plants for sulfur emissions. So not by ... by reducing sulfur at PSNH's plant, we are not only reducing a major state source, but we would be reducing a major national source of sulfur emissions. What we finally ... what we need to do is we cannot sit idly and wait for a national solution to an ever growing ecological and health problem. We have a long and we have a successful history of making environmental progress through modest incremental gains. HB 1673 is the next logical step to our future in the air. Members of the Committee, let's not let the perfect become the enemy of the good. Thank you very much.

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**Please see prepared testimony of Joel M. Harrington, J.D., Vice President of Policy, Audubon Society of New Hampshire, dated April 11, 2006. Also see "Mercury and Sulfur Emissions Reduction Bill, HB 1673, Frequently Asked Questions, Mercury and Sulfur Emission Reductions, List of Supporters and Contacts, News Article - Concord Monitor, and NH Sentinel Source.com, The Keene Sentinel, "Mercury 2013," and Mercury and sulfur Emission Reductions, State-by-State Comparison - What Do These Laws Really Say? Attached hereto and referred to as Attachment #5.**

Senator Bob Odell, D. 8: Thank you very much for your testimony. Questions? Thank you for the efforts you made in this. I'll call on Mr. Harry Vogel from the Loon Preservation Committee.

Mr. Harry Vogel, Loon Preservation Committee: Good afternoon Mr. Chairman, members of the Committee.

Senator Bob Odell, D. 8: Good afternoon.

Mr. Vogel: Thank you for the opportunity. For the record my name is Harry Vogel. I'm the Executive Director of the Loon Preservation Committee for the Audubon Society of New Hampshire, but I'm a biologist by training and I'd like to talk, very briefly about the effects of mercury on loons and wildlife in New Hampshire.

Over the past twelve years the Loon Preservation Committee, the BioDiversity Research Institute and other members of the Northeast Loon Study Working Group have carried out research to assess the threat that mercury poses to loons and other wildlife in New Hampshire. And that research has turned up the following findings: of one hundred and ninety-seven (197) loon eggs tested in New Hampshire, fifty-two percent (52%) of those have mercury concentrations over .5 parts per million (ppm), which is a level high enough to potentially affect reproductive success in birds. And the highest mercury loading of any loon egg, collected anywhere in the United States was right here in New Hampshire, and that was an egg with 3.9 ppm of mercury in it. And that is three times the lethal limit that has been established in other states.

We've also found that other loons captured in New Hampshire have among the highest concentrations of mercury in loons found anywhere in the United States. Out of one hundred and thirty-five adult loons sampled in New Hampshire, eighteen percent were found to have blood mercury levels about 3 ppm which is the established risk threshold for adult loons. And adults with more than 3 ppm of mercury fledged forty percent fewer young than adults with less than 3 ppm.

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Individual loons captured on successive years in other states have constant mercury levels over time, but individual loons captured during successive years in New Hampshire show an average nine point six percent yearly increase in mercury in their blood. So they are accumulating mercury faster than they could rid themselves of it.

Mercury is known to be a potent neurotoxin that affects animal behavior, among other things, and results of our studies and other studies in New Hampshire and in Maine has shown the loons of higher mercury levels have abnormal behaviors that affect their abilities to defend a territory and to raise young.

Mercury can be transported over long distances in the atmosphere, but the majority of mercury deposition in southern New Hampshire is thought to be from local or regional emission sources. And so all of these things together, the concentrations of mercury in loon eggs and in adults, the accumulation of mercury in individual loons over time, and the effects of these mercury levels on breeding, suggest that current levels of mercury emissions are high enough to pose a threat to loons and other wildlife in New Hampshire. And therefore, reduction in mercury from those local sources would reduce the amount of mercury in New Hampshire's environment, something that would benefit loons and other wildlife, and also people. And for those reasons, LPC strongly supports any initiative to reduce mercury emissions from point sources in New Hampshire.

Senator Bob Odell, D. 8: Thank you for your testimony. Any questions? Senator Letourneau.

Senator Robert J. Letourneau, D. 19: Just one. The loons are migratory birds aren't they?

Mr. Vogel: Yes they are.

Senator Robert J. Letourneau, D. 19: Is there any evidence that they're getting a lot of this from other places?

Mr. Vogel: Yes. In fact there is some evidence. Loons are ... have the advantage of having both feathers and blood. In these feathers, the feathers that we're taking from these birds; when we capture them we'll typically take two feathers. One secondary feather from each wing and we'll test those for mercury. And the mercury content of those feathers is more of an expression of long-term mercury exposure and the mercury that was in the oceans. Because at the time these feathers were formed, they were actually over wintering on the oceans. And the mercury that we find in those feathers is much vulgar than the mercury in the blood,

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which we take as an expression of the mercury that's been gathered more recently on the breeding grounds. So by having those two samples to compare, we can really say with a fair degree of confidence that most of the mercury that is coming from these loons is actually coming from fresh water lakes that they're on in the summer time.

Senator Robert J. Letourneau, D. 19:      Where are these birds being captured and tested?

Mr. Vogel:      We capture and test loons from all over New Hampshire. Typically ...

Senator Robert J. Letourneau, D. 19:      Of the typical birds you're talking about.

Mr. Vogel:      Yes. Well, a lot of our loons have been captured from Lake Umbagog, which is in the northern part of the state, but a lot of them have also been captured from the southeastern corner, which has been identified by EPA Atmospheric Deposition Models, as areas where we would expect high mercury depositions. And what we've been able to do, actually the Loon Preservation Committee and the BioDiversity Research Institute, by going out and capturing these loons and sampling the blood, have been able to ground troop that study and validate the results of that study.

Senator Robert J. Letourneau, D. 19:      Just talking about the hot spots in New Hampshire, and the plants that we're talking about here are down wind and generally in the southern part and to the east part of the state. Would you venture to guess that a lot of this mercury is coming airborne from the west?

Mr. Vogel:      Yes. I think prevailing winds, you know, definitely show that there's an effect. There are two things that I could ... I do have a couple of reports with me. One is our "Meeting with the Challenge," which is a thirty year report and on page 13 of that report we actually have a map showing the highest concentrations, and you can clearly see as well that some of the point sources are showing on that and you can see where they'll ... the effect of that plume goes. The other report that I'd like to submit is the "Mercury Connections Report." And in that report there are three different forms of mercury: elementary reactive gaseous mercury and particulate mercury and the transport distances are given from those. And for the last two, the reactive gaseous and the particulate mercury transport distances are estimated from zero to thirty-three, three hundred kilometers and from zero to five hundred kilometers, respectively. So, that certainly suggests that a lot of this

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mercury that we're finding in these biological hot spots is coming from the over sources.

**Please see prepared testimony of Harry Vogel, Executive Director, Loon Preservation Committee of the Audubon Society of New Hampshire. Also, "Meeting the Challenge," and "Mercury Connections," reports attached hereto and referred to as Attachments #6, #7, and #8, respectively.**

Senator Robert J. Letourneau, D. 19: Just one last question. Are you pursuing federal legislation at all to try and get these plants cleaned up from the west of us? Because New Hampshire is contributing its part and it's spending a lot of money and paying high electric rates because of it and we're willing to do that, but we're still going to see this contamination coming over even after we do all this.

Mr. Vogel: Yes. Well, I'm a simple biologist, sir, and so I'm not pursuing any legislation in other parts. But certainly the work that the Loon Preservation Committee and other folks have done clearly shows a link between these local sources and these pollutants in these hot spots. So that to me suggests that if we clean up these local sources, these hot spots will over time dissipate, and in fact we are beginning to see, we have seen some evidence that loons downwind of some of these point sources, once these point sources have been either checked out or the mercury's reduced, we've seen a fairly quick reduction in the amount of mercury in loon blood in some cases as well, which is very encouraging.

Senator Robert J. Letourneau, D. 19: Thank you.

Mr. Vogel: You're welcome.

Senator Bob Odell, D. 8: Thank you very much for being here today.

Mr. Vogel: You're welcome.

Senator Bob Odell, D. 8: And I'll call on Donna Gamache, Public Service of New Hampshire.

Donna Gamache, Public Service of New Hampshire: If I may, I have Terry Large with me. He's with PSNH ...

Senator Bob Odell, D. 8: Sure.

Ms. Gamache: To potentially answer any technical questions.

Senator Bob Odell, D. 8: Good afternoon.

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Mr. Terry Large, Public Service of New Hampshire: Thank you.

Ms. Gamache: Senator, thank you. I am Donna Gamache representing PSNH and Terry Large with PSNH as well. When you first started the hearing you asked that our testimony be kept to what nobody else had said, so I'm trying to find something to say. So, what I thought I would do is make it very brief and hopefully Terry will add a few comments, and then just leave it open for questions. But the one thing that nobody else brought to your attention was that when we started to sit down as a group, and it was a large extended group, trying to find a solution to removing mercury from the environment, we had to do a couple of things. And that was lay the ground work for how we were going to move forward. The first was that we had to recognize that we're all New Hampshire residents and we're solidly invested in the well being of the State of New Hampshire, environmentally, as well as New Hampshire's health.

We also knew that what we had heard in the discussion on SB 128, that there were certain things that diverse interests in the community did not want. They wanted, for one example, no trading of mercury for compliance. They wanted no mitigation in order to meet the limits. That, you know, all the reductions would take place at the stack. We also knew that they wanted as **much** reductions as possible and as **soon** as possible. We feel that HB 1673 really addresses all of those needs in a very good way. So therefore we do support HB 1673 in its current form. We feel this language is realistic in terms of our ability to meet requirements, it's flexible in the way it aims to keep customers' costs lower, and it's significant in terms of setting emissions reductions limits at what the technology actually achieves on a sustained basis.

But the other point that I wanted to raise was that HB 1673 is really Phase II of the Clean Power Act. And, if you go back and take a look at the principles in the Clean Power Act, it really was meant to be a multi-pollutant approach. And the reason for that was they recognized that there would be, it would be beneficial to customers to try to find technology that could get more than one pollutant reduced and it would also be very beneficial to customers, in terms of costs. And we are very supportive of the final piece of legislation because we feel that it's in keeping with principles, yet up to date with what the needs are of today.

Senator Bob Odell, D. 8: Thank you.

Mr. Terry Large, Public Service of New Hampshire: Thank you Mr. Chairman, members of the Committee. I'm just sitting here and have three bullets that maybe will try to summarize what we see in trying to

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(inaudible) this bill. This bill as written, produces the maximum amount of mercury reductions for the most reasonable cost. This bill brings about reductions in mercury as soon as next year, and for years into the future, culminating with the installation of the scrubber technology that not only gets mercury, but SO<sub>2</sub> sulfur dioxide as you've heard. This bill's going to advance the science of mercury removal. We spoke about the DOE grant. Work that with which is already under way and would be implemented this coming and next year and the years into the future so that the science and the technology and the understanding about how to get mercury out of the power plant stacks will be advanced, so that maybe our friends to the west can learn and will follow our lead and reduce emissions of mercury into this state, no matter how much or how little it is. We reduce (inaudible) written services the best interests of the environment of the State of New Hampshire and customers of Public Service Company of New Hampshire. We urge you to vote it "ought to pass."

Senator Bob Odell, D. 8: Thank you very much. Thanks to both of you. Senator Burling.

Senator Peter H. Burling, D. 5: I wanted to ask two questions. What you heard because you were both here through the course of the preceding, two people speak about their view of the relationship between the State and PSNH as a result of this bill. Representative Phinizy talked about this is a five year contract; once you do this nothing ever changes. Is that your view of what we're doing here? Is this a kind of last telephone call between the State and PSNH before we get to 2013?

Ms. Gamache: I'll let Terry follow up to me if he wants to give something more technical. Absolutely not, PSNH has, you don't have to take my word for it, we have history. You can see it out there. We have a history of working with the state continually. We have a very good relationship with DES, we work with them continuously. We work with you, the legislature continuously, and we supported fully the amendment that the Committee, Science and Technology and Energy Committee added to the bill, which required a yearly review by the Electricity Restructuring Oversight Committee beginning one year from its limitation of the law. We fully support it. We have been, PSNH has been, we're just a little over an eighty year old company. We've always been in New Hampshire, we expect to continue to be and we have no reason to walk away at any time.

Senator Peter H. Burling, D. 5: And, if I may, a follow up?

Senator Bob Odell, D. 8: Yes.

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Senator Peter H. Burling, D. 5: Referring to Senator Hassan, I think you could call it a credo, she expressed her belief in the things that your company was prepared to do. But I'd like to hear from you, for the record of this Committee if there are improvements you can make in a faster time frame, if there are reductions you can make sooner. If there are things you can do to get mercury out of our air quicker, will you do them?

Ms. Gamache: Absolutely.

Mr. Large: Absolutely, Senator. This bill incents that behavior and we've demonstrated with the (inaudible) type legislation in the past associated with NO<sub>x</sub> removal and other technologies that we will use as promptly as we possibly can to get scrubbers in service.

Senator Bob Odell, D. 8: Thank you. Any other questions? If not, thank you very much. Oh, sorry.

Senator Robert J. Letourneau, D. 19: So, just a follow up with Senator Burling's question. This is a realistic time frame?

Mr. Large: Yes it is.

Senator Robert J. Letourneau, D. 19: For this bill?

Mr. Large: For this legislation it is, yes.

Senator Robert J. Letourneau, D. 19: But if there's a possibility that you could move it up, you would?

Mr. Large: We will begin with the passage of this legislation and follow the steps to engineer, design, permit, finance, and construct this as we can.

Ms. Gamache: If I could just add as a response to your question, and I can't quite remember where it is in the bill, but there is a provision in this language that within the first year we have to have a certain amount of permitting already in the process, and we've committed to doing so, so we will get started immediately.

Senator Robert J. Letourneau, D. 19: We had a Representative, just a follow up, sorry sir ... Representative come in and say that he's been an engineer on many jobs that are much larger construction jobs and that they were able to do so in a shorter time span. What takes so many years to do this? So the Committee understands.

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Mr. Large: I would start by saying that there's a balance between time and money. Things can be done faster at substantially higher cost. If you've had familiarity with the Merrimack Station facility, the site, this is a monumental project in terms of that site. There will be multiple cranes. There will be lots of construction activity. They will remove essentially all of the remaining property that sits aside the existing boilers today, along side all the other pollution control equipment that's been added in the last ten years. Two hundred and fifty million dollars is an awful lot of money in PSNH's view. So, if more money were to be spent, could it be done more promptly? Possibly, but to be done well so that the plant can be operated and the maximum benefit from this technology can be derived, it would be best to take a prudent and low fall out approach, as opposed to trying to throw more money or throw more people and solve the issue. Doing it in an organized well thought out and planning for the long-term operation of this unit is the right way to go for everyone involved we believe.

Senator Robert J. Letourneau, D. 19: And just one last question. What is the overall cost of the rate payers on this?

Ms. Gamache: I ... Bob Scott from DES has some charts that he was going to pass out.

Senator Robert J. Letourneau, D. 19: Oh, that's going to be further testimony later on? That ... I can hold off on that.

Ms. Gamache: Okay.

Senator Robert J. Letourneau, D. 19: Thank you.

Senator Bob Odell, D. 8: Any other questions? If not, thank you both for being here. Appreciate your testimony.

Senator Peter H. Burling, D. 5: Mr. Chairman, I have a brief, I'm supposed to be in two places at once and it's across the street. I'll be right back.

Senator Bob Odell, D. 8: All right.

Senator Peter H. Burling, D. 5: I assume we have quite a few people left to do at this point.

Senator Bob Odell, D. 8: We are half way down the first sheet.

Senator Peter H. Burling, D. 5: Excellent.

Senator Bob Odell, D. 8: When we get to a point where we have some that aren't speaking then ... so we've got ...

Senator Peter H. Burling, D. 5: I don't want to miss out on a single thing. I'll be back.

Senator Bob Odell, D. 8: How long do you think Senator Burling you'll be gone? (Laughter).

Senator Peter H. Burling, D. 5: Literally five minutes. I'll be right back

Senator Bob Odell, D. 8: All right. Then I'm going to call on Sally Davis, League of Women Voters New Hampshire. Good afternoon.

Sally Davis, League of Women Voters New Hampshire: Good afternoon. As you'll see at the end, I signed Jane Armstrong's signature with my initials after it because she couldn't get to my house to sign.

My name is Sally Davis. I am a past President of League of Women Voters and follow legislation here in Concord fairly frequently. I've been a member of the League of Women Voters since 1966 in several states and was a part of the original study on air quality back in the '70's, and feel pretty (inaudible) with what we have studied and worked on through the years. So this is to the New Hampshire Senate Energy and Economic Development Committee regarding HB 1673.

**Please see prepared testimony of Jane Armstrong, President, League of Women Voters of New Hampshire, dated April 11, 2006, submitted and read to Committee by Sally Davis attached hereto and referred to as Attachment #9.**


Senator Bob Odell, D. 8: Thank you Ms. Davis. Any questions? Seeing none, thank you very much. And I'll call on Bob Scott, Department of Environmental Services.

Mr. Bob Scott, Air Resources Division, Department of Environmental Services: Mr. Chairman.

Senator Bob Odell, D. 8: Good afternoon Mr. Scott.

Mr. Scott: Good afternoon. I will attempt to be brief. Obviously the main points have already been raised and I do not like to be repetitious. First of all, I'll hand out our testimony letter and also, if it helps the Committee, a really, a one pager kind of outlining the major points of the bill.

**Please see prepared testimony of Mr. Michael P. Nolin, Commissioner, the Department of Environmental Services, submitted by Mr. Bob Scott and also an "Overview of HB 1673," attached hereto and referred to as Attachment #10.**



Well, at least for me that works better. And finally, since it came up in recent conversation, potential financial impacts to the ratepayers. Much of what I was going to say again has been covered, so I'll try not to be repetitious. I do want to make the point that this is not a new thing for DES; we've been working on this for well over two years. We originally ... we had the Clean Power Act which required the DES to make a recommendation to the legislature, which we did two years ago, and we've been working on this issue every since. And why I say that is I want to ... it's been said that this bill certainly is a compromise, we've vented this issue through many, many resources. I'm very fortunate to have some very good engineers and scientists at the Department, and frankly I have available to me through other venues, other state agencies from other states, so we would avail ourselves to their knowledge also.

So having said that perhaps I could address more directly some of the concerns raised, so at least you know as we debated this issue and came ... this ... what you see in the bill, how we got there, perhaps that would help you a little bit. On the time frame, can it be done sooner? I want to point out, and PSNH alluded to it, but I want to drive it home a little bit more, that plant as it is, Merrimack II, which again the control to be required from Merrimack I and II. But Merrimack II, the largest plant was built in 1968. It now has two ESP's on it which are Electrostatic Precipitators for DL control and its NOx controls. In order to add yet another layer of control, what we're talking about if you've been to the plant, is putting a brand new stack in, reinforcing the boiler, redesigning certain parts, moving the control equipment; we're not talking just about taking this box here and adding this box. We're talking very major installation changes to the facility, perhaps even depending on the water discharge if there's an issue there of maybe even a cooling tower. These are all very significant. So I'm not here to say that you won't see something before 2013, what I do want to make sure is that this is not an easy thing for the existing plant. In many ways it's easier with a new plant than an existing plant.

And having said that, I have a lot of faith in PSNH and frankly I hope to see something installed sooner. In discussing this bill we planned incentives to give PSNH a reason to do it as soon as possible. It works out financially best for them the sooner they do this. I think that's an important point.

Percentage, we heard some people talk about ... they said the eighty percent and again I'll caveat, the eighty percent is not at that particular plant. The eighty percent is at, of all their coal units, there is three at Schiller also on the seacoast. Those controls they put on Merrimack need to meet the eighty percent for all of that, where I believe that we'll see a higher rate most likely. Can I guarantee you'll see a higher rate? Absolutely not. Again, this is a unique plant. So with that in mind, again we built in incentives to make the company want to do the best they can to get the highest rates possible. And again as it's been mentioned, once the scrubber technology is installed, and I will say scrubber technology is not something you dial up and dial down it's ... you get your reductions. There may be some minor tweaks that can be made to optimize it. For the most part, once that's installed and that is the best technology available today, once that's installed we will get what we get out of it to make it very simple. What we put in the bill is, "Gee, if we get ninety-two point seven percent" or whatever it is, we can lock that in and so we don't need anything on the table environmentally. But we've also provided again, economic incentives to provide the company a reason to try to do the best that they can.

It's also been raised, why are we being prescriptive? Why are we in this regular ... in this law to PSNH to put in a scrubber? And I have to take some personal responsibility for that; I advocated for that myself. Why would I do that? Everybody, including myself I think agrees that we want to see mercury reductions, a high level of mercury reductions sooner than later. We know today that the installation of scrubbers which have a wonderful benefit of SO<sub>2</sub> reductions, also reduce mercury at a high percentage. That is today the best technology, especially taking in to account the multi-pollutant benefits that we know of. What we wanted to avoid is extra time being given, another year, two years of a selection process, what's the best technology, the owner's having to go to PUC to convince them that this is the best technology, and then perhaps having some other company come in and say, "Well, I had this new alchemy and I can do something even better." That's all fine and dandy, but what we're concerned about is we don't want to have this as a method where we're constantly delaying the installation. By calling out scrubber technology in the bill, we're signaling PSNH from the word go to start to engineer, design and build scrubber technology right away. The bill has in it, within one year of passage of the bill, they are required to have all their applications in to us, which means there's a lot of engineering work they have to do. This is starting ... this is in the ground writing for the plan, and this is why we did that.

Costs to the ratepayer, again this needs to be looked at in the context of the existing New Hampshire law which puts a fairly stringent requirement on the utility for SO<sub>2</sub>, again by having to buy SO<sub>2</sub> credits.

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This is the same law under 125:0 that is being amended should this bill pass. What this does is because of that existing requirement, again it's been mentioned PSNH and again I'll mention it, 2007, when that kicks in, they are required to buy, since they won't have the scrubber's installed yet, roughly over twenty million dollars worth of SO<sub>2</sub> credits to comply with our state law, not the federal law. With that in place, that makes installation of scrubbers very economical such that as you look at the chart, ultimately it ends up being a cost savings to the ratepayer because the facility no longer has to buy as many of these credits to meet the current state law.

**Please see "Mercury Compliance Cost - Annual Rate Impacts," submitted by Mr. Bob Scott, Air Resources Division, Department of Environmental Services, attached hereto and referred to as Attachment #11.**

And finally Senator Letourneau is not here, so I won't go on to much. Yes the state is very involved in legal action regarding mercury from other places and cleaner mercury rule as many of you know that we're suing the federal government, frankly over, so that that is our attempt to make sure, not only are we doing the right thing in the state, but to make sure we are not receiving mercury, unnecessarily from outside.

And as a final note I will add this is a problem, again for Senator Letourneau who is not here, the "hot spot" issue. Yes we're getting mercury pollution from outside sources, very definitely. But we're also because of the NO<sub>x</sub> technology that would be required beyond these units; it had the impact of oxidizing the mercury that does come out of the stack. Because of that, that exacerbates the local problem. And as I said before, I call out that no good deed goes unpunished. PSNH was doing the right thing to do that, but now we've had ... they have unintended consequences. This is a way to fix that consequence also. With that I'll gladly take any questions.

Senator Bob Odell, D. 8: Questions for Bob Scott? You are the top air quality person in the State of New Hampshire in the state government.

Mr. Scott: I was a director there for Resource Community Health. (Laughter).

Senator Bob Odell, D. 8: I've heard some ... we've had some comments made today that we're falling behind the state, other states and we're not up to quality and I, and yet from the consensus statements people have made, in particularly the chart that Mr. Harrington gave, I would think that this is, we're the seventh state in the country to do this, that this is

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pretty progressive. I mean this is stepping up and building a consensus that hopefully will get a strong vote here in the Senate?

Mr. Scott: I argue that characterization. And I, and again I'll remind everybody that we'll look at what other states are doing and it's so progressive, they're requiring, for the most part, the installation of scrubbers. That's what we're requiring.

Senator Bob Odell, D. 8: Thank you very much. Appreciate it.

Mr. Scott: Thank you.

Senator Bob Odell, D. 8: Appreciate your efforts.

Mr. Scott: In final, I do want to say how pleased I am to be able to talk on this bill.

Senator Bob Odell, D. 8: Good. Thank you.

Mr. Scott: Thank you.

Senator Bob Odell, D. 8: I'll call on Catherine Corkery from New Hampshire Sierra Club.

Ms. Catherine Corkery, New Hampshire Sierra Club: Sir, if I could switch places with Georgia Murray from AMC?

Senator Bob Odell, D. 8: Okay.

Ms. Corkery: She's got a lot further ride home than I do. (Laughter).

Senator Bob Odell, D. 8: All right. So then do you want to speak after?

Ms. Corkery: Or wherever she was, or whatever you'd prefer.

Senator Bob Odell, D. 8: All right. Consider yourself switched.

Ms. Corkery: Thank you. I appreciate that.

Ms. Georgia Murray, Appalachian Mountain Club (AMC): Okay, I have a handout. For the record, I'm Georgia Murray. I'm the Appalachian Mountain Club's Air Qualities Staff Scientist and I appreciate this opportunity to speak here at this hearing.

**Please see prepared testimony of Ms. Georgia Murray, AMC Staff Scientist, attached hereto and referred to as Attachment #12.**

The AMC recognizes the long hours and hard work put into the development of this bill, HB 1673. We appreciate the ultimate goal, a scrubber on Merrimack's Station that will reduce both mercury and sulfur dioxide emissions. We really like some of the things that Bob Scott just spoke about that again, reduces mercury and SO<sub>2</sub>, that does not allow the sale of mercury credits as mercury credits and that it locks in that mercury reduction level obtained by the scrubber. We think these are all good pieces to this bill.

However, we're here to ask you to consider whether this bill is as good as it gets. Or does it short change New Hampshire ratepayers and the environment. And we urge you not to let this opportunity pass to make this process worth while to insure that for all the work that was put in that we got the best package that we could possibly get out of this process.

You know, I expected to hear that this bill, as is, does not need to be fixed and provide certainty for success. AMC believes the bar is set too low though in this bill and believes with incremental improvements, at the end of the day we can all say we did our best if we just improve it slightly. So I'm here today to ask you to improve HB 1673 while retaining workable economic incentives and flexibility for compliance.

I ask if moving the time line by one year as I propose, and I have a one pager as well on those changes, would make for a catastrophic uncertainty and not weigh to success. We know that it would, with certainty, save the ratepayer around twenty-six million dollars a year. The earlier this goes in, that's an annual savings of about twenty-six million dollars through that avoided SO<sub>2</sub> allowance cost need. Many organizations in the state do believe that this kind of retrofit can be done faster than is currently proposed, and a host of other states, I do think, believe that it can be done faster as well. And furthermore, AMC and its members would do what's within our power to expedite the public permit process for Merrimack Station. Certainly that is one area that PSNH identified as something that could be helped along is that public permit access. And we would help the process to expedite that.

I also ... as for increasing the target of eighty percent reduction to eighty-five percent lead to failure? Again, there's been a report out by EPA that says that ninety percent mercury reduction is achievable, especially with the type of control technology configuration that we're talking about at Merrimack Station. The fact that it has an ESP at ... the fact that it has

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an SCR, like Bob Scott said, in fact it does, the SCR, the NO<sub>x</sub> rule does lead to a more oxidized form of mercury; well that actually helps the scrubber. The scrubber likes ... can actually be more efficient if what's coming through it is a more oxidized form.

You know, I do have to make one clarification related to this eighty percent reduction, and Joel Harrington mentioned that there's ... the devil is in the details of these other state bills. I ask you to look how this eighty percent is calculated. The way this bill is structured it's an eighty percent reduction from the coal input numbers going into this plant. If they did nothing today, they're half way there. They could do nothing and because of ESP that's already there. And I think that that's actually a good thing to reward PSNH for the hard work that they've already done with the ESP that they have installed and the other controlled technologies that they have in place, they should be rewarded for those efforts that they've done in the past. If no scrubber went on today, they'd be half way to the eight percent because it's based on a coal input number. It's not based on ... the early mercury credit reduction component is based on reduction at the stack. But when we're talking about eighty percent we're talking about looking at coal input numbers and then an eighty percent reduction from that. That means what they're getting currently with the ESP already counts towards that eighty percent.

The AMC proposal retains the flexibility of early mercury reduction banking which the source can then use towards meeting the eighty-five percent that we propose. So we're not saying, you know, we agree that they need some flexibility, they need to be able to use banking to potentially meet that to provide them some more certainty. The AMC proposal looks to offset the cost of the wet scrubber through a simple expansion of the current incentives under the existing RSA 125:0 passed by this Senate. We agree with others that we need economic incentives to make this bill work, to bring Merrimack Station into compliance with the sulfur reduction goals of the 2001 New Hampshire Clean Power Act. However, we're very concerned that the current incentives set a very poor precedent. If other states adopted any flavor of what is proposed in HB 1673 related to the incentives, which is exchanging unrelated pollution credits, New Hampshire would suffer because we are downwind of many sources. So even if a state were to do that within that state's boundaries, not even participate in the federal market, if they decided to do this trading of different credits we would suffer from that because we are downwind of a lot of upwind pollution sources.

In addition, the approach amounts to a problematic creative accounting for the years when PSNH has met its federal cap allotment through existing incentives. Currently their existing incentives on the books, as

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soon as that scrubber goes in they are going to get some mercury, excuse me, some SO<sub>2</sub> credits for that reduction which is currently on the books. That's great. But they're limited by the federal cap up to twenty thousand. That's as much as they can get in one year. What they've done is basically an inappropriate way to accumulate this credit currency during these years they've maxed out and just calling it another name. They're calling it a mercury credit because they can't call it a SO<sub>2</sub> credit in that year. Okay? Furthermore, the mercury to sulfur transfer significantly undermines the current state sulfur cap weakening state law. I would agree with one of the previous speakers. Instead of this path of weakening and poor precedent, we offer a simple extension of current incentives. Okay? Which reward on-site sulfur reductions with sulfur credits. Okay? The current on the books incentives work towards when that scrubber goes in and they get major reductions than they're going to get some sulfur credits for that on-site activity. Because, you know, they could choose with the new sulfur cap of seventy-two hundred to just buy their way, if that was economically feasible, down to that cap level; or they can choose to control what the previous Clean Power Act did which was to try to incentivize that on-site reduction, which is a good thing. Let's expand that, it's going to work.

AMC recognizes that PSNH has stepped up to try mercury control technology before the compliance date by obtaining Department of Energy funding, and we urge you to maintain the level of mercury captured achieved through this technology until the scrubber is installed.

I've also included some handouts within my package. It's basically the one pager and two handouts I'd like to go over with you briefly.

**Please see handouts submitted by Ms. Georgia Murray, AMC Staff Scientist, "Proposed Changes to HB 1673," "PSNH Merrimack Station," and "Estimated Annual SO<sub>2</sub> Allowances Needed by PSNH," attached hereto and referred to as Attachment #13.**

I tried to estimate the cost to ratepayers from the capital costs of this scrubber going in, using the capital costs numbers provided in HB 1673, and then adjusting that capital cost, total monthly cost to average ratepayers down after accounting for the annual allowance savings due to the scrubber installation. What we're talking about is that twenty-six million dollars a year. As soon as that scrubber goes in, that's the savings. So you're adjusting down from about four dollars a month cost to ratepayers due to compliance to a dollar forty-four. Then, if you include the actual on the books bonus allowances, we're down to sixty-seven cents a month, on average, to ratepayers. And that's spread out over a ten year window. If you look at the incentive currently in HB

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1673, this mercury to SO<sub>2</sub> incentive you could get back down a little further to forty-two cents. Now we're only going to cost forty-two cents a month for the ratepayer for compliance with this program.

My program looks to replace that value. It looks to expand those incentives; it also looks to incentivize earlier installation of that scrubber, and it's an equivalent level by incentivizing that. So the second piece is the graph. This is really a great way to see how the current envelope incentives work. In 2006, here we are before the Clean Power Act new cap goes in. This is my estimate of how much, how many SO<sub>2</sub> allowances they're going to need. And you can multiply this number by about a thousand dollars to get the actual total annual cost. When the 2007 cap goes into effect, that number is going to jump way up because now they're under a tighter cap, they need more SO<sub>2</sub> allowances to comply with the new law.

Well soon after that, in 2008 and further out, the current on the books SO<sub>2</sub> incentives start buffering that cost. So all I'm talking about is taking those current incentives and expanding those to the same level of what the incentives in HB 1673, the same level value of what's currently in this bill.

This graph also shows ... the different lines are showing different compliance dates basically, under my proposal and under HB 1673 as currently proposed. And basically I want you to focus on the cost, or basically the need, the numbers and the need, and again, just multiply that through by one thousand for simplicity. I checked this morning and actually SO<sub>2</sub> allowance costs were around nine hundred dollars.

Senator Bob Odell, D. 8: Yeah. I think you've over gone your time, so let's move it right along.

Ms. Murray: Okay. So, the earlier we reduce the need for these SO<sub>2</sub> allowances, in other words, the earlier this is installed, the huge difference to ratepayer is that difference in cost from that avoided SO<sub>2</sub> allowance needs. So the earlier we can get this on, the better for the ratepayer, the better for PSNH as well because now they do not have to go out and get these SO<sub>2</sub> allowances.

So, in closing I would like to say I'm not asking for perfect. I'm not asking for another year's study. I'm asking for incremental improvements to get the most out of this process for New Hampshire citizens.

Thank you for your time.

Senator Bob Odell, D. 8: Thank you for your testimony. Any questions? Seeing none, thank you very much.

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Senator Robert K. Boyce, D. 4: Mr. Chairman, in the future when someone asks to be bumped ahead of the rest to facilitate their own schedule in getting home, maybe they ought to consider the time of the people that are behind them. Thank you.

Senator Bob Odell, D. 8: Thank you for your comments. I will say that the Committee is going to vote on this bill tonight and that we do not have the option of not voting on it tonight. This is our deadline day to day. So we will be here for the duration and we will get through this. So, with that, I'm going to step out for a second and Vice Chairman Letourneau is going to, he didn't know it, but he's going to take over.

Senator Robert J. Letourneau, D. 19: Don McGinley.

Mr. Don J. McGinley, Legislative Representative, New Hampshire Wildlife Federation: Thank you Mr. Chairman.

Senator Robert J. Letourneau, D. 19: You're welcome.

Mr. McGinley: Good afternoon.

Senator Robert J. Letourneau, D. 19: I know you've waited a long time.

Mr. McGinley: I apologize, Senator, for all the misspellings I've made of your name, as well.

Senator Robert J. Letourneau, D. 19: You're not alone.

Mr. McGinley: Good afternoon. Maybe I guess good evening Mr. Chairman and members of the Committee. For the record, my name is Don McGinley. I'm a citizen of New Hampshire. I reside in the town of New Boston.

I'm here representing the New Hampshire Wildlife Federation (NHWF) as a non-paid member of their Board of Directors. We represent over ten thousand sportsmen through a combination of individual memberships and over forty-five affiliated sporting clubs. We care dearly about the environment; we don't just care about fish and birds, although they're very important.

**Please see prepared testimony of Mr. Donald J. McGinley, Legislative Representative, New Hampshire Wildlife Federation, attached hereto and referred to as Attachment #14.**

*jac*

I want to first emphasize that I have no expertise in power generation technology, nor the details of mercury and sulphur dioxide pollution. At the same time, I worked for over thirty years in the very competitive computer and internet working industry where overly conservative schedules were never tolerated, yet high quality product was always required and usually delivered. I see no reason why PSNH should not strive in the same manner to reduce pollution to our citizens of New Hampshire, the ratepayers who will bear the costs resulting from this bill in any case.

While the New Hampshire Wildlife Federation agrees with most of HB 1673's content, we seriously question the following three items, and I'll be very quick.

1. The summer of 2005 carbon injection mercury test results were to be published prior to year-end as part of the "retained" SB 128 commitment by PSNH and by the legislature. New Hampshire Wildlife Federation has yet to see any publication of results, good, bad or indifferent. I think the truth should be told to the ratepayers and public in New Hampshire. As part of your review, we ask that a public explanation be made as to what occurred with testing of the subject technology that is no longer considered within HB 1673.
2. The 2013 date for scrubber installation is too conservative. We know the Clean Power Coalition has presented strong arguments in favor of a 2011 date. We understand, as you've just heard, the Appalachian Mountain Club which we hold in high regard for their technical capabilities, believes that 2013 is far too conservative. The EPA reports show that scrubber installs not unlike the Bow Power Station can be accomplished in forty months, three and a half years with their permitting process requiring less than an extra year. We think it unwise that 2013 be your accepted date when our environment and population is under such an extreme mercury and sulfur dioxide attack. If the states of Pennsylvania and Georgia, and Maryland, as Representative Phinizy described, have commitments to cut mercury by 2010, why is New Hampshire requiring three extra years? As such, the New Hampshire Wildlife Federation recommends that you seriously consider improving upon the 2013 date, at least to mid 2011, that's five full years, hence.
3. The New Hampshire Wildlife Federation disagrees with any use of mercury conversion to sulfur dioxide allowances as specified in this bill. We suggest you eliminate the "mercury conversation to

sulfur dioxide allowance incentive.” We agree with AMC’s assessment that “inter-pollutant trading is a bad precedent for New Hampshire to set,” and we believe New Hampshire’s citizens would say exactly the same thing.

*pac*

We urge the Committee to report HB 1673-FN as “Ought to Pass” only after addressing these issues.

Thank you very much for your attention and my ability to testify today.

Senator Robert J. Letourneau, D. 19: Questions from the Committee? Seeing none, thank you.

Mr. McGinley: Thank you very much.

Senator Peter H. Burling, D. 5: Mr. Chairman, I do have one question.

Senator Robert J. Letourneau, D. 19: Oh you do?

Senator Peter H. Burling, D. 5: One very brief question. To the extent that we have seen a group of citizens basically vote themselves for almost a year to the search for a compromise, which might get a bill that would move forward, do you think that we as Senators have any obligation to give power to that compromise when it’s finally reached?

Mr. McGinley: I’m probably not a very good person to answer that question. All I really want to say today, very clearly is that I believe you have the power to improve upon the date 2013 as a reasonable date. Okay? Include a more reasonable date in that legislation.

Senator Peter H. Burling, D. 5: And would you believe me if I said that if I don’t, it is because I have real worry that changing the compromise may cause the whole thing to crumble and disappear?

Mr. McGinley: I believe that if a little bit more time is required, in terms of a little bit more time, I mean maybe a month. Legislature is in session until the end of May. I believe that time should be taken by this Committee and by the legislature.

Senator Bob Odell, D. 8: Let me just point out, because I was going to mention this a little later on. The reason this building has worked for two hundred years is because we have very strict rules of operation and there is a bunch of ... many deadlines that come along. And, the deadline for us is that we receive this bill from the House on what’s called “cross-over” day deadline ...

*jac*

Mr. McGinley: Yes.

Senator Bob Odell, D. 8: And we didn't have very much time to deal with it. We also respected the work that had been done in the House. Or at least I, as the Chairman, I can say that.

Mr. McGinley: As do I.

Senator Bob Odell, D. 8: And so when it comes to us, for us to open this up because there are people that either overtly or covertly would like to see this thing go away in its entirety. That if that's the risk that some would like us to take, that's a risk I'm not willing to take. And that's why the idea of having this around for another month, number one it's got a fiscal note on it, this will go to the Finance Committee after it passes the floor of the House, if it does that. I mean, Senate, if it does that. So there are other steps in the process and we will be here for another month, but this is one of the issues that we have to face because of deadlines. We play to those deadlines. We do the best we can, but I must caution that there are people who would prefer to see this go away entirely.

Mr. McGinley: I understand that. And I'm certainly not one of those people and the New Hampshire Wildlife Federation is not an organization that wants that to happen. However, I do ... New Hampshire Wildlife Federation would like to see some level of improvement or incentive to improve, over and above what's in the context of the bill today. That change would be a very simple amendment to the bill.

Senator Peter H. Burling, D. 5: You mentioned the word "incentive." And you heard me because you were in the wrong choir of PSNH whether they were willing to fulfill the promises that they've made to other Senators. Are you telling me you discredit what they've said they will do?

Mr. McGinley: Absolutely not, but what I heard very clearly today is that one has been put on the table and one is included in 1673 is reasonable, and is reasonable, and is reasonable. I take that and I saw a thread through the bill of being rather conservative. I hate to be conservative when it comes to pollution that these toxins are causing for our citizens.

I think maybe if we were sitting here a year ago with this same bill, and a date of 2012 versus 2013 was put on the table, most of the organizations that fail to support this bill would be high against 2012. I would invite the Committee to put a date of 2012 in simply one year in advance of what that very reasonable and conservative goal is stated in the bill.

*JAC*

Senator Bob Odell, D. 8: Okay. Any more questions? Seeing none, thank you very much.

Mr. McGinley: Thank you very much.

Senator Bob Odell, D. 8: I'll call on Mr. Stephen Perry, New Hampshire Fish and Game Department.

Mr. Stephen Perry, New Hampshire Fish and Game Department: Thank you Mr. Chairman, members of the Committee.

Senator Bob Odell, D. 8: Good evening.

Mr. Perry: I'll be very brief. For the record my name is Stephen Perry. I serve as Chief of Inland Fisheries Division from New Hampshire Fish and Game Department. The New Hampshire Fish and Game Department supports HB 1673 because mercury in the environment poses human health risks and it bio-accumulates in fish and wildlife resulting in sub-lethal and lethal effects.

**Please see prepared testimony of Mr. Stephen Perry, New Hampshire Fish and Game Department attached hereto and referred to as Attachment #15.**

With that I'll end my testimony and take any questions.

Senator Bob Odell, D. 8: Thank you very much for your testimony. Any questions? Seeing none, thank you very much for being here. I'll call on Richard Smith, New Hampshire Bass Federation.

Mr. Richard D. Smith, New Hampshire Bass Federation: I'm going to be mercifully brief. (Laughter).

Senator Bob Odell, D. 8: You'd be eternally (laughter) (inaudible). Come back often. (Laughter).

Senator Robert J. Letourneau, D. 19: Staying longer, say less.

Mr. Smith: For the record though I do have to say my name is Richard Smith, citizen of New Hampshire. I live in the village of Hancock. I'm here representing New Hampshire Bass Federation. I'm here as a non-paid director of conservation.

I'm here because our favorite fish is very much involved. (Laughter). We're often at the top of the food chain.

Nobody disputes that we need to do something, and we're counting on your wisdom, all you Senators. We ... as much as we respect that wisdom, we realize that you can't be scientists and engineers in a very short period of time. I appreciate the fact that this is really been thoroughly (inaudible) over two years. With a lot of expert testimony of engineers, scientists, the whole works, we feel this bill as written is reasonable. And we like the fact that there are, in fact incentives here to start the process which I think is valid.

*jac*

So, we just want to be on record and let you know that. I end with a little quote from Chief Seattle, it's attributed to Chief Seattle and that is that, "You did not weave the web of life, we're merely a strand. And whatever we do to the web, we do to ourselves."

Thank you very much.

Senator Bob Odell, D. 8: Thank you very much. Any questions other than the best fishing questions? (Laughter). Senator Letourneau has an interest in that!

Senator Robert J. Letourneau, D. 19: Just a comment. Your favorite fish, but you don't eat them.

Mr. Smith: No we don't. We pretty much catch and release the best fishing community. However, we feel a family should be able to come to New Hampshire, vacation, catch fish and enjoy a meal without having to worry about it. We'd love to see the day when we no longer have fish consumption advisories to the great State of New Hampshire.

Senator Robert J. Letourneau, D. 19: Thank you very much.

Senator Bob Odell, D. 8: Thank you very much.

Mr. Smith: You're welcome.

**Please see prepared testimony of Mr. Richard Smith, New Hampshire Bass Federation attached hereto and referred to as Attachment #16.**

Senator Bob Odell, D. 8: I'll ... this is going to be a little risky for me, but I'm going to say that "Dorsaka Porrins" from Concord has signed in, in favor of the bill, but does not wish to speak. And then, Kay Tattersale (?) has signed in, in favor of the bill, but does not wish to speak. Jason Stock from the New Hampshire Timberland Owners Association signed in, in favor, but does not wish to speak. David Micciche from Amherst signed in, in opposition, but does not wish to speak. William Klapproth signed in, in favor, but does not wish to speak. Ann Ross of the Office of

*jal*

Consumer Advocate signed in, in favor, but does not wish to speak. Linda Rauter has spoken ... has signed in on her own behalf and then it says, "with strengthening of amendment," and does not wish to speak. Jane Doherty from the Environmental Responsibility Committee, Episcopal Diocese, and some other things, can't read all the words.

Senator Robert J. Letourneau, D. 19: Wasn't enough paper for you, right?

Senator Bob Odell, D. 8: Yeah, I know we need a bigger block. Good afternoon. Welcome.

Jane Doherty, Environmental Responsibility Committee, Episcopal Diocese: Good afternoon Mr. Chairman and the rest of the Committee. I will be very brief because I am representing what we call the Environmental Responsibility Committee of the Episcopal Diocese of New Hampshire. And I am in, we are all very much in favor of the bill and I also was involved and testified last year, and this bill is so much better that it's incredible actually. Many good things have been said this afternoon that, if they haven't been said, we have to say it. But I want to make the point that you, Senator Odell, I do not want to see this bill go down. Our Committee does not want to see the bill go down. And so much good work has been done. We could fine tune it, but we haven't got ... we don't know what will happen if we try to fine tune it. You know more about the politics than I do, but I've heard it may disappear if we fine tune it. And there are already many good aspects and there are some accountability amendments added by the House to which are very good, you know, to ask Public Service to report back.

Now there are several things I want to add. And this is ... it was referred to, but you didn't see a copy. It's too bad we don't all have a copy, "Mercury Connections," it comes from BioDiversity Research Institute and it is a compilation of seventeen scientific articles on mercury in the environment in the northeastern United States. And, some of the facts you heard are in here, but what I wanted to point out is something that didn't come up, exactly. This is under, on page 19, and it says, "What is a hot spot and how is it measured?" I won't go into all of that, but the scientist measured the concentration of mercury in fish, loons, bald eagles, mink and river otter and then generated a map of the hot spots in the northeastern United States. Most of them did not show any lead to a particular source. When reference to your worry about where it's coming from, however this is here in black and white. If you want, you can have somebody Xerox it for you. The two exceptions are the biological hot spots near large point sources in southeastern New Hampshire and a defunct chlorine factory in Orlington, Maine. And the researchers, the

*pac*

reference for the research is given for both those reports. So that's something I wanted you to know.

So being downwind in the southeastern part has been scientifically established that it's related to the Bow Plant. Another thing that's in here is that they're now finding mercury in insect eating forest birds. So the influence of mercury in the wildlife is going far beyond what we expected. So that's another important thing.

Now my last point is just a funny one, but not so funny. We did have somebody who objected to the time lines and gave a lot of construction experience. Unfortunately for him, my daughter lived next to the big dig. (Laughter.)

Senator Robert J. Letourneau, D. 19: I was going to bring it up. (Laughter.)

Ms. Doherty: I would never in my life, if I were a professional engineer mention the central artery (laughter) because it certainly wasn't timely nor did it even work.

Senator Robert J. Letourneau, D. 19: There's just a few cost overruns.

Ms. Doherty: That's all I wanted to say.

Senator Bob Odell, D. 8: Well, thank you Ms. Doherty for being here. Any questions? If not, thank you very much.

Ms. Doherty: You're welcome.

Senator Bob Odell, D. 8: And I'll call Pam Kelly from New Hampshire Faithful Democracy.

Pam Kelly, New Hampshire Faithful Democracy, New Hampshire and Vermont Districts, Unitarian Universalist Social Responsibility: Can I seed my time to Catherine Corkery? Right now, because what I have to say is very short.

Senator Bob Odell, D. 8: Go ahead and say it.

Ms. Kelly: All right. I'm from New Hampshire Faithful Democracy. It's the network of Unitarian Universalist Churches bound together. I have a written testimony I can give you.

**Please see written testimony of Pam Kelly, New Hampshire Faithful Democracy attached hereto and referred to as attachment #17.**

*pac*

But I noticed that you all, all men, may not be as aware as women of how to save money. I mean we are just shopper experts is what I want to say. So I've noticed that you're like not paying to much attention. But the important thing I want you to know ...

Senator Bob Odell, D. 8: Let me just back up a little bit.

Ms. Kelly: Okay. (Laughter.)

Senator Bob Odell, D. 8: No I just want to make a comment.

Ms. Kelly: Umhm.

Senator Bob Odell, D. 8: I was in a Committee meeting the other day and things got out of hand with comments like that.

Ms. Kelly: Okay.

Senator Bob Odell, D. 8: Understand that there are several Committee meetings going on parallel to this.

Ms. Kelly: Yes.

Senator Bob Odell, D. 8: Most of us started anywhere from 7:30 a.m. to 8:00 a.m. this morning.

Ms. Kelly: My apologies.

Senator Bob Odell, D. 8: I want you to know that people here work very, very hard. They're all volunteers. They try to do the best job.

Ms. Kelly: Yes sir.

Senator Bob Odell, D. 8: So when we don't look as if we're attentive, please know we're professionals that are learning while we're doing many monthly tasks, so I ...

Ms. Kelly: Okay.

Senator Bob Odell, D. 8: I caution.

Ms. Kelly: I'm just teasing you really. I think the message that has been brought forward is that we could save money here. We could save money if we get it done early because construction costs are less, we could save money because we're not paying those sulfur dioxide trading

costs of up to twenty or thirty million a year. So if we're interested in supporting the ratepayers, this might really be something to pay attention to.

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And from the Unitarian Universalist point of view, as people of faith, we have seven principles, one of which is to affirm and promote respect for the interdependent web of existence of which we're a part and this would improve our ability to meet those expectations because the faster they clean up the better. And mercury if we try trading mercury, we're not actually benefiting the state, we're undermining our ability to clean up the mercury waste.

So we urge you to represent the people of New Hampshire, not just institutional interests, but we urge you to vote your conscious for the long time interests of us all. We're all a part of this interdependent web. We're linked into a global community through thin life supports to the blue planet of which we're a part. We ask you to think beyond the quarterlies, to the quarter centuries and protect our health, our air and water, which is the real long-term interest bearing account with compounding interest that we'll benefit from in the long run.

So we ask you to look at your conscious and vote your conscious and we really do appreciate your work, your long term work, your hard work over a long period of time and over a long day.

Senator Bob Odell, D. 8: Thank you for your comments. Senator Burling?

Senator Peter H. Burling, D. 5: I'd like to simply make a comment. I've been a minority member of this legislature for sixteen years. I've been in public life as a democrat for thirty years.

Ms. Kelly: Yes sir.

Senator Peter H. Burling, D. 5: I've been trying to do exactly what you exhort us to do.

Ms. Kelly: Umhm.

Senator Peter H. Burling, D. 5: And every day of my public life, sometimes I have to accept less than everything I want.

Ms. Kelly: Umhm.

Senator Peter H. Burling, D. 5: In order to get anything of value.

*pac*

Ms. Kelly: Umhm.

Senator Peter H. Burling, D. 5: This is one of those times. And the fact that we are all of the masculine persuasion up here is an accident of Committee assignment, not a cabal or consortium to suppress the interests of women in the environment. I really am profoundly upset by what you said.

Ms. Kelly: All right. I'm sorry about that.

Senator Peter H. Burling, D. 5: And I just want you to know that because I got up at 6:00 o'clock to come down here.

Ms. Kelly: Umhm.

Senator Peter H. Burling, D. 5: As I do every morning.

Ms. Kelly: Yes sir.

Senator Peter H. Burling, D. 5: Thank you for your input.

Ms. Kelly: Okay. Well I appreciate your ...

Senator Bob Odell, D. 8: Any questions? Seeing none, thank you very much. I'll call on Catherine Corkery.

Catherine Corkery, New Hampshire Sierra Club: Thank you Mr. Chairman and Committee members.

Senator Bob Odell, D. 8: Good afternoon.

Ms. Corkery: I appreciate your time to listen to all the testimony and I understand the time pressure you're under, and I ask ... I won't read over my testimony because I know ... but I would like to point out a few, sort of highlights that we've heard from the testimony, namely, the ... Well, firstly the inter-pollutant trading component of the bill. No other state has gone this route of trading apples for oranges. The STA when the Clean Power Act was first being debated, I was there and I heard the discussion of trading apples to oranges and how the intent of the bill was not to do that, but to instead keep our sulfur credits and our other credits as they are concerning their own pollution.

**Please see prepared testimony of Ms. Catherine Corkery, New Hampshire Sierra Club attached hereto and referred to as Attachment #18.**

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This bill does exactly ... does not do that at all. It provides a mechanism where the utility is able to acquire mercury credits and switch them into sulfur credits without reducing sulfur. I'm going to emphasize that. They get credit for not reducing sulfur. They get a sulfur credit for not reducing sulfur, that's what I wanted to say. Nobody in other states are able to do that and as equating a pollutant that has a method of mitigation, if a pollutant like mercury, a neurotoxin, that can harm women and children developmentally is a very dangerous thing to do. And it's very radical; it's very controversial. And no other state has done that. I wanted to emphasize that.

Secondly, I understand the time pressures and I know there's a lot of things that are going on here and there is an understandable reason to get this bill in now, but there's also an obligation to ratepayers to make sure that at the end of the day all the ideas get a fair shake. And that there is a guarantee to the ratepayers that this is the cheapest way to accomplish acceptable environmental standards with acceptable ratepayer costs. This bill that started in October of 2005, this ... the writing of this bill has not seen an economic analysis from someone outside, from a third party. And, I'm not sure if this Senate wants to carry on that sort of responsibility. And having that said, I do want to agree that I want a bill passed. I do not want to derail this bill. This is a good start and the Senate and the House have a discussion when a bill goes into the committees and I appreciate that hard work that you have to do in order to have that discussion, but it is also that it has a potentially huge impact on ratepayers and the environment, and I ask for your caution.

And lastly, I notice that you Chairman were looking at this last page, it includes all the different states that have and are dealing with a mercury reduction program; some that are legislative, some are rulemaking and some are ... one is a Governor's Executive Order, that's it. Thank you.

**Please see "NH Clean Power Coalition" and "States Tackling Mercury Pollution From Coal-Burning Power Plants," submitted by Catherine Corkery, New Hampshire Sierra Club attached hereto and referred to as Attachment #19.**

And, you'll see they have five year time lines that are involved with the mercury. Some of them are associated with the output of energy, other ones are associated with the control and I think Georgia did a really good job at describing the difference between reducing emissions and controlling. That's a real different sort of way to look at things. And I just hope that you get some time to look at that, and with that I will end my testimony and take any questions.

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Senator Bob Odell, D. 8: Thank you very much for your comments.  
Senator Letourneau?

Senator Robert J. Letourneau, D. 19: Thank you.

Ms. Corkery: You're welcome.

Senator Robert J. Letourneau, D. 19: Were you here when Chairman Ross from the House spoke and when the gentleman from New Hampshire Audubon spoke?

Ms. Corkery: I was.

Senator Robert J. Letourneau, D. 19: They talked about this almost year long process that they've gone through. Did you folks have a seat at that table?

Ms. Corkery: The language, well there were Committee hearings and work sessions throughout the summer and we attended those. There was limited access outside of the Committee room itself. We did attend some meetings, but we were informed rather than invited to negotiate in the negotiations.

Senator Robert J. Letourneau, D. 19: Thank you. One last question. The Audubon Society provided us with a similar breakdown of some of the states that have brought in Mercury and sulfur emission reductions, and they also included the caveats that were included in those. So while some of those may be shorter time frames, if they can't make the standards they're given a pass with a waiver.

