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August 17, 2007



Debra A. Howland
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New Hampshire Public Utilities Commission
21 South Fruit St., Suite 10
Concord, NH 03301-2429

Re: DE 06-097 – Investigation of Public Service Company of New Hampshire's Coal Procurement

Dear Ms. Howland:

In docket DE 05-088, the reconciliation of Public Service Company of New Hampshire's ("PSNH") 2004 costs and revenues associated with its stranded cost recovery charge and transition and default energy service charges, the Commission approved a settlement agreement reached by PSNH, Staff and the Office of Consumer Advocate ("OCA"), (collectively, "the Parties and Staff")¹. One part of that settlement dealt with coal supply and transportation problems experienced by PSNH. The Parties and Staff agreed with Staff's recommendation that the Commission reserve judgment on the associated costs pending Staff's retention of an independent consultant to investigate those costs. Docket number DE 06-097 was established for the investigation. Enclosed please find an original and six copies of the final report prepared by The Liberty Consulting Group ("Liberty"), the consultants retained by Staff to conduct the investigation.

As part of its review, Liberty examined PSNH's coal procurements and transportation operations during the period from late 2003 through 2006. Liberty reviewed PSNH's organizational structure; procurement procedures, justification and control; portfolio strategy, contract policy and management; and the existing conditions regarding unloading ocean vessels and barges at Schiller Station. While Liberty had positive comments concerning PSNH's responses to many of the challenging situations PSNH faced, its report provides recommendations, summarized as follows:

¹ See Order No. 24,568 (December 22, 2005).

- Revise the current procedures for fuel procurement to better address such things as fuel portfolio strategy, minimizing the risks of fuel price volatility, and detailing the procedures for solicitations and bid evaluations;
- Overhaul the coal procurement processes to permit them to demonstrate that PSNH has used solicitation and evaluation processes that result in the lowest reasonable cost to produce electrical energy at the busbar;
- Develop a formalized and documented portfolio strategy that supports coal procurement by addressing and mitigating the risks associated with essential elements of fuel procurement such as commodity, contract term, supplier and price;
- Attempt to negotiate the addition of language in new coal contracts that deals with remedies in the event of supplier default on delivery of coal;
- Do not pass increased coal procurement costs (\$140,000) resulting from inventory control problems at Merrimack Station to customers; and
- Expedite efforts to correct the restrictive coal unloading situation at the Schiller Station.

As docket DE 06-097 is essentially an instance of the Commission conducting its oversight authority, there is no established procedural schedule. With the filing of Liberty's final report, the question remains of the best way to proceed from this point. As the Commission stated in Order No. 24,568,

We...endorse the recommendation that Staff engage a coal procurement expert to analyze PSNH's coal procurement and transportation operations. Consistent with the Agreement, we will defer action on the coal-related costs until that analysis has been completed.

In Staff's view, a few options exist about how best to proceed. It is likely that PSNH will desire to file comments in response to the report, and Staff believes that PSNH should be given that opportunity. From there, the Commission could a) hold a hearing if it is deemed necessary, or b) issue a *nisi* order rendering whatever decision the Commission deems appropriate. Staff also suggests that another option is to include Liberty's final report and any PSNH comments in DE 07-057, the ongoing docket for the reconciliation of PSNH's 2006 revenues and costs associated with its stranded cost recovery charge and energy service charge. Fuel supply and cost issues are routinely examined in these annual reconciliation dockets, so, in that respect, the information from Liberty's examination is in line with issues normally discussed in such proceedings. In addition, the parties involved in DE 05-088, namely, PSNH, the OCA and Staff, are also taking part in DE 07-057. Finally, one of the recommendations from Liberty involves a recommended monetary disallowance. Depending on the ultimate resolution of that issue, any potential dollar adjustment could easily be incorporated into the ongoing reconciliation docket.