Ms. Corkery: Sure, and in fact a comment to that. You're also talking about states that have more than one power plant that's being fitted. Pennsylvania, for instance, has thirty-five different power plants. Illinois, I'm not even sure how many power plants Illinois has, but when you're talking about these different caveats, they're dealing with a state-wide cap in some cases, not a plant-by-plant case. Here we're also dealing with a state-wide cap. But with those allowances they are taking a larger group of power plants into consideration.

Senator Robert J. Letourneau, D. 19: Some of which already (inaudible).

Ms. Corkery: Right, the Massachusetts one. Some of them already have ... and actually to PSNH's credit, they're half way there. They have the SCR the PS ... I forget what it's called ... all this equipment. This is like the last step. The last step to make it a very clean power plant.

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Senator Robert J. Letourneau, D. 19: Thank you.

Ms. Corkery: You're welcome.

Senator Bob Odell, D. 8: Any other questions? Seeing none, thank you for your testimony.

Ms. Corkery: You're welcome.

Senator Bob Odell, D. 8: And for being here. I'll call on Beth D'Ovidio?

Beth D'Ovidio, American Lung Association of New Hampshire:  
D'Ovidio. Very good.

Senator Bob Odell, D. 8: D'Ovidio. Practicing. Good afternoon.

Ms. D'Ovidio: Good afternoon, Mr. Chairman, Senators. For the record my name is Beth D'Ovidio. I'm representing the American Lung Association of New Hampshire and I do have a letter to, copies to give to each of you.

**Please see prepared testimony of Daniel Fortin, President and CEO of the American Lung Association of New Hampshire, submitted by Beth D'Ovidio, American Lung Association of New Hampshire attached hereto and referred to as Attachment #20.**

Earlier on in the day, we have heard some testimony about asthma in the state and we felt that we would be remised to our mission if we did not let you know of our support of this legislation as it is written. I'll try to be very brief.

We know that the scrubber technology is reputed to result in the decrease of at least ninety percent of the sulfur dioxide emissions caused by power plants.

And the major health impact of sulfur dioxide is on population groups especially susceptible to the pollutant's effects because of pre-existing conditions, especially asthma. And our mission is to assist those living with lung disease to breath easier and breath longer and we feel that the passing of this bill will assist in that.

Senator Bob Odell, D. 8: Thank you very much.

Ms. D'Ovidio: Thank you very much.

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Senator Bob Odell, D. 8: Any questions? If not, thank you.

Ms. D'Ovidio: Thank you.

Senator Bob Odell, D. 8: Elizabeth Skipper signed in on behalf of herself, supports with recommendations to strengthen it, but does not wish to speak. Anne Arsenault signed in, in favor of the bill but does not wish to speak. John Tuthill signed in, in favor and wishes to speak, favors the amendment to strengthen. I think I don't see John, okay. Michael Giaimo to speak in favor.

Michael S. Giaimo, Business and Industry Association of New Hampshire (BIA): Good afternoon.

Senator Bob Odell, D. 8: Good afternoon.

Mr. Giaimo: Michael Giaimo I'm with the Business and Industry Association and they are ... in my employment there I'm Vice President for Energy and Environmental Affairs.

BIA appreciates the opportunity to lend our support to HB 1673. I certainly will be as brief as possible. First and foremost, the BIA supported HB 284 four years ago. The bill that I'm referring to is, "The New Hampshire 4 Pollutant Bill." This legislation, HB 1673 brings fulfillment to that legislation, and for So<sub>x</sub>, NO<sub>x</sub>, CO<sub>2</sub> and mercury legislation. So it brings a ... it makes a bill that's a theory, a reality. It will significantly minimize sulfur and mercury pollution. It does so with minimal rate impacts. It is a reasonable piece of legislation with realistic and achievable time limits and pollution limits.

In conclusion, HB 1673 is a cost-effective and maybe the most cost-effective way of controlling plant emissions. So with that I'd be happy to take any questions. I have written testimony. I'll submit it to the clerk and pass them around.

Senator Bob Odell, D. 8: Please.

**Please see prepared testimony of Michael S. Giaimo, Esquire, Vice President, Energy and Environmental Affairs, Business and Industry Association attached hereto and referred to as Attachment #21.**

Senator Bob Odell, D. 8: Thank you very much. Any questions? Seeing none, thank you very much for being here.

Michael Giaimo, Esquire: Thank you.

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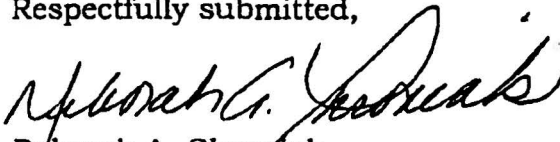
Senator Bob Odell, D. 8: Mr. Will Abbott was here to speak in behalf ...  
and I don't see Will ...

Unidentified Speaker: I think he left.

Senator Bob Odell, D. 8: Okay. And we have Paul Doscher has signed in, in favor of the bill representing New Hampshire Council of Trout Unlimited, but does not wish speak. And with that, we have concluded our Public Hearing and I'll close that hearing on HB 1673.

Hearing concluded at 6:00 p.m.

Respectfully submitted,



Deborah A. Chroniak  
Senate Secretary  
September 19, 2006

21 Attachments

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

Data Request TC-02  
Dated: 06/18/2012  
Q-TC-009  
Page 1 of 1

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-04  
Dated: 08/31/2012  
Q-TC-013  
Page 1 of 5**

**Witness: William H. Smagula  
Request from: TransCanada**

**Question:**

Reference page 16, line 10, of Mr. Smagula's June 15, 2012 prefiled testimony in this docket, please provide copies of any and all "published cost statements" that have been issued in connection with the scrubber project since its inception.

**Response:**

The Clean Air Project Team published three cost estimates. These updated estimates are presented in the company's Form 10-Q quarterly filings attached below. The Clean Air Project Team presented a site specific cost estimate of \$457 million in May 2008 which was approved by NU's Board of Trustees in July 2008. The Clean Air Project Team updated the estimated project cost to \$430 million in the second half of 2010. A third and final update in the first half of 2011 estimated a project cost of \$420 million.

percent and higher than anticipated costs for the final cable burial, CL&P's portion of the project is anticipated to be approximately \$7 million, which represents a \$7 million increase over the previous estimate. As of September 30, 2008, CL&P had capitalized \$71 million associated with this project and placed \$67 million into service.

In addition to our current transmission construction in southwest Connecticut, we continue to plan for our next series of major transmission projects, NEEWS. That series of projects involves our construction of new overhead 345 KV lines in Massachusetts and Connecticut as well as associated substation work and 115 KV rebuilds. One of the projects will connect to a new transmission line that National Grid plans to build in Rhode Island. On September 24, 2008, the New England Independent System Operator (ISO-NE) issued its final technical approval of the NEEWS projects, which allows us to start the siting application process. We estimate that CL&P's and WMECO's total capital expenditures for these projects will be \$1.49 billion through 2013.

The first of the NEEWS projects, the Greater Springfield Reliability Project, which involves a 115 KV/345 KV line from Ludlow, Massachusetts to North Bloomfield, Connecticut, is the largest and most complicated project within NEEWS. This project is expected to cost approximately \$714 million if built according to our preferred route and configuration. CL&P filed its application to build the Connecticut portion of the Greater Springfield Reliability Project with the Connecticut Siting Council on October 20, 2008. WMECO filed its application to build its portion of the project with the Massachusetts Energy Facilities Siting Board on October 27, 2008. If approved as expected in 2010, we expect to commence construction in late 2010 and place the project in service by mid-2013.

Our second major NEEWS project is the Interstate Reliability Project, which is being designed and built in coordination with National Grid. CL&P's share of this project includes a 40-mile 345 KV line from Lebanon, Connecticut to the Connecticut-Rhode Island border where it would connect with enhancements National Grid is designing. We expect CL&P's share of this project to cost approximately \$250 million. Municipal consultations began in September 2008, and CL&P plans to file siting applications with Connecticut regulators by the end of 2008 or early 2009 with construction beginning in 2010. We expect the project to be placed in service as early as late 2012.

The third part of NEEWS is the Central Connecticut Reliability Project, which involves construction of a new line from Bloomfield, Connecticut to Watertown, Connecticut. This line would provide us with another 345 KV connection to move power into southwest Connecticut, where approximately half of the state's electricity is consumed. The timing of this project would be six to twelve months behind the other two projects, and CL&P expects to initiate the siting process in 2009 with construction beginning in 2011. The project is expected to be placed in service in 2013 with a cost of approximately \$315 million.

Included as part of NEEWS are approximately \$210 million of reliability related expenditures, many of which may be incurred in advance of the three major projects.

During the siting approval process, state regulators may require changes in configuration to address local concerns that could increase construction costs. Our current design for NEEWS does not contemplate any underground 345 KV lines. Building 345 KV lines underground would increase total costs, and our estimate could be increased during the siting approval process.

*Distribution Segment:* A summary of distribution segment capital expenditures by company in the first nine months of 2008 and 2007 is as follows (millions of dollars):

	<u>For the Nine Months Ended September 30,</u>	
	<u>2008</u>	<u>2007</u>
CL&P	\$ 202.4	\$ 192.1
PSNH	65.3	66.1
WMECO	24.9	23.0
Totals - Electric Distribution	292.6	281.2
Yankee Gas	24.9	44.0
Other	0.4	0.1
Totals	\$ 317.9	\$ 325.3

On February 15, 2008, Yankee Gas and NRG Energy, Inc. (NRG) entered into a settlement agreement, which, among other things, enabled the recovery of approximately \$17.5 million of capital costs and expenses incurred by Yankee Gas related to an NRG subsidiary's generating plant construction project that was abandoned. Year-to-date 2008 capital expenditures at Yankee Gas were reduced by this \$17.5 million recovery, while the 2007 capital expenditures included \$11 million spent on its \$108 million LNG storage and production facility in Waterbury, Connecticut, which was placed in service in July 2007.

*PSNH Generation:* Capital expenditures for PSNH generation were \$39.5 million for the nine months ended September 30, 2008, as compared to \$18.6 million for the same period in the prior year. PSNH's Clean Air Project is expected to cost approximately \$457 million, which will be recovered through its generation rates under New Hampshire law. PSNH expects to start preliminary site work

for this project in November 2008, with completion of the project scheduled in 2012. New Hampshire law requires this project to be operational by July 2013. Capital expenditures at PSNH for the first nine months of 2008 include \$11.4 million in costs related to this project.

## Liquidity

**Consolidated:** We had \$82.8 million of cash and cash equivalents on hand at September 30, 2008, compared with \$15.1 million at December 31, 2007. This increase in cash balances was due to CL&P's temporary need for cash-on-hand of \$62 million at September 30, 2008 to acquire certain of its Pollution Control Revenue Bonds (PCRBs) on October 1, 2008. As of November 5, 2008, we had approximately \$86 million of externally invested cash. Refer to "Impact of Financial Market Conditions" below for further discussion.

We had positive operating cash flows of \$248 million, after rate reduction bond payments included in financing activities, in the first nine months of 2008, compared with negative operating cash flows of \$93.8 million, after rate reduction bond payments, in the first nine months of 2007. This increase was primarily due to the absence in 2008 of approximately \$400 million in tax payments related to the 2006 sale of the competitive generation business, partially offset by the litigation settlement payment to Con Edison of \$49.5 million in 2008. After factoring these cash flow impacts, the decrease in operating cash flows in 2008 from 2007 was primarily due to a reduction in regulatory refunds and underrecoveries (net of income tax impacts) and a net reduction in other working capital items resulting primarily from a net \$100 million increase in accounts receivable and unbilled revenue items, which also included investments in securitizable assets. Our consolidated regulatory refunds and underrecoveries decreased by \$31 million from the six months ended June 30, 2008, primarily due to a \$33 million deferral adjustment in the third quarter of 2008 for differences in transmission costs related to the Schedule 21 rates.

We project consolidated operating cash flows of approximately \$450 million in 2008, after rate reduction bond payments of approximately \$231 million. This projection includes an expected income tax net settlement of approximately \$70 million in the fourth quarter and a reduction in income tax payments of \$35 million during 2008 related to bonus depreciation.

A summary of the current credit ratings and outlooks by Moody's Investors Service (Moody's), Standard & Poor's (S&P) and Fitch Ratings (Fitch) for NU parent's and WMECO's senior unsecured debt and CL&P's and PSNH's first mortgage bonds is as follows:

	Moody's		S&P		Fitch	
	Current	Outlook	Current	Outlook	Current	Outlook
NU Parent	Baa2	Stable	BBB-	Stable	BBB	Stable
CL&P	A3	Stable	BBB+	Stable	A-	Stable
PSNH	Baa1	Stable	BBB+	Stable	BBB+	Stable
WMECO	Baa2	Stable	BBB	Stable	BBB+	Stable

On July 29, 2008, Moody's changed the outlook of Yankee Gas to stable from negative and affirmed the company's Baa2 corporate credit rating. On August 8, 2008, Fitch Ratings affirmed all of its ratings and outlooks on NU parent, CL&P, PSNH and WMECO. In late October 2008, S&P affirmed all of its ratings and outlooks on NU parent, CL&P, PSNH and WMECO. On November 5, 2008, S&P raised CL&P's unsecured debt rating to BBB from BBB- as a result of a comprehensive review of the unsecured ratings of United States investment grade utilities. S&P's ratings on CL&P's bonds and preferred stock were unaffected.

NU parent's senior unsecured debt ratings were to be reduced to a sub-investment grade level by either Moody's or S&P, a number of Select Energy's supply contracts would require Select Energy to post additional collateral in the form of cash or letters of credit (LOCs). Select Energy would, under its remaining contracts, be required to provide cash or LOCs in the amount of \$20.2 million to various unaffiliated counterparties and collateral or LOCs in the amount of \$5.8 million to several independent system operators, in each case at September 30, 2008. If such a downgrade were to occur, NU parent would be able to provide that collateral. If unsecured debt ratings for CL&P or PSNH were to be reduced by either Moody's or S&P, a number of supply contracts would require CL&P and PSNH to post additional collateral in the form of cash or LOCs to various unaffiliated counterparties. If these ratings were to be reduced below investment grade, the amount of collateral required to be posted by CL&P and PSNH would be \$2.3 million and \$14 million, respectively, at September 30, 2008. If such a downgrade were to occur, CL&P and PSNH would be able to provide that collateral.

NU paid common dividends of \$95.8 million in the first nine months of 2008, compared with \$89.7 million in the first nine months of 2007. The increase reflects a 6.7 percent increase in NU's common dividend that took effect in the third quarter of 2007 and another 15 percent increase that took effect in the third quarter of 2008. On October 14, 2008, our Board of Trustees approved a quarterly common dividend of \$0.2125 per share, payable on December 31, 2008 to shareholders of record as of December 1, 2008.

Beginning in 2009, we will target a dividend payout ratio of approximately 50 percent with a goal to continue our policy of increasing dividend at a rate above industry average and to provide an attractive return to shareholders. In general, the regulated companies

(Millions of Dollars)	For the Nine Months Ended September 30,	
	2010	2009
<b>CL&amp;P:</b>		
Basic business	\$ 80.0	\$ 81.5
Aging infrastructure	66.8	67.5
Load growth	59.7	54.8
<b>Total CL&amp;P</b>	<b>206.5</b>	<b>203.8</b>
<b>PSNH:</b>		
Basic business	27.8	34.0
Aging infrastructure	12.6	12.6
Load growth	16.1	18.8
<b>Total PSNH</b>	<b>56.5</b>	<b>65.4</b>
<b>WMECO:</b>		
Basic business	12.9	12.2
Aging infrastructure	7.3	9.3
Load growth	4.4	3.1
<b>Total WMECO</b>	<b>24.6</b>	<b>24.6</b>
<b>Totals - Electric Distribution (excluding Generation)</b>	<b>287.6</b>	<b>293.8</b>
Yankee Gas	58.3	39.2
Other	0.3	0.3
<b>Total Distribution</b>	<b>346.2</b>	<b>333.3</b>
<b>PSNH Generation:</b>		
Clean air project	115.5	70.7
Other	16.5	13.2
<b>Total PSNH Generation</b>	<b>132.0</b>	<b>83.9</b>
<b>WMECO Generation</b>	<b>5.8</b>	<b>-</b>
<b>Total Distribution Segment</b>	<b>\$ 484.0</b>	<b>\$ 417.2</b>

For the electric distribution business, basic business includes the relocation of plant, the purchase of meters, tools, vehicles, and information technology. Aging infrastructure relates to the planned replacement of overhead lines, plant substations, transformer replacements, and underground cable replacement. Load growth includes requests for new business and capacity additions on distribution lines and substation overloads. For the natural gas business, basic business includes the relocation of conflicting natural gas facilities due to municipal and state road work and the purchase of meters, tools, and information technology. Aging infrastructure relates to the planned replacement of natural gas facilities. Load growth includes requests for new natural gas service, new service mains and new distributed generation service.

PSNH's Clean Air Project is a wet scrubber project at its Merrimack coal station, the cost of which will be recovered through PSNH's ES rates under New Hampshire law. Construction costs are below their original budget of \$457 million and the project is expected to be completed in mid-2012. We currently expect the project to cost approximately \$430 million, including capitalized interest and equity returns. Since inception of the project, PSNH has capitalized \$262.4 million associated with this project, of which \$115.6 million was capitalized in the first nine months of 2010. Construction of the project was approximately 73 percent complete as of September 30, 2010.

On August 12, 2009, the DPU approved a stipulation agreement between WMECO and the Massachusetts Attorney General concerning WMECO's proposal, under the Massachusetts Green Communities Act, to install 6 MW of solar energy generation in its service territory at an estimated cost of \$41 million by the end of 2012. In October 2010, WMECO completed construction of a 1.8 MW project at a site in Pittsfield, Massachusetts and is expected to receive final acceptance of the project later this year. Since inception of the program, WMECO has capitalized approximately \$6.4 million of the total estimated cost of \$9.4 million on this first project as of September 30, 2010. WMECO has identified a second site in Massachusetts where it plans to construct an additional solar generation facility, subject to final approvals.

In April 2010, Yankee Gas commenced construction of its WWL Project, a 16-mile gas pipeline between Waterbury and Wallingford, Connecticut and the increase of vaporization output of its LNG plant, of which the expected cost has decreased from \$67 million to \$63 million. Construction in 2010, which included construction of a segment of pipeline connecting the Cheshire and Wallingford distribution systems, cost approximately \$18 million and was completed in the fourth quarter of 2010. The remainder of the pipeline construction and the expansion of the vaporization capacity of the LNG facility is expected to be completed in the fourth quarter of 2011. Since inception of the project, Yankee Gas has capitalized \$19.6 million associated with this project, \$18.8 million of which was capitalized in the first nine months of 2010. Construction of the project was approximately 37 percent complete as of September 30, 2010 and is currently on schedule and on budget.

**Strategic Initiatives:** We continue to evaluate certain development projects that will benefit our customers, some of which are detailed below.

Over the past two years, we have participated in discussions and continue to discuss with other utilities, policymakers, and prospective developers of renewable energy projects in the New England region regarding a framework whereby renewable power projects built in rural areas of northern New England could be connected to the electric load centers of New England. We believe there are significant

**Distribution Segment:** A summary of distribution segment capital expenditures by company for the first nine months of 2011 and 2010 is as follows:

(Millions of Dollars)	For the Nine Months Ended September 30,	
	2011	2010
<b>CL&amp;P:</b>		
Basic Business	\$ 117.9	\$ 80.0
Aging Infrastructure	81.6	66.8
Load Growth	41.3	59.7
<b>Total CL&amp;P</b>	<b>240.8</b>	<b>206.5</b>
<b>PSNH:</b>		
Basic Business	28.3	27.8
Aging Infrastructure	18.0	12.6
Load Growth	16.9	16.1
<b>Total PSNH</b>	<b>63.2</b>	<b>56.5</b>
<b>WMECO:</b>		
Basic Business	15.2	12.9
Aging Infrastructure	7.8	7.3
Load Growth	5.1	4.4
<b>Total WMECO</b>	<b>28.1</b>	<b>24.6</b>
<b>Total - Electric Distribution (excluding Generation)</b>	<b>332.1</b>	<b>287.6</b>
Yankee Gas	74.1	58.3
Other	0.6	0.3
<b>Total Distribution</b>	<b>406.8</b>	<b>346.2</b>
<b>PSNH Generation:</b>		
Clean Air Project	74.1	115.5
Other	13.6	16.5
<b>Total PSNH Generation</b>	<b>87.7</b>	<b>132.0</b>
<b>WMECO Generation</b>	<b>6.1</b>	<b>5.8</b>
<b>Total Distribution Segment</b>	<b>\$ 500.6</b>	<b>\$ 484.0</b>

For the electric distribution business, basic business includes the relocation of plant, the purchase of meters, tools, vehicles, and information technology. Aging infrastructure relates to the planned replacement of overhead lines, plant substations, transformer replacements, and underground cable replacement. Load growth includes requests for new business and capacity additions on distribution lines and substation overloads.

PSNH's Clean Air Project is a wet scrubber project that has been constructed at its Merrimack Station, the cost of which will be recovered through PSNH's ES rates under New Hampshire law. We currently expect the project to cost approximately \$422 million, as compared to the previous estimate of approximately \$430 million, including capitalized interest and equity returns. The Clean Air Project is operational and in September 2011 was placed in service at PSNH's Merrimack Station. Operational testing is underway and finalization of project activities is expected to conclude in early 2012.

On August 12, 2009, the DPU approved a stipulation agreement between WMECO and the Massachusetts Attorney General concerning WMECO's proposal, under the Massachusetts Green Communities Act, to install 6 MW of solar energy generation in its service territory at an estimated cost of \$41 million by the end of 2012. In October 2010, WMECO completed construction of a 1.8 MW solar generation facility on a site in Pittsfield, Massachusetts. The full cost of this project was approximately \$9.4 million. In May 2011, WMECO commenced development of a 2.2 MW solar generation facility on a 12-acre brownfield site in Springfield, Massachusetts. The project is expected to be complete by the end of 2011. WMECO is continuing its evaluation of sites suitable for construction of the remainder of the authorized 6 MW of capacity.

Yankee Gas' WWL Project, a 16-mile natural gas pipeline between Waterbury and Wallingford, Connecticut and the increase of vaporization output of its LNG plant, has been completed and is expected to be placed in service in November 2011. The project cost approximately \$54 million, \$3.6 million below the previous estimate of \$57.6 million. Pursuant to the June 29, 2011 rate case decision, the WWL project will be included in Yankee Gas' rate base upon entering service.

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

**Data Request STAFF-02  
Dated: 08/30/2012  
Q-STAFF-002  
Page 1 of 50**

**Witness: William H. Smagula  
Request from: New Hampshire Public Utilities Commission Staff**

**Question:**

With respect to the increase in estimated costs of the scrubber project to \$457 million announced in 2008:

- a. Please provide copies of all (i) communications, information and data of any kind and in any form presented at any time by any person, including but not limited to employees and outside consultants, to any PSNH or NU-affiliated management person(s) or board of directors/trustees (including but not limited to management and directors' committees and councils), including but not limited to power point presentations, documents, reports, analyses, evaluations and opinions, in any way concerning approving the \$457 million estimate, making a decision about whether or not to proceed with the scrubber project, or otherwise reacting to the increase in estimated costs.
- b. Please also provide copies of all minutes or other record of decisions by any PSNH or NU-affiliated management person(s) or board of directors/trustees (including but not limited to management and directors' committees and councils) in any way concerning making a decision about whether or not to proceed with the scrubber project or otherwise reacting to the increase in estimated costs.

**Response:**

On June 25, 2008, NU corporate management at a meeting of the Risk and Capital Committee was provided a detailed project description at an estimated cost of \$457M for the purpose of capital project review and approval. The minutes of that meeting are attached. NU corporate management recommended approval of the project by the NU Chairman and CEO. The presentation to the Risk and Capital Committee as well as the presentation provided to the Board of Trustees at the July 14, 2008 meeting are both provided. Although both documents were labeled as confidential documents protected from disclosure by the attorney-client privilege, PSNH waives the privilege in this specific instance to facilitate the review of this project. On July 14, 2008, NU Board of Trustees approved the \$457M for Merrimack Clean Air Project Estimate. PSNH Senior Management obtained NU corporate management approval of an advanced in-service date for the project of mid 2012. The recommendation and approval are attached.

**NORTHEAST UTILITIES  
RISK AND CAPITAL COMMITTEE  
(Committee Meeting, June 25, 2008)**

**RECOMMEND APPROVAL OF CAPITAL FUNDING FOR THE PUBLIC SERVICE COMPANY  
OF NEW HAMPSHIRE CLEAN AIR PROJECT BY THE CEO OF NU AND THE CHAIRMAN  
OF PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE**

Mr. Long directed the Committee's attention to the presentation entitled "Public Service Company of New Hampshire Clean Air Project" (the Clean Air Project) included in the material for the meeting and filed with the records thereof. He then reviewed the New Hampshire Mercury Reduction Act that mandates compliance to mercury emissions standards, and specifies the installation of scrubber technology at Merrimack Units 1 and 2 no later than July 1, 2013. The law stipulates that Public Service Company of New Hampshire (PSNH) must achieve no less than a removal of total mercury resulting in 80% capture of the total amount of mercury contained in the coal burned at all of PSNH's coal-fired units, which includes Schiller Station. Prior RaCC reviews of the Clean Air Project include a conceptual review on April 18, 2007, approval of an initial capital funding request on May 30, 2007, and approval of a revised initial capital funding request of \$10 million and up to \$35 million of commitment authority on September 24, 2007. An update on the Clean Air Project's schedule, cost, engineering activities, risk assessment and an economic analysis was also provided to the Committee on April 25, 2008.

Mr. Long stated that PSNH management is now seeking approval of funding for the entire Clean Air Project, currently estimated at \$457 million, inclusive of funds spent to date. He noted that the cost estimates have been defined by a competitive bidding process, and that prices have escalated from original estimates made in 2006 due to much higher raw material pricing and higher costs of engineering services. The bid proposals indicate that an in-service date of mid-2012 is achievable if two key contracts can be given a limited notice to proceed by June 30. The earlier in-service date reduces the cost of the allowance for funds used during construction, and would allow

**NORTHEAST UTILITIES  
RISK AND CAPITAL COMMITTEE  
(Committee Meeting, June 25, 2008)**

PSNH to take advantage of incentives built into the New Hampshire legislation for “early reductions” of mercury. Mr. Long stated that despite the capital cost increases, the Clean Air Project remains economic for customers. The continued operation of Merrimack Station with a scrubber will maintain fuel diversity and security of domestic fuel supply in the region, while providing PSNH customers with low cost energy. Messrs. Long and Vancho then reviewed the components of the \$457 million cost estimate, including contingencies of \$53 million, the cash flow and earnings projection, financial sensitivities, financial scenarios and key financial takeaways. During the review of the presentation, the Committee raised questions and discussed risks and other matters of concern. It was indicated that according to the Capital Approval Policy, since this project was greater than \$50 million it would require Board of Trustees review at the July Board meeting. Messrs. Robb and Shivery left the meeting during this discussion.

After discussion, and upon motion made and seconded, the following preamble and resolutions were unanimously adopted:

WHEREAS, Public Service Company of New Hampshire (“PSNH”) management provided the Committee with a capital project approval proposal for the PSNH Clean Air Project and have requested \$457 million of capital funding, inclusive of funds spent to date; and

WHEREAS, this Committee has reviewed said proposal;

NOW THEREFORE, BE IT

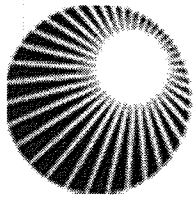
RESOLVED, that this Committee finds the following capital funding by Public Service Company of New Hampshire (“PSNH”) of the PSNH Clean Air Project as described in the material submitted to this meeting and ordered filed with its records thereof acceptable.

<u>Project</u>	<u>Total Cost</u>	<u>Year of Completion</u>
PSNH Clean Air Project	\$457 million, inclusive of funds spent to date	2012

**NORTHEAST UTILITIES  
RISK AND CAPITAL COMMITTEE  
(Committee Meeting, June 25, 2008)**

**RESOLVED**, that this Committee recommends that the Chairman of the Board, President and Chief Executive Officer of Northeast Utilities and the Chairman of PSNH approve the capital funding by PSNH of the PSNH Clean Air Project, provided however that this Committee further recommends that a status update on the project be submitted to the Committee no less frequently than quarterly and the capital funding by PSNH set forth above shall not be exceeded without prior approval by the Committee.

Mrs. Kuhlman and Messrs. Hitchko, Large, Long and MacDonald left the meeting at this point.



**Northeast  
Utilities System**



# Public Service Company of New Hampshire

## Clean Air Project

Capital Project Review and Approval

Northeast Utilities

Risk and Capital Committee

Gary Long/John MacDonald/Jim Vancho

June 25, 2008

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~~Privileged and Confidential. Prepared at the direction of counsel. Prepared in anticipation of litigation.~~



# Executive Summary

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- New Hampshire legislation mandates compliance to mercury emissions standards set forth in the NH Mercury Reduction Act
  - Wet scrubber technology will reduce power plant mercury emissions required by New Hampshire law and is the technology specified by the law
  - There is no other technology which will guarantee capture of 80% of the mercury input of our coal fleet
- Cost estimates have been defined by a competitive bidding process
  - Prices have escalated from original estimates made in 2006 due to much higher raw material pricing and higher costs of engineering service
- Bid proposals indicate that an in-service date of mid-2012 is achievable if two key contracts can be given a limited notice to proceed by June 30
  - Earlier in-service date reduces cost (AFUDC), risk, and allows PSNH to take advantage of incentives built into the New Hampshire legislation for “early reductions” of mercury
- Despite the capital cost increases, the project remains economic for customers and provides a significant investment opportunity for PSNH
  - The NPV of Revenue Requirements of adding the Scrubber versus replacing Merrimack Station energy and capacity supply with market purchases is a benefit to customers of \$132 Million
  - Busbar cost increases to \$94.55/MWh in 2013
  - The scrubber avoids about \$15 Million in sulfur credit purchases annually, included in the customer benefit above
  - Incremental Net Income estimated at \$18.5 M in 2013 – first full year of operation



# Background – Merrimack Station Benefits PSNH Customers



- Merrimack Station produces 3 million MWh of low cost power annually, about 35% of PSNH's total energy service requirement. The low cost energy produced at Merrimack Station off-sets the higher cost of market purchases in the overall energy service rate
- Operating Merrimack Station in a cost-effective manner has been one of the major reasons why PSNH's energy service rate is the lowest in the region, as much as 25% lower than the average of energy service supply that we track in NE
- Merrimack Station has control technology to satisfy NOx and particulate emissions requirements. With a scrubber, SO<sub>2</sub> and Mercury emissions will be controlled and Merrimack will be among the cleanest coal burning plants nationally
- Coal is the most abundant domestic fossil fuel resource in the United States supplying more than 50% of the nation's power generation fleet, but only 15% of New England's generation. Maintaining the use of this secure fuel resource is important for the diversity of the region's future energy supply
- Historically, coal has maintained a significant price advantage over oil or natural gas as fuel for the power generation sector. Operated as Regulated Generation, this cost savings flows directly to customers

**Continued operation of Merrimack Station with a scrubber will maintain fuel diversity and security of domestic fuel supply in the ISO-NE region, while providing PSNH's customers with low cost energy.**





## Background - NH Clean Power Act

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- The NHCPA, in 2002, was the first four-pollutant bill in the nation (SO<sub>2</sub>, NO<sub>x</sub>, Mercury and CO<sub>2</sub>)
- The New Hampshire Mercury Reduction Act, enacted in 2006, was the mercury reduction next-step envisioned by the original NHCPA
- The law was developed in a collaborative effort with PSNH, representatives from the environmental community, and the Executive and Legislative branches of state government
- The New Hampshire Mercury Reduction Act specifies the installation of scrubber technology at Merrimack 1 and 2 no later than July 1, 2013
- The law stipulates that PSNH must capture a minimum of 80% of the total amount of mercury contained in the coal burned at all of PSNH's coal-fired units (Merrimack and Schiller)
- Installation of scrubber technology holds the added benefit of significantly reducing SO<sub>2</sub> emissions from the Merrimack Station boilers (anticipated to be 90% reduction or greater)

# The New Hampshire Mercury Reduction Act Specifics:

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- “It is in the public interest to achieve significant mercury emissions reductions 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 aggregate mercury content of the coal burned at these plants from being emitted into the air by no later than the year 2013”
- “The Department of Environmental Services has determined that the best known commercially available technology is a wet flue gas desulphurization system...as it 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)”
- “The owner of the affected coal burning sources shall work to bring about early reductions (of mercury emissions) and shall be provided incentives to do so”
- “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”
- “The installation of such technology is in the public interest of the citizens of New Hampshire and the customers of the affected sources”
- “The mercury reduction requirements set forth in this subdivision represent a careful, thoughtful balancing of costs, benefits, and technological feasibility and therefore the requirements shall be viewed as an integrated strategy of non-severable components”



# Estimate of Project Costs

## Direct Project Costs

➤ Major Contract Islands: (firm price bids)	
• FGD System	\$100M
• Material Handling	\$45M
• Waste Water Treatment	\$15M
• Chimney	\$13M
➤ PSNH Project Costs	\$30M
➤ Program Manager Costs (URS Washington Group)	
• Balance of Plant & Interconnection	\$93M
• Engineering and Construction Management	\$59M
<b>TOTAL DIRECT PROJECT COSTS</b>	<b>\$355M</b>

➤ PSNH Project Contingency	\$10M
➤ Program Manager Contingencies	
• Materials Escalation	\$23M
• Contingency	\$15M
• Scope Growth	\$ 4M
<b>TOTAL PROJECT CONTINGENCIES</b>	<b>\$53M</b>
➤ Power Advocate's Defined Costs Savings	
• Project cost deduction	(\$6M)
➤ Anticipated Value Engineering*	
• Scope reduction	(\$5M)
<b>TOTAL ANTICIPATED COST REDUCTIONS</b>	<b>(\$11M)</b>
➤ NU Corporate Costs	
• AFUDC	\$55M
• Indirect Costs	\$5M
<b>TOTAL CORPORATE COSTS/AFUDC</b>	<b>\$60M</b>

**Total Project Cost Estimate = \$457M**

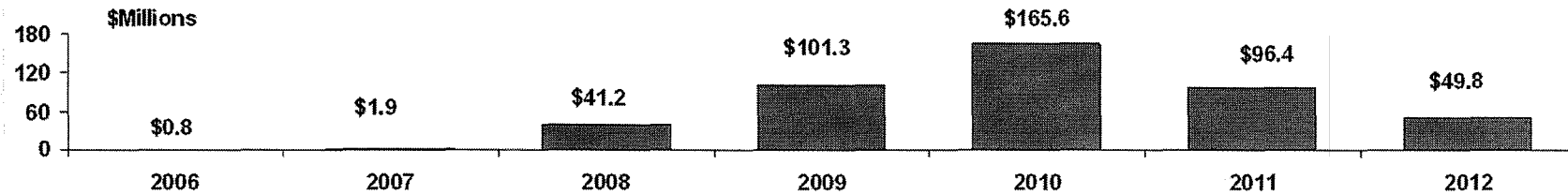
\*Note: Alternative material handling proposal in consideration that would reuse existing station equipment and reduce project costs by about \$5M



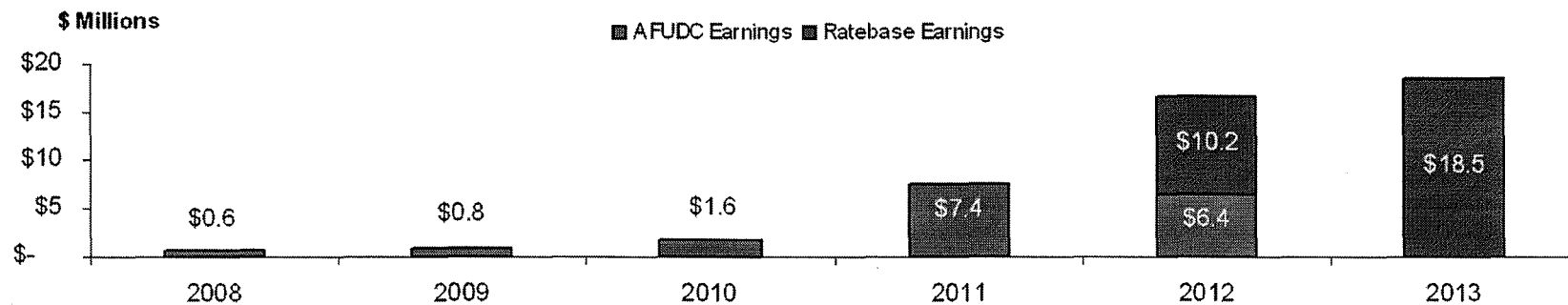
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# Cashflow and Earnings Projection

### Capital Spending by Year



### Estimated Earnings By Year



EPS	2008	2009	2010	2011	2012	2013
	\$ .00	\$ .00	\$ .01	\$ .02	\$ .03	\$ .04

#### Assumptions:

- Base-case project costs are estimated at \$457M
- Project expected to be in-service on June 30, 2012
- Assumes 9.81% ROE on 47.23% of Capital Structure
- Average Shares outstanding per 2009-2013 Forecast

# Financial Sensitivities

- Base-case assumptions result in net customer benefit of \$132 Million and a 2013 busbar cost of \$94.55
- Net customer cost is most sensitive to expected future natural gas and coal prices

ASSUMPTION CATEGORY	ASSUMPTIONS			2008 PV OF NET CUSTOMER COST <sup>1</sup>					2013 PLANT BUSBAR COST						
				2012-2027 (\$ MIL)					(\$/MWH)						
	DOWNSIDE	BASE	UPSIDE	(\$225)	(\$175)	(\$132)	(\$100)	\$0	\$91	\$92	\$93	\$94.55	\$96	\$97	\$98
CAPITAL COST	+10%	\$457.5 mil	-10%	(\$159)	\$(27)	\$27	(\$105)		\$92.31	\$(2.24)	\$2.24				\$96.79
2012 GAS PRICES, MMBTU <sup>3</sup>	-5%	\$11.00	+5%	(\$213)	\$(81)		\$81	(\$51)							
2012 COAL PRICES, MMBTU <sup>3</sup>	+5%	\$4.82	-5%	(\$180)	\$(48)	\$48	(\$84)		\$92.02	\$(2.53)	\$2.53				\$97.08
2012 RGGI/FEDERAL CARBON COSTS PER TON <sup>2,3</sup>	+50%	\$7/\$21	-50%	(\$158)	\$(26)	\$26	(\$106)		\$92.53	\$(2.02)	\$2.02				\$96.57

White text in bars represents change in values;  
 Black text beside bars represents sensitivity result.

## Notes:

- NPV Net Customer Cost = (2008 Present Value of Merrimack Plant Revenue Requirements from 2012 to 2027) minus (2008 Present Value of Market Energy plus 2008 Present Value of Capacity Payments from 2012 to 2027).
- Amounts presented reflect RGGI/federal (Lieberman-Warner) cost estimates. Impacts are equivalent at given prices since RGGI does not provide for carbon allowances but federal proposals are assumed to include Merrimack allocations starting at 67% (per Lieberman-Warner).
- Fuel and carbon costs are escalated at 2.5% per annum off of the 2012 estimate.

# Financial Scenarios

**NPV - NET CUSTOMER COST<sup>1</sup>**
**MONTHLY RESIDENTIAL CUSTOMER COST IMPACT<sup>4</sup>**
**2013 PLANT BUSBAR COST (\$/MWH)**
**NET INC - 2013 (FIRST FULL YEAR IN-SERVICE)**

UNLIKELY LOW	POSSIBLE LOW	BASE	POSSIBLE HIGH	UNLIKELY HIGH
\$210 MIL	\$43.4 MIL	(\$132 MIL)	(\$296 MIL)	(\$461 MIL)
\$1.61	\$0.33	(\$1.01)	(\$2.28)	(\$3.54)
\$104.44	\$100.77	\$94.55	\$89.52	\$84.49
\$21.5 MIL	\$20.1 MIL	\$18.5 MIL	\$18.1 MIL	\$17.7 MIL

**ASSUMED PROBABILITY**

5%	25%	-	25%	5%
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**PARAMETERS**
**CAPITAL COSTS, MILLIONS**
**2012 GAS PRICES, MMBTU<sup>3</sup>**
**2012 COAL PRICES, MMBTU<sup>3</sup>**
**2012 CARBON COSTS, TON (RGGI/FEDERAL)<sup>2,3</sup>**

\$532	\$497	\$457	\$447	\$437
\$9.90	\$10.45	\$11.00	\$11.55	\$12.10
\$5.30	\$5.06	\$4.82	\$4.58	\$4.34
\$15/\$45	\$10/\$30	\$7/\$21	\$3.5/\$10.6	\$0/\$0

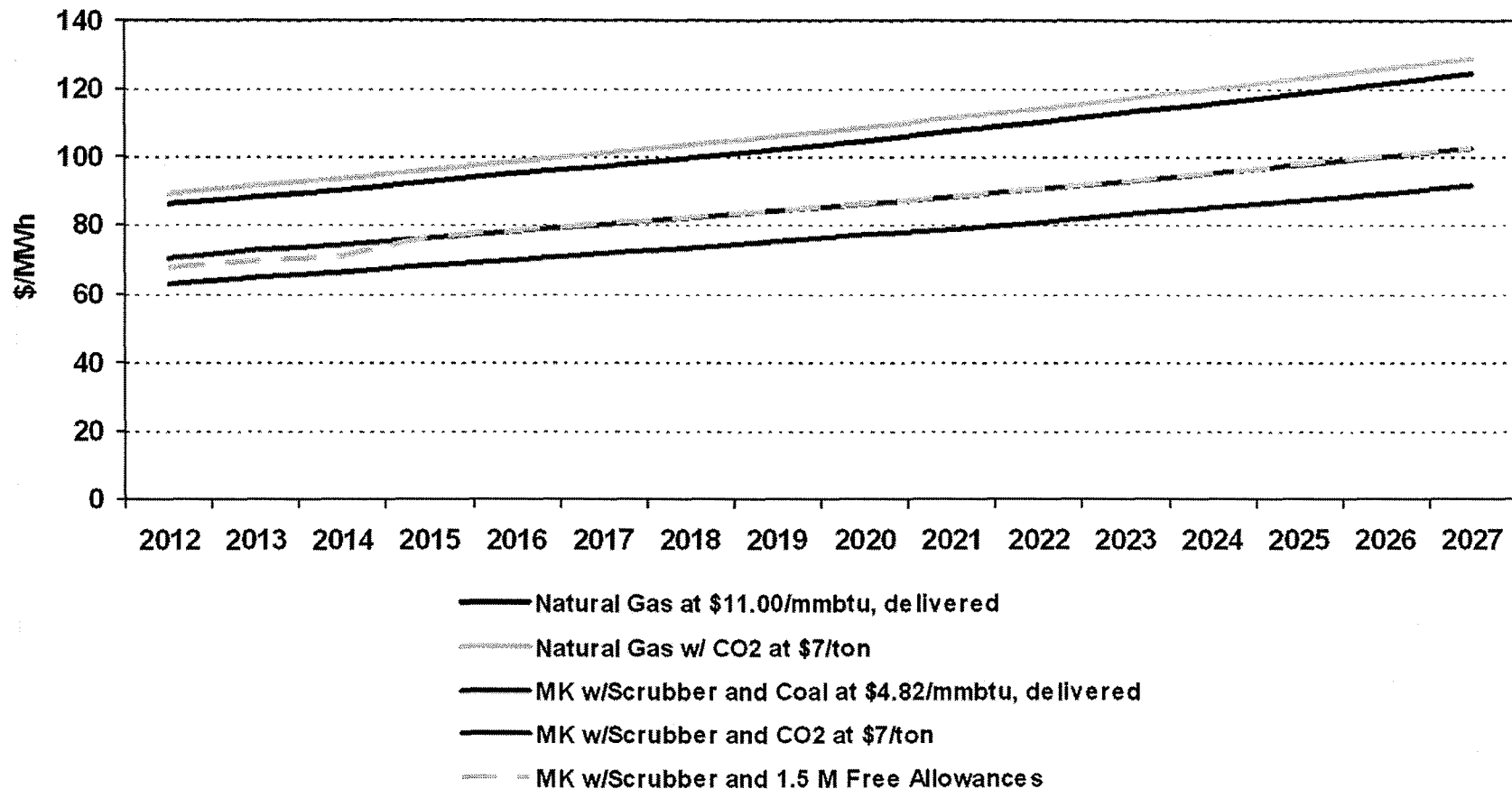
**CASE LEGEND**

<b>UNLIKELY LOW</b>	CASE REFLECTS PROJECT IN-SERVICE DELAYED ONE YEAR AND COST OVERUN (\$45M), COOLING TOWER ADDITION (\$30M), MINIMAL GAS/COAL SPREAD
<b>POSSIBLE LOW</b>	CASE REFLECTS PROJECT IN-SERVICE ON-TIME WITH COST OVERUN (\$10M), COOLING TOWER ADDITION (\$30M), DECREASED GAS/COAL SPREAD
<b>BASE</b>	CURRENT ASSUMPTIONS
<b>POSSIBLE HIGH</b>	CASE REFLECTS PROJECT IN-SERVICE 6 MONTHS EARLY (\$10M), PROJECT COSTS AS EXPECTED, BENIGN CARBON LEGISLATION, INCREASED GAS/COAL SPREAD
<b>UNLIKELY HIGH</b>	CASE REFLECTS PROJECT IN-SERVICE 6 MONTHS EARLY (\$10M) WITH LOWER THAN EXPECTED COSTS (\$10M), NO CARBON LEGISLATION, MAXIMUM GAS/COAL SPREAD

1. NPV Net Customer Cost = (2008 Present Value of Merrimack Plant Revenue Requirements from 2012 to 2027) minus (2008 Present Value of Market Energy plus 2008 Present Value of Capacity Payments from 2012 to 2027).
2. Amounts presented reflect RGGI/federal (Lieberman-Warner) cost estimates. Impacts are equivalent at given prices since RGGI does not provide for carbon allowances but federal proposals are assumed to include Merrimack allocations starting at 67% (per Lieberman-Warner).
3. Fuel and carbon costs are escalated at 2.5% per annum off of the 2012 estimate.
4. Based on NPV Net Customer Cost levelized over the period 2012-2027, and average residential usage of 500 kWh per month.



# Economic Analysis Supports That Merrimack Station With Scrubber Will Be Dispatched



- Natural Gas plant heat rate of 7,620 Btu/kWh in a Combined Cycle unit
- SO<sub>2</sub> at \$500/ton, NOx at \$1,300/ton

# Key Financial Takeaways

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- Customer value of scrubber installation extremely sensitive to future expected natural gas/coal price spread
  - At assumed 2012 price levels and other base case parameters, a spread of approximately \$5.29/mmbtu (escalating) is required to create customer benefits
- Impact of RGGI/Federal carbon legislation is not expected to render scrubber investment uneconomic to customers at current projected costs
  - Assumes any Federally imposed carbon legislation would grant carbon allowances to generators (approximately 67% of Merrimack's requirement)
  - Absent Federal allocations (or under RGGI), assuming all other base case assumptions, a 2012 carbon cost of \$30/ton (escalating) or greater would eliminate customer value of scrubber installation
- Assuming base case fuel and carbon assumptions, capital cost estimates have meaningful headroom before rendering investment uneconomic
  - However, reductions in natural/gas coal spread and increases in carbon costs would put pressure on ability to construct within the current projection

Investment is essentially a long spread position on natural gas/coal with carbon and construction risk

# Project Benefits are Accentuated by Advancing the In-Service Date to mid-2012

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## ➤ Financial

- Reduces AFUDC cost by \$10 Million
- Limits exposure to material or labor cost escalation for project elements not covered by firm price contracts
- Generates real earnings one year sooner

## ➤ Environmental


- Eliminates an additional 31,350 tons of SO<sub>2</sub>
- Eliminates an additional 229 pounds of Mercury
- Reduces particulate emissions to less than 1% one year sooner

## ➤ Customer

- Produces “early reduction mercury credits” that can be used for
  - Compliance in future years if operational issues with the scrubber arise
  - Conversion to fungible SO<sub>2</sub> allowances (estimated at 12,500 allowances)

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## Regional Barriers to Adding New Base Load Generation in New England Cause Merrimack to be Strategically Positioned for Re-Investment

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- New base load power plants (coal, nuclear, IGCC) are not on the near or mid-term horizon for the region, making re-investment in environmental technology at existing assets the necessary strategy to maintain appropriate base-load supply
- Current market players are engaged in blocking opportunities for new, lower cost, regulated generation assets, making preservation of existing assets increasingly important
- ISO-NE market rules, and the current economic climate, make it nearly impossible for prospective generators to secure financing and overcome the substantial “barriers to entry” to build new generation in the region
- New England electric energy supply is highly dependent on natural gas, and costs are subject to corresponding commodity price volatility, and long-term price increases
- In addition to the support these barriers provide for continued operation of existing base-load plants:
  - Brattle Group analysis of future NE energy markets indicates that all coal generation, including Merrimack, will continue to operate economically
  - Operation of Merrimack Station on coal provides stability to the power supply in the region
  - Loss of PSNH’s Merrimack Station would call into question the viability of operating the remaining generating assets as a fleet

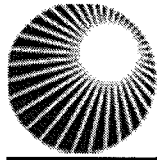


# Conclusion

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- Installation of the scrubber is required by NH law to meet mercury emissions requirements
- Merrimack Clean Air Project capital costs have increased significantly since the original project costs estimates were prepared in 2006, and stand at \$457M
- Under the base case and with varying assumptions, continued operation of Merrimack Station with the Clean Air Project remains economically beneficial for customers
- State law allows for recovery of prudently incurred costs to construct and operate the scrubber
- The project team is in place and prepared to execute contracts now and begin construction in earnest late this year, with a project in-service date of mid-2012
- The proposal to construct and operate a scrubber at Merrimack Station, in conformance with the NH Mercury Reduction Law, is in the best interest of PSNH's customers and shareholders





**Northeast  
Utilities System**



## Appendix Materials

### **PSNH Clean Air Project June 25, 2008**



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# Risk Assessment, Major Risk Concerns

Risk Event	Risk Horizon	Potential Project Capital Cost Impact	Likelihood of Occurrence (%)	Expected Value Capital Cost Exposure	Mitigation Plan
Remaining bids received from vendors are significantly higher than expected related to material and handling costs. Note: The bids on the major equipment have been received.	2008	\$10 million	20%	\$2 million	Currently carrying out the procurement schedule. The Purchasing area is trying to stimulate competition during the bid process. Lastly as the required implementation date allows for some slippage in the schedule.
Lack of sufficient, qualified construction labor results in increased costs to import labor resources, schedule delays to wait for resources to become available.	2009-12	\$50 million	10%	\$5 million	WGI will initiate the National Maintenance Agreement. Meetings have been held with the union trades to discuss the project and labor requirements up front.
Inability to lock in firm prices during contracting phase exposes the project to price volatility and currency risk.	2008-9	\$25 million	20%	\$5 million	The RFP is being structured for fixed/lump sum pricing. The contract will be negotiated to try and include these parameters.

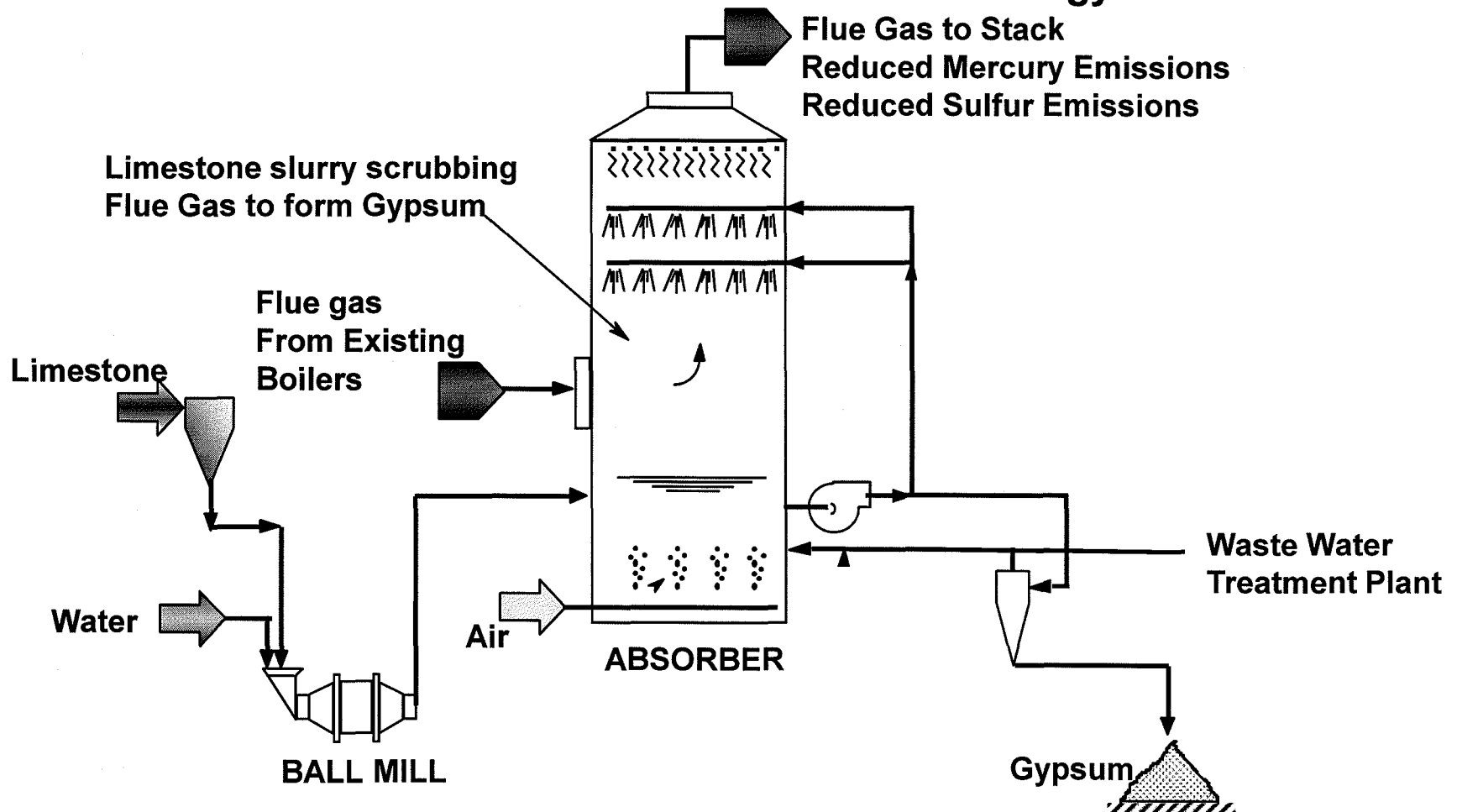


# Risk Assessment, Major Risk Concerns

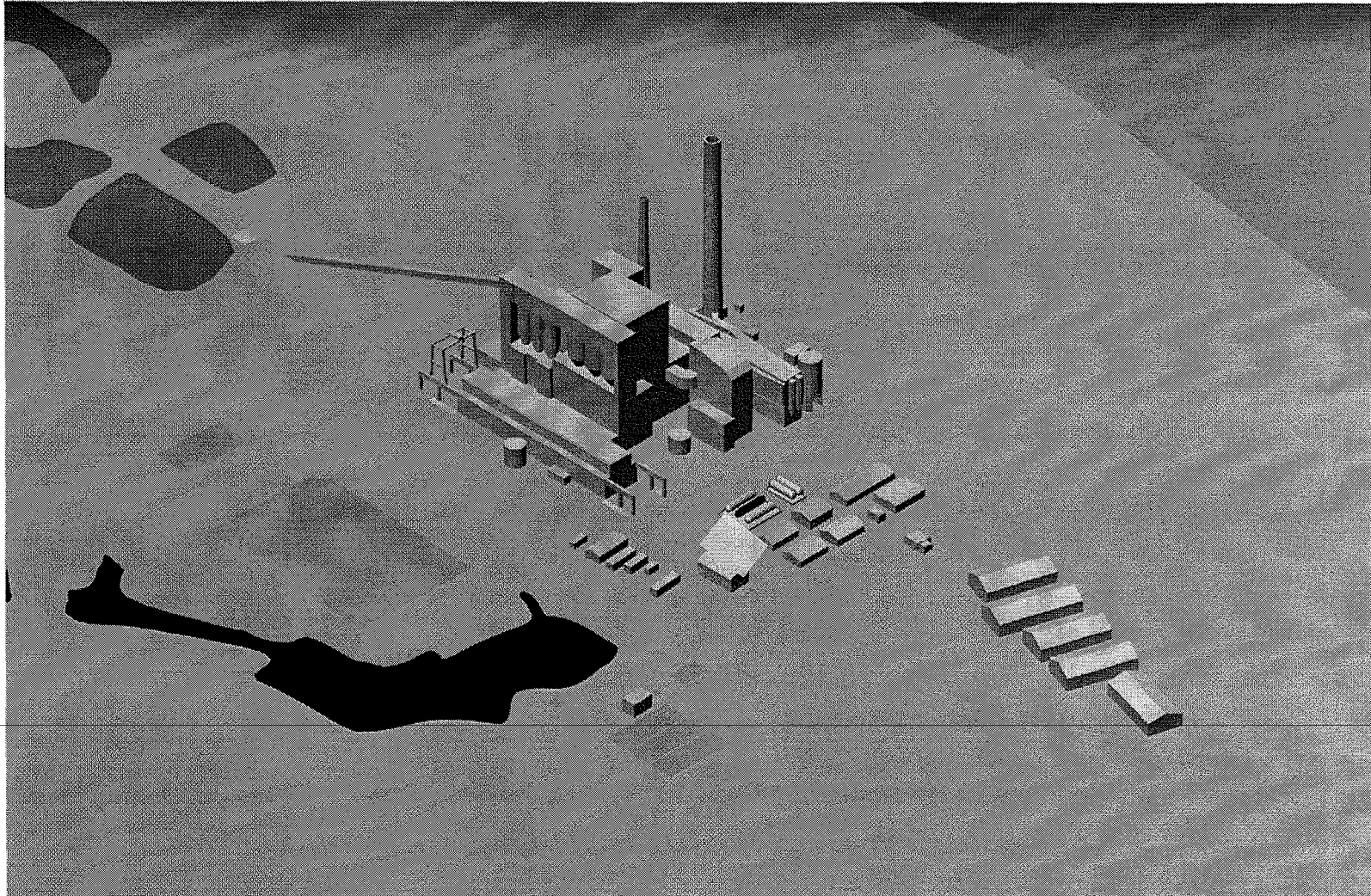
Risk Event	Risk Horizon	Potential Project Capital Cost Impact	Likelihood of Occurrence (%)	Expected Value Capital Cost Exposure	Mitigation Plan
Vendors unable to meet project design criteria resulting in non-conforming bids. Note: bids received with mercury criteria. Risk relates to remaining design specifications.	2008-9	\$25 million	25%	\$6.25 million	In the event this occurs, an acceptable outcome will be negotiated during the procurement process.
Inability to design appropriate plant integration plans resulting in MK1 bypass, boiler implosion and noise issues.	2008-9	\$12.5 million	50%	\$6.25 million	PSNH contracted with experienced contract program manager in Scrubber installations. Additionally, NU personnel will be reviewing design specifications for reasonableness.
Scope definition changes drastically during construction resulting in additional expenditures and/or potential schedule delays.	2008-12	\$18.75 million	20%	\$3.75 million	PSNH team will work closely with WGI & EPC contractors to minimize the impact.
Proposed design is inadequate and does not meet operability/reliability/constructability requirements resulting in complete redesign.	2008-9	\$12.5 million	30%	\$3.75 million	PSNH contracted with experienced contract program manager in Scrubber installations. Additionally, NU personnel will be reviewing design specifications for reasonableness.

# Scrubber Schematic

## Wet Flue Gas Desulfurization Technology

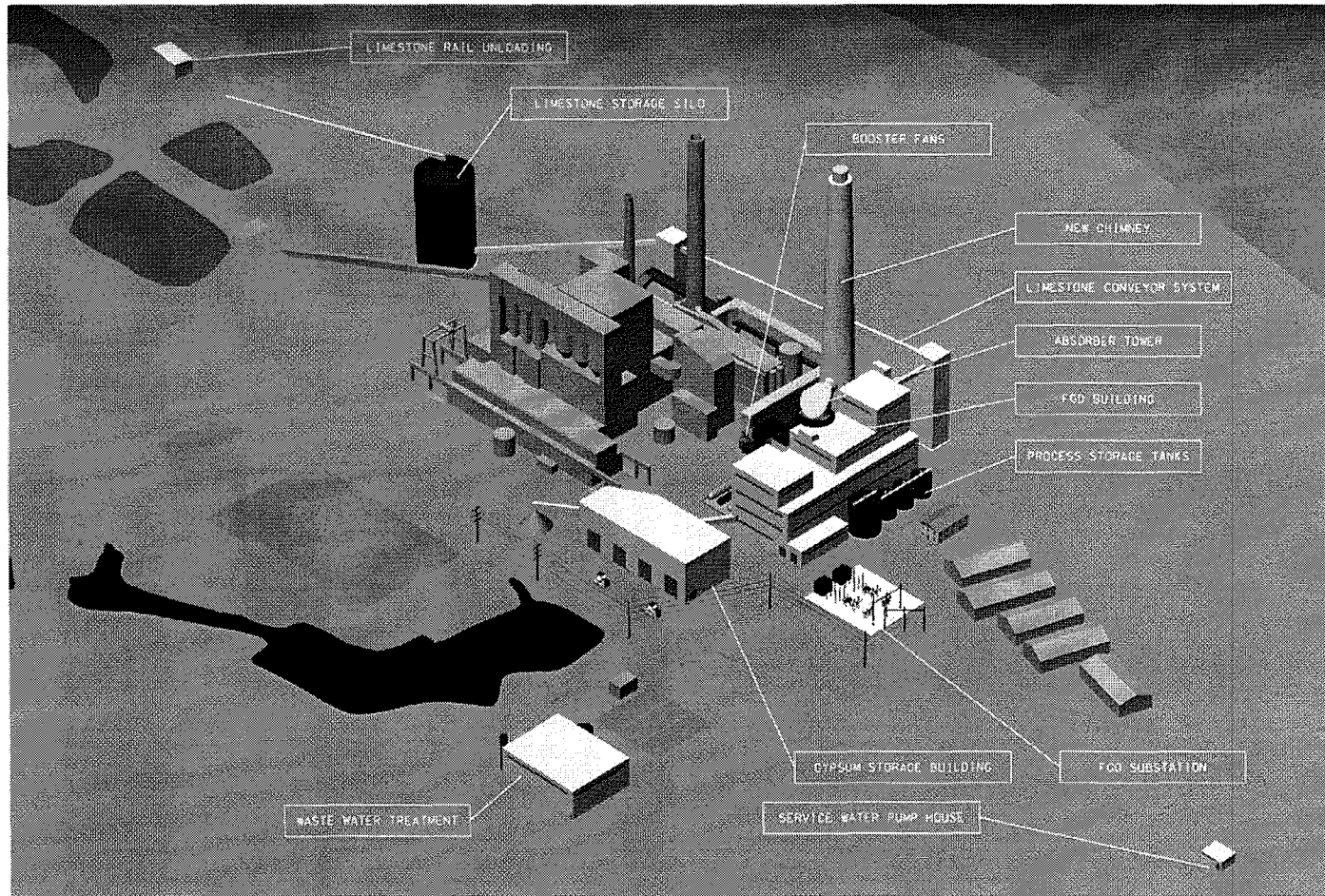


## Merrimack Station: 2008



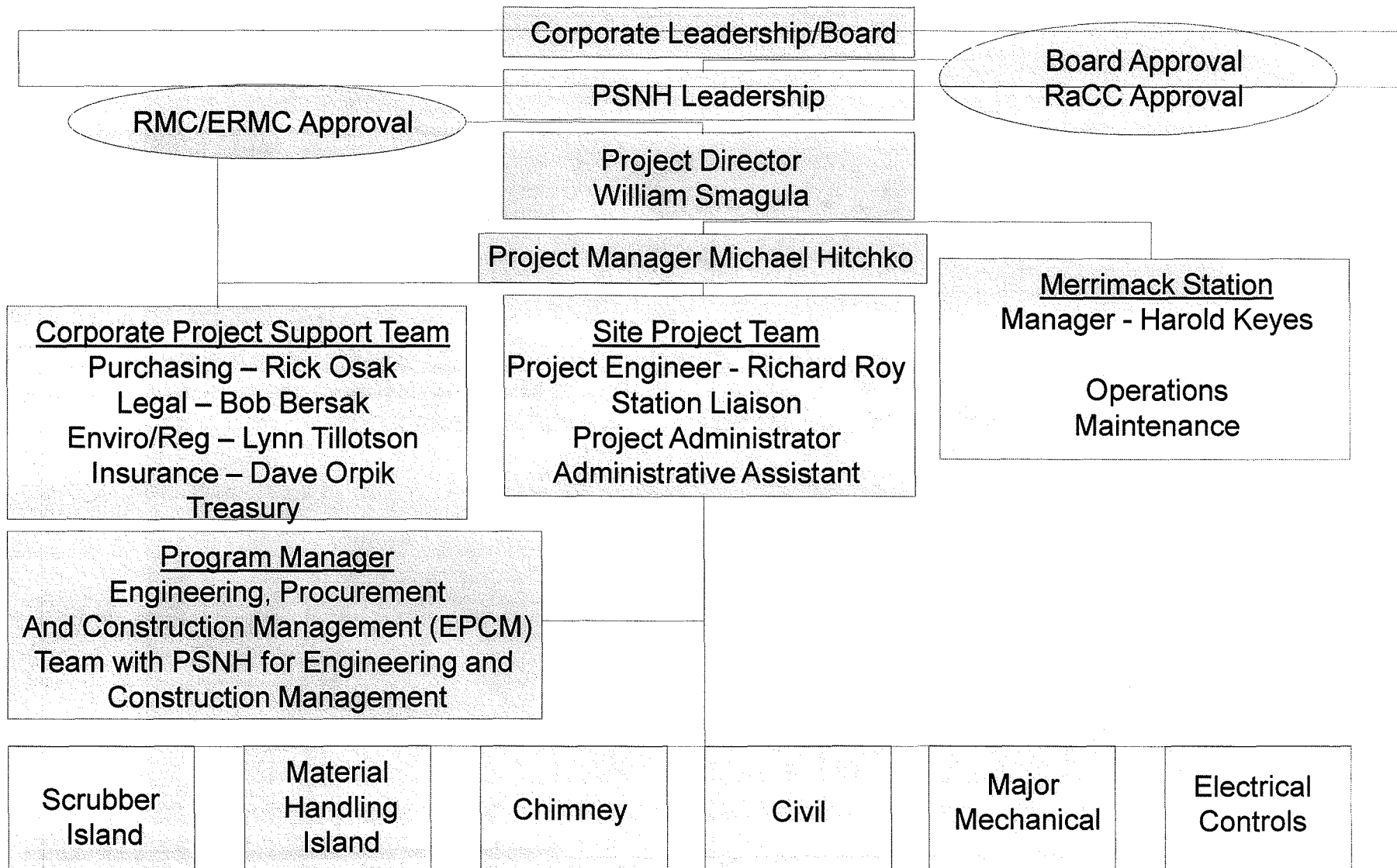
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# Merrimack Station: 2013





# Project Organization



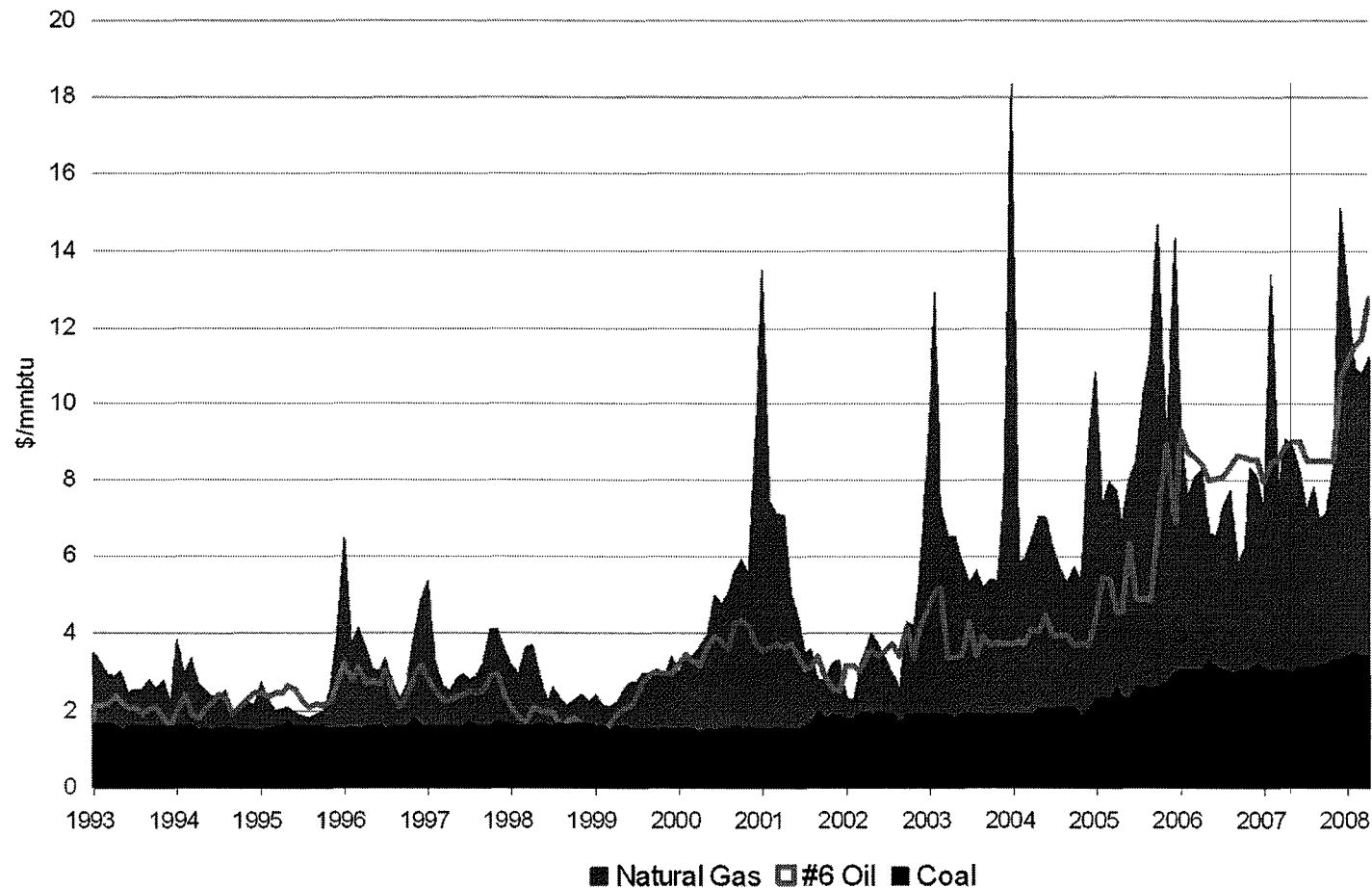
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# Historic Price Volatility Suggests Coal Will Find a Way to be Cheaper than Alternatives

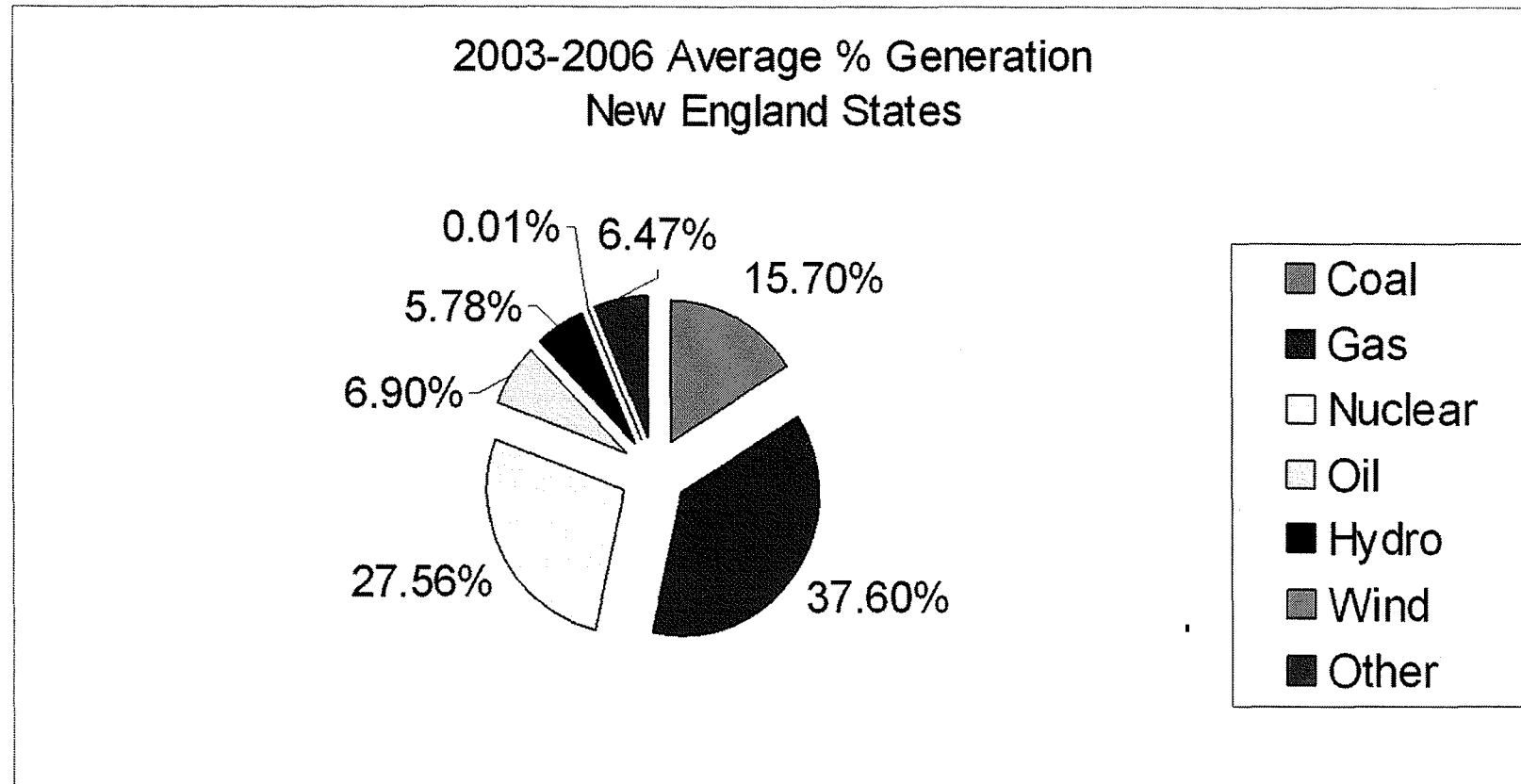


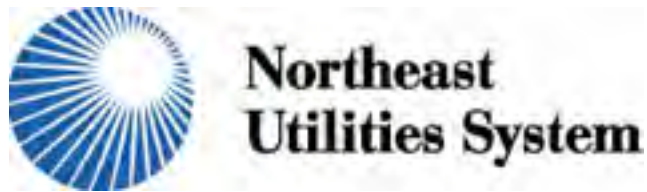
## PSNH Actual/Quoted Delivered Fuel Costs



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# ISO-NE Energy Supply by Fuel Type





# Public Service Company of New Hampshire

## Clean Air Project

Capital Project Review and Approval

Northeast Utilities

Board of Trustees

Gary Long/Cameron Bready

July 15, 2008

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## Executive Summary

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- New Hampshire legislation mandates compliance to mercury emissions standards set forth in the NH Mercury Reduction Act
  - Wet scrubber technology will reduce power plant mercury emissions required by New Hampshire law and is the technology specified by the law
  - There is no other technology which will guarantee capture of 80% of the mercury input of our coal fleet
- Cost estimates have been defined by a competitive bidding process
  - Prices have escalated from original estimates made in 2006 due to much higher raw material pricing and higher costs of engineering service
- Bid proposals indicate that an in-service date of mid-2012 is achievable
  - Earlier in-service date reduces cost (AFUDC), risk, and allows PSNH to take advantage of incentives built into the New Hampshire legislation for “early reductions” of mercury
- Despite the capital cost increases, Merrimack Station remains economic for customers under expected conditions and provides a significant investment opportunity for PSNH
  - The NPV of Revenue Requirements of adding the Scrubber versus replacing Merrimack Station energy and capacity supply with market purchases is a benefit to customers of \$132 Million
  - The scrubber avoids about \$15 Million in sulfur credit purchases annually, included in the customer benefit above
  - Incremental Net Income estimated at \$18.5 M in 2013 – first full year of operation

## Background – Merrimack Station Benefits PSNH's Customers



- Merrimack Station produces 3 million MWh of low cost power annually, about 35% of PSNH's total energy service requirement. The low cost energy produced at Merrimack Station off-sets the higher cost of market purchases in the overall energy service rate
- Operating Merrimack Station in a cost-effective manner has been one of the major reasons why PSNH's energy service rate is the lowest in the region, as much as 25% lower than the average of energy service supply that we track in NE
- Merrimack Station has control technology to satisfy NO<sub>x</sub> and particulate emissions requirements. With a scrubber, SO<sub>2</sub> and Mercury emissions will be controlled and Merrimack will be among the cleanest coal burning plants nationally
- Coal is the most abundant domestic fossil fuel resource in the United States supplying more than 50% of the nation's power generation fleet, but only 15% of New England's generation. Maintaining the use of this secure fuel resource is important for the diversity of the region's future energy supply
- Historically, coal has maintained a price advantage over oil or natural gas as fuel for the power generation sector. Operated as Regulated Generation, this cost savings flows directly to customers

**Continued operation of Merrimack Station with a scrubber will maintain fuel diversity and security of domestic fuel supply in the ISO-NE region, while providing PSNH's customers with low cost energy.**

## Financial Assessment – Summary Metrics

<b>Total Installed Capital Costs</b>	<b>\$457M</b>
<b>Capital Cost \$ / kW</b>	<b>\$1,000<sup>1</sup></b>
<b>NPV of Base Case Customer Benefit</b>	<b>\$132M</b>
<b>2013 Net Income Contribution</b>	<b>\$18.5M</b>
<b>2013 EPS Contribution (Diluted)</b>	<b>\$.04/share</b>
<b>Busbar Cost (2013)</b>	<b>\$94.55/MWh</b>

### **Key assumptions :**

- Project in-service on June 30, 2012
- 9.81% ROE on 47.23% equity component of capital structure
- Base case natural gas price of \$11/mmbtu, coal of \$4.82/mmbtu and carbon of \$7/ton

### *Note:*

1. For reference, capital costs for a new CCGT would be approximately \$1,600 - \$1,700/kw. A new peaker would be approximately \$950 – 1,000/kw.



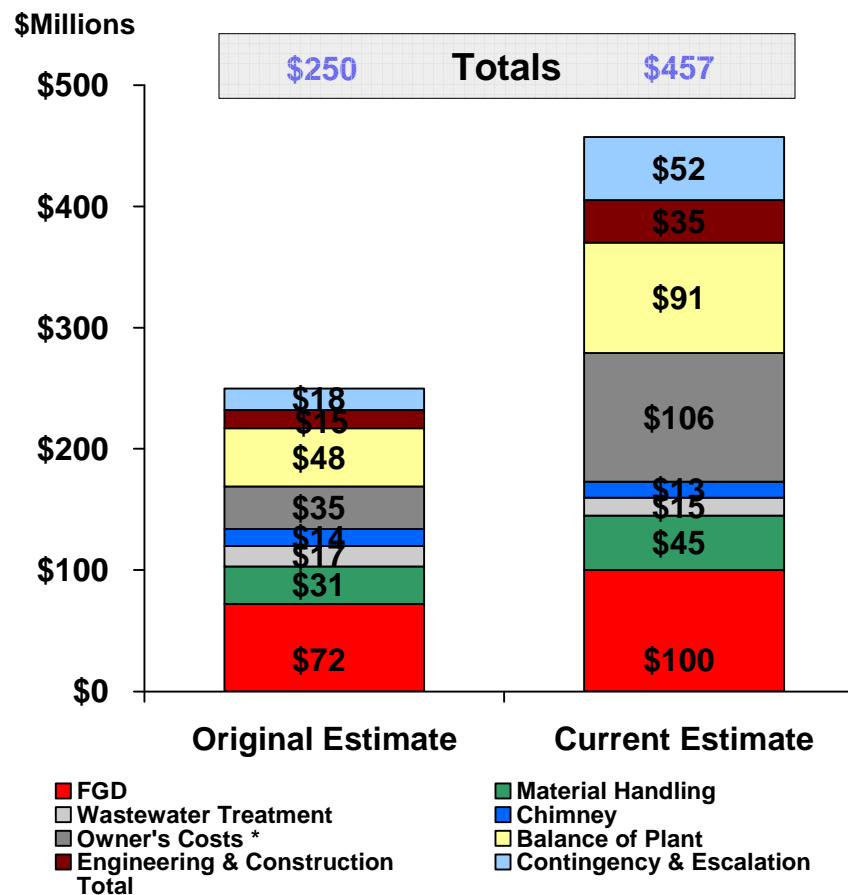
# Estimate of Project Costs

<b>Major Island Contracts (Firm-Price Bids)</b>	
FGD System	\$100M
Material Handling	\$45M
Waste-water Treatment	\$15M
Chimney	\$13M
<b>PSNH Project Costs</b>	<b>\$44M</b>
<b>Other Program Manager Costs</b>	
Balance of Plant and Interconnection	\$91M
Engineering and Construction	\$35M
Contingency and Escalation	\$52M
<b>AFUDC</b>	<b>\$57M</b>
<b>Total Direct Costs</b>	<b>\$452M</b>

<b>NU Indirect Costs</b>	<b>\$5M</b>
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<b>Project Total</b>	<b>\$457M</b>
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**Project Costs by Component**



\* Includes PSNH Project Costs, Indirect Costs, and AFUDC



## Financial Assessment - Overview

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- Customer benefit/cost of scrubber installation is dependent upon customer alternatives for securing the energy and capacity provided by Merrimack
  - Analysis assumes that customers will procure energy and capacity from the market if Merrimack is not operational
  - Market price for energy will likely continue to be set by natural gas units for the foreseeable future
    - Expected future price for natural gas and the spread between natural gas prices and coal prices are critical to assessment of customer impacts
- Financial customer benefit/cost determined as follows:
  - PV of net revenue requirements of Merrimack facility (including new scrubber) – PV of market energy and market capacity costs
  - Customer benefit is achieved when the revenue requirements of Merrimack are lower than the costs of procuring the energy and capacity that would otherwise be provided by Merrimack from the market
- Future impact of carbon may play an important role in determining ultimate customer benefit/cost
  - Carbon costs are expected to impact electricity rates, but coal plants will likely be disproportionately affected given their emission rates versus natural gas plants



## Financial Sensitivities

- Base-case assumptions result in net customer benefit of \$132 million
- Net customer benefit is most sensitive to expected future natural gas and coal prices and the relative spread between the two commodities

Assumption Category	Assumptions			2008 PV of Net Customer Cost <sup>1</sup>					Net Customer Impact
				2012-2027 (\$Mil)					Break-Even Rates
	Downside	Base	Upside	(\$300)	(\$180)	(\$132)	(\$50)	\$40	
Capital Cost	+10%	\$457 mil	-10%	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><di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Text in bars represents change in values;  
text beside bars represents sensitivity result.

### Notes:

- NPV Net Customer Cost = (2008 Present Value of Merrimack Plant Revenue Requirements from 2012 to 2027) minus (2008 Present Value of Market Energy plus 2008 Present Value of Capacity Payments from 2012 to 2027).
- Fuel and carbon costs are escalated at 2.5% per annum off of the 2012 estimate.
- Reflects net impact on a \$/ton basis for either RGGI or Federal policies excluding any allocations of allowances.
- Spread not sensitized as impact depends on underlying natural gas and coal prices. Break even is based on a \$4.82/MMBtu Coal Price (~\$130 per delivered ton).



## Financial Scenarios

- The following scenarios, denoted by their assumed probability of occurrence, demonstrate the compounding impacts of a variety of assumption changes on the key financial metrics for the project:

	Unlikely Low	Possible Low	Base	Possible High	Unlikely High
NPV - Net Customer Cost	<b>\$481 MIL</b>	<b>\$194 MIL</b>	<b>(\$132 MIL)</b>	<b>(\$413 mil)</b>	<b>(\$719 mil)</b>
Monthly Residential Customer Cost Impact	<b>\$3.70</b>	<b>\$1.49</b>	<b>(\$1.01)</b>	<b>(\$3.17)</b>	<b>(\$5.52)</b>
2013 Plant Busbar Cost (\$/MwH)	<b>\$102.41</b>	<b>\$100.37</b>	<b>\$94.55</b>	<b>\$87.86</b>	<b>\$79.44</b>
Net Income - 2013 (First full Year In-Service)	<b>\$21.5 mil</b>	<b>\$20.1 MIL</b>	<b>\$18.5 MIL</b>	<b>\$18.1 mil</b>	<b>\$17.7 mil</b>
Assumed probability	<b>5%</b>	<b>25%</b>	<b>-</b>	<b>25%</b>	<b>5%</b>
Parameters					
Capital Costs, Millions	<b>\$532</b>	<b>\$497</b>	<b>\$457</b>	<b>\$447</b>	<b>\$437</b>
2012 Gas Prices, MMBTU	<b>\$8.80</b>	<b>\$9.90</b>	<b>\$11.00</b>	<b>\$12.10</b>	<b>\$13.20</b>
2012 Coal Prices, MMBTU	<b>\$5.78</b>	<b>\$5.30</b>	<b>\$4.82</b>	<b>\$4.34</b>	<b>\$3.86</b>
2012 Carbon Costs, Ton	<b>\$30</b>	<b>\$20</b>	<b>\$7</b>	<b>\$5</b>	<b>\$0</b>

### Case Legend

<b>Unlikely Low</b>	Case reflects project in-service delayed one year and cost overrun (\$45M), cooling tower addition (\$30M), minimal Gas/coal Spread
<b>Possible Low</b>	Case reflects project in-service on-time with cost overrun (\$10M), cooling tower addition (\$30M), decreased Gas/coal Spread
<b>Base</b>	Current assumptions
<b>Possible High</b>	Case reflects project in-service 6 months early (\$10M), project costs as expected, benign carbon legislation, increased gas/coal spread
<b>Unlikely High</b>	Case reflects project in-service 6 months early (\$10M) with lower than expected costs (\$10M), no carbon legislation, maximum gas/coal spread

- Other scenarios considered:

- \$200 Oil Scenario:
- \$50 Carbon Cost:

### Customer Cost/(Benefit)

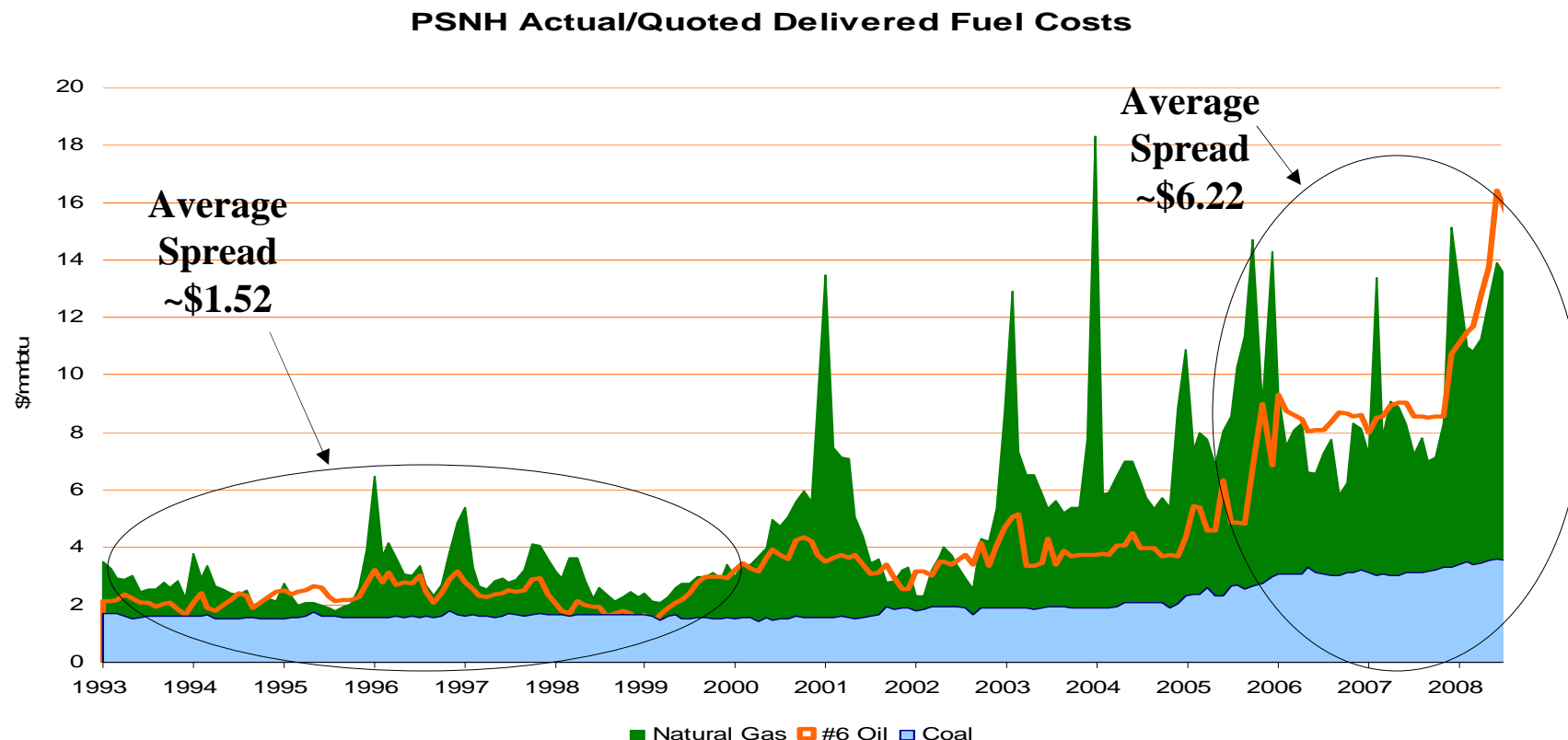
(\$437 million)

\$70 million



## Historic Fuel Spreads

- Gas/Coal spread has averaged \$3.18/mmbtu over the last 15 years, as compared to the required customer break-even level of \$5.29/mmbtu (based on current price levels)
  - However, post the hurricane season of 2005, the spread has averaged \$6.22/mmbtu
- Since January 2007, the spread has averaged nearly \$6.63/mmbtu and current spreads are more than ~\$9/mmbtu






## Key Financial Takeaways

- Customer value of scrubber installation extremely sensitive to future expected natural gas/coal price spread
  - At assumed 2012 natural gas and coal price levels and other base case parameters, a spread of approximately \$5.29/mmbtu (escalating) is required to create customer benefits
  - Recent spreads suggest that this level is realistic; however, historic spread levels have averaged lower
- Impact of carbon legislation is not expected to render scrubber investment uneconomic to customers at current projected costs under RGGI
  - Absent allocations, assuming all other base case assumptions, a net carbon cost of \$30/ton (escalating) or greater would diminish customer value of scrubber installation
- Assuming base case fuel and carbon assumptions, capital cost estimates have meaningful headroom before rendering investment uneconomic
  - All other base case assumptions being held constant, capital costs can increase to ~\$684 million before eliminating customer economic benefits
  - However, reductions in natural/gas coal spread and increases in carbon costs would put pressure on base case capital cost estimates
- Generation ratemaking making structure allows for PSNH to earn 9.81% ROE on equity invested in the project under all scenarios presented
  - Assumes that project capital costs are deemed prudent

Investment is essentially a long spread position on natural gas/coal with carbon and construction risk



**Clean Air Project**  
Merrimack Station



**Northeast  
Utilities System**

11



## Conclusion

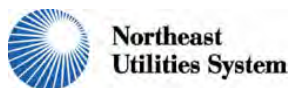
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- Installation of the scrubber is required by NH law to meet mercury emissions requirements
- Merrimack Clean Air Project capital costs have increased significantly since the original project costs estimates were prepared in 2006, and stand at \$457M
- Under the base case, continued operation of Merrimack Station with the Clean Air Project remains economically beneficial for customers
- State law allows for recovery of prudently incurred costs to construct and operate the scrubber
- The project team is in place and prepared to execute contracts now and begin construction in earnest late this year, with a project in-service date of mid-2012
- The proposal to construct and operate a scrubber at Merrimack Station, in conformance with the NH Mercury Reduction Law, is in the best interest of PSNH's customers and shareholders



## Appendix Materials

### **PSNH Clean Air Project July 15, 2008**

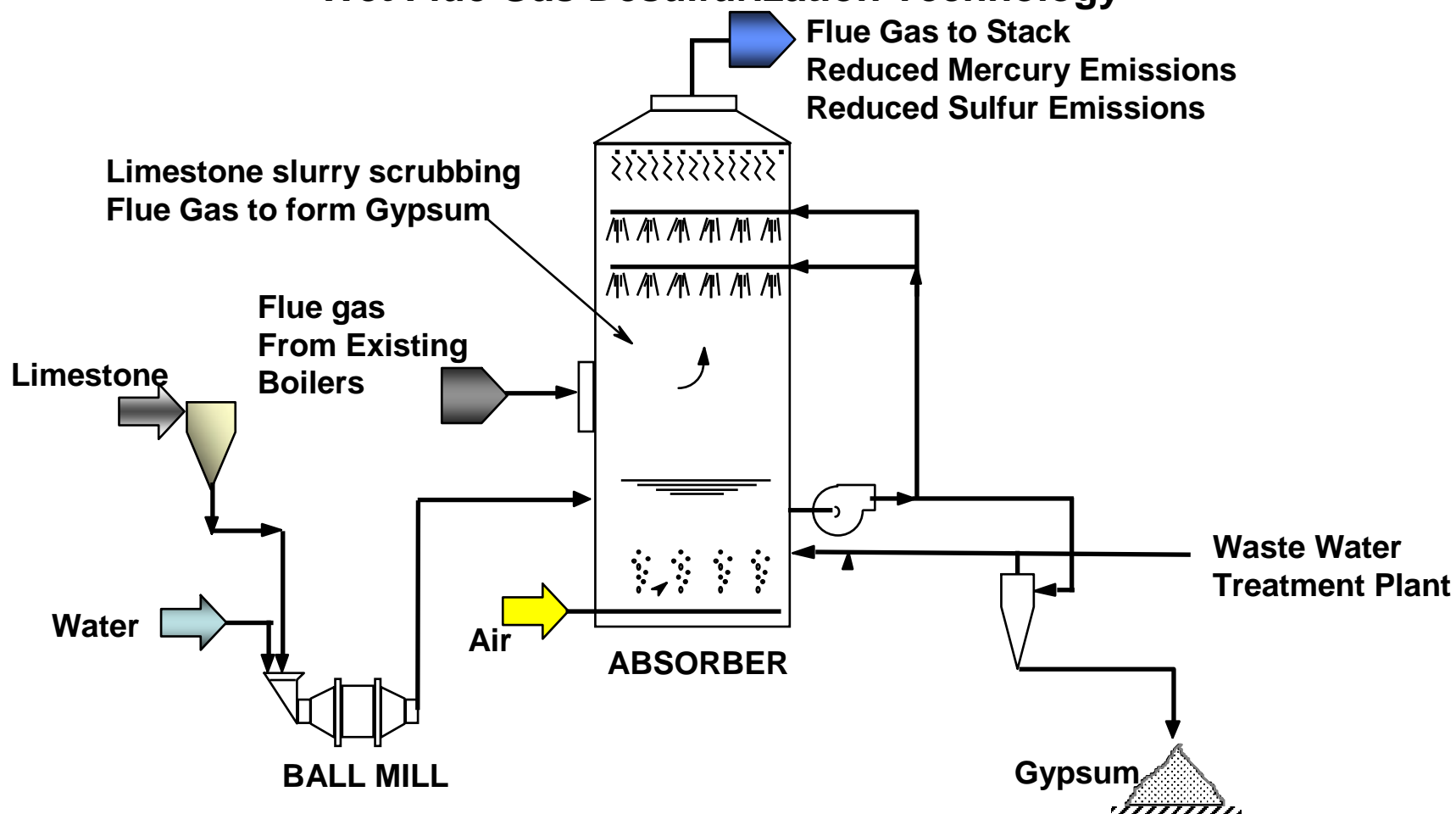


~~Privileged and Confidential. Prepared at the direction of Counsel. Prepared in Anticipation of Litigation.~~

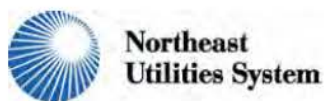
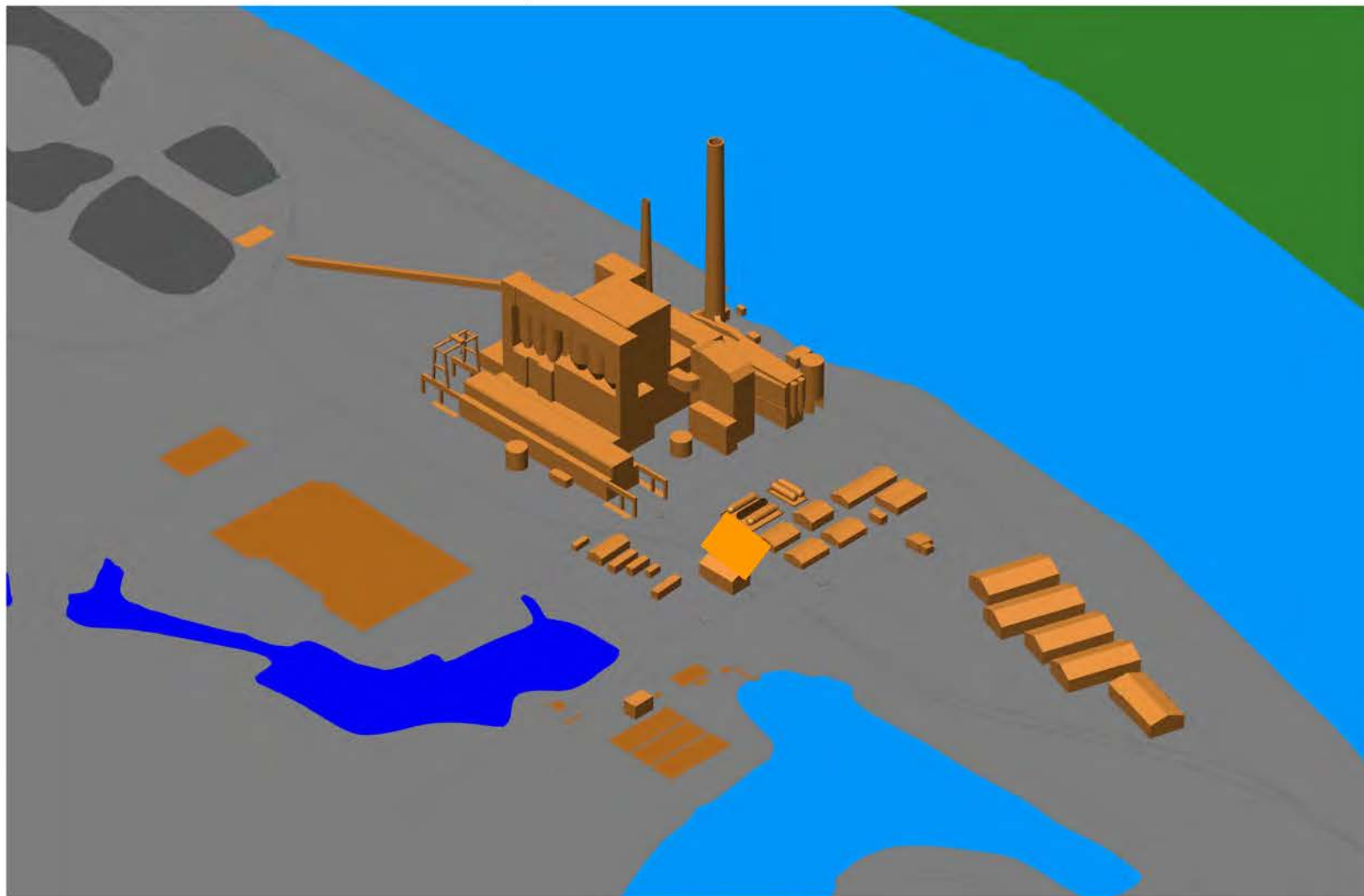
# Scrubber Schematic



## Wet Flue Gas Desulfurization Technology



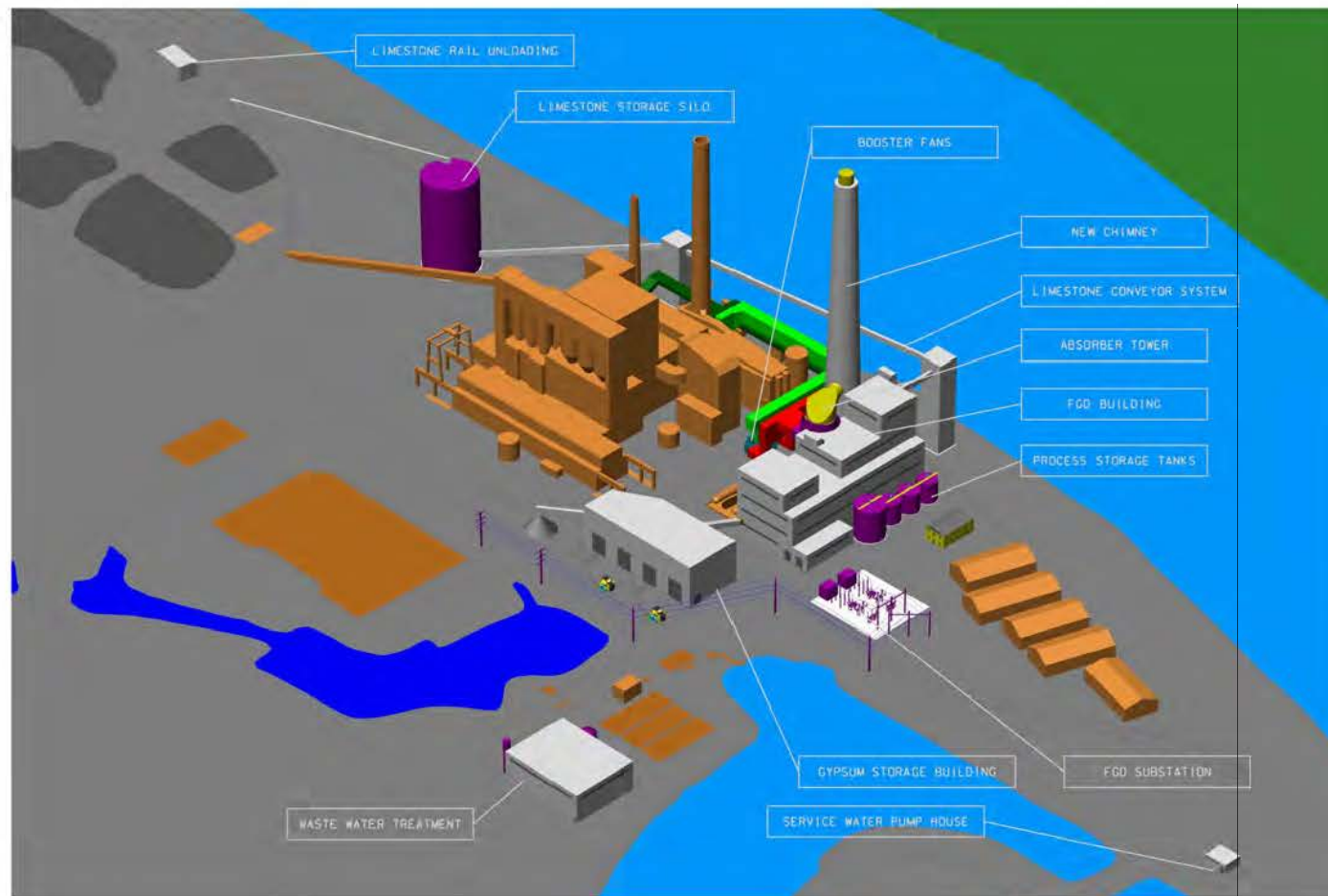
## Merrimack Station: 2008



~~Privileged and Confidential. Prepared at the direction of Council. Prepared in Anticipation of Litigation.~~



## Merrimack Station: 2013





## Risk Assessment, Major Risk Concerns

Risk Event	Risk Horizon	Potential Project Capital Cost Impact	Likelihood of Occurrence (%)	Expected Value Capital Cost Exposure	Mitigation Plan
Remaining bids received from vendors are significantly higher than expected related to material and handling costs. Note: The bids on the major equipment have been received.	2008	\$10 million	20%	\$2 million	Currently carrying out the procurement schedule. The Purchasing area is trying to stimulate competition during the bid process. Lastly as the required implementation date allows for some slippage in the schedule.
Lack of sufficient, qualified construction labor results in increased costs to import labor resources, schedule delays to wait for resources to become available.	2009-12	\$50 million	10%	\$5 million	WGI will initiate the National Maintenance Agreement. Meetings have been held with the union trades to discuss the project and labor requirements up front.
Inability to lock in firm prices during contracting phase exposes the project to price volatility and currency risk.	2008-9	\$25 million	20%	\$5 million	The RFP is being structured for fixed/lump sum pricing. The contract will be negotiated to try and include these parameters.



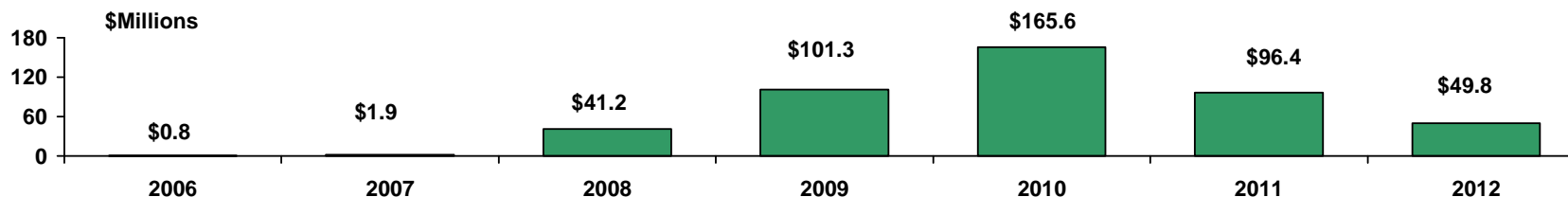
## Risk Assessment, Major Risk Concerns

Risk Event	Risk Horizon	Potential Project Capital Cost Impact	Likelihood of Occurrence (%)	Expected Value Capital Cost Exposure	Mitigation Plan
Vendors unable to meet project design criteria resulting in non-conforming bids. Note: bids received with mercury criteria. Risk relates to remaining design specifications.	2008-9	\$25 million	25%	\$6.25 million	In the event this occurs, an acceptable outcome will be negotiated during the procurement process.
Inability to design appropriate plant integration plans resulting in MK1 bypass, boiler implosion and noise issues.	2008-9	\$12.5 million	50%	\$6.25 million	PSNH contracted with experienced contract program manager in Scrubber installations. Additionally, NU personnel will be reviewing design specifications for reasonableness.
Scope definition changes drastically during construction resulting in additional expenditures and/or potential schedule delays.	2008-12	\$18.75 million	20%	\$3.75 million	PSNH team will work closely with WGI & EPC contractors to minimize the impact.
Proposed design is inadequate and does not meet operability/reliability/constructability requirements resulting in complete redesign.	2008-9	\$12.5 million	30%	\$3.75 million	PSNH contracted with experienced contract program manager in Scrubber installations. Additionally, NU personnel will be reviewing design specifications for reasonableness.

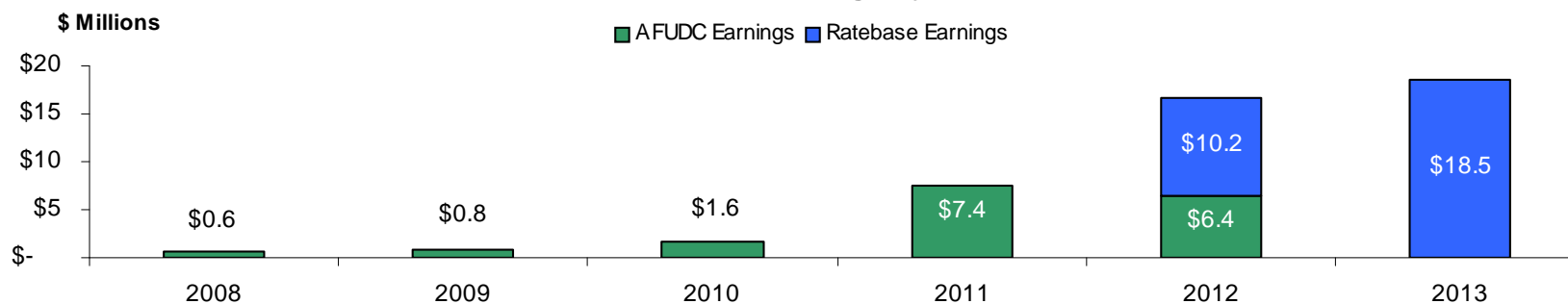


# Cashflow and Earnings Projection

**Capital Spending by Year**



**Estimated Earnings By Year**



<b>EPS</b>	\$0.00	\$0.00	\$0.01	\$0.02	\$0.03	\$0.04
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Assumptions:

- Base-case project costs are estimated at \$457M
- Project expected to be in-service on June 30, 2012
- Assumes 9.81% ROE on 47.23% of Capital Structure
- Average Shares outstanding per 2009-2013 Forecast

## Project Benefits are Accentuated by Advancing the In-Service Date to mid-2012

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### ➤ Financial

- Reduces AFUDC cost by \$10 Million
- Limits exposure to material or labor cost escalation for project elements not covered by firm price contracts
- Generates real earnings one year sooner

### ➤ Environmental

- Eliminates an additional 31,350 tons of SO<sub>2</sub>
- Eliminates an additional 229 pounds of Mercury
- Reduces particulate emissions to less than 1% one year sooner

### ➤ Customer

- Produces “early reduction mercury credits” that can be used for
  - Compliance in future years if operational issues with the scrubber arise
  - Conversion to fungible SO<sub>2</sub> allowances (estimated at 12,500 allowances)

**FOR APPROVAL BY THE  
NORTHEAST UTILITIES  
RISK AND CAPITAL COMMITTEE**

**June 25, 2008**

**PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE CLEAN AIR PROJECT**

**ISSUE:**

The Northeast Utilities Risk and Capital Committee (RaCC) provides oversight and input for capital programs and projects exceeding \$10 million. The PSNH Clean Air Project was brought to RaCC on May 30, 2007 for conceptual project review and initial funding approval, and for revised initial funding approval on September 24, 2007.