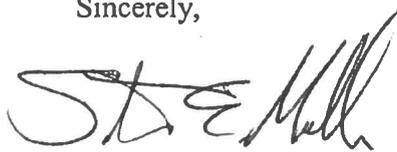
Liberty has spent a good deal of time and effort conducting a thorough examination and preparing its report. Staff recommends the Commission accept the report, allow PSNH the opportunity to file comments, and then allow the report and

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comments to be incorporated into DE 07-057, with the resolution of any issues to be determined in that docket.

Please let me know if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "STE Mullen". The signature is stylized with a large "S" and "M".

Steven E. Mullen
Utility Analyst

encl

cc: Service List
OCA

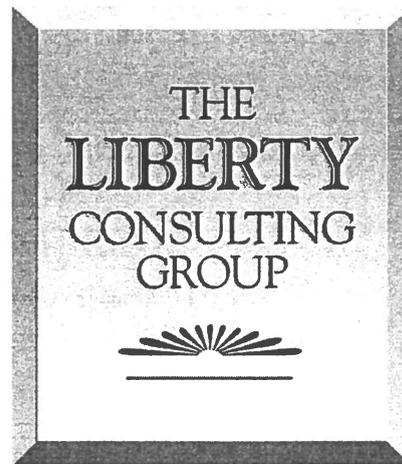
**Final Report
Analysis of PSNH Coal
Procurement and Transportation
Operations**

Presented to:

*State of New Hampshire
Public Utilities Commission Staff*

Presented by:

The Liberty Consulting Group



August 8, 2007

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I. Introduction

A. Background

On May 2, 2005, Public Service Company of New Hampshire ("PSNH") filed with the New Hampshire Public Utilities Commission ("Commission") a proposed reconciliation of the accounts associated with PSNH's Stranded Cost Recovery Charge ("SCRC") and Transition and Default Energy Service charges for calendar year 2004, with accompanying pre-filed direct testimony. Because of this filing, the Commission issued an Order Approving Stipulation and Settlement Agreement, Order No. 24,568 dated December 22, 2005 ("the Order"). The Order adopted Staff's recommendation to engage a coal-procurement expert to analyze PSNH's coal procurement and transportation operations.

The Liberty Consulting Group ("Liberty") performed the required analysis of PSNH's coal procurement and transportation operations. Liberty is a management and technical consulting firm that specializes in the public-utility industries. Liberty has extensive experience in utility fuel procurement and management. The Order addressed, among other things, the procurement and transportation of coal, which comprises PSNH's predominant fossil-fuel source. Liberty's analysis therefore focused on coal procurement and transportation operations for PSNH's two coal-fired electric generating stations; *i.e.*, the Merrimack and Schiller Stations.

B. Merrimack and Schiller Coal-Burning Capabilities

The Merrimack Station, located in Bow, New Hampshire, consists of two generating units with capacities of 112 MW and 320 MW. The cyclone boilers of both units burn coal with comparatively low ash-fusion temperatures. Each unit uses an electrostatic precipitator. Unit #1 typically burns coal with sulfur content in the range of 1.15 percent. Unit #2 typically burns coal with a sulfur content of approximately 1.0 percent. Neither unit operates with equipment specifically designed to control SO₂ emissions. Coal ash-fusion temperatures tend to be inversely proportional to coal sulfur content; therefore the lowest ash-fusion temperature coals are burned in Unit #1, and coals with slightly higher ash-fusion temperatures are burned in Unit #2. Both units have Selective Catalytic Reduction ("SCR") systems for the control of NO_x emissions.