Consistent with the NU RaCC Charter, the PSNH Clean Air Project is being brought to the RaCC for review and recommendation for approval to the Chairman, President and CEO (CEO) of NU and Chairman of Public Service Company of New Hampshire.

**RECOMMENDATION:**

**RECOMMEND CEO AND CHAIRMAN APPROVES THE PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE CLEAN AIR PROJECT CAPITAL FUNDING:**

The RaCC recommends that the CEO and Chairman of PSNH approve the expenditure of \$457 million of capital funding, inclusive of funds spent to date as provided for in the attached material.

**ATTACHMENTS:**

***Presentation entitled "The Public Service Company of New Hampshire Clean Air Project".***

***RaCC resolution recommending CEO and Chairman approval of capital funding for the PSNH Clean Air Project.***

RECOMMEND APPROVAL OF CAPITAL FUNDING FOR THE PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE CLEAN AIR PROJECT BY THE CEO OF NU AND THE CHAIRMAN OF PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE.

WHEREAS, Public Service Company of New Hampshire ("PSNH") management provided the Committee with a capital project approval proposal for the PSNH Clean Air Project and have requested \$457 million of capital funding, inclusive of funds spent to date; and

WHEREAS, this Committee has reviewed said proposal;

NOW THEREFORE, BE IT

RESOLVED, that this Committee finds the following capital funding by Public Service Company of New Hampshire ("PSNH") of the PSNH Clean Air Project as described in the material submitted to this meeting and ordered filed with its records thereof acceptable.

<u>Project</u>	<u>Total Cost</u>	<u>Year of Completion</u>
PSNH Clean Air Project	\$457 million, inclusive of funds spent to date	2012

RESOLVED, that this Committee recommends that the Chairman of the Board, President and Chief Executive Officer of Northeast Utilities and the Chairman of PSNH approve the capital funding by PSNH of the PSNH Clean Air Project, provided however that this Committee further recommends that a status update on the project be submitted to the Committee no less frequently than quarterly and the capital funding by PSNH set forth above shall not be exceeded without prior approval by the Committee.

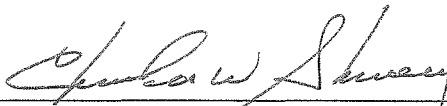
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**APPROVAL OF CAPITAL FUNDING FOR THE PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE CLEAN AIR PROJECT BY THE CEO OF NU AND THE CHAIRMAN OF PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE.**

Approved as recommended by the Risk and Capital Committee on June 25, 2008 as set forth above:

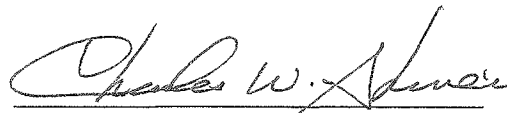
NORTHEAST UTILITIES

Date: 9/24/08

By:   
Charles W. Shivery  
Chairman of the Board, President  
And Chief Executive Officer

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE

Date: 9/24/08

By:   
Charles W. Shivery  
Chairman

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

**Data Request TC-01**  
**Dated: 06/04/2012**  
**Q-TC-002-SP01**  
**Page 1 of 68**

**Witness:** Frederick White, Jody J. TenBrock, Terrance J. Large  
**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:**

ORIGINAL 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.

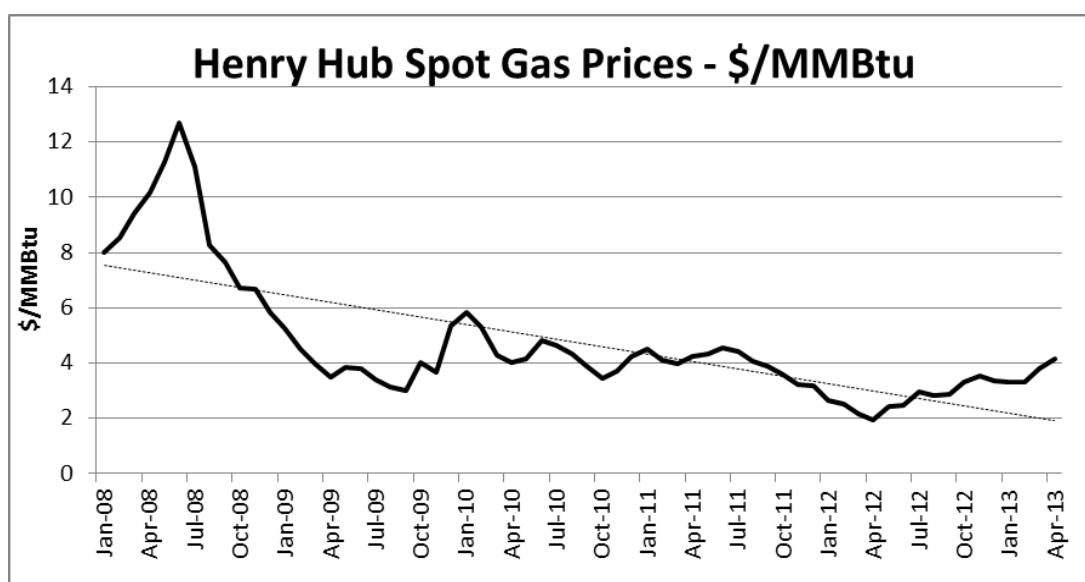
SUPPLEMENTAL RESPONSE: The initial round of contracts for construction of the scrubber were signed in October, 2008. The fuel price forecasts available to PSNH at that time are provided in the attached; which includes NYMEX (natural gas) and broker (coal) forward fuel price quotations from June, 2008, and fuel price forecasts (various) received from industry consultants in February, March, July, and August, 2008. In the scrubber analyses prepared by PSNH, in advance of October, 2008, the company examined a range of values for various cost items, including fuel prices, and did not rely on a singular fuel price forecast.

6/11/2008 per PSNH response to TC 1-2 (supplemental) (\$/MMBtu)		Henry Hub Natural Gas futures from SNL (\$/MMBtu)					
		3/31/2008	6/11/2008	9/30/2008	3/31/2009	9/30/2009	3/31/2010
2008 (Jul - Dec avg)	12.909						
2009 avg	11.718						
2010 avg	10.596						
2011 avg	10.278						
2012 avg	10.342						
2013 avg	10.548	(a)	8.644	10.402	8.124	6.996	6.939
2014 avg	10.767		8.869	10.767	8.302	7.180	7.172
2015 avg	10.992		8.992	10.992	8.441	7.250	7.311
2016 avg	11.223		9.180	11.223	8.602	7.332	7.430
2017 avg	11.459		9.386	11.459	8.765	7.436	7.559
2018 avg			9.584	11.703	8.925	7.539	7.711
2019 avg			9.795	11.961	9.075	7.639	7.854
2020 avg			10.043	12.216	9.214	7.735	7.993
Average years 2013 - 2020			9.312	11.340	8.681	7.388	7.496
					7.139		

(a) Henry Hub futures for natural gas available from SNL begin in May 2013. This accounts for the difference from the full year average used by PSNH for 2013 as of 6/11/2008.

### Actual Henry Hub Spot Natural Gas Prices January 2008 - April 2013

(From June 7, 2013 Staff Report in IR 13-020)



Source: U.S. Energy Information Administration

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

**Data Request TC-03**  
**Dated: 08/24/2012**  
**Q-TC-014**  
**Page 1 of 31**

**Witness: Gary A. Long**  
**Request from: TransCanada**

**Question:**

Reference the attached 31 page power point from the legislative history of SB 152 from the 2009 session of the NH Legislature, who produced this document ? By whom was this person or persons employed ? Who testified before the Legislature on this power point ?

**Response:**

The document was produced through a collaborative effort of several people at PSNH. Gary A. Long testified before the legislature on this topic, although his testimony did not present this document in significant detail; rather, the document was provided to legislators and referred to during Mr. Long's testimony.

Public Service  
of New Hampshire  
The Northeast Utilities System



# BRIDGE NEW HAMPSHIRE'S CLEAN ENERGY FUTURE



 Clean Air Project  
Merrimack Station

## Today's Agenda

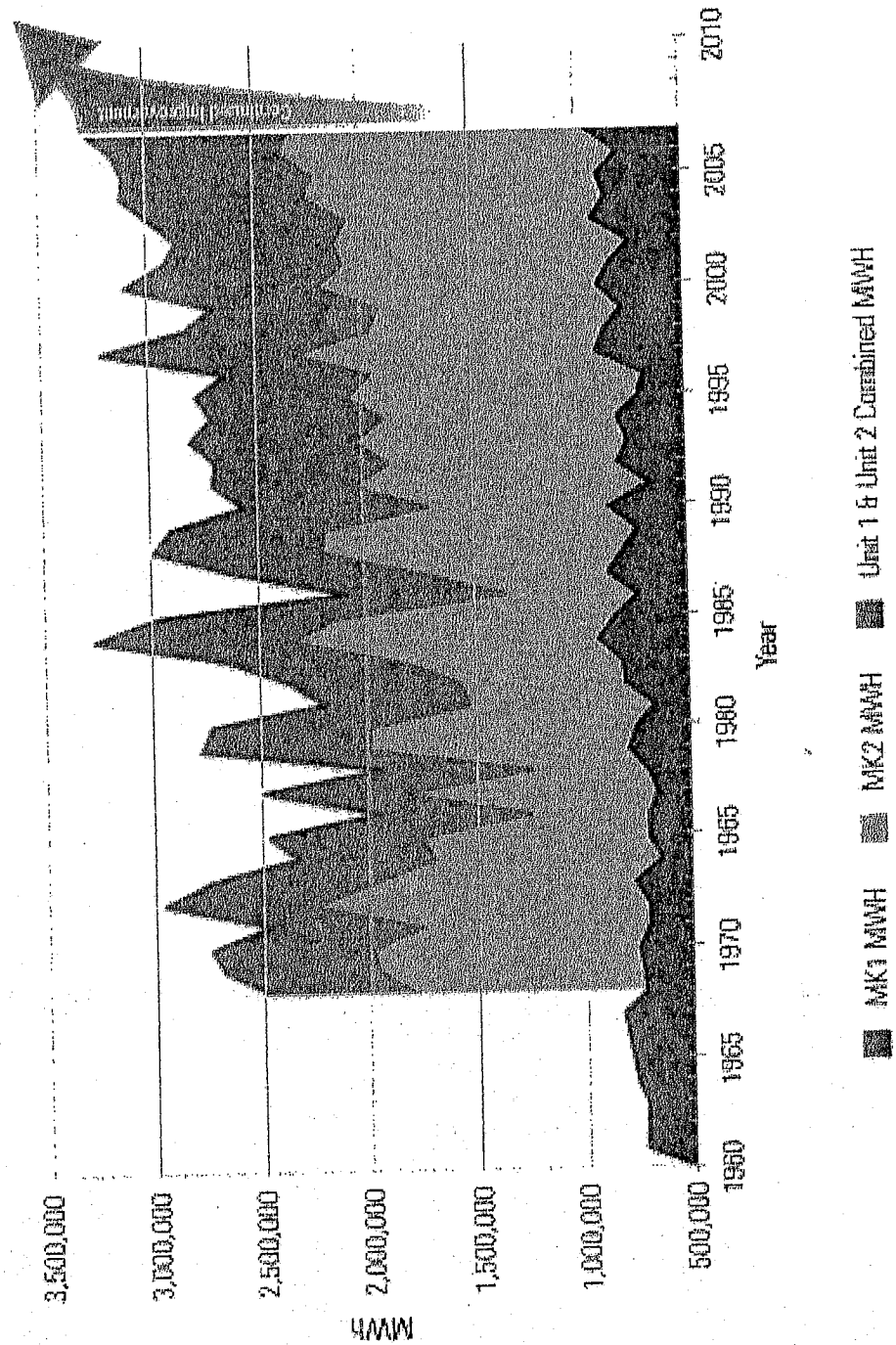
- The Clean Air Project
- Cost
- Project Benefits
- Senate Bill 152
- The Bridge to NH's Clean Energy Future

## Merrimack Station in Bow




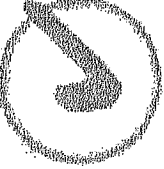
- New Hampshire's workhorse
  - Base load power plant that operates 24/7
  - Coal-fired
  - 433 MW net output
  - Enough energy for 190,000 NH households
    - » 35% of PSNH's generation mix
  - Meets or exceeds all environmental regulations
    - » 20 years of progress guided by state and federal clean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

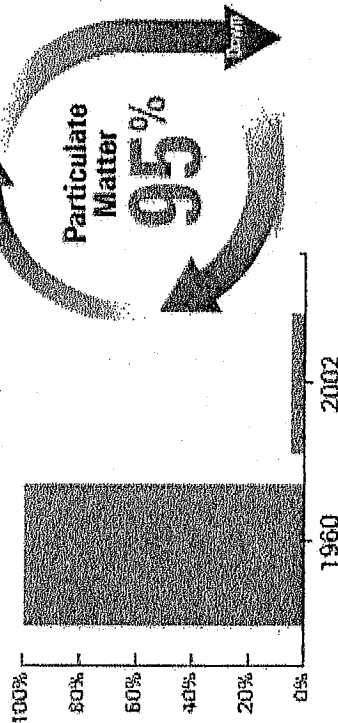
	<b>NOx</b>	<b>85% Reduction – 1995/2000</b> Achieved through installation of groundbreaking Selective Catalytic Reduction system
	<b>Mercury</b>	<b>80% Reduction or Better – 2013 or sooner</b> Required under the Mercury law that was passed in 2006
	<b>SOx</b>	<b>90% Reduction or Better – 2013 or sooner</b> A benefit of the Mercury law that was passed in 2006
	<b>CO<sub>2</sub></b>	<b>Stabilized emissions through 2014: 10% reduction from 2015 – 2018</b> 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

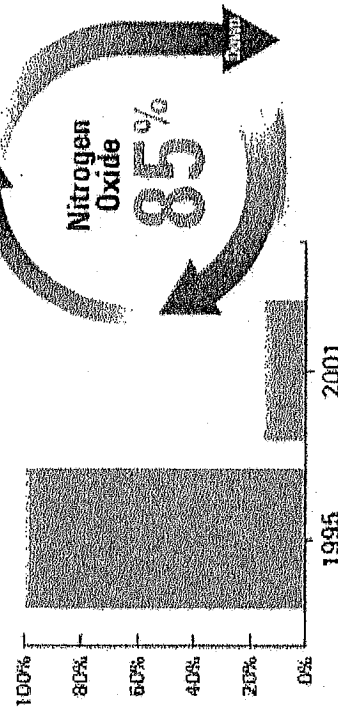
## Electrostatic Precipitators

- \* Installed in 1960 & 1968
- \* Installed supplemental equipment in 1989 & 1999

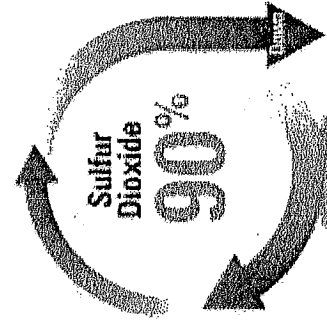
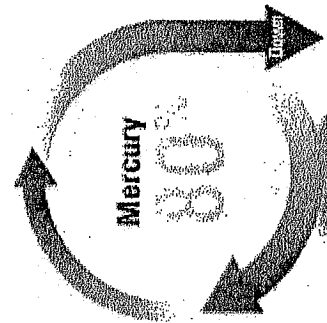
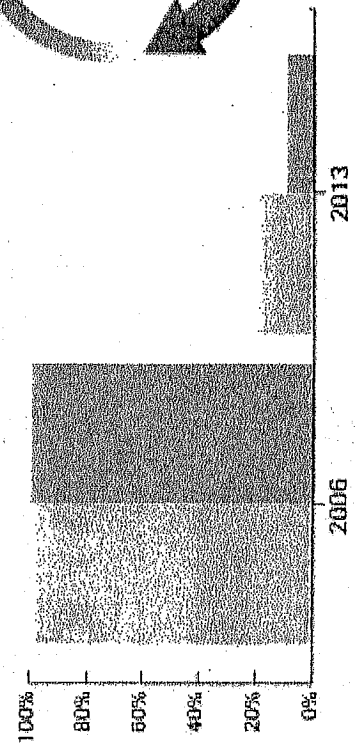


## Selective Catalytic Reduction System

- \* Installed in 1995 & 1999
- \* Augmented in 1998, 2000 & 2001



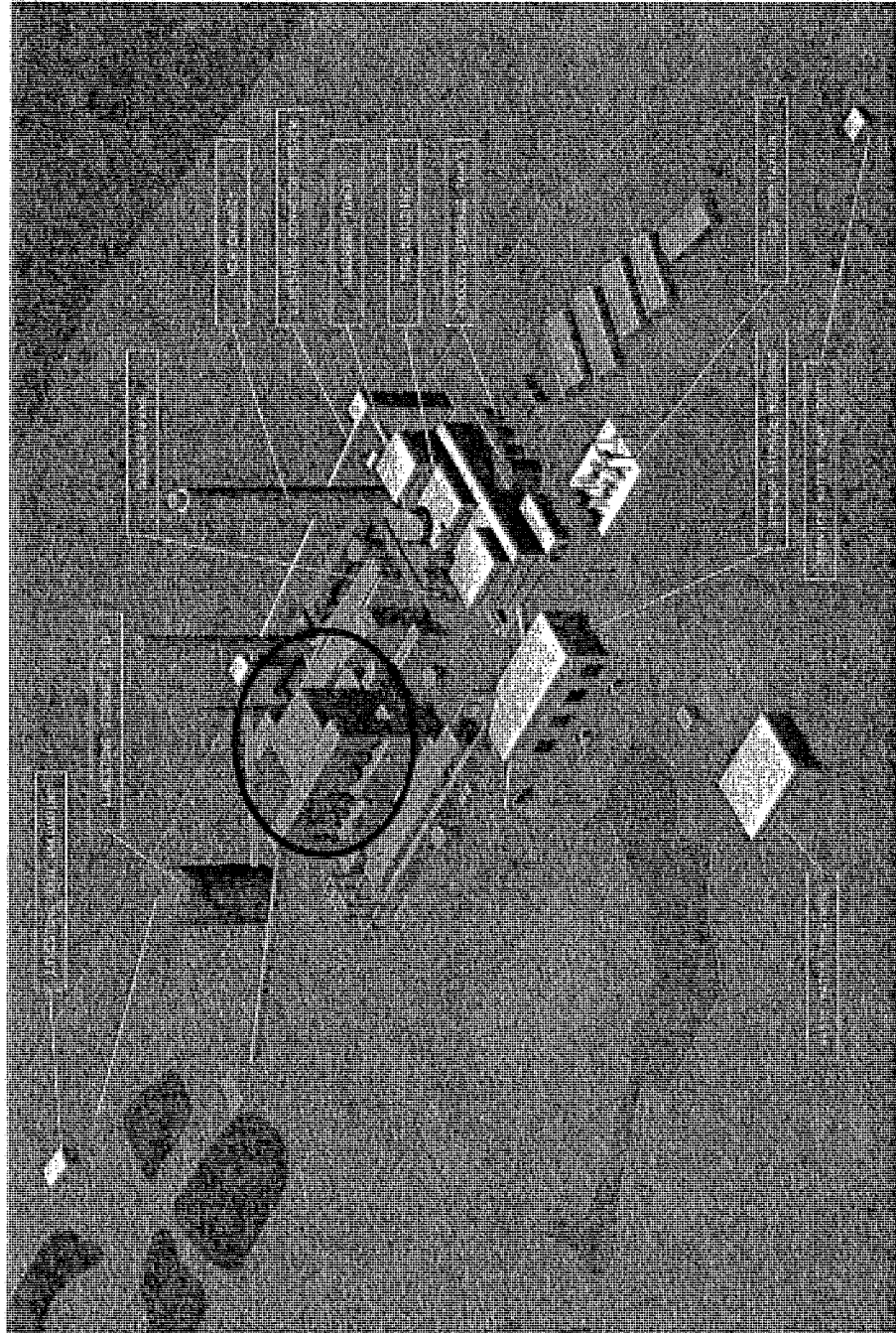
## Clean Air Project: Wet Scrubber



## 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							▲

10.

**COST**

## 2005 / 2008 Cost Comparison

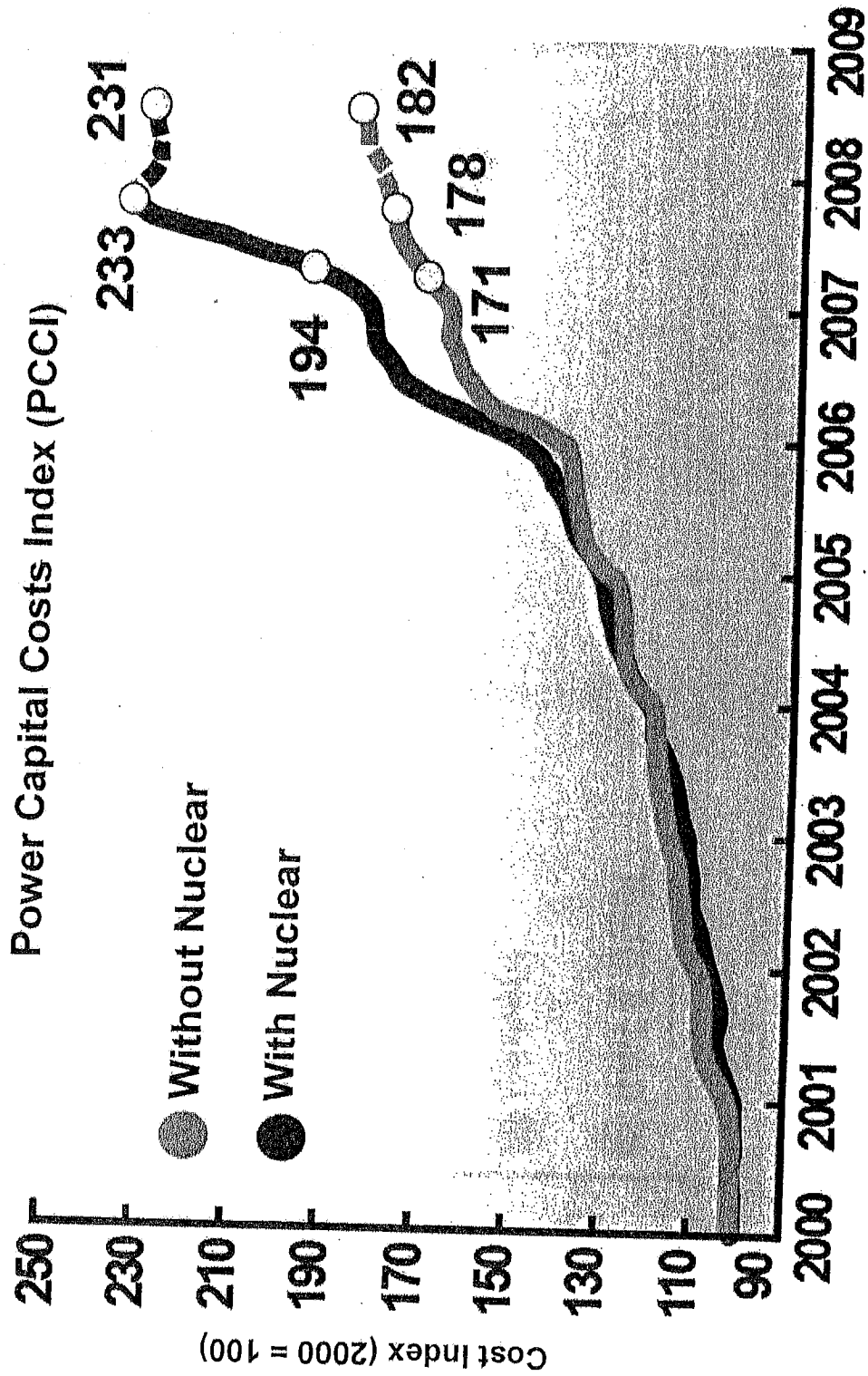
Project Components	2008 (firm price contracts)	2005 (initial estimates)
<b>5 Major Contracts</b> • Scrubber system, chimney, material handling system, wastewater treatment facility, program manager	<b>\$213M</b>	<b>\$149M</b>
<b>Balance of Contracts and Materials</b> • Ductwork, foundations, booster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

## 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

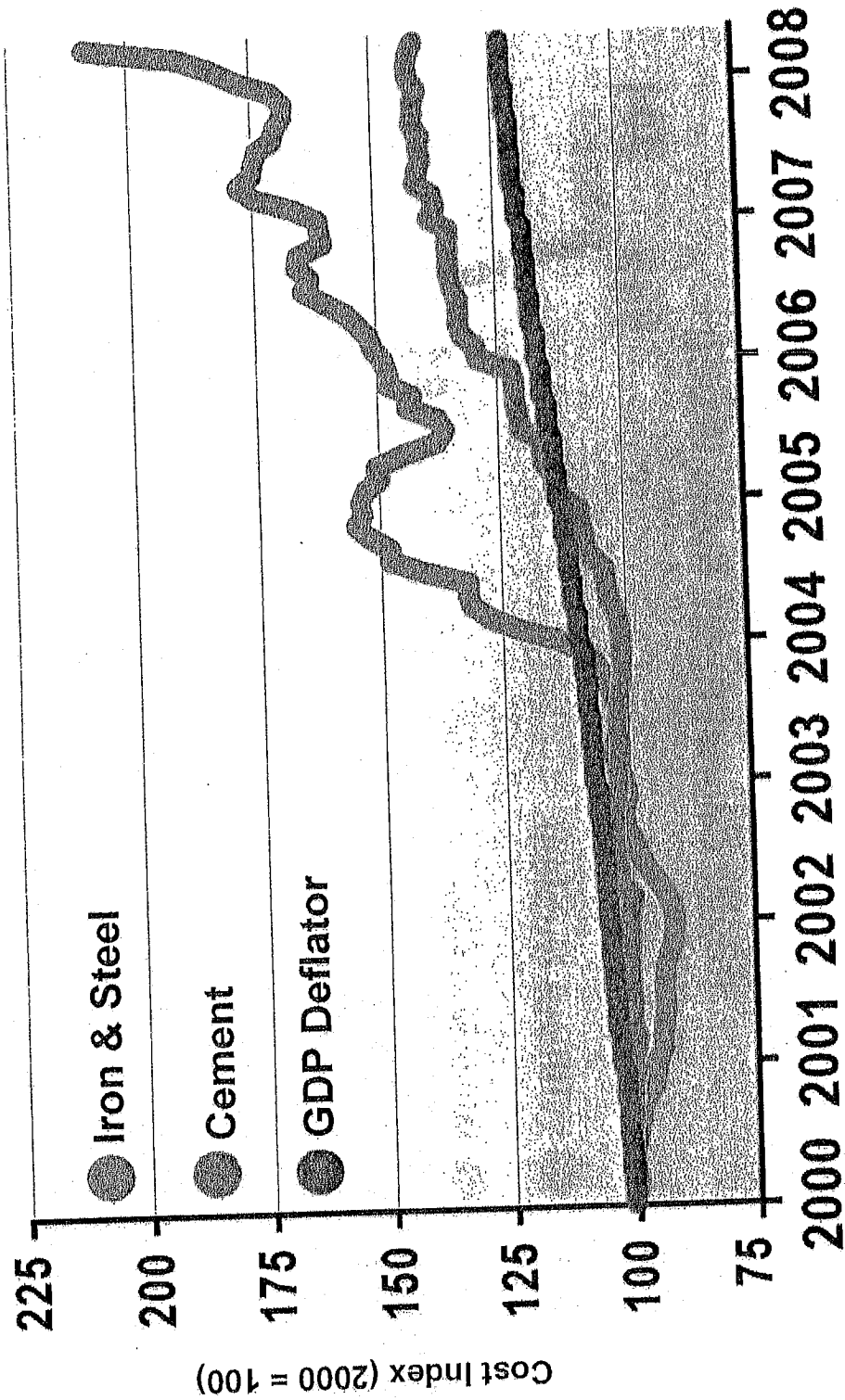
14.

## Capital Costs Increased Significantly



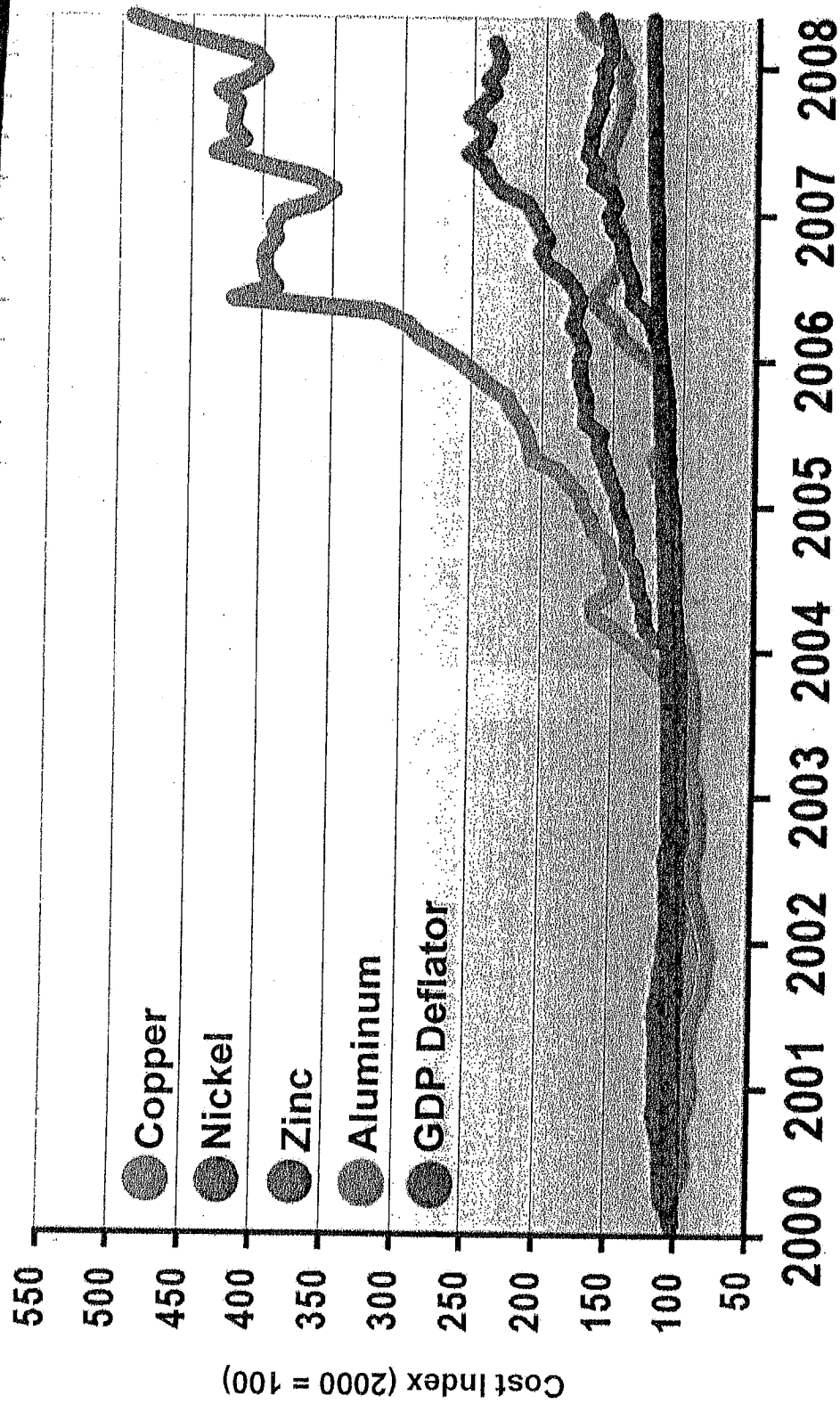
Source: Cambridge Energy Research Associates. 71023-12

## 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

19.

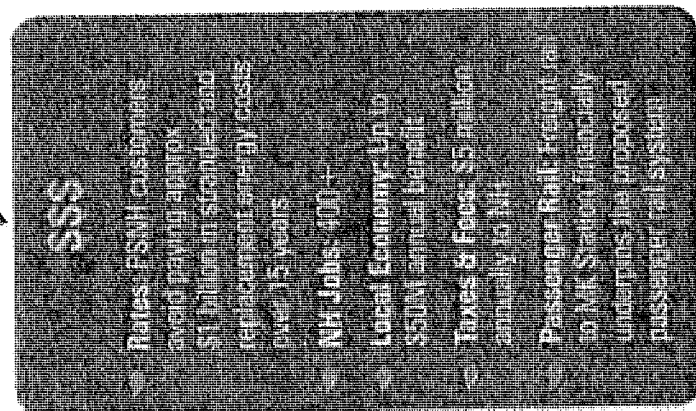
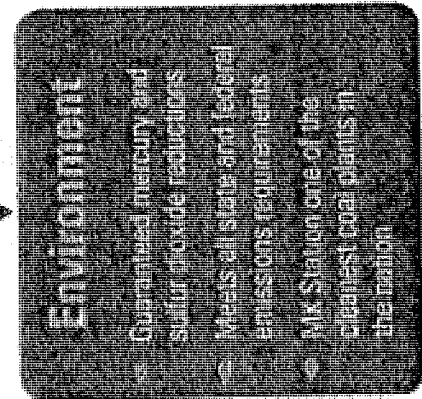
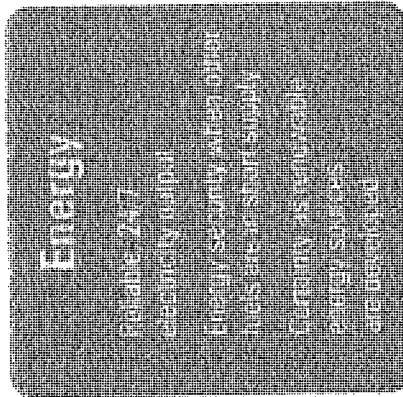
## Customer Cost Safety Nets

- 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

21.

# Project Benefits



# 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

25.

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

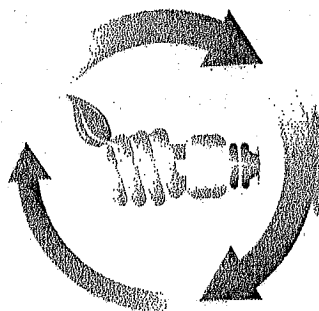
- The study cannot change the price of the scrubber
- It cannot transfer the \$457M scrubber cost to other energy projects
- If the study *supports* the scrubber installation, it is redundant and not needed
- The only logical purpose for performing a study is to create momentum to derail the scrubber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

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

# The Bridge to NH's Clean Energy Future

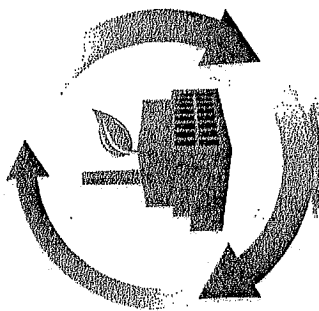
# PSNH is Pursuing a Portfolio of Strategies to Advance Clean Energy in New Hampshire

## Enhance and Expand Energy-Efficiency Programs



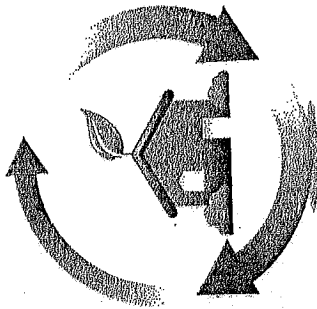
- Revise programs to meet modern needs
- Double investment in efficiency programs
- Goal of quadrupling energy savings for PSNH customers by 2025

## 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

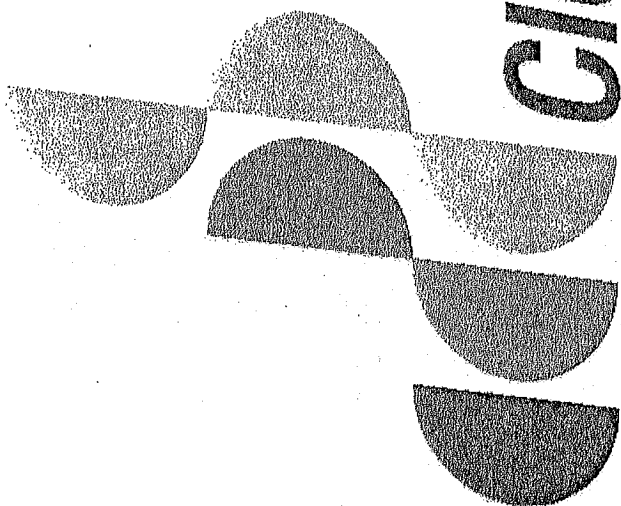
## Invest in Renewable Energy Projects



- 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

- o 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
- o 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
- o 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
- o Cost Savings Opportunities Exist
  - Market volatility and dropping commodity prices provide near term savings opportunities
    - \$6M (35%) foundation contract savings
  - Other savings opportunities exist



# New Hampshire Public Utilities Commission

## Audit Report Merrimack Station Clean Air Project Costs as of March 31, 2012 Docket DE 11-250

August 21, 2012

PUC AUDIT REPORT INDEX  
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Costs as of March 31, 2012

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## **SUMMARY**

Costs relating to the Merrimack Station Clean Air Project, required by RSA 125-O, were reported by the Company Project Manager to be \$410,269,445 as of March 31, 2012.

Merrimack Station is owned by Public Service Company of New Hampshire (PSNH), which is a wholly-owned electric operating subsidiary of Northeast Utilities (NU).

PSNH identified specifics of the Project by Work Orders. Audit reviewed the work orders for accuracy of costs, compliance with contract terms, and approval by appropriate levels of PSNH and NU, in accordance with the Purchasing and Accounting policies. Audit also reviewed costs for compliance with the FERC chart of accounts.

The Company's Project Manager provided Audit with schedules and reports for the following five major construction work orders, with costs through March 31, 2012:

<u>PSNH</u> <u>Work Order</u>	<u>PSNH</u> <u>Description</u>	<u>PSNH</u> <u>Addition Total</u>	<u>Costs</u> <u>of Removal</u>	<u>Total</u> <u>Reported</u>
CO4MK220	Main Scrubber System	\$361,054,695	\$732,335	\$361,787,029
CO4MK221	E-Warehouse	1,074,907	-0-	1,074,907
CO4MK222	Electric Power Supply	16,930,556	26,418	16,956,973
CO4MK225	New Yellow Building	2,014,714	-0-	2,014,714
CO4MK226	Secondary WWT System	<u>28,435,821</u>	<u>-0-</u>	<u>28,435,821</u>
	Grand Total	\$409,510,693	\$758,752	\$410,269,445

Audit was provided with a summary from Plant Accounting indicating the general ledger accounts in which the costs are reflected as of March 31, 2012. Addition costs for work orders C04MK221, C04MK222, and C04MK225 are noted in account 101.01, General Plant. The \$26,418 is reflected in account 108.01. The remaining open work orders are primarily reflected in account 106.01, Completed Construction not Classified, in the amount of \$384,533,345, with \$4,957,171 in account 107.09, Construction Work in Progress (CWIP). The \$732,335 cost of removal associated with work order C04MK220 was noted in 108.08, Accumulated Depreciation (unanalyzed).

After review of the project work orders and supporting contracts and documentation, there are several recommended adjustments to the total plant in service addition. Please refer to the General Conclusions and Recommendations portion of this audit report.

## **INTRODUCTION**

The Electric Division of the Public Utilities Commission requested that the PUC Audit Division perform a review of the costs to construct the Merrimack Station Clean Air Project (CAP or MK). The audit process consisted of a review of construction contracts, purchasing and accounting policies, and prudence of costs. A review of the engineering, design, and construction bidding was conducted by Jacobs Consultancy, hired by the Public Utilities Commission specifically for their expertise in that area. PUC Audit reviewed the ongoing quarterly reports, as well as the due diligence report, and final report, filed with the Commission by Jacobs Consultancy.

Audit appreciates the assistance provided throughout the audit process by the following CAP Project Team members: William Smagula, Director-Generation; Elizabeth Tillotson, Technical Business Manager; Michael Hitchko, Project Manager; and Alexandra Binner, Resource Analyst.

## **COST CONTROLS**

### **Northeast Utilities - Purchasing and Accounting Policies**

NU provided Audit with several documents concerning purchasing and accounting policies and procedures.

The NU policy statement on the authorization and approval process was reviewed by Audit. This statement provided the material request, purchase order, invoice and authorization for payment and dollar limits for the various levels of management. The Auditors used the statement throughout the course of the audit.

The approval processing and release of transactions is electronic. The system matches the invoice dollar amount to the NU policy for approval. The computer system remains locked unless and until the proper management have electronically approved.

The accounts payable system includes reference to the invoice payment terms. Each contract and purchase order has specific terms and requirements for payment of invoices, and states that unless NU is satisfied with the documentation and or work performed, payment could be partially made or withheld. NU recognizes the invoice on the day it is date stamped as received in its Accounts Payable Department, which is different than the invoice date. Before an invoice is paid, it must have all of the fees and charges verified to the supporting documentation required in the contract. The documentation may include such items as time sheets, paid sub-

vendor invoices, reports, or other backup information, and technical data specific to the payments requested in the invoice. If all required information is not attached, the invoice may be paid partially or withheld until all information is provided.

### **Northeast Utilities - Internal Audit**

A request was made for copies of all completed NU Internal Audit reports pertaining to financial controls or costs of the CAP. The Company response included only one report, dated January 17, 2008. The following is from that report:

*“Our overall audit objective is to ensure that PSNH has established adequate project controls with regard to risk, contract strategy, project structure and budget estimates. Currently the CAP is in the initial stages of project planning and development. The overall conclusion of this audit is CONTROLLED. We found that based on project documentation and discussions with CAP management that there is reasonable assurance that the project structure and controls currently in place were adequate for a project in its planning phase.”*

The Internal Audit report specifically concluded:

*“An adequate preliminary process is in place to identify initial project risks. Presentations have been made to the NU Risk and Capital Committee which report on identified project risks as well as contract risks.”*

*“The CAP Project Team has been managing CAP to date in accordance with numerous NU/PSNH Policies and Procedures and appropriate approvals were obtained; however, a “Project Manual” has not yet been formally developed and implemented to guide project personnel.”*

The Internal Audit summary level review of the cost analysis spreadsheets and an Engineering consultant’s (Sargent & Lundy) documentation appear to indicate that the initial budget and conceptual cost estimates included the appropriate cost components.

### **PSNH - Project Manual**

Audit reviewed the PSNH Project Manual, dated 8/26/10, Revision #2. The Project Manual describes the plan for executing the Project. It is a working document governing project implementation to be used by NU/PSNH Project Team members.

The Project Manual describes the NU/PSNH plans for engineering, procurement, project controls, project administration, quality assurance, safety, construction, and start-up and

commissioning to be followed while executing the scope of work of the Project.

The CAP is being executed using an agency multi-prime contractor approach. PSNH has engaged URS as the CAP Program Manager. Refer to the Contractor Labor-WO#C04MK220 portion of this report on page 20. PSNH, through its Project Management Team, has overall responsibility for the execution and performance of the CAP, including providing oversight and control of URS.

The manual contained a significant amount of information. Audit focused on sections of the manual pertaining to accounting and financial items.

Part 3.2 of the manual describes, among other things, the responsibilities of PSNH Core Project Team Members. One member is a PSNH Resource Analyst. That person utilizes internal PSNH budget, cost, accounting and financial policies, procedures and systems to ensure proper Project budget and cost monitoring, reporting and record keeping. The analyst monitors and reports actual costs versus budgets and prepares periodic cost and variance reports for the Project Manager who then updates the Project expenditures as well as budget and capital forecasts.

The Resource Analyst, Senior Contract Administrator (contract employee), URS contract administrators, and the PSNH Project Team all ensure Project compliance with contracts, purchase orders, and proposal terms and expenditure limits. The Resource Analyst verifies invoice charges and provides the initial approval of invoices. Additionally, the Resource Analyst creates and monitors material requests (MRs), identifies and tracks back charges, and takes a project lead on various items such as asset recovery, units of property, insurance, IT, and security, among other issues. The Resource Analyst directly supports the PSNH Project Manager, coordinates contract activities with the PSNH Senior Contract Administrator, and assists the PSNH team members with Project procurement, purchasing, finance, accounting, staffing and related activities.

Part 4.0 of the Project Manual describes Contract/Purchase Order Change Management. It states that the Project team will maintain oversight and control of contract/purchase order change management. All CAP changes must be reviewed and approved by PSNH. The Project Manager will ensure that Project team members are trained to effectively administer all relevant policies and procedures within the NU Purchasing manual and other relevant policies and procedures.

## **NORTHEAST UTILITIES and PSNH - EMPLOYEE TIME RECORDING**

The recording of employee time is done on a weekly basis through the Corporate Online Time (COLT) system. Work orders and activities have been established to track different types of work. Management is responsible for ensuring that these transactions are charged in accordance with all corporate policies and approve the entries only after they are satisfied that all information has been entered correctly.

## **NORTHEAST UTILITIES LABOR - COST REVIEW**

The NU Labor Total line found on each work order contains costs for NU as well as PSNH labor. Reported PSNH labor includes the total of Direct Labor plus Non-Productive, then that sum is multiplied by the calculated payroll overhead (Resource Code, ZE) allocation. Reported NU labor includes the sum of Direct Labor plus Non Productive time. NU payroll overhead is not charged here, but is included as an Indirect Cost (Resource Code, ZF). (See Indirect Cost Allocations, on page 9)

Audit reviewed payroll that was direct charged by employees listed on the Clean Air Project (CAP), Station (MK personnel), Generation (Energy Park), PSNH (Energy Park), and NUSCO (Connecticut). Audit noted that these employees did not generally charge all their time in any given week to the Project, rather only the hours spent when fully engaged on it.

Audit randomly selected the months of April 2008, December 2009, May and September 2010 and April and December 2011 for testing. The Company provided supporting payroll schedules that included, among other things, the employee's name, hours and direct pay by week. Audit reviewed hourly pay rates, overtime (OT) rates and payroll overhead allocations for reasonableness.

A random selection was made to test the accuracy of the electronic time records to the above information. Audit also reviewed time records for Supervisory or Managerial approval. No exceptions were noted.

## **OVERHEADS APPLIED to NORTHEAST UTILITIES and PSNH LABOR**

Audit requested and obtained the overhead rates and methodology applied to the Company's labor.

Non-Productive Time (Resource Code, ZB)

Whether capitalized, deferred, or expensed, non-productive time represents an allocation of sick time, holidays, vacation, etc., based on the productive payroll booked to the work order, multiplied by a rate. The Non-productive payroll benefits overhead percentages are calculated monthly. As examples, the rate for December 2011 was 16.25% and for December 2010 it was 16.14%.

Payroll Overheads (Resource Code, ZE)

Payroll Benefits overhead percentages are calculated annually. This loader spreads employee costs such as, payroll taxes, workers' compensation, pensions, etc. Audit noted that Resource Code, ZE was added to all PSNH labor for the Project. NU payroll overheads are charged separately as Resource Code, ZF through indirect costs. (See Indirect Cost Allocations, below) As an example, the following were the individual rates, (ZE) applied to PSNH labor for year 2011:

Payroll Taxes	8.23%
Insurance	3.21%
Pensions	26.25%
Benefits	<u>27.68%</u>
	65.37%

The rate for December 2010 was 67.87%.

**INDIRECT COST ALLOCATIONS**Administrative Salaries and Expenses (AS&E) Overhead (Resource Code ZJ)

The AS&E percentage allocation covers the costs of functions considered Administrative and General which support the Company's construction program and includes Plant Accounting, Payroll, Legal, etc., and is applied to work order costs only. This overhead is applied daily on all eligible charges (excluding resource codes AD, AN, JO, KS, M5, RO, SH, YD, YE, ZJ) of a work order; "memo" (non-financial) on expense costs. As examples, the rate for December 2010 was .0150 and for December 2011, it was .0075.

Audit random sampled several charges from each work order. Audit notes the calculation is done on payroll, invoice payments, and un-vouchered liabilities (UVLs). Audit did not find any calculations done on costs for above listed resource code exclusions.

AS&E overhead charges to the Scrubber work orders through March 31, 2012 total \$4,395,040. Refer to the General Conclusions and Recommendations portion of this audit report, on page 67.

#### GSC Overhead (Resource code ZF)

This NUSCO only General Service Company Overhead Allocation spreads the employee costs (charges to a Service Group CAU) such as facilities (rent, depreciation), reprographics, payroll taxes, workers' compensation, pension, medical, NUSCO equity return for the costs of capital for the NUSCO assets, and other employee benefits, to the code block to which the payroll is charged. The base to which general service company overheads are applied is the total productive payroll plus associated non-productive time loading. For year 2010, this rate was 61.89% and for year 2011 it was 69.90%.

GSC overhead, less a small Stores expense overhead adjustment, totaled \$290,593 through March 31, 2012.

#### **ALLOWANCE for FUNDS USED DURING CONSTRUCTION (AFUDC)**

This loader covers the costs to borrow funds to complete construction and is applied to capital costs only, excluding un-vouchered liabilities (UVL). Charges stop when work orders are placed in service or when a work order has had no new charges for 90 days. It is applied monthly by taking the work order average monthly balance multiplied by the AFUDC rate.

AFUDC totaled \$34,550,508 through 3/31/12. This includes \$13,282,486 for debt and \$21,268,022 for equity. Refer to the General Conclusions and Recommendations portion of this audit report, on page 67.

Audit performed a random test of the reported AFUDC for several work orders. Support provided by the Company included the calculation of debt and equity and how selected months' AFUDC amounts were done. Audit verified that the Company is following the requirements of the Federal Energy Regulatory Commission for calculating AFUDC.

**WORK ORDER-MAIN SCRUBBER SYSTEM – WO# C04MK220 - \$361,787,031**

Wet Limestone-forced Oxidation (LSFO) Flue Gas Desulfurization (FGD) System  
“SCRUBBER”

**REPORTED COSTS – WO# C04MK220**

NU Labor	\$ 5,123,815
Material	19,110,400
Contractor Labor	287,696,267
Outside Services	4,252,284
Employee Expenses	185,861
Vehicles	455
Fees and Payments	8,513,540
Rents & Leases	153,361
Indirect Costs	4,106,617
AFUDC	<u>32,644,431</u>
Total	\$361,787,031

**Northeast Utilities Labor – WO# C04MK220 - \$5,123,815**

As of March 31, 2012, total NU labor – Generation (760-761) was shown on PSNH Project Manager’s Cost Summary to be \$2,790,675 with costs beginning prior to 2007. NU labor-Station (723-729) for the same period sums to \$1,820,465. Other NU labor for the same period sums to \$512,676, for total labor pre-2007 through March 2012 \$5,123,815.

**Materials - WO# C04MK220 - \$19,110,400**

Materials noted on the PSNH Project Manager’s Cost Summary were summarized by work type and from where the items had been purchased. Materials in total were identified with seventeen individual line items which sum to \$19,110,400. Audit reviewed eleven line items.

Specifically:

1. SW Pumps (Hayes) \$ 316,772 (review summary follows)
2. QW Pumps (Kriebel) \$ 299,168 (review summary follows)
3. Booster Fans (FlaktWoods) \$3,684,333 (review summary follows)
4. Duct Isolation Dampers (Fox) \$ 856,641
5. Duct Expansion Joints (IAFD) \$ 416,750
6. Ductwork Fab (Merrill) \$3,141,157 (review summary follows)
7. Support Steel (Merrill) \$2,215,810 (review summary follows)
8. Truck Wash (Whiting) \$ 241,505 (review summary follows)
9. 480v MCC (Siemens) \$ 851,967 (review summary follows)

10. Cable Bus (MP Husky)	\$ 278,999
11. DCS (Emerson)	\$2,206,117
12. CEMS (CEMTEK)	\$ 858,159 (review summary follows)
13. UPS/DC System (Ametek)	\$ 153,728
14. MV Switchgear/LV Unit (Siemens)	\$2,286,054 (review summary follows)
15. PAP (Corrosion Services)	\$ 646,701 (review summary follows)
16. Truck Scale/House (Fairbanks/Bode)	\$ 187,002
17. Other and Miscellaneous	\$ 469,537 (review summary follows)

**Materials item #1: C04MK220 – Purchase Order (PO) #02249844 - \$316,772**

A proposal made by Hayes Pump, Inc. was dated 6/8/09, in the amount of \$144,135. A letter from URS to PSNH, dated 9/18/09 indicated that the proposal relating to the service water pumps was put on hold due to the adjustment to the location of the service water pump house at the slag sluice pond. The contract change log includes three work change requests (WCR) which sum to \$172,636 or 120% increase over the original agreement. The revised agreement total is \$316,772, of which all has been expended as of 3/31/12.

Audit requested and was provided with a copy of WCR-001, which increased the cost by \$142,538. The WCR documents were signed by officials at URS and PSNH. The scope of work was summarized to be: *“Contractor shall design, fabricate and deliver service water pump and the furnishing of all materials, equipment and services necessary for completion of the work as defined [t]herein, including: 3 service water pumps; 2 days’ start-up assistance; 8 hour days during regular business hours on site, including travel and living expenses; extended two year warranty.”* Due to the size of the purchase order and the activity within it, detailed invoice testing was not conducted by Audit.

**Materials item #2: C04MK220 – PO #02248865 - \$299,168**

A properly authorized purchase order dated 4/28/09 was issued for payment only and directed the reader to the contract dated 4/2009. The document provided to Audit is an agreement with an effective date of June 19, 2009 for the procurement of one diesel driven quench pump and accessories, in the amount of \$200,089, and was signed by Kriebel Engineering Equipment-President on 6/29/09, and Northeast Utilities as agent for PSNH by Manager-Corporate Purchasing, on 7/1/09. A URS letter dated September 18, 2009 for purchase order # 02248865 award value \$200,089, indicated the agreement was placed on hold due to changing the water source for the project. The contract change log indicates there were four WCR which sum to \$99,079, for a revised total agreement of \$299,168, all of which has been spent as of 3/31/12. Audit requested and reviewed WCR001, in the amount of \$105, 268 which

was reviewed and approved by URS and PSNH. Other WCR were reductions to the original proposal.

The scope of work indicated that Kriebel “*shall design, fabricate and deliver one diesel driven quench pump, provide all materials equipment and services necessary for completion of work including acoustical enclosure, flow meter, 2 days of start-up assistance... Diesel driven absorber quench pump will be utilized in an emergency to inject water into the FGD absorbers when a loss of power prevents the absorber pumps from operating. The absorber quench pump shall provide the functionality and reliability consistent with a UL/FM fire pump design, as specified in Attachment A.*” Functionally, per PSNH, upon the loss of scrubber slurry recirculation (i.e. loss of power), this emergency equipment prevents the fiberglass liner of the absorber outlet from overheating.

An invoice test was conducted. The agreement outlined that payment was expected within 30 days of invoicing, and is a fixed price contract based on free on board delivery to the site. Payment terms: 25% payment drawing approval and 75% upon shipment, payment within 30 days. Audit selected an invoice dated 7/30/10, received 8/6/10, in the amount of \$208,068, paid on 10/18/10 (72 days vs. net 30 days). The delay in paying the invoice was due to the delay in receiving corrected drawings and the O&M manual. The original invoice in the amount of \$228,868 included the cost of the pump package, diesel driven quench pump, an extended warranty, acoustical enclosure, flow meter, freight, and WCR-001, as well as freight of \$5,200. The invoice documentation provided included screen prints of the PSNH PO established for \$250,000; PSNH payment authorizations by the appropriate levels, the URS invoice release of payment, with appropriate levels of authorization noted. The URS approval withheld \$20,000 from the invoice which was withheld pending receipt of corrected drawings and O&M manual. A signed and notarized partial release and waiver was noted, and a contractor’s affidavit, listing Peerless Pump, was also noted. The \$20,000 was paid in May 2011, reduced by WCR-003 in the amount of \$3,189 for a total payment of \$16,811. Combined, the invoice test represents 72% of the invoices paid.

Materials item #3: C04MK220 – PO # PO 02247380 - \$3,684,333

The PO was authorized for \$3,881,890 for the booster fans and accessories, including freight. PO 02248788 was established for the long term spares including freight and is *excluded* from the agreement price (per 6/4/09 URS letter to PSNH). The spare PO was authorized for \$825,752, and is not included in the total noted for C04MK220. The spare parts were originally posted in WO #C04MK224 but that work order was cancelled, and costs transferred out of general ledger account 15401, Plant Material and Supplies, and into general ledger account 16302, Stores, for further transfer “to the inventory account at the catalog ID level with *average*

*unit price adjustments noted.* The total amount posted originally to C04MK224 was \$873,308. The total includes \$58,483 of AFUDC. **AUDIT ISSUE # 1**

The cover agreement for the materials is between (The Fan Group) FlaktWoods and Northeast Utilities Service Company as agent for PSNH. The effective date of the agreement is 2/2/09. FlaktWoods proposed to provide three centrifugal ID booster fans, three single speed motors, and three lube oil systems and accessories for the Merrimack Clean Air Project. The fixed contract price is \$3,761,890, not including an estimated freight charge of \$120,000. The contract change log reflects nine WCR. There were three reductions (not assigned WCR) due to actual shipping costs, field services, and liquidated damages for schedule delays, which brought the adjusted PO total to \$3,705,469. Total expended as of 3/31/12 is \$3,684,333.

An invoice test was conducted. Audit randomly selected a payment made on 6/8/10 based on invoice dated 3/31/10 in the amount of \$381,216 and payment made 10/27/10 based on invoice dated 8/20/10 in the amount of \$581,660. A copy of the properly approved materials request screen was provided, as was a properly authorized purchase order in the amount of \$4,500,000.

The invoice for \$381,216 was a progress payment for 15% upon shipment of motors. The total invoice was 15% of \$2,541,442, which related to the booster fan for MK Unit 2. The URS Invoice Release of Payment was authorized by the appropriate levels. A notarized partial release and waiver, and a contractor's affidavit were noted. Appropriate PSNH authorization levels were documented on the invoice request for payment. A check was issued on June 8, 2010.

The invoice for \$581,660 included progress payment (\$508,288), coupling change (\$9,000), replacement of the wet well heater with a dry well heater (\$5,824), and the addition of booster fan brakes (\$58,548). The invoice calculation represents 20% of \$2,541,442, items related to MK Unit 2. The WCR noted on the invoice were less than the WCR noted on the Contract Change log. Audit was informed that the invoices which would support the MK1 portions of the WCR agree with the total on the Contract Change log. Further supporting details relating to the invoice were an appropriately authorized URS Invoice Release of Payment, a notarized partial release and waiver, a notarized contractor's affidavit, and PSNH electronic payment authorization. The invoice was paid by check dated October 27, 2010.

Audit also reviewed the detail relating to the damages assessed for late completion, which reduced the total by \$193,465. A letter dated August 31, 2010, sent from URS to FlaktWoods, calculated the liquidated delay damages at \$5,000 per day for 73 days or \$365,000. The contract caps the damage at 5% of \$3,869,309, or \$193,465. A delivery schedule date of June 1, 2010 was not achieved until 73 days later, or August 23, 2010. Based on the cap of damages, the total

amount credited to the job was \$193,465. A credit memo invoice was provided to PSNH from FlaktWoods, dated September 13, 2010.

Materials item #6: C04MK220 – PO #02250987 - \$3,141,157

The Ductwork Procurement Agreement for the Merrimack Station Clean Air Project is a fixed price agreement dated 08/05/09 between Merrill Iron & Steel Transit, LLC (Merrill) and Northeast Utilities Service Company, as agent for PSNH. The contract was signed by Vice President, Sales & Estimating, Merrill Iron & Steel, LLC and Manager, Corporate Purchasing, Northeast Utilities. The original agreement total of \$2,954,017 was calculated as:

Lump Sum Price – Fixed Price	\$2,670,017
Accepted Option Price – Unit 1 Whole Section	310,000
Combined Ductwork/Structural Steel Package Savings	<u>(26,000)</u>
Total Awarded Contract Price	\$2,954,017
<u>Optional</u> Expansion Joint Frame Deduct	(75,000)
Fifteen Work Change Requests subsequent to original contract	<u>262,140</u>
Adjusted Contract Price	\$3,141,157

As stated in the agreement, *“the scope of work includes detailing, material procurement, fabrication, shop testing, and delivery of doors, support legs, slide bearing assemblies and flue gas ductwork for the Merrimack Clean Air Project.”*

An invoice test was conducted. Audit randomly selected two payments for verification and for proper authorization. Invoice #3 totaled \$549,448, was dated 1/5/10, and was received by PSNH on 1/11/10. The progress payment represented material of \$239,276 and fabrication of \$310,172 for the period of 12/2/09 through 01/05/10. Invoice #3 reflected payment terms of 60 days, as outlined in the contract and was paid by PSNH via ACH on 3/12/10. Invoice #4679 totaled \$295,402 and was dated 5/4/10 but received by PSNH on 6/16/10, with payment terms of net 60 days. Invoice #4679 represented the 10% retention release on the original contract amount. The invoice was approved by the PSNH Project Manager on 12/07/10 and was approved by the PSNH Director of Generation on 12/07/10. The invoice was paid by PSNH via ACH on 12/09/10, five months later than noted in the contract. PSNH noted that the delay in payment was because the vendor had not satisfied all the requirements of the invoice. The invoice was promptly paid once all requirements were met.

Materials item #7: C04MK220 – PO #02250989 - \$2,215,810

The Structural Steel Agreement for the Merrimack Station Clean Air Project is a fixed price agreement dated 08/05/09 between Merrill Iron & Steel Transit, LLC (Merrill) and

Northeast Utilities Service Company, as agent for PSNH. The contract was signed by Vice President, Sales & Estimating, Merrill Iron & Steel, LLC and Manager, Corporate Purchasing, Northeast Utilities. The original agreement total of \$1,348,335 was calculated as:

Lump Sum Price – Fixed Price	\$1,361,335
Combined Ductwork/Structural Steel Package Savings	<u>(13,000)</u>
Total Awarded Contract Price	\$1,348,335
Twenty Work Change Requests subsequent to original contract	<u>867,475</u>
Adjusted Contract Price	\$2,215,810

As stated in the agreement, the “...scope of Work includes detailing, material procurement, fabrication, shop painting, shop testing and delivery...Structural steel supply will include: a) ductwork support steel, b) utility bridge Area’s A&B, c) booster fan enclosure steel framing and platforms, d) all access and maintenance platforms including stairways, walkways, ladders, grating and handrails, e) other miscellaneous steel framing as shown on the contract drawings.”

An invoice test was conducted. Audit randomly selected two payments for verification and for proper authorization. Both invoices reflected payment terms of 60 days, as outlined in the contract. Invoice #10, totaling \$435,287, dated 9/5/10, received 9/13/10, represented work completed on frame #2, frame #3, booster fan #3, and change orders 11-13 from 7/20/10 through 9/7/10. Invoice #10 was paid on 11/12/10, upon receipt of all appropriate documentation. Invoice #13, totaled \$134,834 and was dated 12/1/10 and received 12/13/10, with payment terms of net 60 days. Invoice #13 represented the 10% retention release on the original contract amount. No approvals were given on this invoice until May 2011. During May, all proper approvals were received and PSNH paid Merrill the retention amount on 5/25/11 via ACH transfer. PSNH noted that the delay in payment was because the Vendor had not satisfied all the requirements of the invoice. The invoice was promptly paid once all requirements were satisfied.

Materials item #8: C04MK220 - PO # 02254078 \$241,505

Whiting Systems, Inc. was hired by agreement dated 3/8/10 to engineer, design, fabricate, test and deliver to the job site one completely integrated fully automatic truck bed wash and water reclamation system. The price was \$235,183 plus an estimated \$6,000 cost of freight. Payment terms were outlined to be: “15% of the total value upon submittal and completion of drawings related to the site specific general layout; plumbing; electrical; assembly gantry; pump skid; reclaim skid. 35% of the value paid upon completion of successful testing packing; 40% upon shipment; and final 10% after the owner’s final acceptance of all drawings, equipment, and services.”

Parts, accessories and equipment are warrantied through 1/31/14. PSNH may purchase additional warranty time for \$400 per month thereafter, or \$4,800 per year. The agreement was signed by President of Whiting Systems, Inc. and by the Sourcing Manager Purchasing, Northeast Utilities Service Company as agent for PSNH, owner, on 3/16/10. Within the appendix B is a section authorizing inspection and audit. Also required was contractor insurance, at contractor's own expense with specific liability limits outlined. This contractor was not requested nor required to participate in the OCIP as this was a materials supply contract only. There were four WCR noted which increased the total purchase order by \$4,489 or a total of \$245,672. \$241,505 has been expended as of 3/31/12.

Due to the dollar value of the agreement, an invoice test was not conducted. According to an internal document, the truck wash was declared to be in service 2/22/12.

Materials item #9: C04MK220 - PO #02250067 - \$851,967

Siemens Energy provided switchgear, 400 Amp breaker, among other items, with an original purchase order value of \$808,591. There were five specific work change requests which sum to \$43,377 for a total purchase price of \$851,968 or 5.4% increase from the original value. As outlined above, the total expended as of 3/31/12 is \$851,967. Materials were purchased from Siemens Energy and installed onsite by ES Boulos. Refer to Materials item #14 for the remainder of PO #02250067.

Materials item #12: C04MK220 - PO # 02251761 - \$858,159

A conformed award package, for the continuous emission monitoring system (CEMS) was evidenced by letter to the Project Manager, PSNH 11/2/09 from URS Project Manager. A purchase order was provided with the signature of the appropriate NU Buyer. The PO stated that the order was non-taxable.

An agreement dated October 7, 2009, signed by Manager-Corporate Purchasing for Northeast Utilities as agent for PSNH, and CEMS Specialist for CEMTEK Environmental, Inc., evidenced the details and pricing related to the CEMS. The fixed price contract, \$820,575, was based on free on board delivery of all equipment and materials to the site and pursuant to the schedules outlined. Total cost as of March 31, 2012 is \$858,159. The delivery schedule for the CEMS was April 21, 2010, with equipment start up anticipated by the end of October 2010. Audit reviewed the contract change log and noted that four of the ten changes took place in 2012. Six of the ten took place prior to October 2010. The final total contract cost, after the adjustments for the ten work change requests, was documented to be \$889,325, an increase of 8.4% over the original contract amount.

In response to a request for the reason costs continued to post in 2012, the Company indicated that costs through March 2012 include on-going training, start-up assistance, and additional work performed under WCR. Also requested was clarification of the “not-to-exceed” amount for this purchase order in the amount of \$1.4million. The Company responded that the amount includes an allowance for future mercury monitoring and contingency. The purchase order remains open (as of May 24, 2012). Finally, Audit had requested clarification of a referenced purchase order total on the URS contract valuation cover sheet of the invoice tested. The amount noted was \$1,874,985. URS confirmed (to PSNH) that the figure was their original budget number for the CEMS package of work, not the actual contract (executed) value. Subsequent URS invoice approval cover sheets, as stated in the response, reflect the correct contract value.

The scope of work noted that the contractor “*shall engineer, design, fabricate, conduct performance test, conduct training, complete certification requirements, perform on-site commissioning, supply all required documentation, ship and deliver the following:*”

- Equipment for New Common Wet Stack. The stack liner flue gas will be monitored for SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>, and flow with temperature compensation;
- Unit 1 Duct and Unit 2 Duct-each individually will be provided upstream of the booster fan and downstream of ESP for the bypass operation. The CEMS will monitor for SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>, and flow with temperature compensation, and certify the opacity monitor
- Warranty to January 31, 2014
- Start-up assistance-and training
- Certification testing for RATA

Contractor would provide PSNH with a monthly progress report, un-priced copies of all major suborders if requested, number and size of shipping saddles, cradles, pallets, and complete lists of all items shipped. Field services would be invoiced to the extent they are performed, and in addition to the initial scope of work. Any travel expense associated with the field work would be cost plus 10%. Included in the contract price was a list of 21 maintenance items recommended for quarterly, semi-annual, or annual replacement. The maintenance recommendations sum to \$2,807.

Regarding Insurance, CEMTEK was required to participate in the OCIP, and required subcontractors to participate as well.

An invoice test was conducted. Invoices paid through March 31, 2012 total \$819,908. Audit selected one invoice in the amount of \$388,332, or 47% of the total, for detailed review. The invoice is dated 4/14/10 with a receipt date of 4/27/10, with payment due Net 45, or June 11,

2010 (based on the receipt date). An ACH transfer was made on June 11, 2010. The URS invoice release of payment evidenced the URS authorizations: engineering, which details the contractor has met engineering drawing data requirements of the order supplier data commitment form (2 signatures noted); project control manager; procurement manager, indicating that the subcontractor has met quality standards as evidenced by satisfactory inspection reports/releases, has returned the “acceptance copy” of the order, and material has been received; project manager signature required for payment requests over \$100,000 and so noted on this test. The payment term was noted to be 30 days on the URS invoice release, but the invoice specifically reflects Net 45 as the term. URS sent the documentation to the Project Manager at PSNH. A PSNH Resource Analyst reviewed the invoice for accuracy, then entered the invoice descriptive data into the Accounts Payable system, along with the names of the individuals from whom electronic authorizations to pay the invoice were obtained. The actual invoice indicated:

“50%” of contract amount \$820,575	\$360,912
WCR-002 shelter changes	\$ 12,611
WCR-003 calibration set up	\$ 11,515
Freight	\$ 4,500
Retention portion of customer billing	( <u>1,206</u> )
CEMS invoice #2268	\$388,332

The costs on the Contract Change log, outlining ten WCR, agree with WCR 002 and WCR 003 and states in more detail what the changes were. Specifically, WCR 002 was an addition of one SS ground pad, and two additional SS bulkhead panels, one additional door frame. WCR 003 was an addition of 24 solenoid valves, 24 fittings, 24 switches, 1 additional panel, the addition of an Ethernet Switch #2 with fiber capability, increase length of sample line for common stack from 396’ to 425’. The freight agrees specifically to the Appendix F pricing summary. Based on a PSNH schedule of payments, the retention portion (\$1,206) relates to 5% of the two work change requests listed.  $\$12,611 \times 5\% = \$631$ ,  $\$11,515 \times 5\% = \$576$ .  $\$631 + \$576 = \$1,206$ . A detailed packing slip reflecting the items and serial numbers was included, showing delivery to the Merrimack Station on River Road Bow, NH. An invoice certification was documented by CEMTEK to certify that the invoice is correct and subcontractors have been paid in full for work performed and supplies furnished as reflected on the invoice. A partial release and waiver (of subcontractor liens) was provided by CEMTEK to URS and PSNH. Proper PSNH electronic authorization to pay the invoice was provided to Audit. Authorization limits were reviewed without exception.

Progress payments were detailed to be 15% drawing; 10% upon placement of order of major materials as evidenced by contractor’s un-priced purchase order; 25% receipt of major materials at Contractor’s facility as evidenced by packing list and inland bill of lading; 40% shipment of all equipment, 10% equipment start-up at jobsite by the end of October 2010.

Materials item #14: C04MK220 - PO #02250067 - \$2,286,054

Siemens Energy also provided materials for the Low Voltage (LV) substation including Are Flash Reduction Maintenance System (ARM) remote control panels, among other items, with an original purchase order value of \$2,200,514. There were five specific work change requests noted which sum to \$85,540. The revised purchase order total is \$2,286,054 or 3.9% higher than the original. The total expended as of 3/31/12 is \$2,286,054 or 100% of the revised partial purchase order total. Refer to Materials item #9 for additional portion of the PO. The total PO expended as of 3/31/12 was \$3,138,022.

An invoice test was conducted. Audit selected one invoice in the amount of \$646,948 for review. Documentation provided reflected URS invoice release of payment with 4 levels of approval, the partial release and waiver (identified as Appendix D) signed and notarized, invoice dated 8/25/09 and received 8/31/09 with payment due net 45 or October 15, 2009, the PSNH materials request online authorization with 4 levels of approval noted, the online purchase order authorization in the amount of \$2.6 million. Invoice payment (online) approval was evidenced by 4 appropriate levels of authorization. The screen print of the accounts payable details that the \$646,948 was paid on November 9, 2009, 25 days later than the due date. Materials were purchased from Siemens Energy and installed onsite by ES Boulos.

Materials item #15: C04MK220 - \$646,701

Audit reviewed the invoice and authorizations associated with the purchase of a Potential Adjusted Protection (PAP) System. The PAP had been purchased from Corrosion Services at a cost of \$646,701. Refer to FGD Contractor Labor portion of this work order for further information.

Materials item #17: C04MK220 - \$469,537

The Other and Miscellaneous line item on the Project Manager's cost summary is comprised of small dollar purchases. Audit requested and was provided with the detail of all activity for 2010, which summed to \$75,507. There were 500 items listed, averaging \$151 per item. Posting ranged from less than one dollar to \$31,860, which was the total cost for panel tubes for instrument connection. The invoice from Babcock & Wilcox, dated 3/31/10 and received 5/19/10 in the amount of \$35,400, was discounted by 10%. Audit also reviewed the detailed postings for 2011. 505 items summed to \$140,352, with the average for the year of \$278. Postings ranged from less than one dollar to \$35,259, which was the cost for a sludge transfer and recycling pump. Items such as bottled water were purchased per order of the Bow Code Enforcement Officer, with whom Audit communicated.

Audit noted several vendors included in the Other and Miscellaneous total (all years) for which multiple expense items should be excluded from the calculation of AFUDC, due to the expense rather than capital nature of the costs. Refer to the General Conclusions and Recommendations portion of this audit report.

**CONTRACTOR LABOR – WO# C04MK220 - \$287,696,267**

31 individual contractor labor lines and one miscellaneous line reflect costs pre-2007 through March 31, 2012 which sum to \$287,696,267

**Program Management Agreement - WO # C04MK220, PO #02247849, 02247510 - \$48,565,726**

The Program Management (PM) Agreement is a time and materials contract dated 9/21/07 between Washington Group International, Inc. (URS) and Northeast Utilities Service Company, as agent for PSNH. The contract was signed by Executive Vice President – Operations, Washington Group (URS); President and Chief Operating Officer, PSNH; Vice President – Shared Services, Northeast Utilities; stamped and signed by Washington Group Legal (URS) on 9/24/07.

Per the Contract, URS “...shall be responsible for the engineering, design, procurement services, scheduling, project management, construction management, start-up, commissioning, testing oversight and operator training services for the installation and integration of the FGD System at Merrimack Station.”

Overtime pay, hours worked by non-exempt workers beyond 40 hours per week, must receive prior written approval. Receipts for expenses over \$25 should be made available for PSNH to audit. Subcontractors can be hired, but must comply with provisions of the Contract. Changes in scope to the project must be approved in writing. Either party can request a change, but the other party must approve the change. If a change is due to an emergency, violation of a law, or puts the public at risk, changes can be done immediately and then approved. As of 3/31/12, approximately 43 Change Notices had been processed, increasing the original Capital Cost by \$8,732,829 and increasing the PM Services cost by \$6,767,561.

The contract states that on a monthly basis URS shall submit an original invoice with supporting documents to the PSNH office in Connecticut for payment; an electronic copy shall be sent emailed to the Company Representative (in Bow, NH). PSNH must pay URS within 30 days of receiving the invoice. If PSNH disputes a portion of an invoicing, PSNH must pay the undisputed portion and provide written objections to all disputed portions of the invoice. URS

can adjust an invoice for errors up to 6 months following the original invoice date or project in-service date, whichever is later. URS (and its subcontractors) must preserve all records for 6 years following final payment, as PSNH has the right to audit the books, records, correspondence, receipts, vouchers and memoranda relating to this Agreement.

The contract includes a Performance Incentive Program (PIP) which is funded by the Contractor's Profit Fee of 8% of all costs and expenses, except G&A and travel expenses. There is also a Performance Incentive Fee (PIF) funded by PSNH; a 4% match of those same expenses. The program is divided into six categories, with two subcategories. Each category identifies the percentage of the Incentive Pool assigned to that category and the measure against which the incentive can be earned. A score card was developed by URS and PSNH to facilitate the payout of the categories.

Insurance for "builder's risk – all risks" property insurance is provided by PSNH provided that damage is not a result of negligence caused by URS or its subcontractors. Damage as a result of negligence would result in a deductible to be paid by URS. Workers' Compensation, Comprehensive or Commercial General Liability, Commercial Automobile Liability, Commercial Umbrella Liability and Errors and Omissions coverage are all required to be carried by URS. If URS does not provide insurance coverage for Subcontractors, URS must require each Subcontractor to carry insurance as outlined in the contract.

URS project manager signed a National Maintenance Agreements Policy Committee, Inc. (NMAPC) "Letter of Understanding, Construction Manager Participation", dated 6/25/08, for work at PSNH in Bow. The NMAPC, as identified by Jacobs Consultancy in their redacted due diligence report, administers the National Maintenance Agreement, which is a collective bargaining agreement utilized by over 3,500 industrial contractors employing the members of fourteen participating building trades international unions throughout the United States. The "Letter of Understanding, Construction Manager Participation" states that the Construction Manager recognizes that contractors and subcontractors working on the project must be signatory to the NMA prior to being awarded a contract and ensures that the contractors and subcontractors are operating under the conditions of the NMA.

Warranty is two years following the "Mechanical Completion" of each Unit (Unit 1 and Unit 2). Subcontractor warranties may be longer; in such cases, subcontractor warrantee prevails.

Amounts paid for the Major Contract	43,648,220	
Total amount paid PPF	2,204,539	(unaudited)
Total amount paid PIF	685,213	(unaudited)
Total Escrow Balance PPF	998,832	(unaudited)
Total Notational Balance PIF	<u>881,472</u>	(unaudited)
Total Contract Amount URS	48,418,276	

Audit submitted an audit request to PSNH on 5/7/12 inquiring where in the Company's general ledger the performance incentive amounts are being recorded. On 7/13/12, the Company provided this information. The Company uses five accounts to track the URS escrow and notational accounts in the general ledger: (one) 134 account for the Cash Escrow, (two) 232 accounts for Accounts Payable and (two) 253 accounts for the deferred credit. Audit was told that the escrow account is held at Bank of America and the notational account is solely a general ledger account.

An invoice test was conducted. Audit randomly selected eight payments for verification and for proper authorization; four related to Washington Group and four related to URS. The invoices reflected payment terms of Net 30 days, as outlined in the contract and were paid by PSNH via ACH generally within a week of the due date. The following tables summarize the invoices and expense categories tested by Audit.

<u>Invoice #</u>	<u>Invoice Date</u>	<u>Receipt Date</u>	<u>Paid Date</u>	<u>Invoice Amount</u>
1268882	02/01/08	02/04/08	03/05/08	\$ 98,339
1336393	11/16/09	11/20/09	12/23/09	1,541,647
1352932	04/19/10	04/22/10	05/24/10	1,387,705
1373008	10/15/10	10/19/10	11/22/10	1,099,171
1376644	11/12/10	11/16/10	12/20/10	868,218
1393720	04/19/11	04/19/11	06/07/11	1,078,369
1411392	10/19/11	10/24/11	12/09/11	21,940
1420873	01/24/12	01/25/12	02/24/12	<u>315,095</u>
TOTAL TESTED				\$6,410,484

<u>Expense Category</u>	<u>Totals</u>
Salaries-Regular	\$2,714,877
Salaries-Overtime	119,491
Salaries-Premium Amount	4,774
Salaries-Overhead	2,420,702
Other Direct Costs (ODC)	154,745
Subcontractor: URS	99,606
Subcontractors	2,047
General Expenses	187,683
General and Admin Expenses	224,033
Home Office Princeton Travel	71,306
Project Living Expense	366,098
Insurance	<u>45,122</u>
Total Due	\$6,410,484

Escrowed Profit Fee	\$444,058
Notational Incentive Fee	\$222,028

Salaries – Regular, Overtime, Premium Amount, totaling \$2,839,142 were supported by weekly timecard information detailing each employee’s hours worked by task and rate. During testing, Audit randomly selected employees to trace their rates to the contract and recomputed the total line item cost for the selected employees. No exceptions were noted.

Salaries – Overhead, with a combined total of \$2,420,702, were computed by Washington Group and URS based on percentages documented in the contract. Overhead applied to salaries for Construction personnel was 66%. Overhead applied to all other personnel was 98%. Audit recomputed overhead figures on each invoice tested and found no exceptions.

Other Direct Charges, \$154,745, were computed by Washington Group and URS based on man-hours worked during the billing period. Using the weekly timecard information, total hours were totaled and multiplied by \$4.80 per man-hour per the contract.

The majority of subcontractor charges, \$101,653, consisted of intercompany billings between URS divisions and they were related to the project. Backup provided by URS detailed the employee’s name, hours worked, rate, and travel costs. Costs were detailed by task.

The General Expense category, \$187,683, contains many small charges. Some of the charges should be booked to expense rather than capitalized. The Company is advised to follow FERC when booking final costs in this area. Audit was told that a typical method of achieving a high safety focus is to provide incentives and rewards to the physical work force. Audit understands that each of the items below was used as part of the safety reward program. See General Conclusions and Recommendations section of this audit report.

<u>URS Inv</u>	<u>Description</u>	<u>Amount</u>
1336393	Brainstorm Inv# 3873 & 3892-100 Schrade Two Blade Knives	2,107
1336393	Brainstorm Inv# 3873 – 425 Scratch Off cards	625
1336393	Catered Board Meeting 02/16/09 (Safety Lunch)	364
1393720	Brainstorm Inv#4858-48 Mag Light with Holster	778
1393720	Jordan Marketing Inv #394597JRD 400 12 function hatchet tools	5,915
1393720	Celebrations Catering – “One Million Safe Man-hours” event	11,726
1393720	Darrow, 021211 – Gifts for training class	<u>255</u>
		\$21,770

General and Admin Expenses, \$224,033, were computed by Washington Group and URS based on 4% of Salaries, Other Direct Charges, Subcontractor Charges, and General Expenses

incurred during the invoice period. The rate used agreed to that found in the contract. Audit recomputed the amount charged on each invoice and found no exceptions.

Home Office Princeton Travel, \$71,306, contains travel expenses for employees based out of the Princeton, NJ Office. Included are: flights, hotels, vehicle rentals, meals, limousine transfers, laundry costs and booking fees. During the review of charges, Audit found two instances of first class travel, one of which contained a notation stating that first class was least expensive flight option.

Project Living Expense, \$366,098, consists of the daily living allowances granted to URS employees assigned to long-term contracts on this project. Expenses included such items as: mileage reimbursement for travel to and from employee residence to Bow, flights and transfer costs to and from employee residence to Manchester, vehicle rental costs, vehicle fuel costs, vehicle maintenance costs, rental property lease termination fees, relocation costs, and daily living expenses. Audit noted that some employees received the \$120/day per diem per the contract while others received actual cost reimbursement. During the review of this category, Audit found the following charge does not appear to directly relate to the project. See General Conclusions and Recommendations section of this audit report. Audit understands the gift card was considered by PSNH to be a safety incentive.

<u>Employee</u>	<u>Description</u>	<u>Amount</u>
Carville	022210 – LL Bean Gift Cards for Awards	\$150

Insurance, \$45,122, was computed by Washington Group and URS based on \$0.72 per \$100 expense incurred during the invoice period. The rate used agreed to that found in the contract. Audit recomputed the amount charged on each invoice and found no exceptions.

### **FGD System - WO# C04MK220 - \$92,445,832**

Siemens Environmental Systems and Services was hired via contract signed by Northeast Utilities as agent for PSNH and Siemens Environmental Systems and Services (SESS), dated 10/20/08. Signatures noted were: President, Siemens Environmental Systems & Services; President and Chief Operating Officer Public Service Company of New Hampshire; Vice president-Shared Services, Northeast Utilities Service Company acting as agent for PSNH. The contract amount was \$95,403,300 which included a discount of \$350,000 for selecting Siemens for the Waste Water Treatment facility (refer to the primary waste water treatment portion of this report), and also included a discount overall of \$475,000. As of 3/31/12, the total expended is \$92,445,832, or 96.9% of the original contract amount.

PSNH identified an internal “not-to-exceed” amount of \$101,000,000 due to the escalation clause identified in the contract. Authorization for the purchase order was

electronically noted. Audit relied on the work performed by Jacobs Consultancy relative to the approval processes within Northeast Utilities for contracts of this size.

The contract outlines that the “Contractor shall provide a turnkey Engineering, Procurement and Construction (EPC) wet limestone-forced oxidation (LSFO) flue gas desulfurization (FGD) system to control mercury emissions by co-beneficial absorption of mercury in the flue gas.” Specifically, the contract, appendices, and specifications involve the engineering, procurement, and construction of: the flue gas system, absorber system, limestone storage system, limestone reagent preparation and feed system, mercury control additive systems, primary de-watering system, secondary gypsum de-watering system, chloride purge system, reclaim water system, compressed air system, water distribution system, steam supply, sump system, and auxiliary storage system. Engineering specifications, and codes and standards to which all systems must comply, were documented in explicit detail in the contract. In addition, SESS provided a guarantee that mercury reduction of at least 80% (as required by RSA 125-O:11) would be met. The original contract total of \$95,403,300 was calculated as:

Base bid Equipment and Material Supply-Fixed Price	\$41,900,000
Base bid Equip and Material Supply subject to Escalation/De-escalation	\$10,000,000
Base bid Erection Fixed Price	<u>\$37,500,000</u>
Base bid-Supply and Erect	\$89,400,000
27 lines of adjustments for base contract, which sum to	<u>\$ 6,478,800</u>
Base Scope Contract Sub-total	\$95,878,800
Project discount based on above scope	<u>( \$475,000)</u>
Best and Final (original) Contract Price	\$95,403,300

The detailed listing of the contract change log outlines 55 individual work change requests, the total of which sums to \$466,186. The total change does reflect a deduction of \$900,000 (WCR #055) final settlement agreement. This deduction was also noted on the milestone payment summary provided to Audit. The revised total as noted on the contract change log is \$95,869,486, which agrees with the milestone payment summary.

Siemens also agreed, per WCR 035, R1, to install the Potential Adjusted Protection (PAP) System. Sargent & Lundy conducted engineering to address potential severe corrosion risks recently identified by the power industry associated with A2205 stainless steel which is the material used to build the absorber tank. The PO for the material assessment #02257569 authorized Sargent & Lundy to perform work in accordance with the proposal dated 10/25/2010. The PO was authorized by NU Service Company Sourcing Manager. Sargent & Lundy was also authorized, per PO #02258561, to provide oversight for this proactive absorber vessel corrosion avoidance work, among other technical tasks. The PO was authorized by NU Service Company Sourcing Manager and Senior Vice President for Sargent & Lundy. Refer to the Jacobs

Consultancy Due Diligence Redacted Report, dated June 2011, page 67, for further detail regarding this proactive work, the potential problem and the solution. Total cost for engineering and oversight was \$211,480. These costs were reflected in the Contractor Labor-Other and Miscellaneous line on the Project Manager's cost summary.

The installation estimate on WCR 035- R1, per the Siemens milestone summary, was \$1,170,000. Actual costs to install the PAP System were \$1,003,969. This portion of the cost is accurately noted as Contractor Labor-Siemens. Electrical connections within the PAP System were completed by ES Boulos as part of their contract for Balance of Plant-Electrical. The PAP had been purchased from Corrosion Services at a cost of \$646,701 (as of 3/31/12). (See the Materials portion of this work order, item #15) Audit reviewed the PO #02258955 for the purchase of the Potential Adjustment Protection system, at a cost of \$648,000. The PO was authorized by the Sourcing Consultant NU-Purchasing and was signed by the Manager of the Process Engineering Group, Corrosion Services. Payment for the system was made at \$583,200, with \$63,501 (or 10%, \$64,800, plus WCO#1 for a credit of \$1,299) noted as a UVL. Corrosion Services has yet to invoice PSNH for the balance.

Audit requested the invoice supporting the WCR-035R1, and was provided with supporting detail in the amount of \$940,577. The original invoice dated 9/8/11 reflected labor and materials at a firm price of \$943,084 plus a lump sum drawing and fabrication cost \$40,000, plus a lump sum SESS Engineering and Home Office cost of \$70,000. A revised invoice was provided reflecting an adjusted labor and materials total of \$830,577. Audit verified weekly time records and hours to the rate sheet included in the contract. Total Siemens labor was accurately reflected as \$439,341 representing the cost for 6,174 hours. A flat small tool charge of \$1 per man hour was added in the amount of \$6,174. A variety of materials was supported with invoices. The principal subcontractor was Sterling Boiler and Mechanical. Invoices to Siemens reflected Sterling's cost plus 10%. Siemens invoice to PSNH reflected an additional 10% markup.

Appendix VI discusses, in some detail, the material escalation and reflects \$5,000,000 rather than the \$10,000,000 above. Audit requested clarification of the two figures, and was told that the \$10,000,000 subject to Escalation put too much of the contracted price at risk from the perspective of PSNH. Thus, within the 27 lines of adjustments, there were reductions to specific material supplies meant to reduce the level of exposure. Audit reviewed the monthly milestone billing summary and noted within it is a project escalation/de-escalation section. The total materials subject to price fluctuation were: carbon steel \$2,000,000, alloy steel \$2,000,000, and copper \$1,000,000. The milestone billing summary as of 3/31/12 reflects a total de-escalation of \$1,387,860.

A copy of the National Maintenance Agreement (NMA) was noted within the contract binder. Refer to the NMA discussion noted in the Program Manager portion of this audit report.

An invoice test was conducted. Audit randomly selected a payment in the amount of \$7,505,247 for verification to the milestone summary and for proper authorization. The invoice was dated 4/28/10 and received on 4/30/10 with payment terms of 45 days, as outlined in the contract. The invoice was paid via ACH on 6/14/10, or 45 days after receipt, in compliance with the contract. The total represents the approved completion of milestone items #50, 51, 52, 53, 56, 57, 58, 59, WCR 001 and WCR 007. The URS field invoice release of payment was approved at all six approval levels. The invoice from Siemens was supported with the milestone payment summary, as required by the contract. The invoice certification, stating “the milestones for which payment is requested, have been achieved,” was included with the invoice. A notarized contractor’s affidavit, and notarized partial release and waiver were also included. Electronic approvals from appropriate PSNH/NU were noted.

Audit randomly selected a materials payment in the amount of \$646,948, with the invoice dated 8/25/2009, from Siemens Energy, (relating to the LV/MV materials) due net 45 days or 10/9/09. The invoice was for a variety of items associated with the low voltage substation and medium voltage switchgear. Four levels of approval on the URS invoice release of payment form were noted, and dated 9/14/09. Signed and notarized partial release and waiver, and contractor’s affidavit forms were noted. A material request screen print was provided along with a printout of the electronic authorization, approved by PSNH Project Manager, PSNH Director of Generation, PSNH VP of Generation, and Executive Assistant to CEO/NU. Proper electronic authorization for the purchase order was also evidenced, as was approval of the invoice itself. Payment was made via ACH on 11/6/09.

#### **Chimney - WO# C04MK220 - \$12,873,510**

A Fixed Price Contract (EPC) for the chimney system at Merrimack station signed by Northeast Utilities Service Company as agent for PSNH and Hamon Custodis, Inc. of NJ. 12/9/08. Signatures on the contract copy were President of Hamon Custodis, Inc. and Director Corporate Purchasing for Northeast Utilities Service Company acting as agent for PSNH. The original contract price \$12,614,364 was increased through twelve WCR totaling \$259,146 or 2% increase for a total \$12,873,510. The revised total agreed with the total amount paid per Company response to audit requests #4 and #5.

Regarding insurance, the contractor was required to participate in the OCIP, and contractor was required to ensure that non-excluded subcontractors participated as well. Specific reference in section 9.5 in capital and bolded letters requires Hamon to provide monthly payroll

reports to the OCIP administrator. Supplemental insurance that Hamon may require is at their cost.

Levels of completion were outlined to be: Mechanical Completion; Punch List; Substantial Completion; Final Completion. Warranty periods were defined as:

- Chimney Shell Warranty is for 2 years from date of Final Completion or 12/31/13, whichever is later.
- Chimney Liner Warranty is for 2 years from date of Substantial Completion or 12/31/13, whichever is first.
- Warranty for all equipment supplied and installed by electrical subcontractor is for 2 years from Mechanical Completion.
- Warranty for the elevator is for 2 years from Mechanical Completion, and includes a 2 year maintenance agreement for the elevator. Elevator warranty specifically excludes wearing parts, traveling cable and normal change out cost of the safety device which must be exchanged every 4 years.
- All other equipment shall be warrantied for 2 years from the date that Mechanical Completion of the Chimney System actually occurs or 9/3/12, whichever occurs later.
- Lighting warranty was predicated on the installation of a 480v feed to the chimney, which was done.

Contractor and all subcontractors shall maintain preserve all records for 6 years and allow owner to inspect/audit such records.

A copy of the Certificate of Mechanical Completion was provided, signed by Hamon Custodis 7/13/10, and approved by the PSNH Project Manager 8/24/10. A copy of the Certificate of Substantial Completion was signed by Hamon Custodis 1/14/12 and approved by the Project Engineer 3/13/12, PSNH Contract Administrator 4/9/12 and PSNH Project Manager 4/10/12. A copy of the Certificate of Final Completion was also signed by Hamon Custodis on 1/14/12 and PSNH Project Manager 4/10/12.

An agreement dated 1/1/04 was included for stacks-chimney work, and outlined duties, work rules, safety, etc., and was signed by the following *employers*: VP Construction Pullman Power, LLC; VP and GM Ragnar Benson, Inc.; Manager of Construction Hamon Custodis; President American Boiler & Chimney; President SCT Construction Co; President R&P Industrial Chimney Co., Inc.; President Lopez & Associates, Inc.; Anthony Umar GM Commonwealth Constructors, Inc. and by the following *Unions*: General President United Brotherhood of Carpenters and Joiners of America; General President Laborers' International Union of North America; General President International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers.

A National Field Manufacturing Agreement for Fiberglass Reinforced Plastic (FRP) was an agreement outlining the general terms and working conditions for the specialty field of FRP and was signed by President of Powerlina Inc, and International President on behalf of the International Brotherhood of Boilermakers, Iron Shipbuilders, Blacksmiths, Forgers and Helpers, AFL-CIO. The agreement was signed on 6/13/01 to be in effect from 6/1/07 through 5/31/12.

The Progress Milestone payment summary as of 3/12 was requested, and the totals paid agree with the total \$12,873,510. The summary indicated that during the construction phase 5%, or \$630,718 had been retained. As aspects of the project were completed, the retention was paid. The \$12,873,510 represents all progress milestone payments with zero retained as of 3/31/12.

An invoice test was conducted. Two invoices were selected from the response to audit requests #4 and #5: \$2,098,795 and \$1,638,016. The total invoice test represents 30% of the total payment made to Hamon Custodis. The materials request authorization screen print detailed approval for the dollar amount at the appropriate PSNH/NU levels.

The invoice for \$2,098,795 was approved by appropriate levels of URS. A signed and notarized partial release and waiver was provided, along with the contractor's affidavit. Subcontractors were noted as CMC Rebar, L&W Fabricators, Augusta Fiberglass & Coatings, and Commonwealth Fabrication. The Hamon Custodis slip form concrete pour daily report identified the employee and hours spent pouring. The invoice itself was dated 6/26/09 and received on 6/30/09 with payment terms of net 45. The payment represented the costs per the milestone billing schedule and WCR-1, directional wind study. A manual payment was made 8/14/09 (within the net payment term) and authorizations for the payment were documented at the appropriate PSNH/NU levels.

The invoice for \$1,638,016 was approved by appropriate levels of URS. A signed and notarized partial release and waiver was provided, along with the contractor's affidavit. Subcontractors were noted as CMC Rebar, L&W Fabricators, Augusta Fiberglass & Coatings, and Commonwealth Fabrication. The invoice itself was dated 11/12/09 but received 11/17/09 with payment terms of net 45. The payment represented the costs per the milestone billing for the FRP liner fabrication, installation of liner cans excluding assembly of the elbow, and the smoke interference and drain relocation change orders (noted on the milestone summary as WCR 5 and 6). An ACH payment was authorized (by all appropriate levels at PSNH/NU) for transfer 1/4/10, 48 days from date of the invoice. Notation was made that the authorization was reconciled for month end 12/31/09 which would have put the payment within the 45 net payment terms of the invoice.

### **Primary Wastewater Treatment System - WO# C04MK220 - \$19,147,910**

Siemens Water Technologies Corp. and Northern Peabody LLC (Siemens and NPI)- contract and specifications related to the Primary Wastewater Treatment System (PWWT or WWT) were reviewed. The contract among Northeast Utilities and Siemens/NPI jointly and severally, is in the amount of \$13,593,280. The original contract dated 12/5/08 is an EPC-engineering, procurement, and construction, fixed price. The price reflects a notation related to the FGD contract's reduction of \$350,000 due to Siemens being selected for the FGD and the WWT. Forty five change orders were noted in the WCR contract change log. The total increase in the contract was \$6,111,032, or 45%. The adjusted total Waste Water Treatment System is \$19,704,312. The contract total was calculated as:

Base bid Equipment and Material Supply-Fixed Price	\$ 3,585,000
Base bid Equipment and Material Supply subject to Escalation	\$ 2,610,000
Base bid Erection Fixed Price	<u>\$ 5,834,000</u>
Base bid-Supply and Erect	\$12,029,000
21 lines of adjustments for base contract, which sum to	<u>\$ 1,564,280</u>
Best and Final (original) Contract Price	\$13,593,280
Forty five Work Change Requests subsequent to original contract	<u>\$ 6,111,032</u>
Adjusted Contract Price	\$19,704,312

A review for authorizations relating to WCR-023 R2 in the amount of \$2,172,600 and WCR-037 in the amount of \$1,879,110 was conducted. WCR-023 R2 increased the scope of work with the following: "engineering, design, procurement, fabrication, testing, packaging, shipping, storage, handling, erection, startup, commissioning, and performance testing of a nominal 50 gpm enhanced mercury and arsenic removal wastewater treatment system (Enhanced WWTS" or EMARS). URS approvals of the work change request were noted with signatures of the contract administrator, engineer, site manager, project manager, and PSNH project manager. A detailed document list and schedule, each page with approval initials on it, as well as an email authorization for the change, sent from the PSNH Director of Generation, were reviewed.

WCR-037, associated with the FGD Wastewater Softening System pre-treatment, and in coordination with WCR-027 (conceptual design), WCR-035 (major equipment procurement and additional conceptual design), and WCR-036 (detailed engineering and prefabricated building fabrication down-payment), WCR-037 directed SWT-NPI to complete the FGD Softening WWTS engineering, procurement, construction, and startup scope in its entirety. The Soda Ash system scope was defined by commercial and technical documents. The lump sum price for nine portions of the soda ash system amount to \$1,148,903. Subcontracted portions of the soda ash system were priced at reimbursable cost plus fixed 15% per appendix VIII-7 amount to \$730,207. Specific subcontractors listed were Cairns, CCB, and Reilly Electric.

The Enhanced Mercury and Arsenic Removal System, EMARS, was noted as WCR-023 at a cost of \$2,172,600 dated 2/17/11. The Jacobs Due Diligence Report dated June 2011 identified the need for this due to the requirements of the NHDES to meet the “*rigorous emission limits of the water discharge permit limitations*”. Subsequent to the March 2010 request for proposal, and the bidder selection and work change request date, PSNH decided to construct a secondary or supplemental waste water treatment system (SWWT). As a result, there is no water being discharged into the Merrimack River with the construction of the SWWT. There are a total of three work change requests specifically related to EMARS, which sum to \$2,195,873. Refer to the SWWT portion of this report for further review of the secondary waste water treatment. PSNH indicated that the EMARS was “*initially added as a polishing system to allow the FGD effluent to directly discharge to a settling pond and then to the Merrimack River. Subsequently, the primary waste water system including the EMARS was used as the design basis for the design of the secondary waste water equipment and the effluent characteristics trucked to area privately owned treatment facilities for disposal.*” In addition, the PSNH Progress Report dated 11/10/11, stated that “[d]ue to EPA’s refusal to modify or amend the Station’s current water discharge permit, and the indeterminate time until a new permit becomes effective, alternate wastewater disposal arrangements have [been] made to ensure compliance with the RSA 125-O requirements.” Audit understands that the scrubber was declared in service in September 2011, and that further delay of the permit process would have increased the cost of the project by the AFUDC calculation.

Regarding insurance, both contractors were required to participate in the OCIP. Contractor was required to deliver to [PSNH] a parent guarantee in substantively equivalent form as set forth in attachment XIII-2. Audit requested and was provided with a copy of the irrevocable guarantee of Siemens Corporation for the full and prompt payment and performance of its subsidiary Siemens Water Technologies for obligations in the contract dated 12/5/08.

Regarding the warranty, Contractor warrants that the WWT “system and all other equipment and services provided or delivered to owner shall be supplied in accordance with the requirements in the specifications and shall be free from defects in design, materials, and workmanship for a period of two years from the date of substantial completion actually, occurs or 3/31/15, whichever occurs first.”

Regarding the completion, the contract indicates that a punch list of items for the WWT shall be filed with the certificate of substantial completion, and within 10 days, owner will accept or modify the list. Unless specified otherwise, punch list items must be completed to reasonable satisfaction in accordance with the agreement within 90 days of the certificate of substantial completion. Said certificate was signed on 3/30/12 by Siemens Water Technologies and

Northern Peabody, and by URS on 3/30/12, and by PSNH Project Manager on 4/3/12. As of 6/7/12, Final Completion has not occurred.

An invoice test was conducted. As of 3/31/12, \$18,147,910 invoices have been paid. Audit selected five invoices totaling \$7,931,118 or 44% of the paid invoices. A properly authorized material request and a purchase order in the amount of \$14,200,000 were provided. The establishment of the PO is in accordance with the original contract. PSNH established a revised not-to-exceed figure of \$20,400,000.

A milestone payment invoice \$3,477,725 dated 8/6/09 and received 8/18/09 for the period 4/1/09 through 7/31/09. Payment was made by check dated 10/20/09. URS properly authorized invoice release of payment was noted, along with PSNH electronic authorizations at the appropriate level. A signed and notarized partial release and waiver was noted. Photocopies of the Standard Subcontract Agreement for Building Construction were noted for subcontractor CCB for designing foundations and steel platforms, Reilly Electric for designing electrical systems, and Allied Engineering for HVAC systems. Un-priced purchase orders (in accordance with the contract), with proper initials indicating authorization, were provided. On the progress milestone payment summary, twenty six early stage progress milestone payment line items were identified, representing schematics, drawings, engineering, equipment and material purchase orders placed, purchase orders for piping, clarifier internals, air compressor package, electrical, mobilization, sump and footings.

A milestone payment invoice in the amount of \$1,502,702 was dated 1/8/10, received 1/15/10 and paid by check 3/9/10. Payment was made within 60 days. A copy of the URS field invoice release of payment evidenced the proper levels of authorization. The invoice properly reflected the period for which the funds were requested; period ending 11/30/2009. A notarized partial release and waiver, dated 1/8/10 was also reviewed. Electronic authorizations from PSNH were noted at the appropriate levels. There were thirteen milestones achieved for which various percentage payments were made. The progress milestone payment schedule supported the amount requested and paid.

A milestone payment invoice in the amount of \$1,176,728 was dated 2/22/10, received 2/26/10 and paid 4/12/10. The proper PSNH levels of electronic approval were noted, as were the URS approvals on the field invoice release of payment. A notarized partial release and waiver, dated 2/22/10 was noted. Un-priced purchase orders, bills of lading, packing lists, and procurement shipment notification forms, relating to fiberglass tank and related parts, were provided, in accordance with the contract. A letter from NPI Mechanical Contractors to Reilly Electric to proceed with construction of the electrical system as outlined in their contract 8198-5518-01, along with 5 pages of drop shipment (un-priced) purchase orders, were provided. 100+ pages of change orders, relating to small parts, were provided by Siemens and authorization

initials were noted on each. The progress milestone payment request outlined piping and electrical drawings, equipment and materials progress billings, filter presses, structure erection and interior connection, and electrical installation.

A milestone payment invoice in the amount of \$1,001,335 was dated 8/19/11 and received 8/30/11 for the period 4/1/11 through 7/31/11. The invoice was paid by wire 10/17/2011. Proper authorizations were noted for both URS and PSNH. A notarized partial release and waiver was dated 8/19/11. A copy of a 21 page drop shipment (un-priced) purchase order from Industrial Controls and Equipment to Siemens was noted. Two pages of an eight page drop shipment (un-priced) purchase order from Columbian Tectank to Siemens were provided. A change order from CST Storage to Siemens was provided. A three page drop shipment (un-priced) purchase order from J&B Industrial Sales Co., Inc to Siemens was provided, (related to the soda ash silo bin activator). A two page drop shipment (un-priced) purchase order from Flex-Kleen to Siemens, relating to the soda ash silo dust collector was provided. Three pages of a drop shipment (un-priced) purchase order from BW Sinclair to Siemens, relating to the soda ash silo screw conveyor, were provided. The progress milestone payment summarized percentages complete relating to clarifier tanks, lime slurry storage tanks, reduction tanks, effluent tanks, sludge holding tanks, secondary containment outdoor tanks, and related testing and piping, instrumentation and tagging.

A milestone payment invoice in the amount of \$772,628 was dated 1/20/12 and received 1/26/12 for the period 10/1/11 through 11/30/11. The invoice was paid by wire on 3/19/12. The progress payment #24 represents the escrow disbursement, noted as \$336,370 for Siemens Water Technologies and \$436,258 for Northern Peabody. URS authorization for the payment was noted at appropriate levels, and by PSNH electronically at the appropriate levels. Further support provided to Audit was a signed and notarized partial release and waiver, progress payment schedule for slab, HVAC systems, testing and turnover, punch list items, completion of secondary containment for outdoor tanks, completion of filter press mezzanine level modifications, pipe labeling, work related to the soda ash systems WCR 035, 036, and 037. Additional subcontractor invoices and supporting detail was provided as submitted to Northern Peabody, which submitted their invoice with the 15% markup noted. Subcontractor invoices and documentation reviewed were CCB, Inc. and Cairns.

### **Material Handling System - WO# C04MK220 - \$38,796,005**

The Material Handling System Agreement is a fixed price contract dated 12/19/08 between Dearborn Mid-West Conveyor Co. (DMW) and Northeast Utilities Service Company, as agent for PSNH. The contract was signed by Executive Vice President & General Manager, Dearborn Mid-West Conveyor Co.; President and Chief Operating Officer, PSNH; Vice President – Shared Services, Northeast Utilities.

The original contract total of \$34,728,878 was calculated as:

Base Bid Total Supply and Erect – Fixed Price	\$37,995,500
Twenty-six Adjustments to Base Contract Design	(2,204,900)
Project Discount	<u>(1,000,000)</u>
Best and Final Contract Price	\$34,790,600
Base Bid Credit for OCIP	(456,078)
Base Bid Letter of Credit	251,356
Base Bid Errors & Omission Insurance	<u>143,000</u>
Final Contract Price	\$34,728,878
Sixty-three Work Change Requests subsequent to original contract	<u>4,382,688</u>
Adjusted Contract Price	\$39,111,566

A not to exceed figure of \$41,200,000 was assigned to PO#02246381 and 02250144, project 29384, Spec 15-6-714.

As stated in the Contract, DMW “...shall engineer, design, furnish, fabricate, procure, deliver, unload, protect, remove from protection, erect and install the Material Handling Systems for the Merrimack Clean Air Project. The Material Handling Systems consist of Limestone and Gypsum Material Handling Systems...”

Changes in scope to the project must be approved in writing. Either party can request a change, but the other party must sign off on the change. If a change is due to an emergency, violation of a Law, or puts the public at risk, changes can be done immediately and then signed off on within ten (10) days. Subcontractors can be hired, but must comply with provisions of the Contract.

The contract states that on a monthly basis DMW shall submit an original invoice with supporting documents to the PSNH office in Connecticut for payment; an electronic copy shall be sent emailed to the Company Representative (in Bow, NH). DMW (and its subcontractors) must preserve all records for 6 years following final payment, as PSNH has the right to audit the books, records, correspondence, receipts, vouchers and memoranda relating to this Agreement.

As noted by the Company, “DMW was unable to secure a Letter of Credit (LoC) from an NU accepted advising and conforming bank. Subsequently, NU and DMW agreed to an interim LoC plus a 10% collateral reserve. Collateral reserve was not withheld from the first invoice; the second invoice (84663) was withheld in its entirety (\$336,300) for collateral reserve; the third invoice and subsequent invoices had 10% collateral reserve withheld until DMW accrued an acceptable LoC. The collateral reserve was paid to DMW on 11/8/10, \$3,191,915.60.”

Insurance for “builder’s risk – all risks” property insurance is provided by PSNH provided that damage is not a result of negligence caused by DMW or its subcontractors. Damage as a result of negligence would result in a deductible to be paid by DMW. Workers’ Compensation, Commercial General Liability and Commercial Umbrella Liability coverage are all required to be carried by DMW in order to cover work performed away from the site and on-site after “Substantial Completion” has been reached. For more information on insurance, refer to the Fees and Payments portion of this audit report for specific information regarding the OCIP.

The contract contained a signed copy of the National Maintenance Agreements Policy Committee, Inc. (NMAPC) “Letter of Understanding, Construction Manager Participation”, dated 6/25/08, for work at PSNH in Bow. Please refer to the Project Management section of this report for further information on this subject matter.

Warranty is two years from date of “Substantial Completion”. Corrective work shall be warranted for one year beyond the expiration of the then-applicable warranty.

An invoice test was conducted. Audit randomly selected four payments for verification to the milestone summary and for proper authorization; one from 2009, 2010, 2011 and 2012, totaling \$5,553,836. The invoices reflected payment terms of 45 days, as outlined in the contract. The 8/31/09 invoice that was reviewed contained a URS field invoice release of payment and was either approved or marked “n/a” at all approval levels; engineering, project control manager, procurement/receiving, construction manager and project manager. All other invoices reviewed, 4/30/10, 6/30/11 and 1/31/12, contained a URS field invoice release of payment marked as approved or marked “n/a” at all approval levels; construction contract coordinator; construction discipline lead, contract administrator; field engineer, project control manager and construction manager. The invoice from DMW was supported with the milestone payment summary, as required by the contract. The invoice certification, stating “the milestones for which payment is requested, have been achieved,” was included with all but the first invoice tested; dated 8/31/09. A notarized contractor’s affidavit and a notarized partial release and waiver were included for all invoices.

DMW Invoice #85246, dated 8/31/09 and received 9/4/09, in the amount of \$1,251,236, covered work completed through 8/31/09. The invoice reflected payments terms of 45 days. The invoice was paid by PSNH via ACH on 10/20/09. The invoice represented 20% completion. The invoice detail included items such as; design drawings, lightning and grounding design, issuing subcontracts and purchase orders, engineering costs. The total cost of the invoice was \$1,390,262 and 10% collateral reserve, \$139,026, was deducted. PSNH records did not show the full invoice amount or the collateral reserve amount, only the net amount, \$1,251,236, was reflected in PSNH records.