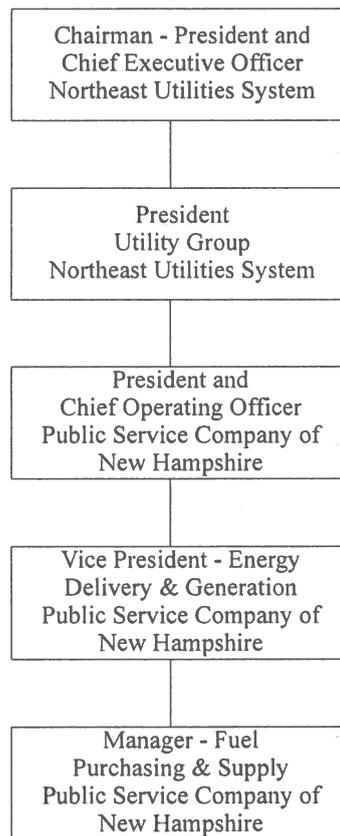
Merrimack Station can take coal deliveries by rail and by truck. Typically, about 32 percent of Merrimack's requirements arrive by truck. Rail deliveries arrive in sets of 90 cars on the Boston & Maine Railroad. Norfolk Southern typically originates the rail deliveries from coal mines located in northern and central Appalachia. Rotary dumpers individually unload rail cars. Merrimack's cyclone boilers and the corresponding requirement for coal with low ash-fusion temperatures significantly constrain the market that offers sourcing opportunities for the station's coal. Only a small number of domestic and international suppliers can offer coal that meets the Merrimack boilers specifications.

The Schiller Station, located in Portsmouth, New Hampshire, consists of three 50 megawatt generating units (#4, #5, and #6). PSNH completed the conversion of Unit #5 to a wood-fired boiler and placed it in service for commercial operation in December of 2006. The Unit #4 and #6 pulverized coal boilers can burn a wide range of generally available coals. Units #4 and #6 have electrostatic precipitators. Each unit typically burns coal with sulfur content in the range of

0.75 to 1.0 percent. Neither unit uses equipment specifically designed to control SO₂ emissions. Units #4 and #6 have Selective Non-Catalytic Reduction systems (“SNCR”) for control of NO_x emissions. Most coal arrives at the Schiller Station by water, and comes by barges or ocean cargo vessels. The station can also take truck deliveries. Self-unloading ocean vessels or the station’s Siwertell auger type unloader unload coal into the station’s hopper and conveyor system.

C. Fuel Organization

The PSNH Fuel Department procures and manages fossil fuels, which consist of coal, oil, and natural gas, for use at PSNH generating stations. The Manager – Fuel Purchasing & Supply heads this Department. He reports to the Vice President – Energy Delivery & Generation for PSNH. That executive in turn reports to the President & Chief Operating Officer of PSNH. The President of PSNH reports to the President – Utility Group for the Northeast Utilities System, and the President – Utility Group reports to the Chairman – President and Chief Executive Officer of Northeast Utilities System. The following organization chart shows these reporting relationships.



Five Fuel Department individuals report to the Manager – Fuel Purchasing & Supply:

- *Fuel Principal, Coal*: Lead commercial representative for coal procurement and supply
- *Fuel Principal, Rail Logistics Coordinator*: Lead commercial representative for rail transportation, and support to the Coal Principal
- *Fuel Principal, Wood*: Lead commercial representative for wood fuel procurement and supply
- *Fuel Principal, Oil, Natural Gas & Emission Allowances*: Lead commercial representative for fuel oil, natural gas and emission allowances
- *Fuel Technician*: Technical support.

The Manager and the Fuel Principal, Coal comprise the two individuals most extensively involved in coal procurement and management. The Manager has a strong fuels technical and procurement background. This background includes many years of experience in the energy field, and a graduate degree in business. He has served NU in fuel supply since 1987, and has been the fuel manager for 10 years. The Fuel Principal, Coal has been in his current position for 10 years; he served as fuel analyst for the five preceding years. Overall, the Fuel Department has sufficient experience in fuels and analytical support for fuel procurement and the administration of contracts and purchase orders for the procurement and transportation of fuels.

II. Discussion

A. Procurement Procedures

PSNH operates under fuel procurement procedures entitled “Fossil Fuel Procurement and Inventory Management,” FF1.00, Rev. 03, dated October 1, 2002. These summary level procedures (only 13 pages) provide only overall guidance. The stated intent of the procedures is to provide flexibility to the fuel management process and to integrate it with the electronic routing and record-keeping capabilities of the “Materials Information Management Systems” (“MIMS”). The procedures contain the following major sections:

- Contracting
- Inventory Management
- Purchase Orders
- Invoicing
- Receiving
- Planning
- Records
- Attachment 1, “Delegation of Signature Authority for Fossil Fuel Contracts, Purchase Orders, and Invoices.”