Invoice #85880, dated 4/30/10 and received 5/20/10, in the amount of \$3,879,586 was for work completed through 4/30/10. The invoice reflected payments terms of 45 days, but was paid by PSNH via ACH on 7/6/10. Invoice detailed reflects work done on; bucket elevator, PLC control cabinet, belt scales, conveyor drive, roofing and siding, limestone receiving conveyor L-2 drive tower, L-2 support belts, limestone transfer conveyor L-3C, emergency belt feeder, gypsum conveyors transfer house, Silo LSS-1, limestone transfer conveyor L-2, limestone transfer conveyor L-3C. The total cost of the invoice was \$4,310,651 and 10% collateral reserve, \$431,065, was deducted. PSNH records did not show the full invoice amount or the collateral reserve amount, only the net amount, \$3,879,586, was reflected in PSNH records.

Invoice #87124, dated 6/30/11 and received 7/11/11, totaling \$298,000 was for work completed through 6/30/2011. The invoice detail showed work on items such as; communication system, limestone truck unloading system, pipe tagging. No collateral reserve was deducted from the original invoice total.

Invoice #87940, dated 1/31/12 and received 2/8/12, in the amount of \$125,014, covered work completed through 1/31/12. The invoice detail was; Phase 3 C-boom modifications, programming changes, L-2 Tall Gallery study, snow guards. No collateral reserve was deducted from the original invoice total.

#### **Foundations - WO# C04MK220 - \$18,384,462**

The Foundation Installation for the Merrimack Station Clean Air Project Agreement is a fixed price contract dated 2/4/09 between Francis Harvey & Sons, Inc. and Northeast Utilities Service Company, as agent for PSNH. The contract was signed by President and Treasurer, Francis Harvey & Sons, Inc. and Director – Corporate Purchasing, Northeast Utilities. The original contract total of \$9,998,703 was calculated as:

Base Bid Technical Price – Lump Sum & Unit Priced	\$10,162,300
Base Bid Credit for OCIP	(322,122)
Base Bid Sales/Use Tax on Rental Equipment & Expenses	31,007
Base Bid Performance & Payment Bonds	81,132
Base Bid Optional Lump Sum FGD Embedded Conduit	<u>46,386</u>
Final (original) Contract Price	\$9,998,703
Eighty-seven Work Change Requests subsequent to original contract	<u>8,385,760</u>
Adjusted Contract Price	\$18,384,463

A not to exceed amount of \$20,700,000 was established for PO #02247458.

The contract contained a signed copy of the National Maintenance Agreements Policy Committee, Inc. (NMAPC) “Letter of Understanding, Construction Manager Participation”, dated 6/25/08, for work at PSNH in Bow. Please refer to the Project Management section of this report for further information on this subject matter.

Warranty is two years from date of “Final Completion”. Corrective work shall be warranted for one year beyond the expiration of the then-applicable warranty.

As of March 31, 2012, early pay discounts of 2% or 4%, totaling \$355,109, were taken. Total early pay discounts applied to the entire Contract per the Contract Change Log totaled \$355,109.

An invoice test was conducted. Audit randomly selected four payments for verification and for proper authorization. The invoices reflected payment terms of 15 days, which varied from that outlined in the contract. Francis Harvey offered discounts on the invoices, of 2% or 4%, and PSNH took advantage of the discounts.

Francis Harvey & Sons, Inc. Invoice #11, dated 12/31/09 and received 01/06/10, in the amount of \$2,632,265, covered work completed 12/1/09 through 12/31/09. The invoice copy reflected payments terms of 15 days, less a 2% discount of \$52,645. PSNH paid \$2,579,620 via ACH on 1/22/10. The invoice copy represented progress work done on the following: structural excavation; supply, placement and compaction of fill and backfill; sheet piling; mud mats; large mat foundations; large equipment foundations; LS conduit embeds; change orders 31, 40-47.

Francis Harvey & Sons, Inc. Invoice #17, dated 06/30/10 and received 07/08/10, in the amount of \$822,160, covered work completed 06/01/10 through 06/30/10. The invoice copy reflected payments terms of 15 days, less a 2% discount of \$16,443. PSNH paid \$805,717 via ACH on 07/22/10. The invoice copy represented progress work done on the following: supply, placement and compaction of fill and backfill; footings and piers; walls; mud mats; slab on grade; demolition; change orders 16, 37, 50, 58, 60, 65R1-68R1, 70-73, 75, 76. The original cost of the invoice was \$826,479; however, PSNH adjusted the invoice deducting \$4,319 and the 2% discount, \$16,443.

Francis Harvey & Sons, Inc. Invoice #19, dated 01/13/11 and received 02/16/11, in the amount of \$140,018, covered work completed through 01/13/11. The invoice copy reflected payments terms of 15 days, less a 2% discount of \$2,800. PSNH paid \$137,218 via ACH on 02/23/11. The invoice copy represented progress work done on the following: supply, placement and compaction of fill and backfill; slab on grade; demolition; OCIP credit; change orders 33, 49R1, 84, 87R1, 88.

Francis Harvey & Sons, Inc. Invoice # 18, dated 01/13/11 and received 01/14/11, represents the first of two \$600,000 payments, part of Settlement Agreement 2C of the global settlement due to Francis Harvey and was due within three business days from the execution of the Settlement Agreement. An ACH was done on 01/19/11 in the amount of \$600,000. The second of the two \$600,000 payments, Invoice # 20, also dated 01/13/11 but received 02/24/11, was stipulated to be paid within fifteen days of PSNH's receipt of defined items within Settlement Agreement 2C. In a letter dated 2/14/11, URS reminded Francis Harvey of outstanding issues. On 2/28/11, John Harvey, from Francis Harvey offered a 4% discount to PSNH to speed along the approval process. An ACH was done on 03/02/11 for the amount of \$576,000.

### **Duct/Steel Installation - WO# C04MK220 - \$14,201,125**

The Duct/Steel Installation for the Merrimack Station Clean Air Project Agreement is a fixed price contract dated 12/09/09 between Merrill Iron & Steel Transit, LLC (Merrill) and Northeast Utilities Service Company, as agent for PSNH. The contract was signed by Vice President, Operations, Merrill Iron & Steel, LLC and Purchasing Manager for Director, Corporate Purchasing, Northeast Utilities. The original contract total of \$12,873,877 was calculated as:

Base Bid Technical Price – Fixed Price	\$12,976,095
Base Bid Credit for OCIP	(252,976)
Base Bid Sales/Use Tax on Rental Equipment & Expenses	<u>93,758</u>
Base Bid – Technical & Commercial	\$12,816,877
Performance & Payment Bond (100%)	<u>57,000</u>
Best and Final (original) Contract Price	\$12,873,877
Misc. adjustment (copying error)	(100)
Forty-seven Work Change Requests subsequent to original contract	<u>1,636,575</u>
Adjusted Contract Price	\$14,510,352

A not to exceed amount of \$16,000,000 was established for PO #02252748.

As stated in the contract, Merrill shall erect “flue gas ducts, including expansion joints, insulation dampers, and access platforms, walkways, and ladders from the ductwork.” Additionally, Merrill shall erect “structural steel and related items shown on Contractor’s drawings and Fabricator’s erection and shop drawings.”

The contract contained a signed copy of the National Maintenance Agreements Policy Committee, Inc. (NMAPC) “Letter of Understanding, Construction Manager Participation”,

dated 6/25/08, for work at PSNH in Bow. Please refer to the Project Management section of this report for further information on this subject matter.

Warranty is two years from date of “Final Completion”. Corrective work and components that experience chronic failure shall be warranted for one year beyond the expiration of the then-applicable warranty.

An invoice test was conducted. Audit randomly selected three payments, totaling \$3,001,625 or 21% of the total agreement, for verification to the milestone summary and for proper authorization. The invoices reflected payment terms of 60 days, as outlined in the contract. All invoices reviewed: Invoice 26289 dated 6/28/10 and received 7/12/10, invoice 26406 dated 9/27/10 and received 10/12/10, and invoice 27032 dated 11/10/11 but received 1/9/12, contained a URS field invoice release of payment marked as approved or marked “n/a” at all approval levels; construction contract coordinator; construction discipline lead, contract administrator; field engineer, project control manager and construction manager. The invoices from Merrill were supported with the milestone payment summaries, as required by the contract. The amounts due were calculated using a percentage of work completed to date. The invoice certification, stating “the project milestone(s) stated on this invoice have been achieved,” was included with all but the last invoice tested; dated 11/10/11. A notarized contractor’s affidavit and a notarized partial release and waiver were included for all invoices.

During the invoice testing, Audit observed that Azco, Inc. was a major subcontractor for this contract. As a result, Audit questioned the Company about whether or not Azco, Inc. bid on this project. The Company responded, “Azco was not one of the 8 companies provided the steel erection specification. Four (4) bids were received and Merrill was the highest evaluated bidder. The selection of Merrill as the highest evaluated bidder also eliminated the potential for “finger-pointing” between a supplier and an installer. Azco partnered with Merrill Steel to install/erect the steel Merrill supplied. Azco was known to URS as a BOP mechanical contractor, but not as a steel erection company.” Refer to the Balance of Plant Mechanical Installation section below.

#### **Balance of Plant (BoP) Mechanical Installation - WO# C04MK220 - \$4,581,616**

A copy of the contract between Azco, Inc. and Northeast Utilities Service Company as agent for PSNH, dated 3/25/10 was provided to Audit for review. The original contract was signed by the Executive Vice President of Azco, Inc., and the Manager of Corporate Purchasing NU Service Company. The lump sum contract in the amount of \$2,385,725 was adjusted 69 times per the WCR Contract Change log. The adjusted total was noted to be \$5,448,014. Start up support assistance as needed was identified as time and materials based. A credit for participation in the OCIP was noted in the amount of \$31,338. Establishment of the PO was documented by the Sourcing Manager, NU Service Company.

Reference to the requirement to participate in OCIP was noted, as was a reference to the NMAPC Letter of Understanding.

An invoice test was conducted. Audit selected two invoices for detailed review. UVL for March 2012 in the amount of \$1,676,618 was included in the \$4,581,616 total as of March 31, 2012. Proper electronic authorizations were noted to establish the purchase order and materials request.

One invoice in the amount of \$442,106 was submitted for payment 8/9/10, with payment made by check on 10/4/10. Evidence of the appropriate URS authorizations for the field invoice release of payment was provided. The invoice referenced the lump sum contract, change order, zero retainage, and previous payments received, reflecting a net amount due of \$442,106. Descriptive application for payment form indicated that payment was for installation of booster fans, water pumps, quench water pumps, truck wash system, hoist, piping, among other items, including a credit of \$8,775 related to OCIP. A contractor's affidavit and partial release and waiver were also provided, both signed and notarized.

One invoice in the amount of \$429,693 was selected for detailed review. This invoice was submitted on 10/4/10 with payment made by check 11/29/10. As noted above, appropriate levels of authorization at both the URS and PSNH levels were noted for the payment. The application for payment outlined the percentages of specific equipment installation and miscellaneous testing, clean up, etc., for which payment was requested. A signed and notarized certificate for payment was provided. Also as above, the contractor's affidavit and partial release and waiver were provided, both signed and notarized.

Audit noted references to the "quench water piping incident" and requested clarification. The Company noted that *"as part of the initial commissioning effort prior to equipment and system start-up activities, during the pneumatic pressure test of the piping system, a segment of the fiberglass quench water pipe system failed on January 13, 2011 at the service water pump house. A portion of the above-ground portion of the pipe system being pneumatic pressure tested by Azco, the BoP Mechanical Contractor, to comply with their contract requirements for turnover. There was no injury to any personnel."* The Company indicated that Azco completed the necessary piping repairs. The total cost of the AZCO claim was \$118,333. The date of the claim was 1/13/11, with final costs to the insurance company on 12/29/11. NU received \$18,333 from the insurance company on 8/16/12 and the AZCO deductible of \$100,000 was reflected as a WCR credit on 8/7/12.

**Balance of Plant (BoP) Electrical Erection - WO# C04MK220 - \$9,986,063**

A copy of the fixed price agreement signed 4/23/10 by the Director of E.S. Boulos and the Director Purchasing Northeast Utilities Service Company acting as agent for PSNH in the amount of \$5,840,030 was reviewed. A Conformed Award Package value \$5,840,030 documented by the Project Manager, URS to the Project Manager, PSNH to install all balance of plant electrical for the clean air project at Merrimack Station was also reviewed. The projected cost, net of a credit for \$114,970 related to OCIP, was further detailed as:

Mobilization	\$ 150,000
Demobilization	\$ 50,000
Subcontractor	\$ 231,416
Materials	\$2,004,258
Field labor	\$3,246,963
Construction equipment, small tools, consumables	\$ 272,362
OCIP credit	<u>(\$ 114,970)</u>
Total Fixed Price	\$5,840,030

There were 63 WCR totaling \$4,562,157, with the resulting total contract amount \$10,412,187. The total cost as of 3/31/12, per Project Manager's Cost Summary is \$9,986,063.

Regarding insurance, E.S. Boulos, and any subcontractors thereof, were required to participate in OCIP, and required to have insurance for all other off-site work and liabilities, at their expense. Tab #14 of the contract binder has a copy of the completed OCIP enrollment application, which calculated the \$114,970.

Regarding the NMAPC, reference was noted regarding National Maintenance Agreements Policy Committee. Refer to detail in the Project Management portion of the audit report.

An invoice test was conducted. Three invoice were selected at random (from the response to Audit Requests #4 and #5) and represent 23% of the total payments as of 3/31/12. The electronic approval of an \$8 million PO was provided, detailing the Director of Purchasing as the authorization. The material request electronic authorization detailed the appropriate levels of PSNH approval. Per the agreement, payment would be based on progress invoicing, payable within 60 days. Time and Materials labor rate schedule was noted within the agreement, as was the equipment rent sheet for items owned by Boulos, and unit pricing for panels, transformers, conduit, boxes, fused disconnect switches, trays, medium voltage cables, power, control cables, instrumentation cables, fiber optic cable terminations low voltage, instrument & control, grounding, heat tracing, lighting convenience, communications and fire alarm systems

The first invoice, in the amount of \$7,899, dated 8/31/10 and received 10/4/10, representing time and materials, was supported with the URS field invoice release of payment, with appropriate levels of approval documented; a notarized partial release and waiver, and notarized contractor's affidavit, both dated 9/30/10; invoice electronic approval was documented by the appropriate PSNH levels; payment by check was made on 12/3/10. The amount represents cost of materials related to WCR-007, steel for the FGD Cable Bus and Duct Support.

The second invoice, in the amount of \$921,450 dated 12/10/10 and received 1/10/11 represented a contract invoice payment related to the BoP Electrical Erection. URS approval was documented at the appropriate levels. A notarized partial release and waiver was noted, as was a notarized contractor's affidavit. Subcontractors listed were George Cairns & Sons for excavation and backfill; CCB, Inc. for site clean-up; Fuellgraf Chimney & Tower Inc. for electrical above 207 level chimney; Francis Harvey & Sons, Inc. for concrete and steel welding; and Safway Services, LLC for scaffolding installation. The invoice was authorized for payment by the appropriate PSNH levels and was paid on 3/11/11. Further supporting detail outlined the time and materials for which the invoice was submitted, and the percentage of the total cost associated with each line, as documented in Appendix VIII-2 and work change requests #13, 16, 17, 20, 22 and 25.

The third invoice in the amount of \$1,096,762 was supported with documents in the amount of \$1,113,085. An additional invoice in the amount of \$50,071 was added to the \$1,113,085 invoice, for a total approval by URS of \$1,163,156. The \$50,071 related to WCR-019 and WCR-024 both of which related to startup support and revised time and material rates. Audit recalculated the invoice to the rates without exception. The initial invoice of \$1,113,085 represented a contract invoice payment per the base bid. The payment of \$1,096,762 represents the invoiced amount of \$1,113,085 less a reduction to WCR-029 (new UPS) of \$1,000 due to lack of adequate documentation relating to freight, and a short pay of \$15,323 of WCR-032 (temp heater hookup) due to lack of adequate receipts. Finally, all appropriate electronic authorizations for the payment of the adjusted \$1,096,762 were noted without exception. The invoice dated 3/31/11 but received 5/13/11 requested payment within 60 days. The funds were wired on 6/29/11, after all proper documentation relating to WCR-029 and WCR-032 was resolved.

#### **Other and Miscellaneous Contractor Labor – WO# C04MK220 - \$2,873,063**

As of 3/31/12, Audit reviewed the contractor labor items within this line item of the Project Manager's Cost Summary. A review of the C04MK220 work order annual summaries indicated the following within the Other and Miscellaneous Contractor Labor line item total:

Atlantic Contracting	\$ 39,671
Air Modeling	\$ 20,000
Golder (Soil Borings)	\$ 117,973
Demolition and Relocation	\$ 164,891
Other and Miscellaneous	<u>\$2,530,528</u>
Total	\$2,873,063

Audit reviewed the detail postings for Other and Miscellaneous for 2010, in the amount of \$880,515. There were a total of 484 entries, which average \$1,819. The posting amounts for that year ranged from \$1 to \$43,400. The \$43,400 entry was paid to DeAngelis Railroad for track repair. Included in the Project Manager's cost summary is a payment to Northern Peabody in the amount of \$134,300 on 1/3/12. The payment relates to the Secondary Waste Water Treatment system according to the work order detail. Thus, the work order #C04MK226, on the Project Manager's cost summary only, is understated by the same figure of \$134,300.

Audit noted total snow removal costs in the amount of \$184,771, paid to Streamline Maintenance Group. PSNH indicated that the costs incurred are incremental based on the areas plowed, such as the materials laydown area, construction trailers area, contractor parking, new construction roads and access roads, among others.

Security Services for the property have been and will (in the foreseeable future) continue to be provided by Securitas Security Services USA, Inc. Audit was informed that the \$438,889 paid for security represents the incremental cost of the security at the site while the construction was ongoing.

Medical services provided to the project amounted to \$514,577 as of March 31, 2012, and were paid to Mobil Medical Corp beginning in July 2009.

#### **Outside Services – WO# C04MK220 - \$4,252,284**

As of 3/31/12, \$4,252,284 had been recorded in work order C04MK220. The following specific outside services were identified. Audit reviewed Janus Management \$726,750, Legal \$912,853, and the Other and Miscellaneous line which sum to \$1,905,068.

Janus Management-PO#02222187	\$ 726,750
Legal-PO#02233443	\$ 912,853
Legal-PO#02233819	\$ 17,444
RW Beck-PO#02251868	\$ 386,814
Jacobs Consultancy	\$ 148,949
Sargent & Lundy-PO#02257569	\$ 154,406
Other and Miscellaneous	<u>\$1,905,068</u>
Total Outside Services	\$4,252,284

Janus Management, as noted by PSNH, initially provided organizational input (at early stages) given their experience with large construction projects. They also documented key efforts and milestones associated with the CAP and resulting in the project history workbook. Audit reviewed the draft on hand at Merrimack Station and noted that the first volume contains an introduction, chronology of key events, the requirement for compliance with the Mercury Reduction law, a description of the scrubber, legal and regulatory matters, and preliminary engineering discussions. The second volume relates to project permitting, project organization and management, major contractor and supplier decisions, project engineering, construction and start-up, operator training and maintenance training, project estimates, budgets and costs, project schedules, and significant project accomplishments. At the end of the project, the volumes will provide an historical summary of the project from inception to conclusion.

Legal costs identified through PO# 002233443 were applicable to McLane, Graf, Raulerson and Middleton. The firm represented PSNH/NU in seven specific matters. Specifically, the firm represented the Company in suits filed by commercial ratepayers relating to PUC determination of lack of authority to determine the public good (of the project); appeals filed relative to temporary permits issued by NHDES; research into permitting relative to wastewater and anti-degradation; motions before the Site Evaluation Committee regarding the size of the project; time relating to meeting with the EPA and NHDES; representing the Company in the appeal to the State Supreme Court relative to the PUC decision regarding the use of financing proceeds; and a matter relative to the appeal by PSNH to the Air Resources Committee (ARC) regarding the mercury baseline determination. PSNH has stated that “during our review of these and other Project charges, as we have completed periodically throughout the project to insure proper booking of costs, PSNH has identified three legal fee areas that will be removed from the project. These are the mercury baseline determination, the appeal relative to PUC decision regarding PSNH financing, and a Citizen's law suit vs. PSNH / Merrimack Station.”

The Other and Miscellaneous line is comprised of several small or one-time contractor costs. Two specific items, incurred pre-2007, were Burns & McDonnell \$192,500 and Sargent & Lundy \$434,200. According to the R.W. Beck Redacted Project Review as of October 2009 (see

DE11-250), Burns & McDonnell was contracted to evaluate alternative methods of dealing with the stack emissions. Sargent & Lundy performed engineering work associated with the 2005 RSA 125:O requirement to reduce mercury (known as Phase I) and further engineering work associated with refining the recommendation for the limestone based FGD (known as Phase II). Activity in 2009 in the Other and Miscellaneous line summed to \$481,283. The activity for the year reflected a variety of payments to Siemens Power relating to engineering releases \$305,416, Eastern Analytical relating to water testing and lab services \$11,841, and Eastmount Environmental relating to mercury stack testing \$118,532, among a variety of smaller items.

Audit requested clarification of costs associated with the lengthy permit list provided in response to OCA data request #OCA set 1, question 2. PSNH informed Audit that most permit costs for which outside engineering assistance was used, were paid to TF Moran. However, permit level specific costs for types of permits was not maintained (for permits such as those needed for FAA compliance, EPA, Army Corps of Engineers, NHDES, municipal). Total costs paid to TF Moran, as of March 31, 2012, for work order C04MK220, were \$980,971.

#### **Employee Expenses – WO# C04MK220 - \$185,861**

Total Employee Expenses were \$185,861. The majority of the expense consisted of several small charges such as mileage, meals, parking, and airfare. Audit reviewed all charges in excess of \$1,500.

Relocation Allowance – \$8,000 plus 32.65% markup	\$11,878
Hotel costs – 13 days: Pittsburgh, PA	1,912
Four employees were reimbursed for training vouchers	1,875 (each)
Airfare costs – 3 flights Manchester to Pittsburgh	1,789
Hotel costs- 5 nights: Pittsburgh, PA	1,471
Hotel costs – 8 nights: Pittsburgh, PA	1,176

PSNH indicated that the costs incurred were related to specialized training regarding the operation of the scrubber control systems. FERC indicates that “when it is necessary that employees be trained to operate or maintain plant facilities that are being constructed and such facilities are not conventional in nature, or are new to the company's operations, these costs may be capitalized as a component of construction cost. Once plant is placed in service, the capitalization of training costs shall cease and subsequent training costs shall be expensed.”

**Vehicles costs** assigned to C04MK220 were an immaterial \$455 and were not reviewed by Audit.

**Fees and Payments – WO# C04MK220 - \$8,513,540****Owner Controlled Insurance Program (OCIP) - \$6,567,150**

Audit requested and was provided a PSNH Project Insurance Manual, dated April 28, 2011. Per the manual, PSNH arranged insurance for this construction project under an Owner Controlled Insurance Program (OCIP). An OCIP is a single insurance program that insures Owner and the enrolled contractors and enrolled subcontractors of any tier, along with their eligible employees and other designated parties, for work performed at the site. Marsh, USA Inc., (Marsh) based in Boston, Massachusetts was the PSNH OCIP Administrator.

Certain parties and their employees were excluded from the OCIP as identified in the manual. This included, among others, off-site fabricators, vendors, suppliers (who do not perform or subcontract installation), material dealers, guard services, blasting, truckers and asbestos abatement or other hazardous waste removal contractors.

The OCIP for this project provided the following coverage for enrolled parties whose employees perform actual on-site labor. This coverage includes:

- Workers' Compensation
- Employers Liability
- General Liability
- Products/Completed Operations
- Excess Liability

The Owner paid insurance premiums for the OCIP coverage. The Owner will be the sole recipient of any returned OCIP premiums or dividends. PSNH provided documentation relating to the original bid value for insurance in the amount of \$9,500,122. Projected costs for the OCIP as of May 31, 2012 were \$8,128,459. The resulting \$1,371,663 represents the premium savings achieved through the use of the OCIP.

Audit reviewed many of the insurance policies and all payments. A Marsh invoice for \$935,000 was paid in 2008. Support showed this was for two excess liability policies. Another Marsh invoice paid in 2008 for \$2,092,000 was for the first of three installments for workers' compensation, the first installment for commercial general liability, and a deductible funding for liability premium.

In 2009 a payment was made to Marsh in the amount of \$1,594,000 for the second of three installments for commercial general liability, workers' compensation and a deductible funding for liability premium.

In 2010 a payment was made to Marsh in the amount of \$1,594,000 for the last installments for commercial general liability, workers' compensation and a deductible funding liability premium. Also, a cash receipt was posted in the amount of \$47,851. Support showed this check was to PSNH for full and final settlement of all claims. The final settlement claim refund was not related to the OCIP program.

Marsh invoices for OCIP Administration CAS Consulting fees were paid in 2008, 2009, 2010 and 2011 and total \$400,000.

Audit noted that the above insurance policies and OCIP administrative fee payments show an effective date of 11/1/08 and the expiration date or term of project is listed as 11/1/13. The policies' terms required making prepayments for coverage and these payments when made began incurring AFUDC charges.

Audit was informed that the NU/PSNH's insurance department encouraged the broadest use of OCIP as reasonable for this project. This resulted in all contractors managed by URS and contractors on SWWT managed by PSNH including Burns and McDonnell, AZCO, ECA, NPI, and Cairns to be included in the OCIP program. Work not covered by OCIP included the E-warehouse (North Branch), The Meeting Place (North Branch), the electrical supply work and other minor contracts.

PSNH and NU were covered for General Liability and Excess Liability through the OCIP. However, Audit was informed that PSNH and NU were not enrolled for Workers' Compensation through the above OCIP. PSNH and NU employees who worked on this project were covered by separate Northeast Utilities policies for workers compensation for which costs were allocated through payroll overheads.

#### Builders Risk Insurance - \$931,850

A Marsh invoice was paid during 2009 in the amount of \$881,850. The invoice was for two builders' risk policies with effective date of 3/6/09 and an expiration date of 6/1/12. Another Marsh invoice was paid in 2009 in the amount of \$50,000. The invoice was for two builders' risk policies with the same above effective and expiration dates.

#### Other and Miscellaneous - \$1,014,540

Generally, charges shown in this category included other fees and payments, other permits and bonds. Also included were costs relating to incremental state utility property taxes for the Merrimack Station, as a result of the construction. Total taxes capitalized in December 2010 were \$581,317 and \$107,448 in December 2011. Audit requested clarification of the three

“amortization of CAP dollars” entries, which sum to \$193,773, which were reclassifications of six months’ worth of 2011 property tax dollars. The total scrubber related Statewide Utility Property tax expenses posted to the CAP were \$882,538. Charges to the work order stopped when the FGD was placed in service at the end of September 2011.

Audit requested clarification of payments shown as New Hampshire Fish and Game (NHFG), in the amount of \$10,000 each, for a total of \$50,000. NH Department of Environmental Services (NH DES) required PSNH to reach an agreement with the NH Fish and Game Department (NHFG) to address conservation concerns relating to the New England cottontail rabbit, which is listed as an endangered species. Due to the lack of habitat that could be retained for the species, PSNH and NHFG agreed to a total funding of \$50,000 to support conservation efforts at different sites.

An Aquatic Resource Mitigation (ARM) payment of \$78,157 was reviewed. The ARM was approved by NH DES for compensatory mitigation relating to the dredging and filling of wetlands, temporary impact on forested wetlands, and permanent impact relating to scrub shrub wetlands (refer to DES Wetlands Bureau file 2008-02312).

Audit noted that a miscellaneous payment of \$100 was charged and listed as donation. (See General Conclusions and Recommendations section).

#### **Rents and Leases – WO# C04MK220 - \$153,361**

Rents and Leases, \$153,361, is comprised of charges PSNH incurred to rent special equipment, required but not included within specific contracts, such as rental equipment, bathroom trailers, storage trailers, mobile medical services, crane services, snow removal services and office trailers (before they were purchased by PSNH.)

#### **Indirect Costs – WO# C04MK220 - \$4,106,617**

Refer to the overall description regarding the calculation of the Indirect Allocations, on page 9 of this audit report.

#### **AFUDC – WO# C04MK220 - \$32,644,431**

Noted within WO# C04MK220, (and prior to the establishment of work orders for those parts of the project not completed) AFUDC was comprised of \$32,644,430 with the total Debt component \$12,574,784, and Equity component \$20,069,647. Specific reviews of the monthly entries of November 2010, December 2010, June 2011, and July 2011 were conducted. Refer to the AFUDC portion of this audit report on page 10.

**E WAREHOUSE – WO# C04MK221 - \$1,074,907**

A Request for Proposal #00313-2007 was issued by NUSCO, Agent for PSNH. The proposal was for a 50 foot by 100 foot structure with a clearance of 23 feet to the eave, as well as a second floor. This structure was to be substantially completed by 02/01/08.

North Branch Construction (NBC) of Henniker, NH submitted a Lump Sum \$815,000 proposal for design-build; and an alternate Lump Sum \$775,000 for a pre-engineered structure. Subcontractors, material & equipment are to have mark-ups of 10%.

A PSNH Purchase Order # 02238851, dated 09/28/07 was issued to vendor NBC for the alternate Lump Sum, \$775,000 pre-engineered structure. A change order #1 “Change from base bid pre-engineered building to a conventional structural steel building” on 12/18/07 was made for \$129,489, raising the firm price to \$904,489. Change order #2 was made on 04/15/08 for \$8,436 raising the firm price to \$912,925.

**REPORTED COSTS - WO# C04MK221**

The Company provided a schedule that summarized the costs as follows:

NU Labor	\$47,173
Material	9,015
Contractor Labor	992,884
Outside Services	11,220
Employee Expenses	612
Vehicles	34
Indirect Costs	3,654
AFUDC	<u>10,315</u>
Total	\$1,074,907

**Material - WO# C04MK221 - \$9,015**

Material included charges from Eastern Propane Gas and credit card purchases by employees for various supplies from Graybar Electric.

**Contractor Labor - WO# C04MK221 - \$992,884**

Contractor Labor included charges from Ayer Electric, Bode Equipment Company, Comensura, North Branch Construction and TF Moran, Inc. Ayer Electric provided electrical support for this project. Their charges totaled \$12,718. Bode Equipment Company provided

racking for the warehouse in the amount of \$35,828. Comensura provides temporary employees to PSNH. These temporary employees are generally retirees of PSNH/NU. Comensura charges totaled \$1,303 for this project. TF Moran, Inc. provided engineering services. Their charges totaled \$28,286. Eaton Electric charges total \$1,824. Total payments to North Branch Construction were \$912,925 which was tied to the purchase order. Audit randomly selected and reviewed five paid invoices to NBC. The final NBC invoice was dated 5/15/08 and paid 6/30/08. All NBC support attached to each invoice was reviewed by Audit and tied to the invoice paid. Total contractor labor was \$992,884.

#### **Outside Services - WO# C04MK221 - \$11,220**

Outside services included payments to Mohlin & Company which totaled \$11,220. Mohlin & Company provided engineering services to develop a conceptual design.

**Employee Expenses, Vehicles, and Indirect Costs** for work order C04MK221 were immaterial and thus not reviewed in detail.

#### **AFUDC - WO# C04MK221 - \$10,315**

Audit noted that March, 2008 was the last date AFUDC was charged to this project by PSNH. The Company provided the in service date of 04/08/08 for the E-Warehouse.

#### **Retirement/Cost of Removal - WO# C04MK221**

This building was located on land at the south end of the four existing warehouses (A-D). Prior to the construction this area was used as additional laydown and storage area. Therefore, no assets were retired and no cost of removal was charged. This building currently stores project spare parts as well as other material supplies.

#### **ELECTRIC POWER SUPPLY - WO# C04MK222 - \$16,956,973**

A 115kV switchyard tie-in, and the 115kV to 4,160 volt substation (S/S) and all related equipment, are included in this project. The scheduled completion of this project was June 01, 2010.

**REPORTED COSTS – WO# C04MK222**

NU Labor	\$ 780,276
Material	1,825,158
Contractor Labor	12,885,583
Outside Services	114,779
Employee Expenses	26,882
Vehicles	16,820
Rents & Leases	29,832
Indirect Costs	192,235
AFUDC	<u>1,085,408</u>
Total	\$ 16,956,973

**Northeast Utilities Labor - WO# CO4MK222 - \$780,276**

As of March 31, 2012, total NU labor – Generation (760-761) was shown on PSNH Project Manager's Cost Summary to be \$83,340 with costs beginning in 2007. NU labor-Station (723-729) for the same period sums to \$78,322. Other NU labor for the same period sums to \$618,614, for total labor 2007 through March 2012 of \$780,276.

**Materials - WO# CO4MK222 - \$1,825,158**

Per the Project Manager's Cost Summary, charges included:

Siemens	\$291,172
Thomas & Betts steel structures	\$351,720
P&C panels from Keystone totaling	\$131,078
Major equipment various vendors	\$182,551
FGD Substation charges total	\$ 22,645
Miscellaneous costs	\$845,992

An Audit review of years 2010 and 2011 Miscellaneous charges greater than \$20,000 included structural steel for \$30,901; five cable, insulated, controls summing to \$128,207; two transformer instruments totaling \$77,100; a switch disconnect for \$22,237 and a control room console for MK1 costing \$19,758. The Material total is \$1,825,158.

**Contractor Labor - WO# CO4MK222 - \$12,885,583**

The Project Manager's Cost Summary reported the following Eaton Corp. charges: \$6,091,005 for FGD Substation; \$485,922, sub-station construction; \$185,005, install cable tray; \$685,945, training testing & commissioning; \$370,937 electrical consulting and \$44,112, install cables. Charges from IC Reed \$2,051,192 were for the 115kV Expansion. Kerite charges were

for underground cable in the amount of \$472,086. Ayer Electric charges total \$203,446. Tri-State charges for caisson installation in the amount of \$503,849. Comensura/Guidant temp employees charges total \$346,561. Patrick Energy Services/SAIC charges were \$993,220. Utility Services charges were \$53,267. Miscellaneous contractor labor was \$399,036. The total for charges classified as Contractor Labor was \$12,885,583.

Audit randomly selected and reviewed two paid invoices to Ayer Electric and six paid invoices to Eaton Corp./Electric, Inc.

Ayer Electric of Dover, NH provided a foreman and 4 journeymen for electrical work during the week of April 18, 2009, at a cost of \$9,127. Work performed as noted on daily time sheets was, demolition of guard shack, temporary power for lay down yard and temporary trailer(s). A second invoice from Ayer for electrical materials amounting to \$15,324.20 was reviewed. All approvals were noted without exception.

Eaton Corp. invoice #EMP00079-1A, selected for review, was the payment of retainage on 15 invoices previously paid. Labor [KL] totaled \$463,223 and material [CM] totaled \$115,793. The invoice total was \$579,016. Eaton Corp. invoice #EMP00079-10, total \$221,956 is a partial invoice for delivery of a transformer. Eaton Corp. invoice #EMP00079-10, total \$1,825,500 includes 3 vendor invoices. One for labor, net of retainer in the amount of \$89,325; one for equipment, net of retainer in the amount of \$197,488 and one for material, net of retainer in the amount of \$1,538,687. Description of materials/equipment: 8 classes on site; switchgear scheduled for delivery as well as transformers final payment scheduled for delivery.

All support attached to each above invoice was reviewed by Audit and tied to the invoice paid.

#### **Outside Services - WO# CO4MK222 - \$114,779**

Total charges of \$114,779 was coded as Outside Services and listed as Miscellaneous. The Company presented a response to Audit Request #89 displaying the Miscellaneous Outside Services in 2010, \$27,050 and 2011, \$176.

**Employee Expenses - \$26,882, Rents & Leases - \$29,832, Indirect Costs - \$192,235, and AFUDC - \$1,085,408** were not reviewed specifically within this work order. Allocation methods and calculation of the AFUDC were reviewed and discussed in the Indirect Cost Allocation portion of this report as well as the AFUDC portion of this report.

**THE MEETING PLACE (NEW YELLOW BUILDING) - WO# CO4MK225 - \$2,014,714**

NUSCO, Agent for PSNH and North Branch Construction of Henniker NH entered into a fixed price contract for \$1,623,000 dated 10/15/10. Four change orders totaling \$16,544 led to a new contract value of \$1,639,544. Additional work was to be on a Time & Material basis plus mark-ups. This building is where employees meet and training is conducted. Please refer to the General Conclusions and Recommendations section of this report for additional Audit comment on the above building.

**REPORTED COSTS –WO# C04MK225**

The Company provided a schedule that summarized the costs as follows:

NU/PSNH Labor	\$ 50,858
NU/PSNH Material	122,257
Contractor Labor-North Branch Construction	1,716,272
Outside Services	71,938
Indirect Costs	22,610
AFUDC	<u>30,780</u>
Total	\$2,014,715

**Materials - WO# CO4MK225 - \$122,257**

Company provided support shows that BKM Total Office Today provided furniture, locks, labor and installation summing to \$73,224. Miscellaneous other costs total \$49,033.

**Contractor Labor - WO# CO4MK225 - \$1,716,272**

Eight NBC invoices total \$1,639,544. T.F. Moran provided Engineering Services totaling \$35,632. Miscellaneous charges were \$41,096, of which \$23,796 was Environmental Systems Group to provide access control to 6 doors. Total contractor labor was \$1,716,272.

Audit tested NBC invoices 4A & 7A with totals \$368,014 and \$205,632, respectively. Support included the contractor's application for payment. No exceptions were noted.

**Outside Services - WO# CO4MK225 - \$71,938**

Udelsman Associates charges of \$67,422 were for Engineering/Architectural Services. Miscellaneous charges were \$4,516.

**Plant General Ledger Posting - WO# CO4MK225**

The Company posted the \$2,014,715 to plant accounts 311.89, 316.89 and 391.81 in the general ledger account 101-01, as confirmed in the continuing property records report.

**Retirements/Cost of Removal - WO# CO4MK225**

Three plant accounts total \$2,014,713.65 were placed in service 05/01/11. The Company properly posted 23 retirements, totaling \$98,053 and consisting of 49 total units, to account 108.01.

PSNH indicated that the cost of removal was in the main Scrubber work order C04MK220, in the amount of \$67,766 (Daniel O'Connell demolition and abatement). Refer to the General Conclusions and Recommendations section of this report

**SECONDARY WASTEWATER TREATMENT SYSTEM (SWWT)– WO# CO4MK226 - \$28,435,821**

PSNH was mandated to construct and operate the Scrubber System by law (RSA 125-0:11-18) as soon as possible but no later than July 2013. Due to a lag in the water discharge permitting, other provisions had to be made to comply with the above RSA which would allow for the immediate operation of the scrubber.

The SWWT installation required the services of a mechanical and design contractor for building structures and mechanical equipment. Audit reviewed the following contracts and purchase orders for labor, materials and other expenses related to the SWWT.

**Reported Costs - WO# CO4MK226**

The Company provided a summary of total costs as follows;

NU Labor	\$170,560
Material	9,667,749
Contractor Labor	17,274,633
Outside Services	166,376
Employee Expenses	6,144
Vehicles	5,349
Rents & Leases	4,921
Indirect Costs	360,516
AFUDC	<u>779,573</u>
Total	\$28,435,821

**Northeast Utilities Labor – WO# CO4MK226 - \$170,560**

See NU Labor – Cost Review, page 8 of this report.

**Materials – WO# CO4MK226 - \$9,667,749**

Materials noted on the PSNH Project Manager's Cost Summary were summarized by work type and from where the items had been purchased. Materials in total were identified with five individual line items which sum to \$9,667,749. Audit reviewed the five line items.

Specifically:

1. SWWT/ZLD (Aquatech)	\$7,921,030 (review summary follows)
2. Structural Steel (Isaacson)	\$332,245 (review summary follows)
3. Digital Control System/DCS (Emerson)	\$601,781 (review summary follows)
4. Electrical Equip. & Switchgear /ZLD (Siemens)	\$759,619 (review summary follows)
5. Other & Miscellaneous	\$53,074 (review summary follows)

**Materials item #1: C04MK226 –PO #02258551 - \$7,921,030**

Aquatech fabricated and provided materials, equipment and support for the manufacturing and delivery of a Zero Liquid Discharge (ZLD) System (also referenced generally as the SWWT). The original firm-fixed contract value was \$5,422,300. Change orders and second effect expansion led to increased costs.

Audit requested support documentation for three invoices. Invoice #502088, dated 01/27/11 and received 2/3/11, for \$648,500, was for the first placement of the order for major, long-lead materials for the SWWT (i.e., tubes, tube sheets, plates and compressor). The screen printout of the route list shows the proper employee authorizations. Payment date was 3/10/11.

Invoice #502138, dated 4/20/11 and received 4/25/11, in the amount of \$775,222 was for placement of purchase orders for evaporator and crystallizer vessels. The screen printouts for payment detail and the routing list showed all approvals were appropriate per the Company's Authorization and Approval policy. The invoice was paid on 5/23/11.

Invoice #502269, dated 10/13/11 and received 10/17/11, in the amount of \$1,887,498 was paid on 12/5/11. This amount consists of 35% of the original PO value of \$5,341,000 or \$1,869,350, plus 35% of the value of change orders 1-3 and 35% of the value of change orders 6-9.

Audit reviewed the vendors' Bills of Lading and packing lists from Aquatech and several subcontractors. Although there were no dollar amounts listed on the shipping documentation, all of the equipment was for the SWWT.

The screen printouts for payment detail and the routing list showed all approvals were appropriate per the Company's Authorization and Approval policy.

**Materials item #2: C04MK226 –PO #02260013 - \$332,245**

Audit reviewed the purchase order dated 04/27/11 for Isaacson Structural Steel to provide steel for the SWWT system per Isaacson's formal estimate. The delivered price was \$2,570.73/ton for approximately 123 tons of steel \$316,200, delivered to the MK Station. Alternate add for curb angle as described in the proposal was \$4,600 for a new total cost of \$320,800. However, two change orders and several back charges to Isaacson's vendors, due to the steel Company's bankruptcy, brought the final total to \$332,245. Audit noted the purchase order was approved by the Contractor's Vice President of Sales. The Company's contact person for the Audit responded that this was a lump sum purchase.

Audit selected two Applications for Payment for review: PSNH provided the computer screen printouts for the invoice detail, payment detail and the routing list which showed the personnel authorizing the Application for Payment #2 for the period ending June 30, 2011 in the amount of \$159,840. This payment was for raw materials, freight and shop labor to complete 50% of the PO for structural steel.

PSNH provided the computer screen printouts for the invoice detail, payment detail and the routing list which showed the personnel authorizing the Final Application for Payment for the period ending August 31, 2011 in the amount of \$77,626. All approvals were appropriate per the Company's Authorization and Approval policy.

The contract change log shows credits totaling \$78,006 to PSNH including an early payment discount of \$799. The change order also shows a payment to Isaacson's suppliers, due to Isaacson's bankruptcy, in the amount of \$74,542.

**Materials item #3: C04MK226 – PO #02259647 - \$601,781**

Audit reviewed the purchase order dated 04/06/11 for Emerson to supply the Digital Control System (DCS) for the SWWT at a cost of \$343,800. Per Diem rates for the Emerson Field Service Engineer were \$1,600 plus \$142 for travel and living expenses per day. The Company's contact person for the Audit Staff responded that this was a lump sum contract.

Payments on this P.O. were based on a percentage of completion for the DCS. Per the P.O., Emerson's invoice #9034749 dated July 21, 2011 in the amount of \$137,520 was for 40% of Hardware Complete on the test floor.

Emerson's invoice #9037490 dated January 27, 2011 in the amount of \$18,538 was for field service work by an Emerson employee.

The screen printouts for payment approvals were consistent with the PSNH's Authorization and Approval policies.

**Materials item #4: C04MK226 –PO #02259586 - \$759,619**

Audit reviewed the purchase order dated 04/01/11 for Siemens Energy to supply electrical equipment for the SWWT. This was a fixed price contract with additional terms that stated if additional Factory Acceptance Tests (FAT) are required, a price adder of \$2,500 for the first day and \$1,000 per day until the FAT is complete applies to individuals or a group. The contract was signed off by PSNH's Manager of Corporate Purchasing and a Siemens Manager.

All charges were accumulated in 2011 with the exception of a credit in the amount of (\$74,508) in March of 2012. PSNH stated that the invoice was held in pending status as they verified whether Siemens met the deliverables required for payment. It was determined that Siemens had not earned this payment and the invoice was cancelled in March 2012, creating a credit for that P.O. that month. The actual amount Siemens contributed was valued at \$759,618.

Audit selected three invoices for review totaling \$715,990. The invoices included 3 transformers totaling \$562,082, 2 LVMCC for \$45,414 and Project Management costs of \$108,493.

**Materials item #5: C04MK226 – \$53,074**

Other & miscellaneous materials consisted mostly of small dollar items or one-time vendor charges. Audit requested invoices greater than \$20,000 for review. One vendor charged \$35,000 to fabricate and deliver structural steel for the SWWT pipe supports. The invoice was paid on 02/22/12 and all the invoice information was supported by the Project Manager's Cost Summary report.

**Contractor Labor – WO# C04MK226 - \$17,274,633**

**Burns & McDonnell PO #02258488, \$3,632,598**

Audit reviewed the Burns & McDonnell contract dated August 2011. This was a Time and Materials contract covering design, engineering, technical and drawings associated with professional services for the engineering study of SWWT options at the Merrimack Station. It also provided for day to day support to PSNH for construction and start-up, including requests for information, change orders, and performance testing. As of March 31, 2012, Burns & McDonnell charges totaled \$3,632,598.

Audit tested labor charges for three invoices totaling \$1,066,821. The Company provided the Client Labor Detail which showed individual billing level, job classification, dates and daily hours assigned to the project. Audit sampled several job classifications for total hours worked and the dollar amount by rate and tied the amounts to the actual invoice with no exceptions.

**George Cairns (Foundations & Underground) PO #02260400, \$1,931,412**

Audit reviewed the lump sum contract signed on 5/25/2011 by George Cairns and PSNH's Manager of Corporate Purchasing for foundation and underground work for the SWWT Building. The original contract amount for the work is as follows:

Site preparation and underground:	\$773,746
Foundation:	<u>378,483</u>
Subtotal:	1,152,229
Less: Payment/Performance Bonds:	<u>(8,571)</u>
Contract Amount	\$1,143,658

Audit reviewed a purchase order for foundation and underground work signed on 5/25/2011 in the amount of \$1,900,000. Change orders totaling \$787,754 have brought the original contract price to \$1,931,412. PSNH stated that change order 09 did incorporate labor and equipment rates but no markup percentages for material, or subcontractors. The majority of the change orders issued were authorized on a lump sum basis based on Cairns proposals which did identify a markup of 10% for material and subcontractors. This markup is the same percentage as captured in their Site Finalization Contract, Appendix VIII-7, Materials and Rental Markup Rates. Work described above was completed as of January 2012.

Audit selected three Applications for Payment to review:

PSNH provided the computer screen printouts for the invoice detail, payment detail and the routing list which showed the personnel authorizing the Application for Payment #3 for the period ending August 31, 2011 in the amount of \$489,046. The Company noted, "Subcontract

amounts listed on the partial release and waiver as ‘now due’ do not necessarily correspond directly to the submitted invoice time period.”

PSNH provided the screen printouts for the invoice detail, payment detail and the routing list which showed the personnel authorizing the Application for Payment #5 for the period ending October 31, 2011 in the amount of \$500,513.

PSNH provided the screen printouts for the invoice detail, payment detail and the routing list which showed the personnel authorizing the Application for Payment #8 for the period ending January 31, 2012 in the amount of \$119,958.

All approvals were appropriate per the Company’s Authorization and Approval policy.

**Azco, PO #02261690, \$8,931,054**

Audit reviewed the Azco contract dated August 12, 2011. With the exception of fixed pricing for home office work (Project Management, warehouse labor and office supplies) in the amount of \$81,124 and the Performance Bond in the amount of \$57,086, all of the work was performed on a time and materials basis and billed in accordance with the rates and mark-ups in the contract.

The contract was signed by the Director of Purchasing in accordance with PSNH’s Authorization and Approval Policy. As of March 31, 2012, costs incurred totaled \$8,931,054.

PSNH required a performance assurance bond within 21 days of the agreement from the contractor to be issued to the Company by the bond issuer in the penal amount of (\$8,084,725). The Company provides “builder’s risk-all risks” insurance for property, materials, equipment and supplies placed on site pending installation provided that the contractor shall be solely responsible for the deductible of up to \$100,000. All contractors shall participate in the OCIP, which provides for Commercial General Liability coverage (Excluding Automobile and Professional Liability) and Workers’ Compensation coverage.

The contract terms included Material & Rental Mark-up rates as follows:

- Materials purchased by Contractor at the direction of the Construction Manager – 10%
- Lower Tier Subcontractor cost expended at the direction of the Const. Manager – 10%
- Equipment or other items rented at the direction of the Construction Manager – 5%

Notes on the completed project were stated in the contract as follows:

- Percentage of work performed by Contractor's own forces: 65%
- Percentage of work performed by Subcontractors: 35%
- There was no NU labor utilized under this contract.

Application for Payment Summary Reviewed by the Audit:

<u>Invoice #</u>	<u>48165-06</u>	<u>48165-03</u>	<u>48165-05</u>
T&M Labor:	\$709,136	\$645,824	\$967,021
T&M Subsistence:	25,312	26,063	32,875
T&M Materials (@10% MU):	209,249	206,928	458,479
T&M Subcontracts (@10% MU):	100,153	607,012	807,152
T&M Azco Tools & Equipment (over \$500):	13,793	17,823	14,573
T&M Outside Rentals (@5% MU):	49,165	32,422	26,691
3 <sup>RD</sup> Party Fuel, Oil & Grease:	18,147	9,097	12,971
T&M Expenses:	617	802	827
Home Office – Travel:	1,187	882	1,163
Home Office:	40,562	0	0
Sales Tax:	0	0	0
Total Invoice Amount:	1,167,322	1,546,852	2,321,753

The Company provided the computer screen printouts showing the invoice detail, payment detail and the routing list which showed the personnel authorizing the payments for invoice #'s 48165-06, 48165-03 and 48165-05. Audit compared the Authorization and Approval policy dated May 21, 2009 with the personnel approving the payments.

Labor charges for the three sampled invoices totaled \$2,321,981. The Company provided the timesheets, the payroll weekly labor cost break down and the vendor invoice. All labor rates and hours worked shown on the timesheets agreed with PSNH's Payroll Weekly Craft Cost Breakdown sheets with no material exceptions.

Subsistence charges for the three invoices reviewed totaled \$84,250. These charges consist of a \$125 per diem for seven days a week for each employee eligible per contract. Audit totaled all the charges which tied to each respective invoice.

Materials charges for the three invoices reviewed totaled \$874,656. This included a 10% mark-up per the contract. Materials for invoice #48165-03 totaled \$206,928. Materials for invoice #48165-05 totaled \$458,479, and materials for invoice #48165-06 totaled \$209,249.

Audit sampled all invoices greater than \$1,000 which when totaled sum to \$137,366, or 73% of the materials for invoice #48165-06. For invoice #48165-03, Audit sampled invoices greater than \$5,000 which when totaled sum to \$116,461 or 62% of materials. For invoice #48165-05, Audit sampled invoices greater than \$10,000 which when totaled sum to \$324,191 or 78% of the total materials.

Total Sub-Contractor costs for the three sampled invoices amounted to \$1,514,316 which included a 10% mark-up per the contract.

Sub-contracting for invoice #48165-03 totaled \$607,012. This amount consisted of mostly the first payment of \$405,465 on a \$1,095,196 subcontract with API for insulation.

For invoice #48165-05 totaling \$807,152, Audit tested sub-contracting costs greater than \$5,000 which when totaled sum to \$735,171 or 91% of the total.

For invoice #48165-06 totaling \$100,153, Audit tested costs greater than \$1,000 which when totaled sum to \$90,910 or 91% of the total.

Audit tied the Vendor's invoice amounts to the Company's Invoice Drilldown Detail sheets for all three invoices with no exceptions noted.

Tools and Equipment Rental for the three invoices reviewed totaled \$46,190. Per the contract, equipment or other items rented at the direction of the Construction Manager are subject to a 5% mark-up.

Outside Rentals for the three invoices reviewed totaled \$108,278. For invoice #48165-06, actual charges totaling \$46,824 were reviewed and agreed to PSNH's Invoice Drilldown Detail. Including the 5% mark-up, total charges amount to \$49,165. For invoice #48165-03, actual charges totaling \$30,878 were reviewed and agreed to PSNH's Invoice Drilldown Detail. Including the 5% mark-up, total charges amount to \$32,422. For invoice #48165-05, actual charges totaling \$25,420 were reviewed and agreed to PSNH's Invoice Drilldown Detail. Including the 5% mark-up, total charges amount to \$26,691.

Third Party Fuel, Oil & Grease for the three invoices reviewed totaled \$40,215. Per the contract, these items are charged at cost. For invoice #48165-05, actual charges for the last week in November and the month of December, 2011 totaling \$12,971 were reviewed by Audit. The total agreed with PSNH's Invoice Drilldown Detail. This was a blanket PO for diesel fuel with the cost per gallon in the range of \$3.5058 to \$3.7058 per gallon. Total gallons used for the period were 3,507.40.

For invoice #48165-06, actual charges for the month of January, 2012 totaling \$18,147 were reviewed by Audit. The total agreed with PSNH's Invoice Drilldown Detail. This was a blanket PO for diesel fuel with the cost per gallon in the range of \$3.6258 to \$3.8284 per gallon. Total gallons used for the period were 4,013.40.

For invoice #48165-03, actual charges for the month of October, 2011 totaling \$9,097 were reviewed by the Audit. This total agreed to PSNH's Invoice Drilldown Detail. This was a blanket P.O. for Off Road Red Diesel fuel with the cost per gallon in the range of \$3.5780 to \$3.8026 per gallon. Total gallons used for the period were 2,439.30. No exceptions were noted for the above items reviewed.

Home Office for invoice #48165-06 totaled \$40,562. This was the only invoice of the three reviewed that carried a Home Office charge.

**Electronics Corporation of America (ECA), PO #02261905, \$2,286,989**

Audit reviewed the ECA contract for electrical work associated with the SWWT system which was signed off on 08/26/11 by PSNH's Manager of Purchasing and ECA's President. The scheduled value of the original contract was \$1,595,889. As of January 31, 2012, change orders 1-14 totaled \$821,656. These support services are to be billed on a time and materials basis. In addition, costs for Performance and Payment Bond are not applicable. Total ECA electrical work as of March 31, 2012 was \$2,286,989.

Audit selected three Applications for Payment for review: PSNH provided the screen printouts for the invoice detail, payment detail and the routing list which showed the personnel authorizing the Application for Payment #1 for the period ending October 31, 2011 in the amount of \$494,585.

PSNH provided the screen printouts for the invoice detail, payment detail and the routing list which showed the personnel authorizing the Application for Payment #3 for the period ending November 30, 2011 in the amount of \$458,153.

PSNH provided the screen printouts for the invoice detail, payment detail and the routing list which showed the personnel authorizing the Application for Payment #5 for the period ending January 31, 2012 in the amount of \$203,659.

All approvals were appropriate for the above three invoices per the Company's Authorization and Approval policy.

Audit noted that the Project Manager's Cost Summary report shows a February Credit balance of (\$294,085). When questioned, PSNH stated that in January, 2012 the Company accrued \$597,744 for this vendor. Their UVL report for January should have listed invoice #4 for \$396,840, which PSNH already had in their system. Therefore, PSNH over accrued for January resulting in a credit for February.

#### **Contract Labor – Other/Miscellaneous - WO# CO4MK226 - \$152,089**

Audit requested to review vendor invoices greater than \$20,000, which PSNH provided. A one-time vendor charged \$30,500 for Geotechnical Services related to the SWWT building. These services included preliminary evaluations, drilling and testing and report preparation through 04/03/11. The invoice was paid on 05/26/11 and all the invoice information was supported by the Project Managers Cost Summary report.

In addition, costs for Comensura, Inc., PO #02200226 totaled \$51,933. Audit noted that these engineering services were subcontracted by Guidant Group, Inc. to Comensura. Audit reviewed the electronic records to verify payment. There were no exceptions.

#### **Outside Services – WO# CO4MK226 - \$166,375**

Audit requested invoices greater than \$20,000 for review. Outside Services totaling \$96,674 were charges from Casella Waste Systems, Inc. to haul and dispose of soil from September 7, 2011 through September 13, 2011. All the invoice information agreed with the Project Manager's Cost Summary report.

TF Moran Inc. provided as needed engineering services to support the SWWT totaling \$36,003 under PO #02240832.

#### **Employee Expenses – WO# CO4MK226 - \$6,144**

Audit reviewed and totaled the charges which agreed with the Project Manager's Cost Summary report.

#### **Vehicles – WO# CO4MK226 - \$5,349**

Vehicle charges consisted of 16 line items dating from January, 2011 through January, 2012. The dollar amounts ranged from \$12 to \$548. Audit totaled the charges which agreed with the Project Manager's Cost Summary Report.

**Fees and Payments – WO# CO4MK226 - \$0**

There were no fees or payments as of March 2012 and none forecast for the project.

**Rents and Leases – WO# CO4MK226 - \$4,921**

This amount consisted of three line items on the Project Manager's Cost Summary Report. The invoices, dated February and March 2012, were from United Rentals of America for what is described as rental equipment as needed for the Merrimack Station.

**Indirect Costs – WO# CO4MK226 - \$360,516**

Total charges as of March 2012 were \$360,516. (See Indirect Cost Allocations, page 9 of this report).

**AFUDC – WO# CO4MK226 - \$779,573**

Total charges as of March 2012 were \$779,573. Refer to the AFUDC portion of this report on page 10.

**WORK ORDERS OPEN AS OF MARCH 31, 2012****PLANT IN- SERVICE DATES AND CREATION of NEW WORK ORDERS**

Audit was provided copies of e-mails from the Director-Generation to various management personnel in support of the dates for which plant was declared "In Service." These dates are used by PSNH Accounting to stop calculating AFUDC for that plant declared in-service.

It was noted from the e-mails that when the Director-Generation declared the Scrubber to be in-service on 9/27/11, a change from one large active Work Order to the creation of four smaller continuation Work Orders was necessary to complete the remaining portions of the Project. Therefore, costs in Work Order #CO4MK220 were reduced to \$341,959,498 and that amount was deemed in-service. The total however, includes the costs of removal which have not been analyzed by Plant Accounting, in the amount of \$732,335. Net new equipment in account 106.01, Completed not Classified, was \$341,227,164 as of 3/31/12.

Work Order #CO4MK227, described as MK2 Scrubber Equipment, was opened on 9/27/11. Items moved to this work order included costs for MK- 2, ductwork, dampers,

expansion joint and booster fans. Costs reported as of 3/31/2012 were \$12,678,510. The amount was posted to account 106.01, Completed Construction not Classified.

Work Order #CO4MK228, described as WWT EMARS, was opened on 9/27/11. Items moved to this work order included costs for enhanced mercury and arsenic supply & install and WWT soda ash equipment and associated costs. Costs reported as of 3/31/12 were \$2,262,887. See also Work Order ##C04MK22B described as Soda Ash (below). \$2,262,887 was posted to account 106.01, Completed Construction not Classified.

Work Order #CO4MK229, described as Truck Wash, was opened on 9/27/11. Items moved to this work order included truck wash building equipment, foundation, electrical equipment and piping & installation. Costs reported as of 3/31/12 were \$2,293,725 and were posted to account 106.01, Completed Construction not Classified.

Work Order #CO4MK22A, described as Truck Scales, was opened on 9/27/11. Items moved to this work order included truck house. Costs reported as of 3/31/12 were \$278,645 and were posted to account 106.01, Completed Construction not Classified.

Work Order #C04MK22B, described as Soda Ash, was opened on 11/01/11. The work order was not in-service as of 3/ 31/12. Items moved here include equipment to facilitate additional treatment of water in the SWWT. Costs had been reflected in the primary waste water treatment system due primarily to the location of the silos and the efficient use of the contractors who performed the work. Costs reported as of 3/31/12 were \$2,313,764 and were posted to account 107.09, CWIP.

Work Order #CO4MK22C, described as SWWT 2<sup>nd</sup> Effect, was opened on 2/22/12. This equipment takes processed waste water and concentrates any residual material in the water to a solid for off-site disposal to an approved landfill. Items moved to this work order were originally recorded in WO # CO4MK226. Costs reported as of 3/31/12 were \$2,643,408. This work order was originally reflected within the SWWT C04MK226. \$2,643,408 was posted to account 107.09, CWIP.

## **GENERAL CONCLUSIONS AND RECOMMENDATIONS**

The General Conclusions and Recommendations contained herein are based on the contracts and invoices selected and reviewed by Audit. The costs should not be included in the calculation of both AFUDC and AS&E. Audit understands that as all costs are reviewed by NU Plant Accounting, during the final general ledger posting process, adjustments in addition to those outlined, may be determined and booked by PSNH.

### **Recommended adjustments from WO# C04MK220:**

#### Miscellaneous Materials to expense rather than capitalize:

##### Multiple payments to American Express for:

Filter Fresh Coffee	\$416
Lyons Coffee Service	1,536
Say More Trophy	186

##### Payments to GE Capital for:

Hannaford Supermarket	145
Shaws Supermarket	87

Multiple payments to Carey Wiper Supply for plastic ware	280
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Multiple payments directly to Eures Dining for coffee	157
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Multiple payments to Laconia Ice for ice blocks	6,894
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Payment to Sanborn Trucking for replacement mud flap	135
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#### Miscellaneous Outside Services to expense rather than capitalize:

Payments to Town & Country Repro for contract binders	17,595
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Brainstorm Inv# 3873 & 3892-100 Schrade Two Blade Knives	2,107
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Brainstorm Inv# 3873 – 425 Scratch Off cards	625
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Catered Board Meeting 02/16/09	364
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Brainstorm Inv#4858-48 Mag Light with Holster	778
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Jordan Marketing Inv #394597JRD 400 12 function hatchet tools	5,915
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Celebrations Catering – “One Million Safe Man-hours” event	11,726
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Darrow, 021211 – Gifts for training class	255
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Carville 022210 – LL Bean Gift Cards for Awards	150
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Donation to American Heart Association (other Misc. Material)	100
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#### Miscellaneous Contractor Labor should exclude the following:

Payments to Bierlein Companies-removal of demolition	135,798
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Payment to Envirovantage lead paint removal	1,660
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Payments to Structural Preservation Systems-for stack decommissioning	187,038
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Payments to Daniel O’Connell for C04MK225 removal	67,766
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**Recommended exclusions for purposes of capitalization and thus inclusion in AFUDC and AS&E calculations, in addition to Audit Issue #1: \$441,713**

Audit understands that FERC allows for the capitalization of small items used in the construction of major facilities. A number of those items noted above were not considered necessary for the CAP. PSNH informed Audit that many of the costs above were incurred for safety and/or efficiency purposes. As a result of these adjustments, Audit recommends a recalculation of AFUDC and AS&E, which will cause the total AFUDC \$34,550,508 to be less than reported, by an undetermined amount and the AS&E total reported \$4,395,040 to be less than reported, by an undetermined amount. Refer also to Audit Issue #1

In addition, Audit understands that the existing meeting building had to be demolished due to the construction of the CAP. It is also understood that the total costs of the new building posted to General Plant account 311.38. (Meeting Place -Yellow Building, work order #C04MK225) Audit also understands that PSNH, for regulatory purposes, considers the cost of the building to be part of the CAP and thus the recovery of the costs treated in the same manner as other CAP costs. Audit recommends that recovery of the prudent, used and useful costs incurred to construct the new building should be reviewed in the context of docket #DE 12-116.

Finally, Audit understands that as of March 31, 2012, the following totals (provided to Audit 8/17/12) were posted to the general ledger accounts identified:

	Closed WO to 101.01	Completed not Classified to 106.01	CWIP to 107.09	Closed WO Cost of Removal to 108.01	Open WO Cost of Removal to 108.08	Retirements Booked account not stated	Inventory to 154.01
C04MK221	\$ 1,074,906						
C04MK222	\$ 16,930,556			\$ 26,418			
C04MK225	\$ 2,014,715					\$ 98,053	
C04MK220		\$ 341,227,164			\$ 732,335	\$ 192,198	
C04MK227		\$ 12,678,510					
C04MK228		\$ 2,262,887					
C04MK229		\$ 2,293,725					
C04MK22A		\$ 278,645					
C04MK22B			\$ 2,313,764				
C04MK226		\$ 25,792,414					
C04MK22C			\$ 2,643,407				
C04MK224							\$ 86,385

Included in the Project Manager's cost summary spreadsheet figure were costs of removal for C04MK222 in the amount of \$26,418 and in C04MK220 in the amount of \$732,335. The general ledger properly has these totals posted to an Accumulated Depreciation reserve account 108.01 and 108.08 respectively. It is unclear if the costs of removal were included in the AFUDC and AS&E calculations.

Retirements identified by the Plant Accounting for C04MK220 in the amount of \$192,198 and for C04MK225 in the amount of \$98,053 are properly not included in the Project Manager's cost summary sheet total, although the specific accounts to which the retirements were booked was not provided to Audit. Also as of 3/31/2012, Plant Accounting reflects the

spare booster fans in the inventory account 154.01, with a balance of \$86,385. This figure is also not included in the Project Manager's cost summary.

**AUDIT ISSUE # 1**  
**Materials Item #3 WO #C04MK220**

**BACKGROUND**

Spare booster fans relating to the FGD were authorized for purchase through FlaktWoods, and were assigned PO# 02248788 with an authorized value of \$825,000. The spare parts were posted to WO# C04MK224.

**ISSUE**

In response to audit request #67 which questioned the general ledger account to which the spare part costs were posted, the Company provided detail of the cancelled work order C04MK224. Total costs of **\$869,235** included calculated Allowance for Funds Used during Construction (AFUDC) in the amount of **\$58,483**. The total activity, from 7/2009 through 12/2011, appears to have posted the costs and AFUDC to account 15401, Materials and Supplies. A final clearing entry for effective date 12/31/11, provided in response to audit request #8, reflected:

Debit 16302 Stores Expense-Clearing	\$86,385
Credit 15401 Materials and Supplies Other	\$86,385

The “remarks” section of the entry states that the entry was made “to transfer dollars remaining in the work order to store clearing. Dollars will then be transferred to the inventory account at the catalog ID level with average unit price adjustments noted...”

Audit noted a clearing entry of \$783,980 in July, 2011. The total clearing entries therefore sum to \$873,365, \$4,130 more than the total cost noted above.

**RECOMMENDATION**

It is recommended that the AFUDC amount of \$58,483 be adjusted to zero, as the costs appear to have posted to account 15401 throughout the existence of work order C04MK224, and were then moved to the Stores account 16302. By including the AFUDC in the cost of the spare parts, the “average unit price adjustments” noted in the remarks section of the entry will be overstated going forward.

**COMPANY RESPONSE**

PSNH provided an analysis done in 2009 by NU’s Plant Accounting department to determine the proper treatment for the progress payments made for the spare equipment

constructed for the scrubber project. NU contracted to have these booster fan parts constructed and properly included in CWIP during the construction phase and subject to AFUDC. If NU had not made progress payments, the builder would have charged the company more money to cover the use of his capital and/or borrowings.

The Plant Accounting summary outlined the possible cost treatment methods as Inventory, Prepayments, or CWIP. Regarding placing the costs of the fans in FERC account 154, Inventory, the summary indicated that “while the scrubber booster fan spare parts will ultimately be inventory, this option was not selected because progress payments do not meet the definition of Materials and Supplies.” Prepayments were not appropriate accounting treatment, and the decision to place the inventory costs in FERC 107, CWIP, was concluded due to the cost of the equipment being financed by PSNH.

The Company’s accounting treatment summary also states that the work order (for the spare parts) is *“FERC mapped to account 15401 to avoid the budgetary impact that would have resulted by capturing these charges in account 10710. As the system is not capable of automatically applying Capital Overheads, it is necessary to calculate AFUDC manually apply it to the work order with a journal entry before “I Cycle”. Prior to “A Cycle” the total amount of the work order is moved through a reversing journal entry at the general ledger level to account 10710. This treatment applies the appropriate accrual of AFUDC and keeps the charges out of rate base where they would otherwise be if the work order was left in account 15401.”*

## **PUC AUDIT RESPONSE**

Audit reviewed the Plant Accounting description of the 2009 process used to determine where the parts costs should be booked. Specifically, Audit concurs that the 2009 order placed for spare parts and *“the long lead time for these parts dictates that they will not be delivered until spring of 2011”*. Audit disagrees with the conclusion that manually moving the inventory costs from account 154 into account 107, and thus the accumulation of and inclusion of AFUDC into the eventual Inventory account was the correct accounting treatment. FERC specifies that account 154, Plant materials and operating supplies *“shall include the cost of materials purchased primarily for use in the utility business for construction, operation and maintenance purposed. ...it shall include also the book cost of materials recovered in connection with construction, maintenance or the retirement of property, such materials being credited to construction, maintenance or accumulated depreciation provision, respectively, and included herein...”* without reference to progress payments or timing of delivery.

# STATE OF NEW HAMPSHIRE

## Inter-Department Communication

**DATE:** August 23, 2013

**AT (OFFICE):** NHPUC

**FROM:** PUC Audit Staff

**SUBJECT:** Merrimack Station-Clean Air Project  
Updated Cost Review as of December 31, 2012  
**FINAL** Audit Report DE 11-250

**TO:** Tom Frantz, Director, Electric Division  
Steve Mullen, Assistant Director, Electric Division

### Introduction

The Audit Staff has reviewed the updated costs incurred relative to the Merrimack Station Clean Air Project (Scrubber) as of December 31, 2012. An Audit report, issued on August 21, 2012, reflected audit work done for project costs from inception through March 31, 2012. That report is incorporated hereto by reference. Reported costs per the Project Manager Cost Summaries and net changes are:

<u>Work Order</u>	<u>3/31/2012</u>	<u>12/31/2012</u>	<u>Net Change</u>
C04MK220 Main Scrubber	\$341,959,498	\$345,748,710	\$3,789,212
C04MK227 Scrubber Equipment	\$ 12,678,510	\$ 12,921,885	\$ 243,375
C04MK228 EMARS	\$ 2,262,887	\$ 2,307,437	\$ 44,550
C04MK229 Truck Wash	\$ 2,293,725	\$ 2,409,873	\$ 116,148
C04MK22A Truck Scale	\$ 278,645	\$ 964,150	\$ 685,505
C04MK22B Soda Ash	\$ 2,313,764	\$ 2,688,135	\$ 374,371
Sub-total Scrubber	\$361,787,029	\$367,040,190	\$5,253,161
C04MK226 Secondary Waste Water	\$ 25,792,414	\$ 27,866,656	\$2,074,242
C04MK22C SWWT Second Effect	\$ 2,643,408	\$ 3,866,534	\$1,223,126
Sub-total Secondary Water	\$ 28,435,822	\$ 31,733,190	\$3,297,368
<b>Subtotal of Work Order Changes 4/2012 – 12/2012</b>			<b>\$8,550,530</b>
<u>Completed Work Orders:</u>			
C04MK221 E-Warehouse	\$ 1,074,906	\$ 1,074,906	\$ -0-
C04MK222 Electric Power Supply	\$ 16,956,973	\$ 16,956,973	\$ -0-
C04MK225 Meeting Place	\$ 2,014,714	\$ 2,014,714	\$ -0-
Total Reported	\$410,269,444	\$418,819,973	\$8,550,530
<u>Less Cost of Removal</u>			
C04MK220	\$ (732,335)	\$ (775,065)	\$ (42,730)
C04MK222	\$ (26,418)	\$ (26,418)	\$ -0-
Adjusted Total	\$409,510,691	\$ (801,483)	\$ (42,730)
3/31/2012 Audit Adjustments	\$ ( 500,199)	\$ ( 500,199)	\$ -0-
<b>NET TOTAL</b>	<b>\$409,010,492</b>	<b>\$417,518,291</b>	<b>\$8,507,800</b>

The overall increase in company reported costs of **\$8,550,530** was summarized in the following manner:

	C04MK220	C04MK227	C04MK228	C04MK229	C04MK22A	C04MK22B	C04MK226	C04MK22C	TOTAL
NU Labor	\$ 209,353	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 3,308	\$ 77,194	\$ 289,855
Materials	\$ (282,683)	\$ -	\$ -	\$ -	\$ 57	\$ 33,162	\$ 152,441	\$ 27,229	\$ (69,794)
Contractor Labor	\$ 3,712,647	\$ 240,965	\$ 43,325	\$ 113,129	\$ 663,894	\$ 298,169	\$ 1,904,352	\$1,048,594	\$8,025,075
Outside Services	\$ 13,337	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 13,337
Employee Expenses	\$ 1,844	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 40	\$ 1,400	\$ 3,284
Vehicles	\$ 33	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 33
Fees & Payments	\$ 38,878	\$ -	\$ -	\$ -	\$ 1,585	\$ -	\$ -	\$ -	\$ 40,463
Rents & Leases	\$ 61,254	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 525	\$ 61,779
Indirect Costs	\$ 34,552	\$ 2,410	\$ 1,225	\$ 3,019	\$ 19,969	\$ 10,036	\$ 14,059	\$ 28,878	\$ 114,148
AFUDC	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 33,003	\$ -	\$ 39,306	\$ 72,309
<b>TOTAL</b>	<b>\$ 3,789,215</b>	<b>\$ 243,375</b>	<b>\$ 44,550</b>	<b>\$ 116,148</b>	<b>\$ 685,505</b>	<b>\$ 374,370</b>	<b>\$ 2,074,200</b>	<b>\$1,223,126</b>	<b>\$8,550,489</b>

The work orders relating to the E-Warehouse C04MK221, Electric Power Supply C04MK222, and Meeting Place C04MK225 had been closed prior to 3/31/2012. Further audit work (after 3/31/2012) was therefore not necessary for these three work orders.

A recommended Audit adjustment of \$(67,766) relating to the Meeting Place Miscellaneous Contractor Labor has not been reflected on the updated costs for work order C04MK225. The adjustment was identified in the August 2012 audit report. Audit understands that the cost summary sheets are not representative of the final accounting treatment of expenses incurred in the overall project.

Audit is also aware that the Project Manager's summary of expenses includes costs of removal relating to work order C04MK220 in the amount of \$775,065 and work order C04MK222 \$26,418 respectively. The costs of removal were booked to accounts 108.08 and 108.01 respectively.

### **C04MK220 Main Scrubber**

Audit work completed as of March 31, 2012 reflected total reported costs of \$341,959,498. The audit work recommended adjustments to work order C04MK220:

Miscellaneous Materials	\$ (9,836)
Miscellaneous Outside Services	\$ (39,615)
Miscellaneous Contractor Labor	<u>\$(324,496)</u>
Net Audit adjustments	\$(373,947)

The information provided by the Company for the period April 2012 through December 2012 did not reflect the adjustments as of the fieldwork date of April 2013.

The reported figure of \$345,748,710 represents an increase over the 3/31/2012 Company figure of \$3,789,212. The increase was verified to the schedule of costs noted above.

NU Labor - \$209,353

Audit requested clarification of charge codes and source codes 056, 02P, as these NUSCO Labor charges did not reflect benefits overhead. The Company indicated that 056 is the charge code for Legal and 02P is the code for Corporate Purchasing, both of which as NUSCO. NUSCO labor charges have the General Service Company Overhead Loader applied, rather than the payroll benefit loaders. Refer to the Indirect Costs portion of this report.

Audit requested support for a direct labor charge in the amount of \$2,405 which posted to the work order in April 2012. Audit was provided with a confidential payroll summary for the employee, which was verified to the hours posted to the work order without exception.

Materials – (\$282,683)

A stores overhead (resource code ZC) is applied to all materials used from stock or returned to stock. Audit was provided with a listing of materials returned to warehouse stock, along with the related overhead. The overhead rate applied to the direct cost for 2012 was 0.14. The returned materials information reflected 533 line items, and amount to a net credit of \$277,034 for the period. The overhead stores expense incurred was \$31,717, which remained in the work order. The inclusion of the overhead complies with FERC. No exception.

Audit requested support for six individual entries noted in the resource code MX. The requested support was provided, along with copies of URS Final Release and Waiver, duly notarized; invoice certification statements; copies of invoices; shippers' bills of lading as necessary; screen print of payment approval; and screen print of actual payment. Audit specifically requested and was provided with support for:

- Emerson Process Management \$14,821 for 18 weeks of training at \$823.40 per week.
- Emerson Process Management \$127,466 for software related to the soda ash softening system
- Two 1.5" back pressure regulators were verified to an invoice from New England Controls without exception. The total for the two, including \$90 shipping was \$3,169.
- Flaktwoods/The Fan Group \$62,646. The invoice represents straight time, overtime, travel time, and report preparation of a Flaktwoods sub-contractor, Buck & Company, Inc.. Timesheets were provided. However, the timeframe for which the May 2012 invoice was billed, is:

07/12 – 07/17/2010	\$ 7,007
09/12 - 09/25/2010	\$16,278
10/10 – 10/15/2010	\$ 3,741
06/12 – 06/26/2011	\$19,000
07/19 – 07/22/2011	<u>\$ 4,513</u>
Invoice total	\$62,646

Audit requested clarification of hourly invoiced fees from Lee Buck of Buck & Company. The timesheets do not include two hours of report writing associated with three site visits. The Company indicated that the hours spent were not "unreasonable or unexpected". Audit calculated the unverified hours to represent \$713.

In addition, travel hours reported on the invoice listed 48, although actual travel time was noted to be eight hours. The Company indicated that the travel hours included five layover days and one travel day.

Finally, Audit reviewed Appendix E Final Release and Waiver for contract 224738 which indicated that no part of the work had been subcontracted. Buck & Company, however, is an independently owned and operated field service company. When asked about the representation that none of the work had been subcontracted (from the Fan Group to others), the Company stated that *“the advice from our Sourcing Manager was that the waivers did not apply to subcontracted labor services, i.e. consultants, and that if a contractor certifies that they have not contracted with subs then that certification is acceptable to us.”*

#### Contractor Labor - \$3,712,647

A payment to George Cairns and Sons, in the amount of \$141,407 was verified to an invoice dated 4/30/2012 for Site Finalization-phase 1. The total invoice was for \$144,189. \$2,782 was posted to work order C04MK22A. The application for payment schedule identified the total as work related to Work Change Request (WCR) 023 and WCR 043. Audit requested the work change requests and was provided with copies of them. WCR 023, dated 8/12/2011, was documented to “provide all labor, supervision, administration and management and supply all construction equipment, materials, and services necessary to complete the Site Finalization Phase 2 Scope of Work as outlined in the appendices attached to it. The lump sum price of \$2,463,532 included an OCIP credit. There were additional terms and conditions, primarily associated with the timeframe for completion. Any no-fault extension of time for the work, after 11/18/2011, would result in reimbursement of site establishment costs past that date. Winter conditions caused the extension of work, and WCR 043 documented a lump sum cost of \$108,253 for expenses incurred in 2011 (\$49,206) and anticipated expenses in 2012 (\$59,047). WCR 043 was dated 3/30/2012. Activity within the 4/30/2012 invoice was verified to the WCR 043 without exception.

A payment to ES Boulos, for Balance of Plant Electrical, was posted to work order C04MK220 in the amount of \$1,042,401. Audit reviewed the materials request, purchase order, invoice, payment screen, and allocation of the overall invoice to three work orders. The invoice in the amount of \$1,077,646, dated 6/1/2012 and paid 8/30/2012, was for the electrical erection at Merrimack Station. Total invoice was allocated among the following work orders:

C04MK220	\$1,042,401 balance of all electrical progress payments
C04MK22A	\$ 3,707 WCR 055, item 2, scale house security
C04MK229	\$ 20,037 WCR 034 plans and drawings, WCR 046 truck wash feeder
C04MK229	\$ 11,500 extend 4” conduit for fiber optics and communications cable to
Invoice Total	\$1,077,646 truck wash building

A payment to AZCO for Balance of Plant Mechanical, was posted to work order C04MK220 in the amount of \$1,200,174. The invoice noted the rolling contract sum to be \$5,146,829 with \$4,443,742 completed and stored to date with prior payments applied of \$3,243,568. The invoice was dated 6/7/2012, and net due on the invoice was \$1,200,174. Payment was made via ACH on 8/1/2012. The documentation provided to Audit included proper authorizations for payment from NU, PSNH, and URS. The total due was then verified to the contractor’s application and certificate for payment which outlined the following WCR:

WCR-049 Monorails Time and Materials	\$ 106,098
WCR-056 SWPH 1 <sup>st</sup> Repairs	\$ 136,364
WCR-057 CEMS Air, Cylinder Rack, LO PIs	\$ 25,763
WCR-058 Units 1 & 2 Bypass Duct Installation Time and Materials	\$ 898,114

WCR-061 Duct Project Damper Repairs	\$ 10,934
WCR-065 Remove and Replace Guillotine Valves	\$ 17,391
WCR-068 Ladder Cages Unit 1 Recirc Platform	\$ 5,511
Total invoice	\$1,200,174

Audit reviewed WCR-058, which authorized a not-to-exceed value of \$900,000 relating to Unit 1 and Unit 2 bypass duct installation. Proper signatures evidencing permission to proceed with the work were noted on the WCR.

A payment to George Cairns and Sons for site finalization was posted to work order C04MK220 in the amount of \$594,737 in October 2012. Supporting documents however indicate that the company was paid via ACH on 12/5/2011. Audit requested clarification of the dates and was provided with the following explanation: *"The costs were included in the 3/31/2012 audit. The transactions you are currently reviewing represent a reallocation of charges between work orders..."* Refer to the AS&E discussion in the Indirect Cost portion of work order C04MK227.

A payment to Siemens Energy Inc., in the amount of \$4,278,231, was verified to a progress payment invoice. The invoice detailed the substantial completion to be \$5,178,213, with a credit for disputed items of \$(900,000) resulting in the \$4,278,231. Reference was made to the contract for the Wet FGD system at Merrimack Station, at the value of \$96,103,134. The disputed items credit was noted on the progress payment schedule as WCR-055 and related to the settlement agreement and release. Proper authorizations and affidavits were provided for review. A wire transfer was made on 6/14/2012. Audit requested a copy of the settlement agreement and release. The confidential dispute resolution compromise and settlement was provided and reviewed without exception.

#### Outside Services - \$13,337

Costs in this category represent legal expenses paid through PO# 002233443. As noted in the August 2012 audit report, the legal firm of McLane, Graf, Raulerson and Middleton represented the Company in suits filed by commercial ratepayers relating to PUC determination of lack of authority to determine the public good (of the project); appeals filed relative to temporary permits issued by NHDES; research into permitting relative to wastewater and anti-degradation; motions before the Site Evaluation Committee regarding the size of the project; time relating to meeting with the EPA and NHDES; representing the Company in the appeal to the State Supreme Court relative to the PUC decision regarding the use of financing proceeds; and a matter relative to the appeal by PSNH to the Air Resources Committee (ARC) regarding the mercury baseline determination.

PSNH has stated that *"during our review of these and other Project charges, as we have completed periodically throughout the project to insure proper booking of costs, PSNH has identified three legal fee areas that will be removed from the project. These are the mercury baseline determination, the appeal relative to PUC decision regarding PSNH financing, and a Citizen's law suit vs. PSNH / Merrimack Station."* Audit requested clarification of the costs and was provided with specific details which sum to \$116,145. Audit was informed that the expenses were removed from Construction Work in Progress and posted to:

Account #50699 Misc Steam Power Exp-Other	\$114,720
Account #923RA NUSCO Outside Services-RA	\$ 1,425

Employee Expenses - \$1,844

Thirty three entries ranging from \$2 to \$291 were noted. Due to the immateriality of each, detailed review was not conducted.

Vehicle Expenses \$33

This figure is considered immaterial and was not reviewed by Audit.

Fees and Payments - \$38,878

Audit requested supporting documentation for \$30,899 noted on the Miscellaneous Fees and Payments line of the Cost Summary in October 2012. The entry was documented to be workmen's compensation.

Rents and Leases - \$61,254

Audit reviewed the work order summary and noted in excess of 40 rental charges relating to dumpsters, scaffolding, portable toilets, office trailers, and storage containers. None was reviewed in detail due to the immateriality of the individual charges.

Indirect Costs - \$34,552

The resource codes which comprise the Indirect Costs were noted:

ZC – Stores Allocation	\$ 4,268
ZF – GSC Allocation	\$ 2,700
ZJ – AS&E Allocation	<u>\$27,584</u>
Total Indirect cost	\$34,552

Indirect Costs represent allocations of Stores, General Services, and Administrative Salaries and Expenses Overheads.

ZC is an overhead rate applied to direct inventory dollars. For 2012, the rate was \$0.14. Compliance with FERC was noted, as movement both from the warehouse and returned to the warehouse (if not used) incur the stores overhead. Audit recalculated the stores overhead without exception.

ZF General Services Allocation represents NUSCO service groups Corporate Center/Utility Group/Transmission Group, and Unregulated. The overheads include payroll taxes, pension, employee costs, and costs relating to the physical buildings which house the NUSCO groups. Annually the rate is updated during the budget process, with a separate rate calculated for each NUSCO service group based on the ratio of the service group's benefits and support activities to that service group's total payroll charges. The rate for 2012 was 0.7683.

ZJ, the AS&E overhead rate, is applied to eligible charges of a work order excluding ten specific resource codes. The overhead is booked to the work order as the applicable resource code charges are incurred. Audit selected a random sample of AS&E entries for work order C04MK220 and recalculated the charges without exception. Refer to the Indirect Cost section of C04MK227 for further discussion regarding the calculation of the rates themselves.

As noted in the August 2012 audit report, AS&E overhead rates for December 2010 and 2011 were .0150 and .0075 respectively. Throughout 2012 the rate changed as follows:

January-March	.0050	April	.0100
May	.0125	June	.0150
July	.0200	August	.0225
September	.0250	October	.0300
November	.0350	December	.0300

Audit was given the following explanation for AS&E overhead (ZJ) and its calculation:  
*“The AS&E is applied daily to applicable charges as they are posted to the work order. The end result is that AS&E is applied to the Total Cost of Work Order excluding AFUDC, reimbursements, CIAC payments and salvages.”*

### **Performance Incentive Program included in C04MK220**

The Program Management agreement between URS and Northeast Utilities Service Company, as agent for PSNH, includes a Performance Incentive Program (PIP) and a Performance Incentive Fee (PIF). The PIP, as stated by PSNH, is “funded by the Contractor’s Profit Fee of 8% of all costs and expenses, except general and administrative (G&A) and travel expenses. The PIF is funded by PSNH and is a 4% match of those same expenses.” The PIP is referenced as Escrow and the PIF is referenced as Notational.

As noted in the prior audit report, PSNH reflects the PIF solely on the general ledger, while the PIP is tracked on the general ledger and is held in an account at Bank of America. Audit requested and was provided with the updated and final incentive payments made to URS. URS compiled a reconciliation of the overall incentive, and determined, based on settlement, that PSNH had over-estimated the incentive by \$414,675. The following reconciliation detail (compiled by URS) was provided, which was summarized by Audit:

	Contractor's Profit Fee <u>8% Escrow</u>	Performance Incentive Fee <u>4% Notational</u>	
2008	\$ 590,018	\$ 295,009	
2009	\$1,000,283	\$ 500,141	
2010	\$ 925,601	\$ 462,801	
2011	\$ 567,658	\$ 283,829	
1/2012-3/2012	\$ 49,811	\$ 24,905	
4/2012-12/2012	\$ 40,010	\$ 20,005	
Sub-total Fee calculations	\$3,173,381	\$1,586,691	\$4,760,072
Plus interest on Escrow account	\$ 4,612	\$ 2,306	\$ 6,917
TOTAL Accrued	\$3,177,993	\$1,588,996	\$4,766,989
Less Unearned Interest on Escrow	\$ (401)	\$ (200)	\$ (601)
Less Unearned profit at Substantial Completion	\$ (63,464)	\$ (31,732)	\$ (95,196)
Less Unearned profit at Final Completion	\$ (212,585)	\$ (106,292)	\$ (318,877)
Amount Refunded URS to PSNH	\$ (276,450)	\$ (138,225)	\$ (414,675)
<b>Total Adjusted Incentive Paid</b>	<b>\$2,901,142</b>	<b>\$1,450,572</b>	<b>\$4,352,313</b>

The incentives were noted on the Project Manager's work order summary for work order C04MK220. Total incentive on the summary was \$4,545,054 or \$192,740 higher than the calculated final completion certificate and settlement agreement. Audit was provided with the following summary of the URS, URS PPF, and URS PIF line items as noted on the Project Manager's worksheet, and that which was invoiced by URS.

	<u>Project Mgr</u>	<u>URS Invoice</u>	<u>Net Difference</u>
URS	\$44,049,486	\$44,247,094	\$ 197,608
URS PPF	\$ 2,918,415	\$ 3,173,381	\$ 254,966
URS PIF	<u>\$ 1,626,639</u>	<u>\$ 1,450,771</u>	<u>\$(175,866)</u>
	\$48,594,539	\$48,871,246	\$ 276,707

Although the split among the three URS related line items in the Project Manager's worksheet do not directly correspond with the URS invoiced amounts, overall the summary noted on the worksheet is accurate. URS invoiced PSNH \$276,450 more for the PPF incentive than should have. A credit was received and posted in December 2012. The difference between the costs recorded on the Project Manager's worksheet, and the credit received from URS, \$256, is immaterial.

The general ledger activity reflected the escrow cash in account #134WG, with the offsetting liabilities noted in accounts #232WG, an accounts payable and #253WG Other Deferred Credit.

The notational incentive liabilities were noted in accounts # 232WN, an accounts payable and #253WN, Other Deferred Credit.

#### **C04MK227 Scrubber Equipment - \$243,375**

Work order # C04MK227 – Scrubber equipment was opened on 9/27/2011 and placed in service on 11/17/2011. Audit work completed as of March 31, 2012 reflected total reported costs of \$12,678,510. The reported figure at the end of December 2012 was \$12,921,885, a net change of \$243,375.

#### **Contractor Labor - \$240,965**

Audit requested the invoice and supporting documentation for two invoices totaling \$240,965. Both invoices provided reflected URS Washington Division in the letter head area and indicated Merrill Iron & Steel Transit, LLC as the contractor (a summary and detailed invoice were supplied for each invoice). PSNH provided screen prints showing purchase order and work order details and approvals of \$16M, invoice details and payment approvals and details for the invoices. Payments were made via ACH to Merrill Iron & Steel Transit LLC.

Vendor	Invoice #	Invoice Date	Amount	Payment Date	PO #	Total Invoice Amt.
Merrill Iron & Steel Transit LLC	27032	11/10/11	\$ 169,558	02/28/12	2252748	\$ 211,390
Merrill Iron & Steel Transit LLC	27222	04/10/12	\$ 71,407	05/02/12	2252748	\$ 162,021
ASE Daily Calc.			<u>\$ 2,410</u>			
			\$ 243,375			

The first invoice # 27032 was dated 11/10/2011 for work through 10/28/2011, indicated PO # 02252748 and totaled \$211,390. It was split 80.211% or \$169,558 to WO C04MK227 and 19.789% or \$41,831 to WO C04MK220. The invoice indicated the work performed was for the following:

<u>Dated 11/10/11- Rec'd 1/9/12 - Posted 4/12</u>	<u>Inv. #27032</u>
Erection of Ductwork & CEMS Access Platforms	\$ 37,235 WO C04MK220
Unit 2 - Expansion Joint Installation	\$ 43,696 WO C04MK227
Unit 2 - Insulation and Lagging (supply & install)	\$ 10,792 WO C04MK227
Unit 2 - Outage Tie-in	\$ 115,070 WO C04MK227
OCIP Insurance credit	\$ (2,530) WO C04MK220
Change order WCR-043 - Temporary handrail	\$ 7,126 WO C04MK220
Total Invoice	<u>\$ 211,390</u>

A copy of WCR-043 dated August 30, 2011 and signed by the contractor on October 28, 2011 was provided by PSNH and indicated approval for a lump sum price of \$7,126 (inclusive of OCIP credit). Also reviewed were:

- A notarized partial release waiver which indicated the current invoice amount of \$211,390 and the total paid to date of \$14,163,711 for services provided prior to 10/28/2011;
- A notarized contractor affidavit which indicated the total amount of the contract was for \$14,390,761 with \$13,808,007 paid to Merrill to date. AZCO Inc. was indicated as the erection sub-contractor, the subcontract price was \$12,461,462 and \$12,165,465 had been paid to date with \$295,998 remaining;
- An "authorized field invoice release of payment approval check list" was signed by the project manager on 11/11/2011 which indicated the invoice was for a progress payment and that the supplier/contractor had met contractual requirements and milestone schedule dates. The invoice was not paid until 2/28/12, and not posted to the work order until 4/2012. Audit asked about the AS&E calculated on the Merrill invoice #27032 in the amount of \$211,390 dated 11/10/2011, posted 4/2012 and paid on 2/28/2012. PSNH explained that while it was dated 11/10/2011 it was not received until 1/9/2012 in the system. In response to the posting date, they explained that the entire invoice had originally been posted in January to WO C04MK220, then backed out and reposted in April 2012 in the current split.

The second invoice # 27222 was dated 4/10/2012 for work through 11/30/2011, indicated PO #02252748 and totaled \$162,021. It was split 44.072% or \$71,407 to WO C04MK227 and 55.928% or 90,614 to WO C04MK220. The invoice included the following charges:

<u>Dated 4/10/12 - Rec'd 4/17/12 - Posted 4/12</u>	<u>Inv. #27222</u>
Unit 1 - Expansion Joint Assembly & Installation	\$ 17,675 WO C04MK220
Unit 1 - Insulation and Lagging (supply & install)	\$ 28,886 WO C04MK220
Unit 1 - By-Pass Tie-In	\$ 16,365 WO C04MK220
Unit 2 - Expansion Joint Installation	\$ 21,848 WO C04MK227
Unit 2 - Insulation and Lagging (supply & install)	\$ 11,202 WO C04MK227
Unit 2 - Outage Tie-in	\$ 38,357 WO C04MK227
Independent Testing & inspection	\$ 1,545 WO C04MK220
Demobilization	\$ 19,639 WO C04MK220
OCIP Insurance credit	\$ (5,060) WO C04MK220
Change order WCR-001 - Pre-engineered bldgs	\$ 11,564 WO C04MK220
	<u>\$ 162,021</u>

A copy of WCR-001 (dated 2/17/2010 signed by the contractor on 3/28/2010) was provided by PSNH. It indicated in part "Execute the Purchase Order Agreement to Supply, Deliver, and Erect the Pre-Engineered Buildings, both "Service Water Pump House" and "Truck Wash Facility" as identified in Appendix VIII-2 of the Contract Agreement" and "The Lump Sum for all work associated with these buildings is \$940,178". A value option was selected that indicated "*switch from the standard Direct Tension Indicator Washers to the Squirter Type Washers – Reduction in contract cost of (\$25,000)*". Authorization was given to proceed with the described work for a lump sum price of \$915,178. Also provided:

- A notarized partial release waiver that indicated the current invoice amount of \$162,021 and the total paid to date was \$14,325,732 for services provided prior to 11/30/2011;
- A notarized contractor affidavit that indicated the total amount of the contract was for \$14,390,761 and that \$14,163,711 had been paid to Merrill to date. Also indicated was that AZCO Inc. was the erection sub-contractor, the subcontract price was \$12,715,578 and that \$12,583,971 had been paid to date with \$131,607 remaining;
- An authorized field invoice release of payment approval check list which was signed by the project manager on 12/15/2011 indicated that the invoice was for a progress payment and that the supplier/contractor had met contractual requirements and milestone schedule dates.

#### Indirect Costs - \$2,410

Audit recalculated the AS&E charge by multiplying the total invoices posted to WO C04MK227 in April 2012 by the AS&E rate for April 2012 which was 0.010:

Vendor	Invoice #	Invoice Date	Amount	Payment Date	Post Date
Merrill Iron & Steel Transit LLC	27222	04/10/12	\$ 71,407	05/02/12	4/12
Merrill Iron & Steel Transit LLC	27032	11/10/11	\$ 169,558	02/28/12	4/12
			<u>\$ 240,965</u>		
AS&E rate for 4/12			<u>0.010</u>		
Recalculation of AS&E Daily Calculation			\$ 2,410		

## **Audit verification of the AS&E Rate Calculations**

Audit requested PSNH's formal policies and procedures regarding AS&E. The Company explained that *"PSNH/NU has a documented procedure rather than an accounting policy or statement."* Along with the explanation, the Company provided two "Summary of MIBS Loaders and Overheads" documents. The loaders and overhead documents explain the various loaders and overheads, provided the MIBS code, a brief description of the loader/overhead as well as a brief description of how it is applied but did not provide guidance on how the Company should handle reposting of invoices.

The first loader and overhead document was in effect until May 2012 (Audit is unsure when this procedure went into effect) at which time the second loader and overhead document became effective. Among other things the new loader effective in May 2012 has additional columns for frequency of rate application and frequency of rate calculation. The frequency of rate calculation also includes information for the store expense and lobby stock regarding when a true-up to its respective clearing accounts are performed. True-ups are not performed for the AS&E work order.

The AS&E clearing work order (ASECLR06) is booked to account #10709. While construction personnel charge time directly, a portion (approx. 4%) of salaries for support personnel is allocated to the AS&E clearing account. This allocation is cleared to the applicable project work order by the application of the monthly AS&E rate times the eligible charges posted to the project work order. The difference between the charges allocated to the AS&E clearing account for construction support services and what is cleared is what is reflected in the above comparison as the "clearing WO Balance" (see summary comparison below).

The clearing work order balance is for PSNH as a whole. Audit requested support for the balances and the Company provided construction work in progress trial balances that reflected the clearing work order balances identified by distribution (6D), generation (6F) and transmission (6T).

	Mar. 2012	May 2012	Sept. 2012
ASECLR6D	\$ 6,571,453	\$ 6,863,420	\$ 7,207,655
ASECLR6F	\$ (3,711,067)	\$ (3,659,338)	\$ (3,558,985)
ASECLR6T	\$ (2,382,368)	\$ (2,389,207)	\$ (2,805,046)
*6D Activity	\$ -	\$ 4	\$ 53
	\$ 478,019	\$ 814,878	\$ 843,677

\* 6D activity reflects activity for 6D not included in CWIP total

The Company explained that the AS&E work order includes PSNH administrative expenses and any NU administrative charges for time that NU employees spend on PSNH construction projects. When asked if this account was "trued-up" the Company explained that it was not because it was a continuous process.

Audit requested the details for the computation of the AS&E rate for May, July and November of 2012. Along with the computations PSNH explained that the *"... AS&E Rate is based on a rolling average of the prior 12 months"* and the *"...calculated AS&E rate is reviewed and occasionally adjusted by Business Group Budget Services in order to manage the balance of the AS&E Clearing Account such that it is not significantly under or over allocated"*.

The calculation worksheets provided (Monthly Activity Report and Calculation for Overhead Rates – 12 Month Cumulative) indicated calculated cumulative rates (12 month cumulative direct Charges / 12 month cumulative construction base) of 1.32%, 1.39% and 1.55% for May, July and November. However, 1.25%, 2% and 3.5% were authorized for each of the months respectively rather than the calculated rates. After reviewing the information provided, Audit asked why the average cumulated rates were not used and how the authorized rates were determined. PSNH responded by providing additional calculations and explained *“the attached calculation sheet for one month standard balance is used to set the May such that the current-month balance remains close to the one-month-average balance. If the current-month balance is lower than one-month-average balance, then the rate is decreased. If the current-month balance is higher than the one-month-average balance, then the rate is increased.”*

Below is an Audit prepared summary comparison of the AS&E average cumulated rate, as calculated over the prior twelve months as compared with the prior month rate and the new authorized rate as adjusted by the Business Group Budget Services for three select months (May, July and November 2012):

For Month	Ending Month of 12-Month Cumulative Average	Cumulative Calc. Rate (Cum Direct Chrgs / Cum. Construction Base)	One Month Average of Direct Chrgs (12 Mnth Cum / 12)	Clearing WO Balance	Over/ (Under)	Previous Month Rate	Adjusted Rate
May 2012	Mar. 2012	1.32%	\$ 310,843	\$ 478,019	\$ 167,175	1.00%	1.25%
July 2012	May 2012	1.39%	\$ 312,738	\$ 814,878	\$ 502,140	1.50%	2.00%
Nov. 2012	Sept. 2012	1.55%	\$ 329,596	\$ 843,677	\$ 514,081	3.00%	3.50%

The Company explained that the cumulated calculated rate is calculated each month as part of the process and the result demonstrates a comparison of the AS&E over the last 12 months. The cumulated calculated rate is based on the cumulative totals of the prior 12 months construction base which is divided into the cumulative totals of the prior 12 months of direct charges. When setting the upcoming month's rate the Company compares a one-month average balance of direct charges against the ending balance of the clearing WO balance (ASECLR06) and adjusts the prior month's authorized rate up or down accordingly based on the comparison, historical factors, and other forward looking variables such as the expected construction activity in the upcoming month.

Because the AS&E rates change monthly and the above referenced Merrill Iron & Steel invoices were dated 11/10/2011 and 4/10/2012 and were paid 2/28/2012 and 5/2/2012 respectively, Audit asked how the Company determined which AS&E rate was used.

The Company explained that the *“...AS&E rate utilized is the one in effect during the month in which the charge posts to the work order”*. PSNH further explained that *“charges are booked to the work order when the expense is incurred. For example - when an invoice is received the charge is booked to the work order, when labor payroll is approved each week it is booked to the work order and when material is removed from stores the charge is booked to the work order”*

Audit asked about the AS&E calculated on the Merrill invoice #27032 in the amount of \$211,390 dated 11/10/2011, posted 4/2012 and paid on 2/28/2012. In response to the posting date, they explained that the entire invoice had originally been posted in January to WO C04MK220, then backed out and reposted in April 2012 in the current split.

Audit questioned PSNH about the reallocation of invoices and related AS&E. It was noted that when an invoice is booked to a work order and AS&E is booked, then at a later date the invoice is reallocated to a different work order, the original AS&E is not reversed.

The Company explained “*when an invoice is moved to a different work order in a different month than when it was originally posted, the AS&E rate in effect during the month in which the move is posted is used to calculate the credit to the ‘from’ work order and the debit to the ‘to’ work order.*”

Audit did not review all reposting transactions and is therefore not able to quantify the extent of the variance or other issues associated with this treatment. Because AS&E is included in the CWIP and subject to AFUDC, this unknown variance could also impact the overall AFUDC. Refer to **Audit Issue #2**

Below is a comparison of the correct versus original posting treatment of invoice #27032. While the actual treatment arrived at the same dollar amount overall (in this particular case), on a work order basis, and thus timing basis, the treatment created a variance.

Invoice # 27032, total \$211,389.79, dated 11/10/11 for work through 10/28/11, paid on 2/28/12

Post Month	Work Order	If recorded correctly initially		As recorded & adj.		Variance
		ASE Charge (Credit)	Calculation	ASE Charge (Credit)	Calculation	
01/2012	C04MK220	\$ 209	\$41,831*0.0050 (Jan. rate)	\$ 1,057	(\$211,390*0.0050 Jan. rate)	
01/2012	C04MK227	\$ 848	\$169,558*0.0050 (Jan. rate)			
04/2012	C04MK220			\$ (2,114)	(\$211,390*0.010 April rate)	
04/2012	C04MK220			\$ 418	(\$41,831*0.010 April rate)	
04/2012	C04MK227			\$ 1,696	(\$169,558*0.010 April rate)	
		<u>\$ 1,057</u>		<u>\$ 1,057</u>		
Net	C04MK220	\$ 209		\$ (639)	C04MK220 is understated by	\$ 848
Net	C04MK227	\$ 848		\$ 1,696	C04MK227 is overstated by	\$ (848)

Because in this particular case the invoice was originally posted in January 2012, reposted in April 2012 and work order C04MK220 went into service in September 2011 and C04MK227 in October 2011, there was no impact to the AFUDC calculation related to each work order. However, due to the unknown number of reallocations throughout the project, Audit cannot quantify the overall impact. Refer to **Audit Issue #2**

#### **C04MK228 Waste Water Treatment Enhanced Mercury and Arsenic Removal System (EMARS) - \$44,550**

Audit work completed as of March 31, 2012 reflected total reported costs of \$2,262,887. The reported figure at the end of December 2012 was \$2,307,437, a net change of \$44,550. As of the end of March, 2012 there had been 45 Work Change Requests. Three additional WCR were documented in May, September, and December 2012 reflecting a total net change of \$36,554. The overall contract with Siemens Water Technology/Northern Peabody resulted in total costs of \$19,666,144, spread among this work order, and work order C04MK22B.

Contractor Labor - \$43,525

There were two limited engineering releases paid to Siemens Water; one in the amount of \$29,103 in September 2012, the other in the amount of \$14,222 in November 2012. Audit reviewed the 2010 invoice and supporting details relating to WCR-018, piers for the EMARS mezzanine \$29,103. (Refer to the August 2012 final audit report for detailed discussion of the EMARS.) Audit's review of this one item was the result of the movement from the initial posting to work order C04MK220 in 2010 to the instant work order C04MK228 in September 2012. Refer to the Indirect Cost portion of this report for work order C04MK227 regarding the timing and posting of AS&E overheads.

Indirect Costs - \$1,225

The AS&E overheads were recalculated without exception. The AS&E rate for September, 0.025 applied to the \$29,103 resulted in the reported \$728. The rate for November, 0.035 applied to the \$14,222 resulted in the reported \$498. The combined \$1,225 agrees with the indirect cost noted above (all figures are rounded).

**C04MK229 Truck Wash**

Audit work completed as of March 31, 2012 reflected total reported costs of \$2,293,725. The reported figure at the end of December 2012 was \$2,409,873, a net change of \$116,148.

Contractor Labor - \$113,129

Audit requested and reviewed invoices totaling \$99,939 all of which were resource code KL, contractor labor. Specifically:

AZCO	\$30,450
ES Boulos Co.	\$20,037
ES Boulos Co.	\$11,500
ES Boulos Co.	<u>\$37,952</u>
	\$99,939

Invoice 14232-15 from AZCO, in the amount of \$30,450 was paid 12/11/2011 for 20.75% of \$146,782 invoice for Balance of Plant Mechanical Equipment & piping Installation. Costs are shown on WCR 038-040, 038-053, and 038-057.

Three invoices from ES Boulos Co. were reviewed. One in the amount of \$20,037 or 1.86% of Requisition #15 total \$1,077,646 was received 6/1/2012, paid 8/31/2012 for Balance of Plant Electrical Erection WCR 034, \$4,686 and WCR 046, \$15,352.

One ES Boulos Co. invoice in the amount of \$11,500 or 1.07% of Requisition #15 total \$1,077,646 was received 6/1/2012, paid 8/31/2012 for Balance of Plant Electrical Erection. WCR034, \$4,686 and WCR 046, \$15,352.

Lastly, an ES Boulos Co invoice dated 6/1/2012 was paid 8/31/2012 in the amount of 37,952, 4.07% of the Final billing \$931,649 for Balance of Plant Electrical Erection.

Indirect Costs - \$3,019

Audit recalculated three monthly AS&E overhead postings in August, September, and October. The rates used were 0.0225, 0.0250, and 0.0300 respectively. The calculations were without exception.

**C04MK22A Truck Scale**

Audit work completed as of March 31, 2012 reflected total reported costs of \$278,645. The reported figure at the end of December 2012 was \$964,150, a net change of \$685,505.

Materials - \$57

The immaterial amount noted for Materials was not reviewed in detail by Audit.

Contractor Labor - \$663,894

Contractor Labor was verified to the work order activity from April 1, 2012 through December 31, 2012 to the following charge codes:

KL-Contractor Labor	\$661,586
OS-Outside Services	\$ 2,308
Total Contractor	\$663,894

Audit requested and reviewed six invoices all of which were resource code KL, contractor labor. No exceptions were noted.

Invoice #9 from George R Cairns & Sons total \$773,153 dated 9/30/2011, paid 12/1/2011 was allocated between work order C04MK220 \$594,737 (refer to the C04MK220 portion of this report) and C04MK22A \$178,417. The \$178,417 related to 5 lump sum construction activities, noted as:

15.1, Sedimentation and erosion control	\$ 10,592
15.4, Truck Scale Foundation	\$101,518
15.5, Truck Scale Building Foundation	\$ 36,169
15.6, Existing fence removal	\$ 3,227
15.7, Grading & Drainage	<u>\$ 26,912</u>
	\$178,417

Invoice #10 from George R Cairns & Sons total \$85,057 dated 10/31/2011 paid 12/19/2012 for 2 lump sum construction activities, noted as:

15.7, Grading and Drainage	\$69,970
15.10, Electrical Work Including Power Supply, Lighting and Communication	<u>\$15,086</u>
	\$85,057

Invoice #11 from George R Cairns & Sons total \$273,588 dated 11/30/2011 paid 01/19/2012 for 46.79% of the \$561,018 invoice for:

15.2, Receive, unload and set the truck scale	\$ 10,540
15.4, Truck Scale Foundation	\$ 33,839
15.5 Truck Scale Building Foundation	\$ 36,169
15.6, Existing Fence Removal	\$ 1,076
15.7, Grading and Drainage	\$ 10,765
15.8, Asphaltic paving of access road and turnaround	\$ 76,067
15.10 Electrical work including power supply, lighting, communication	\$ 80,460
15.12 Catching Basin	\$ 6,316
15.13, 90% of Other	<u>\$ 18,356</u>
	\$273,588

Invoice #12 from George R Cairns & Sons total invoice \$367,335 dated 12/11/2011 and paid 02/16/2012 was allocated with \$65,723 posted to work order C04MK22A, and the remaining \$301,612 posted to work order C04MK220. The \$65,721 represented the following:

Site Finalization-Phase 1	\$11,237
15.2 Receive, unload and set the truck scale in the truck scale building	\$10,540
15.3 Receive, unload and set the truck scale in the truck scale building	\$ 5,072
15.8, Asphaltic paving of access road and turnaround	\$ 8,558
15.10 Electrical work including power supply, lighting and communication	\$ 5,029
15.11, Seeding, fertilizing and mulching	<u>\$25,287</u>
	\$65,723

Invoice #15 from George R Cairns & Sons total \$2,782 dated 04/30/2012 paid 06/15/2012 for 1.93% of the Site Finalization – Phase 1. Specifically included on the invoice were:

15.9, Roadway markings and signage	\$ 742
15.13 10% of Other	<u>\$2,040</u>
	\$2,782

Invoice #16 from George R Cairns & Sons total invoice amount was \$268,534. The invoice was 39,061 dated 05/31/2012 and paid 07/12/2012, and allocated to work orders as follows:

C04MK220	\$214,504
C04MK229	\$ 14,969
C04MK22A	\$ 39,061

Specific testing relating to work order C04MK22A is summarized:

15.8, Asphaltic paving of access road and turnaround	\$10,459
15.9, Roadway markings and signage	<u>\$ 4,208</u>
	\$14,667

Audit requested clarification of the difference between the \$39,061 and \$14,667. PSNH provided change order #44 which was the cost of an additional 1" paving on the truck scale road.