The procedures’ intent to provide flexibility in fuel procurement necessarily makes them general and relatively brief. Liberty found them, however, to be significantly shorter and more general than similar procedures reviewed at other fuel management organizations. The strong emphasis on brevity has produced procedures that do not provide sufficient: (a) guidance regarding the overall objectives of fuel procurement, and (b) attention to the necessary mechanics and controls applicable to fuel procurement and management activities. One particularly significant omission

(discussed later in this report) is the lack of definition of a concisely stated set of portfolio component objectives and parameters, and how the portfolio will be created and maintained to balance diversity in its essential elements (e.g., commodity, contract term, supplier and price). Such definition comprises an important element in mitigating the risks faced by fuel purchasers in dynamic, volatile markets. Hedging, another important tool for addressing volatility, represents another significant gap; the subject receives no direct mention in the procedures. However, the procedures do refer to one component of hedging. The procedures state that the use of derivative products is prohibited in the procurement of fuel. The procedures also fail to address a number of activities central to effective fuel management; i.e., maintenance and use of bidders lists, mechanics of the solicitation process, controls necessary to ensure confidentiality of incoming bids, and impartiality of bid analyses.

PSNH does maintain a separate strategy document, entitled "Fuel and Emissions Strategy", whose purpose is to provide overall strategy associated with PSNH Generation's emissions and fuel management. This document is reported to be updated annually. It states that fuel for PSNH's generating stations is procured on a lowest-evaluated cost basis, which takes into account such factors as commodity price, transportation (logistics and price), heat (Btu) and ash content and elemental constituents (e.g., sulfur, nitrogen, mercury). This strategy document and the fuel procurement procedures do not appear to be linked in that neither document makes reference to the other.

B. Procurement Justification and Control

1. Procurement Approval Authority

Revision 3 to the "Fossil Fuel Procurement and Inventory Management" procedures, dated October 1, 2002 contains Attachment 1, which authorizes two individuals to approve fuel-related invoices and fuel-related contracts:

- Manager, Fuel Management: \$3 million in value or one year in length.
- Director, PSNH Generation: \$20 million in value or three years in length.

The PSNH response to a Data Request¹ indicated that, while not part of the procedures manual, the Vice President, Energy Delivery and Generation had authority to approve fuel-related invoices and fuel and fuel-related contracts to a maximum of \$25 million in value.

Liberty found numerous approvals of purchase orders and contracts by individuals not granted the requisite authority.² The Manager, Fuel Management (now called the Manager, Fuel Purchasing & Supply) and the Vice President had exceeded their approval authority in signing fuel contracts and purchase orders. In four cases the vice president signed contracts for a value of greater than \$25 million; an example of one of these cases is included in the following discussion under item #3. In two cases, the Manager, Fuel Purchasing and Supply signed contracts for a value of greater than \$3 million.

Following questions posed by Liberty to the manager and the vice president, PSNH provided fuel-procurement manual revisions to the authorized signature list of Attachment 1, and added

¹ Response to Liberty Data Request Q-LIB-011.

² Response to Liberty Data Request Q-LIB-011.

the Vice President, Energy Delivery and Generation. These changes came as Revision 4, dated September 25, 2006, and authorized the vice president to approve fuel and fuel-related invoices, purchase requisitions and purchase orders associated with contracts up to a limit of \$25 million, and fuel and fuel-related contracts up to \$75 million in value, or six years in length. The revisions did not change the authority of the Manager, Fuel Purchasing and Supply, or the Director PSNH Generation. Had these changes been in effect from late 2003 through 2006 (*i.e.*, the period covered by Liberty's review of this matter), there would have been no cases where the vice president would have exceeded his established approval authority. The new procedures also added a number of provisions related to procurement of wood.