#### Fees and Payments - \$1,585

Fees and Payments were verified to the work order charge codes:

PS-Printing Services	\$ 314
FO-Other Fees and Payments	\$ 436
FO-Other Fees and Payments	<u>\$ 835</u>
Total	\$1,585

Due to the immateriality of the specific items, further review was not conducted.

#### Indirect Costs - \$19,969

AS&E overhead amounts were recalculated by Audit. For October 2012, the rate of 0.0300 was applied to \$661,829. Audit verified the total to the work order and recalculated the AS&E charge of \$19,855 without exception.

For August 2012, the AS&E rate of 0.0225 was applied to \$3,707. Audit verified the total to the work order and recalculated the AS&E charge of \$83 without exception.

For April 2012, there were only two line items noted in the work order:

MX Material	\$ 3,034
UM UVL for March	<u>\$(3,034)</u>
Net April activity	\$ -0-

However, for April an AS&E charge of \$30 was noted using \$3,034 as a basis against which the rate of 0.0100 was applied. It appears that the AS&E charge was in error, but due to the immateriality, Audit does not recommend a change to the work order.

#### **C04MK22B Soda Ash \$374,371**

Work order C04MK22B was opened on 11/1/2011 and placed in service on 6/21/2012. Audit work completed as of March 31, 2012 reflected total reported costs of \$2,313,764. The reported figure at the end of December 2012 was \$2,688,135, a net change of \$374,371.

The total costs were recorded as:

Materials	\$ 33,162
Contractor Labor	\$ 298,169
Indirect Costs	\$ 10,036
AFUDC	<u>\$ 33,003</u>
	\$ 374,370

#### Materials - \$33,162

Audit requested the invoice and supporting documentation for the \$33,162. The Company provided copies of the invoices payment approvals, along with various screen prints indicating invoice details, purchase order and work order details, approvals and payment details and are discussed in more detail below.

Invoice # 9038767, dated May 1, 2012 from Emerson Process Management totaled \$43,046 and indicated that it was authorized under PO 2252543 WCR 016. The invoice contained one line item described as "I/O Cards for Soda Ash Softening System Q0081 / MLS" (DCS). The terms on the invoice were "payment due in 30 days". An email was attached to the invoice from an Emerson process Management Project engineer that referred to billing for

“...Event 88- Hardware delivery”. Screen prints of the payment details were provided that reflected a payment of \$43,046 was authorized and made via ACH on June 4, 2012. The total payment was split 77.039% or \$33,162 to C04MK22B and 22.961% or \$9,884 to C04MK220 and was coded as “MX” materials.

Audit requested a copy of and was provided with WCR 016 and an explanation of how the split was determined. The WCR-016 was dated 2/2/12 in the amount of \$43,046 and provided a breakdown of the items included in the total. The Company also explained that “item 1 is specific to the Soda Ash System, work order C04MK22B, and item 2 is specific to the overall wastewater treatment system, work order C04MK220” and that “the cost for in house engineering was pro-rated between the two items based on cost”.

Screen prints of the authorized material request and purchase orders (#02252543) that were originally issued on November 24, 2009 for \$1.4 M were provided. These were both subsequently increased by \$1.0M for a total not to exceed more than \$2.4 M by NTX request #5962 on 1/19/2011.

A field invoice release of payment which was signed by the project manager on 5/22/2012 was provided in conjunction with the invoice and PO and indicated that it was approved for payment. The Field Invoice Release indicated that while the invoice was dated 4/5/2012 it was not received until 5/10/2012. The contract value was reflected as \$2,279,310 (WCR – 16) and that including this current invoice that \$2,202,437 had been billed to date.

An Invoice Certification Statement was completed by Emerson Process Management certifying that the invoice was correct and that subcontractors had been paid in full for work performed and supplies furnished. A notarized partial release waiver was provided and signed by Emerson Process Management Contract Administrator on 5/1/2012. The partial release reflected that Emerson was contracted to furnish plant control system (DCS), the current invoice of \$43,046 and that total payment to date was \$1,527,091 for work and services provided prior to 5/1/2012.

#### Contract Labor - \$298,169

Contract labor of \$298,169 consisted of the following:

Vendor	Invoice #	Invoice Date	Invoice Amount
URS Energy & Construction	1429055	04/18/12	\$ 22,452
URS Energy & Construction	1432201	05/16/12	\$ 15,669
URS Energy & Construction	1434898	06/14/12	\$ 4,959
Siemens Water Technologies	1495-28	09/17/12	\$ 242,789
Siemens Water Technologies	1495-28	09/17/12	\$ 12,300
			<u>\$ 298,169</u>

Audit requested the invoice and supporting documentation for all of the invoices above. The Company provided copies of the invoices, URS approvals, payment approvals, along with various screen prints indicating invoice details, purchase order and work order details, approvals and payment details and are discussed in more detail below.

URS - \$43,081

The \$43,081 of contract labor from URS billings was for program management services for February 25, 2012 through June 1, 2012 and consisted of the following (all three invoices indicated authorization under PO # 02247849 agreement 092407 change order # 063):

	<u>Total</u>
Salaries - Regular (305.5 Hours)	\$18,552
Overhead - Regular (98% of reg. sal)	\$18,181
Other Direct Costs (ODC)	<u>\$ 1,457</u>
Sub-total	\$38,190
G&A @ 4% of Sub-Total	\$ 1,528
Service Fee @ 8% of Sub-Total	\$ 3,055
Insurance @ \$0.72 per \$100 total due	<u>\$ 308</u>
Total Due	\$43,081

Copies of the URS invoices and corresponding billing detail reports that reflect the URS employees providing the services, the type of service provided, the dates and number of hours worked and the base salary rates of each employee were also provided by PSNH. Audit verified the supporting documentation to each invoice with no exceptions noted.

- Other Direct Costs (ODC) were calculated at \$4.80 per man-hour which agreed with the contract;
- The G&A was calculated at 4% of salaries, other direct charges, subcontractor charges and general expenses which agreed with the contract;
- The Insurance was calculated at \$0.72 per \$100 of expense incurred during the billing period which agreed with the contract;
- No incentive fee was calculated- see below for deviation from the contract;
- The Service Fee of 8%, see below for deviation from the usual contract.

Deviation from PM Contract - The Soda Ash System was not part of the original URS Program Management contract. PSNH provided a copy of the Potential Deviation Notice (PDN) signed by URS Washington Division on 8/24/2011 outlining the addition of the Soda Ash Project. The URS scope of the project included provide engineering oversight, including bid evaluation, review of revisions and additions to existing documentation, equipment and infrastructure, construction management, startup support and project management and support. The PDN noted contract changes associated with the addition of the Soda Ash System, in part, deletion of the 4% incentive and that the Profit Fee of 8% would be calculated and paid as a fixed fee without any scorecard grading system. It was also noted that the addition of the soda-ash system was expected to extend the project schedule by four months (as related to URS program management). A rough order of magnitude estimate was given as \$3,572,030 (capital cost), \$206,968 (services) and 1,325 man-hours.

The PM agreement indicates that each invoice shall be certified in writing as correct by Contractor Representative, however no certifications were provided with the three URS invoices mentioned above.

System screen prints were provided by PSNH for each of the invoices reflecting the invoice details and ACH payment approvals. Copies of system screen prints were provided for the material request #58137120, approved on 9/21/07 (with a need date of 9/24/07) referenced to

C04MK220 and purchase order #02238795, issued 9/27/07 both of which were authorized at \$35M. The NTX listing provided by PSNH reflected that on February 4, 2011 PO #02247849 for URS Energy & Construction was increase from \$35M to \$46M by NTX#/MR# 5910. A note to the NTX listing indicates with an asterisk that the change is due to “multiple purchase orders due to company separation”.

An accounts payable listing for URS and Washington Group was provided for the period 11/15/2007 -7/26/2012 that totaled \$45,697,865 and included two different purchase orders:

PO/Contract #2238795 (Inv. Dated 11/07-1/09) (Cks Dated 12/07-2/09)	\$ 8,716,184
PO/Contract #2247849 (Inv. Dated 2/09-12/12) (Cks Dated 3/09-1/13*)	\$ 36,981,681
	<u>\$ 45,697,865</u>

\*Through 12/31/12.

Siemens Water Technologies and Northern Peabody LLC - \$255,089

Invoice # 1495-28 dated September 17, 2012, from Siemens Water Technologies Corp. (SWT) and Northern Peabody LLC (NPI) indicated authorization under PO 02250142. The invoice was for a Progress Payment Request (# 28) and covered the period February 1 through March 31, 2012 and totaled \$306,153. The invoice was allocated \$128,054 to SWT and \$178,099 to NPI (and included a notation that the allocations would be less escrow agent fees to be split 50/50 among the consortium members). The SWT and NPI progress payment schedule was verified to the invoice. The invoice was allocated as follows:

	Care & Custody	\$ 30,000	C04MK220
WCR-032	SASS Additional Bench Scale Studies	\$ 12,300	C04MK22B
WCR-034	Air Compressor Maintenance	\$ 870	C04MK220
WCR-037	Soda Ash System Full Release	\$ 242,789	C04MK22B
WCR-040	Install CAT 5e Cables	\$ 5,972	C04MK220
WCR-042	EMARS Effluent Recycle Line	\$ 14,222	C04MK228
		<u>\$ 306,153</u>	

Screen prints were provided of the purchase order and material request approvals which both reflected a contract value approval of \$14.2M issued on 12/16/2008 (for all WO that SWT and NPI were involved in).

Payment of \$306,153 was approved and made via wire on November 19, 2012. The total invoice of \$306,153 was coded to “KL”, contract labor, with a total of \$255,089 allocated to C04MK22B (\$242,789 + \$12,300).

PSNH provided a contract change log for SWT and NPI that reflected the original contract price of \$13.593M and 48 WCRs totaling \$6.072M (issued between 4/09 – 12/12) for a cumulative total of \$19.666M along with copies of the above WCR.

- WCR-032 was dated 1/3/2012 and signed by the contractor on 1/5/2012. It authorized the contractor to proceed with the bench scale treatability test of the FGD purge sample for a lump sum price of \$12,300 which agrees with that portion of the invoice.
- WCR- 037 Rev. 1 was dated 11/30/2012 and signed by the contractor on 12/5/2012. The WCR was a revision to the original WCR-037 and stated in part that “This Revision actualized the Reimbursable costs and converts this entire WCR into Lump Sum”. Authorization included \$1,148,903 of contract work for the Soda Ash System and

\$658,788 of subcontract work for the Soda Ash System for a total lump sum of \$1,807,691 with invoicing and payments in accordance with the existing contract terms and conditions. Including this payment of \$242,789 a total of 63 percent or \$1,191,351 had been paid.

- WCR-040 Rev 1 indicated it was for the installation of six CAT5E network cables and accessories. The revision indicated that the original WCR authorized a Time and Material, not to exceed \$9,275 but that the actual costs were \$5,972, which agrees with that portion of the invoice.

PSNH provided a notarized partial release waiver that reflected SWT and NPI were contracted to furnish the wastewater treatment system and reflected that total payments of \$18,991,928 had been made (including the current partial payment of \$306,153) for work performed prior to 3/31/2012.

A copy of the Siemens wire remittance request provided that the revised contract value was \$19,701,009 consisting of the original contract value of \$13,593,280 and \$6,107,729 of modifications. It also indicated that \$18,991,928 had been billed to date which agreed with the partial release waiver.

The escrow disbursement instructions submitted by the consortium of Siemens Water Technologies Corp and Northern Peabody, LLC dated 9/17/2012 indicated it was for progress payment request #28, no retention was deducted.

PSNH provided an accounts payable listing for SWT and NPI that reflected total payments of \$19,666,144 for the following two POs through 2/2013 (which agrees with the contract change log):

PO-2246009 (Inv. Dated 1/09-4/09)(Cks Dated 3/09-7/09)	\$1,922,937
PO-2250142 (Inv. Dated 08/09-12/12) (Cks Dated 10/09-2/13)	\$17,743,207
	<hr/> \$19,666,144

Audit compared the final progress payment schedule attached to the invoice agreed with the WCR log, without exception.

#### Indirect Costs - \$10,036

Indirect costs of \$10,036 (noted as ZJ - ASE Daily Calc.) associated with WO C04MK22B consisted of the following (also see indirect costs under WO C04MK227 of this report for a more detailed explanation):

Posted		Invoices		
		Posted to WO	AS&E Rate	AS&E Charge
May 2012	URS (Inv. #1429055) & Emerson (Inv. #9038767)	\$ 55,614	0.0125	\$ 695
July 2012	URS (Inv. #s 1432201 & 1434898)	\$ 20,628	0.0200	\$ 413
Nov. 2012	Siemens (Inv. # 1495-28)	\$ 255,089	0.0350	\$ 8,928
		<hr/> \$ 331,331		<hr/> \$10,036

AFUDC - \$33,003

AFUDC costs included in WO C04MK22B totaled \$33,003 for the months of April, May and June of 2012. The soda ash system, WO C04MK22B, was placed in service on 6/21/2012 and consisted of the following:

YD-AFUDC (Debt)	\$ 17,078
YE-AFUDC (Equity)	<u>\$ 15,925</u>
Total AFUDC	\$ 33,004

Audit verified that the AFUDC charges stopped as of June 2012 when the WO was placed in service and requested the calculations for the AFUDC charges which are summarized below and tied to the AFUDC charges booked to the Soda Ash workorder.

Month	CWIP BOM Base	CWIP EOM Base	CWIP Base (BOM + EOM /2)		Rate	Base * (Rate /12)
April 2012	\$ 2,296,919	\$ 2,296,919	\$ 2,296,919	Debt	0.0221	\$ 4,230
				Equity	0.0513	\$ 9,819
				Total	0.0734	\$ 14,049
May 2012	\$ 2,296,919	\$ 2,353,228	\$ 2,325,074	Debt	0.0319	\$ 6,181
				Equity	0.0136	\$ 2,635
				Total	0.0455	\$ 8,816
June 2012	\$ 2,353,228	\$ 2,353,228	\$ 2,353,228	Debt	0.0340	\$ 6,667
				Equity	0.0177	\$ 3,471
				Total	0.0517	\$ 10,138
Total Debt						\$ 17,078
Total Equity						<u>\$ 15,925</u>
Total AFUDC						<u><u>\$ 33,003</u></u>

Audit recalculated the charges based on the method used and rates and average CWIP bases provided by the Company. The above calculations, which agreed to the charges booked in the workorder, indicate that the AFUDC rate calculated was an annual rate and therefore needed to be divided by 12. PSNH used a simple average CWIP base beginning plus ending monthly balance divided by 2, when calculating the AFUDC.

Audit asked PSNH why there would be an ending balance in June if the project had been placed in service on 6/21/2012. PSNH explained that *“NU utilizes a half month convention. AFUDC is not applied to a work order if the in service date is the fifteenth of the month or earlier. If the in service date is the sixteenth of the month or later a full month of AFUDC is charged for that month and none is charged thereafter. Therefore, because the in-service date for WO C04MK22B was after the fifteenth, AFUDC was applied as a full month using the average of the beginning-of-month balance and the final WO balance. Otherwise, AFUDC is calculated on the average of the work order’s balance at the beginning of the month and the end of the month”*.

Audit did not review the criteria or mechanisms used by the Company to determine the in service dates, it was noted that of the eleven workorders in the project all but three were placed in service after the 15<sup>th</sup> of the month.

Audit asked why the AFUDC was being calculated on a monthly basis when FERC requires it to be calculated annually. PSNH explained that “in 1981, during the construction of Millstone, Northeast Utilities obtained a special approval from FERC to compute its AFUDC rates on a monthly basis instead of an annual basis as required by the provisions of Order No. 561”. Audit requested and was provided with a copy of the authorization.

The letter from NU to FERC dated October 19, 1981 requested in part “due to rapid changes in short-term debt requirements and rates that the NU Companies and other companies are currently experiencing, the NU Companies determine their AFUDC rates on a monthly basis. This provides better tracking of the cost of capital devoted to construction...” and “NU does not recommend a change from the formula concept, but does recommend that certain components of the AFUDC formula that are now fixed for stated periods of time be allowed to change when the capital structure and the related capital costs change”.

NU also asked “...that its operating companies be allowed to reflect in their monthly determination of AFUDC, the components of capital and their cost levels at the end of the prior month for all the components of capital utilized in the formula for the current month’s determination of AFUDC”. On the summary of FERC Formula AFUDC attached to the letter the Company further explained “The AFUDC rate calculated from FERC Order No. 561 does not allow any recognition of a change in permanent capitalization in the year of issue. In light of the unprecedented capital costs for permanent finance, the weighted cost of capital may change significantly during the year these financings occur”.

FERC responded with its approval to NU’s request on November 13, 1981. In its letter of approval FERC reiterated that NU was not “... requesting a change from the formula concept of Order No. 561 but ask that the operating companies be permitted to reflect in a monthly determination of AFUDC the balances and cost levels as of the end of the preceding month for all components of capital used in the formula”. FERC further stated “not specifically stated in your request but presumed for purposes of this response is that construction work in progress balances and short-term debt balances and cost rates would continue to be estimated but only for the month that the AFUDC rate is to be used” and “also, it is assumed that compounding of previously capitalized AFUDC will be no more frequently than semi-annually”.

The Company provided the following AFUDC rates for 2011 through 2012:

Month	2011			2012		
	Total	Debt (YD)	Equity (YE)	Total	Debt (YD)	Equity (YE)
January	0.0621	0.0228	0.0393	0.0673	0.0221	0.0452
February	0.0664	0.0255	0.0409	0.0734	0.0221	0.0513
March	0.0708	0.0272	0.0436	0.0734	0.0221	0.0513
April	0.0727	0.0247	0.0480	0.0734	0.0221	0.0513
May	0.0776	0.0278	0.0498	0.0455	0.0319	0.0136
June	0.0794	0.0282	0.0512	0.0517	0.0340	0.0177
July	0.0697	0.0230	0.0467	0.0418	0.0261	0.0157
August	0.0661	0.0232	0.0429	0.0626	0.0626	-
September	0.0683	0.0238	0.0445	0.0285	0.0148	0.0137
October	0.0763	0.0243	0.0520	0.0428	0.0206	0.0222
November	0.0763	0.0243	0.0520	0.0487	0.0192	0.0295
December	0.0763	0.0243	0.0520	0.0580	0.0221	0.0359

The long-term debt used to calculate the AFUDC rates for 2011 was \$820,490,000 with an associated cost percentage of 5.18% and the equity used was \$1,746,938,000 of common stock with an associated cost percentage of 9.81%. The long-term debt used to calculate the AFUDC rates for 2012 was \$982,377,000 with an associated cost percentage of 4.63% and the equity was \$1,078,362,000 of common stock with an associated cost percentage of 9.81%. The short-term debt and associated cost and the CWIP balances fluctuated each month and were based on the previous month's information.

Audit requested and was provided with PSNH's formal policies and procedures regarding AFUDC (Revised June 16, 2006). The policies and procedures confirmed the Company's half month convention treatment for WO CO4MK22B. The policies and procedures also addressed the Company's special treatment of major projects "appropriate major projects will be charged with AFUDC to the specific date that the construction project is 'placed in or ready for service'."

Audit requested the AFUDC calculated for 2011 through 2012 by month and work order. The Company provided a schedule of the calculated AFUDC by work order for August 2011 through June 2012. Audit reviewed the schedule and calculation details for reasonableness, compliance with the procedures and to verify that the Company was not compounding previously capitalized AFUDC more often than semi-annually.

Audit noted that WO CO4MK229, Truck Wash, was opened on 9/27/2011 and closed on 2/22/2012 reflected as of September 30, 2011 (July – December 2011) debt AFUDC of \$65,164 and equity AFUDC of \$102,911 on an AFUDC base of \$1,834,780. Audit requested clarification of the amounts and was told that *"the work orders established to care for equipment or systems not going into service with the scrubber (220 WO) in September 2011...included the dollars transferred to the new work orders (including 229), as well as all the associated journals."*

Audit also recalculated the AFUDC charged to WO C04MK220 in September 2011 based on the Company's policies and procedures for major projects. This was the "main scrubber" work order that was placed in service on 9/28/2011 with a 12/31/2012 value of \$345,748,710. The AFUDC calculations provided by the Company indicated that \$625,742 of debt and \$1,169,980 of equity AFUDC were calculated for the month of September which calculates out to a full month of AFUDC. A journal entry crediting the difference between the

full month and the appropriate 27 day calculation was provided to Audit. \$214,737 of the AFUDC was reversed on October 5, 2011.

### **C04MK226 Secondary Waste Water**

Audit work completed as of March 31, 2012 reflected total reported costs of \$25,792,414. The reported figure at the end of December 2012 was \$27,866,656, a net change of \$2,074,242.

#### **NU Labor - \$3,308**

NU labor costs were not reviewed in detail due to the immateriality of the amount. Refer to test work conducted in work order C04MK220.

#### **Materials - \$152,441**

Resource Code MX;

Direct Material Expense	\$150,306
Overhead Stores Expense	<u>1,965</u>
Total	\$152,271

Reported Materials Expense	\$152,441
Cost Detail	<u>\$152,271</u>
Immaterial Variance	\$170

#### **Contractor Labor - \$1,904,352**

AZCO	\$1,648,081
George Cairns	<u>129,329</u>
Total	\$1,777,410

#### **AZCO Invoice #48165-07 - \$1,648,081**

\$1,648,081 or 89.1% of the project costs were posted to Work Order C04MK226 and paid on 6/13/2012. AZCO work was performed on a time and materials basis and is billed in accordance with the rates and mark-ups in the contract. The contract terms included Materials and Rentals. Mark-up rates are as follows;

- Materials purchased by Contractor at the direction of the Construction Manager – 10%
- Lower Tier Subcontractor cost expended at the direction of the Const. Manager – 10%
- Equipment or other items rented at the direction of the Construction Manager – 5%

#### **Detail of AZCO Invoice Costs:**

T&M Labor	\$532,858
T&M Subsistence	23,125
T&M Materials (at 10% MU)	321,628
T& M Subcontracts (at 10% MU)	653,635
T&M AZCO Tools & Equipment (>\$5,000)	14,077
T&M Outside Rentals (at 5% MU)	49,645
3 <sup>rd</sup> Party Fuel, Oil & Grease	17,813
T&M Expenses	1,619
2nd Shift Rate Differential	6,480
Home Office 2 <sup>nd</sup> Effect	<u>27,202</u>
Total	\$1,648,081

AZCO labor charges totaled \$532,858 with no mark-up on labor costs per the contract. The Company provided the timesheets, the payroll weekly labor cost break down and the vendor invoices. All labor rates and hours worked shown on the timesheets agreed with PSNH's Payroll Weekly Craft Cost Breakdown sheets with no material exceptions.

Audit reviewed 63% of invoices for Materials, sampling various line items. Materials were \$76,993 and with a 10% mark-up per the contract, totaled \$84,692. This amount agreed with PSNH's Invoice Drilldown Detail. No exceptions were noted.

Sub-Contractor Costs were \$594,213 with Audit testing \$319,189 or 54%. Including a 10% mark-up per the contract, total sub-contractor cost was \$653,635. The work was performed by five different sub-contractors and was for the painting of structural steel, the B-I System and insulation. Invoices greater than \$5,000 were tested for accuracy and timeliness. Audit tied the sample invoice amounts to PSNH's Invoice Drilldown Detail sheets with no exceptions.

Outside Rentals were \$27,433 per PSNH's Drilldown Cost sheet. Including a 5% mark-up rental costs totaled \$34,761. Equipment was for modular structures which were invoiced monthly by the Rental Company and Booms/Cranes for specific heights and terrain and were rented on a weekly basis. Invoices greater than \$1,000 were tested. Audit tied the sample invoice amounts to PSNH's Invoice Drilldown Detail sheets with no exceptions.

#### Employee Expenses - \$40

This amount was considered immaterial and not reviewed by PUC Audit.

#### Indirect Costs - \$14,059

The following resource codes comprised the Indirect Costs:

ZC – Stores Allocation	\$170
ZJ – AS&E Allocation	<u>\$13,889</u>
Total Indirect cost	\$14,059

Refer to test work conducted in work order C04MK227, Scrubber Equipment.

#### George Cairns (Foundations & Underground) Invoice #10 - \$129,329

Audit reviewed the George Cairns & Sons invoice dated July 12, 2012 in the amount of \$129,329. The charges pertain exclusively to a change order for an outside containment slab. No break out of labor or material costs was provided.

The Company provided Audit with the Scope Change Request and Authorization Form #22 which stipulated the work completed, the amount of the project, the extended completion date and the terms of the lump sum contract.

The Company provided a project justification paper stating “that the modifications were necessary in order to create a more positive and complete drainage of the area. The original design utilized the SWWT process sump as a portion of the containment volume. As operation progressed, it was determined that additional water entering the system would adversely affect the process. The containment slab was extended to meet all SWPPP requirements for a stand-alone containment and not utilize the process sump in the volume calculations.”

PSNH provided the computer screen printouts for the invoice detail, payment detail and the routing list which showed the personnel authorizing the payment of the invoice on August 1, 2012. All approvals followed the Company's Authorization and Approval policy.

### **C04MK22C SWWT Second Effect**

Audit work completed as of March 31, 2012 reflected total reported costs of \$2,643,408. The reported figure at the end of December 2012 was \$3,866,534, a net change of \$1,223,126.

#### **NU Labor - \$77,064**

Direct Labor	\$39,664
Non Productive Time	6,481
Stores Expense	<u>30,919</u>
Total	\$77,064

#### **Materials - \$7,873**

Resource Code MX;

Direct Material Expense	\$7,346
Overhead Stores Expense	<u>527</u>
Total	\$7,873

#### **Contractor Labor - \$1,048,594**

AZCO	\$826,749
Electrical Corporation of America	201,133
Atlantic Contracting	34,172
AQUATECH	<u>(13,460)</u>
	\$1,084,594

#### **Audited Invoices;**

##### **AZCO Invoice #48165-11 - \$826,749**

\$826,749 or 73% of project completion was posted to Work Order C04MK22C on October 18, 2012, and \$304,655, or 27% of the project was posted to Work Order C04MK226.

The AZCO contract states that work is to be performed on a time and materials basis and is billed in accordance with the rates and mark-ups in the contract. The contract terms included Material & Rental Mark-up rates as follows;

- Materials purchased by Contractor at the direction of the Construction Manager – 10%
- Lower Tier Subcontractor cost expended at the direction of the Const. Manager – 10%
- Equipment or other items rented at the direction of the Construction Manager – 5%

The invoice reflected the following details:

T&M Labor	\$332,122
T&M Subsistence	18,625
T&M Materials (at 10% MU)	84,692
T& M Subcontracts (at 10% MU)	607,872
T&M AZCO Tools & Equipment (>\$5,000)	20,744
T&M Outside Rentals (at 5% MU)	34,761
3 <sup>rd</sup> Party Fuel, Oil & Grease	60
T&M Expenses	4,270
Home Office Travel	896
Home Office	27,202
2nd Shift Rate Differential	160
Total	\$1,131,404

Labor charges were \$332,122 with no mark-up on labor per the contract. The Company provided the timesheets, the payroll weekly labor cost break down and the vendor invoice. All labor rates and hours worked shown on the timesheet agreed with PSNH's Payroll Weekly Craft Cost Breakdown sheets with no material exceptions.

Costs for Materials were \$76,993 and with a 10% mark-up per the contract, totaled \$84,692. Audit reviewed 63% of invoices for materials, sampling various line items. Audit tied the Vendor's invoice amounts and/or specific line items to PSNH's Invoice Drilldown Detail sheets with no exceptions.

Cost for Sub-Contractors came to \$594,213 with Audit testing 54% or \$319,189. Including a 10% mark-up per the contract, total sub-contractor cost was \$607,872. Invoices greater than \$5,000 were tested. The work was performed by five different sub-contractors and was for the painting of structural steel and the B-I System and insulation. Audit tied the Vendor's invoice amounts and/or specific line items to PSNH's Invoice Drilldown Detail sheets with no exceptions.

Outside Rentals totaled \$33,106 and with a 5% mark-up came to \$34,761. Invoices greater than \$1,000 were tested. Equipment rentals were for modular structures which were invoiced monthly by the Rental Company and Booms/Cranes for specific heights and terrain. Audit tied the Vendor's invoice amounts to PSNH's Invoice Drilldown Detail sheets with no exceptions.

Electronics Corporation of America (ECA), Invoice #46339 - \$158,700

Change Order #13 charged to C04MK22C	\$118,016
Change Order #15 charged to C04MK226	34,562
Change Order #18 charged to C04MK226	6,122
Total	\$158,700

\$118,016 or 74% of project completion was posted to Work Order C04MK22C on April 30, 2012, the remaining 26% of the project was posted to Work Order C04MK226.

PSNH provided the screen printouts for the invoice detail, payment detail and the routing list which showed the personnel authorizing the Application for Payment in the amount of \$158,700 and paid on 5/15/2012. All approvals followed the Company's Authorization and Approval policy.

Audit reviewed WO C04MK22C charged on 5/2012 in the amount of \$118,016. This was associated with change order #13 (addition of 2<sup>nd</sup> effect) and was executed lump sum. The Application for Payment dated 4/25/2012 showed the total scheduled value of the change order at \$361,230 with work completed and previous applied of \$213,066 and this application amount of \$118,016. Total completion and stored to date of \$331,082 or 88 %, with the balance to finish of \$45,148.

Audit reviewed the Scope Change Request and Authorization form stipulating the revisions to the original contract which describes the materials and equipment changes.

The Contract Labor charges taken from the time sheets were \$31,411. Subcontractor costs were marked up 10% as per the contract and all pay rates and hours worked agreed with the rate and timesheets.

Rentals/Materials and mark-up totaled \$3,150 (2,561+303+286) and included a 5% mark-up per the contract. Audit reviewed all the invoices for the rental of meters and a portable 75 KV HIPOT tester with no exceptions noted.

#### Atlantic Contracting Invoice #851710 - \$6,756

Audit reviewed an invoice for contract labor charges from June 18 through June 24, 2012 in the amount of \$6,756. The project was a Time and Materials contract with only labor charges and described on the invoice as Maintenance/AQUATECH SWWT 2<sup>nd</sup> Effect Insulation Work.

The Company provided the Labor Material/Equipment Report from Atlantic Contracting showing the employee name, the work date and the hourly rates. The Report was then tied back to the timesheets and the vendor invoice. Timesheets were handwritten and included the description of the work, employee name, classification, the day and hours worked and were signed and dated by PSNH. Audit found no exceptions.

#### Atlantic Contracting Invoice #852305 - \$6,844

Audit reviewed the invoice for contract labor charges from June 25 through July 01, 2012 in the amount of \$6,844. The project is described as Maintenance/AQUATECH SWWT 2<sup>nd</sup> Effect Insulation Work.

The Company provided the Labor Material/Equipment Report from Atlantic Contracting and a detailed labor report which included the employee name, the work date and the hourly rates. The Report was then tied back to the timesheets and the vendor invoice.

Timesheets were handwritten and included the description of the work, employee name and classification, the day and hours worked. The timesheets were signed and dated by PSNH. This was a Time and Materials contract with only labor charges. Audit found no exceptions.

#### Employee Expenses - \$1,400

Audit reviewed the work order summary which reflected 32 entries ranging from \$10 to \$100. Each entry was posted to the work order in June 2012. Audit requested clarification of the amounts and was told that the payments "were meal expenses for Merrimack Station union employees who worked overtime on the Clean Air Project SWWT 2<sup>nd</sup> Effect." Employees are

paid a flat \$10 for breakfast and lunch and \$20 for dinner. Audit reviewed the schedule of employees and weeks/reimbursements provided, with no exception noted.

Rents and Leases - \$525

The amount is considered immaterial and was not reviewed by Audit.

Indirect Costs - \$28,878

The indirect costs of \$28,878 were for AS&E overhead (ZJ). Refer to test work conducted in work order C04MK227, Scrubber Equipment.

AFUDC - \$39,306

Refer to the discussion in work order C04MK22B, Soda Ash.

**General Ledger as of 3/ 31/2012, 12/31/2012, and 3/31/2013**

As noted in the August 2012 audit report, as of **3/31/2012**, the following totals were posted to the general ledger accounts identified:

	Closed WO to 101.01	Completed not Classified to 106.01	CWIP to 107.09	Closed WO Cost of Removal to 108.01	Open WO Cost of Removal to 108.08	Retirements Booked account not stated	Inventory to 154.01
C04MK221	\$ 1,074,906						
C04MK222	\$ 16,930,556			\$ 26,418			
C04MK225	\$ 2,014,715					\$ 98,053	
C04MK220		\$ 341,227,164			\$ 732,335	\$ 192,198	
C04MK227		\$ 12,678,510					
C04MK228		\$ 2,262,887					
C04MK229		\$ 2,293,725					
C04MK22A		\$ 278,645					
C04MK22B			\$ 2,313,764				
C04MK226		\$ 25,792,414					
C04MK22C			\$ 2,643,407				
C04MK224							\$ 86,385
	\$ 20,020,177	\$ 384,533,345	\$ 4,957,171	\$ 26,418	\$ 732,335	\$ 290,251	\$ 86,385
			\$ 409,510,693				

Updated general ledger information as of **12/31/2012** was:

	Closed WO to 101.01	Plant in Srv Clearing 101.51	Completed not Classified to 106.01	CWIP to 107.09	Closed WO Cost of Removal to 108.01	Open WO Cost of Removal to 108.08	Retirements Booked account not stated	Inventory to 154.01
C04MK221				\$ 1,074,906				
C04MK222		\$ 16,930,556			\$ 26,418			
C04MK225		\$ 2,014,714					\$ 98,053	
C04MK220				\$ 344,973,645		\$ 755,065	\$ 192,198	
C04MK227				\$ 12,921,885				
C04MK228				\$ 2,307,437				
C04MK229				\$ 2,409,873				
C04MK22A				\$ 964,150				
C04MK22B				\$ 2,688,135				
C04MK226				\$ 27,866,656				
C04MK22C				\$ 3,866,534				
C04MK224								\$ 86,385
	\$ -	\$ 18,945,270	\$ -	\$ 399,073,221	\$ 26,418	\$ 755,065	\$ 290,251	\$ 86,385
				\$ 418,018,491				

Audit updated the 3/31/2012 general ledger detail with the information provided for the final period ended **3/31/2013**:

	Closed WO to 101.01	Completed not Classified to 106.01	CWIP to 107.09	Closed WO Cost of Removal to 108.01	Open WO Cost of Removal to 108.08	Retirements Booked account not stated	Inventory to 154.01
C04MK221	\$ 1,074,906						
C04MK222	\$ 16,930,556			\$ 26,418			
C04MK225	\$ 2,014,714					\$ 98,053	
C04MK220		\$ 344,209,274			\$ 755,065	\$ 192,198	
C04MK227		\$ 12,921,885					
C04MK228	\$ 2,340,401						
C04MK229	\$ 2,430,588						
C04MK22A	\$ 964,150						
C04MK22B	\$ 3,342,529						
C04MK226		\$ 27,950,618					
C04MK22C		\$ 3,847,178					
C04MK224							\$ 86,385
	\$ 29,097,844	\$ 388,928,955	\$ -	\$ 26,418	\$ 755,065	\$ 290,251	\$ 86,385
			\$ 418,026,799				

The final general ledger posting of capital costs does not reflect the August 2012 recommended reduction of \$441,713 (which Audit recommended should have been expensed rather than capitalized), nor does it reflect the recommended reduction of AFUDC in the amount of \$58,483. **Audit Issue #1**

The incremental change in costs from December 2012 \$417,518,295 through March 2013 \$417,526,603 is \$8,308, or 0.002% of the 12/31/2012 costs posted to the general ledger. The amount was not considered material. Therefore Audit has concluded the fieldwork relating to the Clean Air Project.

Audit compiled the following summary of the Clean Air Project, for ease of view, to demonstrate that the total cost for the Clean Air Project should be \$417,526,603. This total does not reflect any AS&E over or under charging due to reallocating invoices among work orders, nor does it reflect any AFUDC impact of the AS&E reallocations.

		12/31/2012	3/31/2013
		General Ledger	General Ledger
C04MK220	Main Scrubber-total capital	\$ 344,973,645	\$ 344,209,274
C04MK220	Main Scrubber-cost of removal	\$ 775,065	\$ 775,065
		\$ 345,748,710	\$ 344,984,339
C04MK21	E Warehouse	\$ 1,074,906	\$ 1,074,906
C04MK222	Electric Power-capital	\$ 16,930,556	\$ 16,930,556
C04MK222	Electric Power-cost of removal	\$ 26,418	\$ 26,418
		\$ 16,956,974	\$ 16,956,974
C04MK225	The Meeting Place	\$ 2,014,714	\$ 2,014,714
C04MK226	Secondary Water	\$ 27,866,656	\$ 27,950,618
C04MK227	Scrubber Equipment	\$ 12,921,885	\$ 12,921,885
C04MK228	EMARS	\$ 2,307,437	\$ 2,340,401
C04MK229	Truck Wash	\$ 2,409,873	\$ 2,430,588
C04MK22A	Truck Scale	\$ 964,150	\$ 964,150
C04MK22B	Soda Ash	\$ 2,688,135	\$ 3,342,529
C04MK22C	SWWT 2nd Effect	\$ 3,866,534	\$ 3,847,178
	TOTAL CAPITAL	\$ 418,018,491	\$ 418,026,799
	TOTAL COST of REMOVAL	\$ 801,483	\$ 801,483
	TOTAL	\$ 418,819,974	\$ 418,828,282
	LESS Cost of Removal	\$ (801,483)	\$ (801,483)
Audit Issue #1	LESS Recommended Adjustment	\$ (441,713)	\$ (441,713)
Audit Issue #1	LESS AFUDC for Spare Booster Fan	\$ (58,483)	\$ (58,483)
	ADJUSTED CAPITAL for CAP	\$ 417,518,295	\$ 417,526,603

**Audit Issue #1****Classification of Clean Air Project Costs****Background**

The audit report issued in August 2012 contained recommended adjustments to the costs reviewed from inception of the Clean Air Project through March 31, 2012, in the amount of \$441,713.

The August 2012 report also included Audit Issue #1 relating to a spare booster fan which resulted in the accumulation of AFUDC in the amount of \$58,483

**Issue**

Audit understands that PSNH generally disagreed with the recommended adjustments as well as the exclusion of the spare booster fan for AFUDC calculation.

**Recommendation**

Audit encourages the Company to review the accounting treatment of the AFUDC related to the spare booster fan, as well as the detailed listing of incidental items recommended to be expensed rather than capitalized. The adjustments and AFUDC exclusion are reiterated for purposes of this final cost review.

**PSNH Response**

As encouraged by Audit, PSNH has reviewed the accounting treatment of both the AFUDC related to the spare booster fan as well as the detailed listing of items recommended to be expensed rather than capitalized. While PSNH understands Audit's recommendation, PSNH continues to believe the accounting treatment used for this project, and specifically these two items, is consistent with the Company's accounting guidelines, processes, and procedures.

The appropriateness of accruing AFUDC as funds are disbursed for construction expenditures is an acceptable industry standard and is supported by SFAS 71 and SFAS 34 as explained with the attached white paper, 'Milestone Payments Associated with Large Equipment Purchases'. Please see the separate attachment in our email response.

PUC Audit copied the white paper into this report below:

## Milestone Payments Associated with Large Equipment Purchases

### Introduction

With the increased size and complexity of our capital program, NU is entering into a growing number of nontraditional equipment purchase contracts. This large equipment, such as autotransformers and coal unloading cranes, is typically built to specific NU specifications with limited opportunities for the vendor to sell this equipment into the marketplace should NU not take delivery. With growing concerns over the global economy, including commodity pricing, foreign exchange rates, supply chain disruptions, availability of credit, and critical skill labor shortages, our vendors are mitigating such concerns and risks by requesting progressive payments along the design, manufacturing, shipment, and installation phases of equipment purchase. As a result, some of our large equipment purchase contracts call for milestone (or progress) payments with large, up-front payments several months prior to ownership passing to NU. Depending on the type of equipment purchase and related contract, additional risk mitigation tools such as letters of credit and special deposits are also employed by both NU and the vendor.

Below is an example of a typical milestone payment arrangement for an autotransformer:

#### Autotransformer (Single Phase)

10% Issuance of PO  
 15% Design drawings approved - month 3  
 20% Completion of Factory Acceptance tests - month 12 - 15  
 30% Deliver to pad - month 16 - 19  
 20% Substantial completion (dressed, filled, tested, and ready for energization) - month 18 - 20  
 5% Final Acceptance - month 20 - 24.

From an accounting standpoint, the milestone payment arrangement presents a concern whether such payments should be recorded as a prepayment or a construction asset (CWIP). From the above payment arrangement, delivery, installation, and acceptance do not occur for several months after payments are made. On the surface, these payments represent prepayments, since transfer of title, ownership and risk of loss has not occurred. However, a closer examination of the nature of the equipment contract supports recording the payments to construction work in progress (CWIP).

#### Prepayment Treatment

The above payment schedule calls for significant payments, as a percent of the purchase price, made to the vendor prior to transfer of ownership or risk of loss. An argument can be made to record these payments as prepayments. However, prepayments tend to relate to current period expenses (prepaid pension expense, prepaid property taxes, prepaid insurance, etc.), not yet incurred, as opposed to a long-lived physical asset. By this definition, prepayments are classified as short-term assets, unlike physical equipment.

Prepayments are recorded in Account 165 under the FERC Uniform Chart of Accounts. Our Transmission and Generation jurisdictions allow rate base treatment for prepayments. Consequently, the prepayment earns a current cash return, as opposed to accruing non-cash AFUDC under a CWIP asset. *However, AFUDC is appropriate under FERC and GAAP rules, see CWIP section below for further details.* Finally, prepayment treatment would require a reclassification from a short-term asset (Account 165) to a long-term classification for SEC reporting purposes, resulting in inconsistent FERC vs. SEC reporting treatment.

### **Construction Asset (CWIP) Treatment**

The above payment arrangement will become more prevalent for capital intensive companies, like utilities. As result of a world-wide credit crunch, volatility in raw materials, disruptions in supply chains, and skilled labor shortages, manufacturers mitigate such risks through the above type of payment arrangement. In addition, NU, much like other companies, requires a number of unique manufacturing specifications. As a result, the manufacturer, at the end of the manufacturing process has a uniquely-sped piece of equipment on their hands without a marketplace to sell it into. This situation results in progressive ownership and liability for damages at the start of the manufacturing process.

Progressive ownership is relevant in this situation because the vendor is manufacturing a unique asset for NU, in which a ready marketplace does not exist. If NU does not take possession of the equipment, the manufacturer is left with equipment it can not sell. Under such circumstances, the manufacturer would surely seek damages against NU. Progressive ownership treatment has been used by NU in the past. In the 1990s, the turbine replacement at Milestone Unit 2 required a uniquely manufactured turbine. NU was liable to the manufacturer for non-possession of the turbine at the start of the design and manufacturing process. Progress payments on the turbine were recorded directly to CWIP. More recently, the LNG tank in Waterbury, CT and the wood plant at Schiller Station were recorded directly to CWIP because of their uniqueness, turn-key, and on-site construction.

In November of 2008, NU polled a number of EEL utility companies at an industry roundtable event, regarding this subject. Overwhelmingly, the EEL companies would record the progress payments directly to CWIP. By recording the progress payments to CWIP, AFUDC would accrue on the equipment until it's placed in-service. AFUDC is appropriate in this case as funds are being disbursed directly for construction expenditures prior to the projects' in-service date. CWIP provides the mechanism to capitalize AFUDC under FERC accounting rules.

*The appropriateness of AFUDC on milestone/progress payments is supported by SFAS 71 and SFAS 34. SFAS 71, Accounting for the Effects of Certain Types of Regulation, allows capitalization of AFUDC equal to the amount that would be capitalized under FAS 34, as long as the amounts are allowable costs for rate-making purposes (See paragraph 15 excerpt below). We believe the AFUDC on progress payments is collectible in accordance with FERC rules, as funds are being disbursed directly for construction expenditures prior to the projects' in-service date. CWIP provides the mechanism to capitalize AFUDC under FERC accounting rules.*

*Furthermore, FAS 34, Capitalization of Interest Cost, specifies that interest should be capitalized on deposits and progress payments, supporting CWIP classification and AFUDC accrual (see paragraph 9 excerpt below).*

SFAS 71, paragraph 15:

#### *Allowance for Funds Used during Construction*

*15. In some cases, a regulator requires an enterprise subject to its authority to capitalize, as part of the cost of plant and equipment, the cost of financing construction as financed partially by borrowings and partially by equity. A computed interest cost and a designated cost of equity funds are capitalized, and net income for the current period is increased by a corresponding amount. After the construction is completed, the resulting capitalized cost is the basis for depreciation and unrecovered investment for rate-making purposes. In such cases, the amounts capitalized for rate-making purposes as part of the cost of acquiring the assets shall be capitalized for financial reporting purposes instead of the amount of interest that would be capitalized in*

*accordance with FASB Statement No. 34, Capitalization of Interest Cost. Those amounts shall be capitalized only if their subsequent inclusion in allowable costs for rate-making purposes is probable. The income statement shall include an item of other income, a reduction of interest expense, or both, in a manner that indicates the basis for the amount capitalized.*

**SFAS 34, paragraph 9.a)**

9. *Interest shall be capitalized for the following types of assets ("qualifying assets"):*

a. *Assets that are constructed or otherwise produced for an enterprise's own use (including assets constructed or produced for the enterprise by others for which deposits or progress payments have been made)*

**Other Considerations**

In light of the emergence of equipment contracts with growing complexities, many contracts require some type of upfront collateral, by both parties, in the form of special deposits or letters of credit. Such collateral protect either the manufacturer or NU in the event of default by the other party.

In regard to special deposits, NU places cash in a bank account that the manufacturer/vendor has draw-down rights to. As cash is drawn-down, a prepayment or a construction asset (CWIP) is created.

In the case of the letters of credit, two scenarios are possible. First, if NU provides a letter of credit to the manufacturer, we are assuring economic performance on our end to complete the equipment purchase. Assuming delivery and payment take place, the letter of credit is never executed. However, if NU should default on its obligations under the contract, the manufacturer will settle its damages through execution of the letter of credit. If this happens cash is expended and a loss is incurred, unless some asset value (prepaid or construction) can be salvaged.

In the second scenario, the manufacturer provides the letter of credit to NU to assure economic performance on their end to complete the manufacturing and installation of the equipment. If the manufacturer defaults, NU would execute the letter of credit to cover damages for nonperformance. If this happens, cash would increase and amounts due from the manufacturer (a receivable) would settle. Existing prepayments or construction assets would be written off against the deferred credit established to offset the manufacturer receivable.

Although the use of special deposits and letters of credit to assure contract performance is more prevalent due to the complexity of various economic drivers, the use of such instruments, whether executed or not, does not weigh into the prepayment vs. construction asset debate. In the event of a default, on either side, the prepayment/construction asset debate is outweighed by impairment and other loss contingencies, since impairment would be required regardless of its classification.

**Conclusion**

The prepayment vs. construction asset debate becomes clearer when the substance of fact patterns are examined. The facts surrounding this issue are as follows:

Prepayments relate to current period expenses (prepaid pension expense, prepaid property taxes, prepaid insurance, etc.), not yet incurred, as opposed to a long-lived physical asset.

By this definition, prepayments are classified as short-term assets, unlike physical equipment. The progress payments in question directly relate to construction assets, which are long-term in nature.

The vendor, through a specific job order, is manufacturing a unique asset for NU, in which a ready marketplace does not exist. If NU does not take possession of the equipment, the manufacturer would surely seek damages against NU.

NU in past has employed this treatment for progress payments in the Milestone 2 turbine replacement, the LNG tank and the wood burner at Schiller Station.

Other EEL companies would record the progress payments directly to CWIP.

AFUDC is appropriate in this case as funds are being disbursed directly for construction expenditures prior to the projects' in-service date. CWIP provides the mechanism to capitalize AFUDC under FERC accounting rules. *This is supported by SFAS 71 and SFAS 34.*

The prepayments are better described as construction assets, reflecting the true nature of the transaction, vs. as a short-term prepayment or long-term "other" debit.

Base on the above set of facts, we conclude the prepayments represent construction expenditures which should be directly capitalized as a construction asset (CWIP). However, because of the nature of these transactions NU will disclose the above recommended accounting treatment in the footnotes to our financial statements.

1/21/2009

## Audit Comment

Audit appreciates the input and information provided by PSNH.

## **Audit Issue #2**

### **AS&E**

#### **Background**

PSNH posts AS&E overheads to work orders as invoices are booked.

#### **Issue**

Throughout the Clean Air Project, at certain times, invoices are reallocated from one work order to another. When the invoice is posted to the new work order, a new AS&E overhead is also posted. The new AS&E is credited to the original work order.

The difference between the original AS&E posting and the revised AS&E posting cannot be quantified due to the number of reallocations and the timeframe over which the accounting entries took place.

Because each work order was placed in service at different times, the subsequent cost impact may also include an over or under calculation relating to AFUDC.

#### **Recommendation**

Audit recommends that as invoices are moved from one work order to another, the original invoice and the original related AS&E move together. The debiting of a new AS&E calculation to the new work order, but offsetting the original AS&E debit with a revised credit creates an imbalance that cannot be quantified by Audit.

#### **PSNH Comment**

The Company has reviewed the accounting treatment for reposting of invoices and the calculation of AS&E; and believes the AS&E calculation for the reposting of invoices is consistent with acceptable industry practices and the Company's accounting processes.

On an individual work order basis, there may be a slight impact in the AS&E when invoices are reposted if the overhead rate is different. However, on an overall project and financial statement level, there is no impact as the AS&E nets out to the initial calculation.

#### **Audit Comment**

Audit appreciates the PSNH comment and encourages the Company to reverse costs as specifically as possible.

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

**Date Request Received: 08/30/2013**

**Request No. Q-OCA-AUDIT-001**

**Request from: Office of Consumer Advocate**

**Date of Response: 08/30/2013**

**Page 1 of 1**

**Witness: William H. Smagula**

**Request:**

Reference Audit Report page 2 regarding work order "C04MK220 Main Scrubber." The report states "The information provided by the Company for the period April 2012 through December 2012 did not reflect the adjustments as of the fieldwork date of April 2013." (emphasis added) Have the adjustments referenced been made subsequent to the fieldwork date? Is it the Company's intention to make the adjustments in accordance with Audit Staff's recommendations? If not, why not?

**Response:**

No, the changes have not been made. Please refer to the PSNH response to Audit Issue #1 on page 34 of the report. PSNH has reviewed the accounting treatment of the costs recommended to be expensed rather than capitalized and continues to believe the accounting treatment is consistent with FERC guidance and the Company's accounting guidelines, processes, and procedures. The adjustments recommended by Audit Staff fall into three categories. Please see below for discussion consistent with FERC Uniform System of Accounts guidance.

Decommissioning / Demolition - "Cost of Removal means cost of demolishing, dismantling, tearing down or otherwise removing electric plant, including the cost of transportation and handling incidental thereto."  
 "Replacing or replacement, when not otherwise indicated in the context, means the construction or installation of electric plant in place of property retired, together with the removal of the property retired."  
 "Structures and Improvements accounts shall be credited with the cost of coal bunkers, stacks, foundations, subways, tunnels, etc., the use of which has terminated with the removal of the equipment with which they are associated even though they have not been physically removed."

Safety - Safety is a necessary component of well-run large capital projects and is a high priority for PSNH. Safety incentives are a way of sustaining high safety focus and awareness.

Office Supplies - FERC guidance allows for administrative and general expenses to be capitalized as part of a construction project. As these office supplies were purchased for the Project's administration employees, the costs are applicable to construction work.

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

**Data Request OCA-04**  
**Dated: 09/27/2012**  
**Q-OCA-017**  
**Page 1 of 1**

**Witness:** William H. Smagula, Timothy J. Griffin  
**Request from:** Office of Consumer Advocate

**Question:**

Reference Audit page 68. The report states "Audit also understands that PSNH, for regulatory purposes, considers the cost of the building to be part of the CAP and thus recovery of the costs treated in the same manner as other CAP costs. Audit recommends that recovery of the prudent, used and useful costs incurred to construct the new building should be reviewed in the context of docket DE 12-116. Please respond to the following: a. What is the in-service date for the Meeting Place building? b. If the costs of the Meeting Place, aka "Yellow Building" in Work Order #C04MK225 of \$2,014,714 (see Audit page 54) were removed from the CAP, would the total AFUDC amount for the CAP through its in-service date of 9/28/12 be different? c. If the answer to part b is "Yes" please provide a revised calculation of AFUDC per part b. d. If the Company had constructed the Meeting Place building independent of the CAP, what would it propose for the depreciable life of the building? How does that compare to the currently proposed depreciable life of the building when it is considered as part of the CAP?

**Response:**

As shown on Audit page 55, the Meeting Place was closed to Plant Accounts 311.89, 316.89 & 391.81. These accounts are common to Merrimack Station, not Scrubber specific (ie sub-acct 38). Accordingly, the cost of the building is not considered part of the CAP and recovery of the costs is treated in the same manner as other general plant assets at Merrimack Station.

- a. The in-service date for the Meeting Place building is May 20, 2011.
- b. No. As stated above the cost of the Meeting Place, aka "Yellow Building" is not included in the CAP, therefore there is no impact to CAP AFUDC. Additionally, the Meeting Place was constructed under its own work order (C04MK225), and at the time it was placed in-service on 5/20/2011, AFUDC ceased accruing on C04MK225.
- c. N/A
- d. Merrimack Station has an Average Year of Final Retirement (AYFR) of 2038. If the Meeting Place building had been constructed independent of the CAP, the life of the building would be the same as what is currently proposed which is the same as any other Merrimack station asset. The asset would enter service and retire in the AYFR year of 2038. The cost of the assets making up the Merrimack station are recovered, on a straight line basis, over the period of time between the asset's entry into service and 2038.

		Staff Proposal (000s)				
<u>PSNH Forecasted 2012 Costs:</u>						
1	Scrubber O&M, Fuel & Avoided SO <sub>2</sub> cost	\$ 8,319	PSNH response to Tech Session 2-1, p. 2 (415,512,889/ 25 yr life)			
2	Scrubber Depreciation Expense	16,620				
3	Scrubber Property Tax Expense	215	PSNH response to Tech Session 2-1, p.2			
4	Scrubber Return on Rate Base	38,242	PSNH response to Tech Session 2-1, p.2 adjusted to Staff's capital cost (38,839 * 415,512/422,000)			
5	Subtotal	63,396				
6	Forecasted 2014 ES MWh Sales	3,682,376				
7	ES Rate Attributable to Scrubber	1.72 ¢/kWh				
8	Temporary Scrubber Rate per Order No. 25,346 (April 10, 2012)	0.98				
9	Rate increment for Annual Ongoing Costs	0.74				
10	Unrecovered Costs Through December 31, 2012	\$ 50,127	PSNH response to Tech Session 2-1, p.1			
11	Unrecovered Costs for Calendar Year 2013	\$ 28,607	PSNH response to Tech Session 2-1, p.2			
12	Total Unrecovered Costs as of December 31, 2013	\$ 78,734				
13						
14	Amount of Unrecovered costs to be recovered	\$ 78,734	\$ 26,245	\$ 15,747	\$ 11,248	\$ 7,873
15	cents/kWh	2.14	0.71	0.43	0.31	0.21
16	Annual costs cents/kWh	1.72	1.72	1.72	1.72	1.72
17	Total	3.86	2.43	2.15	2.03	1.94
18	Temporary Rate	0.98	0.98	0.98	0.98	0.98
19	Rate Increment	2.88	1.45	1.17	1.05	0.96