2. Solicitations to Potential Suppliers

Liberty examined 29 different PSNH coal procurements during the period from late 2003 through April 2006. PSNH's 2003 procurements addressed deliveries in 2004 or later. These 29 procurements included some long-term contracts, short-term contracts, spot procurements, and procurements for test burns.

Some of these procurements covered relatively small quantities of what is often termed "distress" coal. Such supplies become available from time to time at "bargain prices" when a supplier with an established relationship with a buyer finds itself with coal available because it cannot for some reason make delivery to another, originally designated customer. Generally, suppliers must find another buyer within a short period of time, often under price offers so discounted that a purchaser, like PSNH, finds it appropriate to make a purchase without using a solicitation process that would certainly produce a significantly higher price.

Apart from these situations, where waiving a solicitation process is appropriate, Liberty considers it good practice to make use of competitive solicitations, except where extenuating circumstances exist and that can be documented. Generally, those solicitations should seek broad vendor response. Liberty found that PSNH did not regularly use solicitations in cases where it bought non-distress coal. However, in many cases PSNH solicitations prior to procurements included only a limited number of potential vendors.

Many PSNH procurements that Liberty examined involved contacts with only two or three suppliers, which comprise a very small audience. One such case involved a relatively large procurement. Specifically, a 2004 solicitation for 2005 deliveries to Schiller and Merrimack led to the purchase of 385,000 tons of coal. PSNH sent the solicitation only to two suppliers. PSNH considered this small number appropriate because fuel personnel believed that they already knew which suppliers (and there were only two) would have the necessary coal and necessary ocean vessels available; PSNH also stated that the added expense in issuing solicitations to a broader range of potential suppliers has justified the use of a small vendor population when seeking competitive supply offers.

Liberty has found that good practice generally involves the use of as broad a list of potential suppliers as possible. Liberty has not found in its experience that the incremental cost of inviting additional vendors to participate is material. Certainly, this conclusion applies to a procurement as large as 385,000 tons, which involves expenditures in the range of \$20 million. Even if PSNH has perfect market knowledge, if its suppliers did not, knowledge that PSNH solicits broadly

would likely affect the responses PSNH receives. More importantly, however, is the danger in presuming perfect information. Coal market supply and transportation situations do not remain static for long; constant change makes it unduly risky for a utility fuel procurement organization to rely on its information about who has coal available. It takes routine solicitations to a broad audience to give even a large and sophisticated organization confidence that it is getting the best price for its purchases. Third, at a broader level, markets respond to demand. PSNH communicates needs to the marketplace through solicitations; coal and transportation suppliers use demand information to assess increase in production and transport capability. Over the long run, it benefits even relatively smaller purchasers to communicate their needs; broad solicitations comprise an important means of making this communication.

In the short-term, restricting the list of those receiving solicitations to only a few suppliers, should leave PSNH without sufficient comfort that it has found the most attractive supply options available. Such restrictions cannot be expected always to produce a process that results in the lowest reasonable cost to produce electrical energy.

3. Procurement Analysis for Large Commitments

During the time period examined by Liberty, PSNH was experiencing unsettled conditions in fuel procurement. Several suppliers claimed force majeure and railroad shipments of coal were significantly delayed. PSNH therefore had to act swiftly on a number of occasions to procure needed supplies of coal. In such situations, some of the more formal procurement processes sometimes need to be modified.

Nevertheless, on five different occasions from 2003 through mid 2006, PSNH procured amounts of coal in excess of 200,000 tons without extensive solicitation or analysis. These purchases were for delivery periods covering two or more years, and covered amounts in excess of those needed to replace force majeure tonnage and compensate for slow rail deliveries. These occasions included:

- CONSOL: 2.0 million tons at \$64 million
- Peabody Contract Extension: 1.1 million tons at \$61 million
- CONSOL: 840,000 tons at \$42 million
- CONSOL: 240,000 tons at \$8.4 million
- RAG: 200,000 tons at \$6.8 million

In some cases PSNH did use solicitations. For example, in late 2005 PSNH did solicit bids when it sought 260,000 tons of coal for 2007 and 2008. CONSOL, which supplied coal in three of the five procurements listed above, is a frequent and large PSNH supplier. CONSOL operates a number of mines that produce coal that is attractive to PSNH.

The largest of the five major unsolicited purchases was from CONSOL. In late 2003, CONSOL proposed to PSNH to provide a three-year coal supply for Merrimack for the years 2004, 2005 and 2006. CONSOL offered approximately 700,000 tons of coal per year from the Bailey and Buchanan mines of CONSOL. The offer's value exceeded \$64 million. This offer did not come in response to any PSNH market solicitation for this procurement.

PSNH did not make price comparisons to any specific or recent offerings by any competitor. PSNH used JD Energy's forecasted coal prices to determine the competitiveness of the offered CONSOL prices. These JD Energy forecast prices included annual average spot prices, not the three-year contract coal prices offered by CONSOL. Therefore, the price comparisons were not direct. The procurement file contains a message from the Fuel Principal, Coal to the Manager, Fuel Purchasing and Supply stating that, "Given the lack of reliable producers and low fusion coal options, I have gone forward with CONSOL's offer."

Liberty does not believe that the methods used to enter this procurement developed sufficient information to support that conclusion. Moreover, there was a failure to comply with approval requirements, which is particularly troublesome given the lack of a broad solicitation for such a large procurement. The implication of the message contained in the file is that the commitment was made by the Fuel Principal, Coal, whose approval authority is far below \$64 million. In fact, prior to amendment of the procedures within the last several months, even the Vice President, Energy Delivery and Generation, who signed the agreement, did not have sufficient authority.

4. Procurement Adjustments for Ash Content of Coal

The PSNH procurement evaluations of coal for the Schiller Station include a spreadsheet that adjusts the delivered price of coal for various characteristics. PSNH adjusts for the impacts of ash content on disposal costs. PSNH's adjustments for the ash impact on disposal costs range from approximately \$3/ton to over \$5/ton depending on the percent of ash in the coal. This adjustment is appropriate as far as it goes, but PSNH does not account for any ash related impacts on O&M costs. Impacts on operation can increase as the ash content of a coal increases. Higher ash can affect the pulverizer train including the coal silos, feeders, pulverizers, coal pipes, burners and ignitors.

Liberty's experience, based on analysis of ash impacts on O&M costs at many generating stations, indicates that the impact of ash on Schiller or at Merrimack O&M costs would probably fall in the range of \$0.133/ton for 5 percent ash coal to about \$0.324/ton for 8 percent ash coal. Therefore, each 1 percent change in ash content would produce an approximately \$0.06/ton change in operating costs.

The PSNH procurement evaluations of coal for the Merrimack Station do not include ash adjustments of any kind, either for O&M cost impacts, or for ash disposal costs/credits. PSNH stated that ash adjustments in procurement evaluations are not necessary because ash from Merrimack is used beneficially (*i.e.*, not disposed of); therefore, there are no associated costs. Sale of Merrimack ash represents effective cost mitigation. This statement does not, however, respond to the issue of how ash content affects O&M costs.

Liberty believes that PSNH should develop and include an O&M ash factor in its coal procurement analysis in order to fully evaluate the costs to produce power from coals of varying ash content. Liberty has examined all of the data for the procurements from late 2003 through mid 2006 to determine if such a factor had the potential for changing the economic rankings of vendor offerings. In most cases, Liberty could not conduct an effective analysis, because of the unavailability of procurement evaluation data (discussed immediately following in item #5).

Liberty did not find, however, for those procurements where data was available, a case where the use of such a factor would likely have changed relative offer rankings.

5. Procurement Records

The 29 coal procurements that Liberty examined consisted of long-term contracts, short-term contracts, spot procurement, and procurements for test burns. Liberty found significant gaps in procurement records. For 23 of the 29 procurements examined, the RFP, the bid, or both were not available. Instances of missing documentation included some of the largest procurements. Liberty asked PSNH about the data it had provided about the 29 procurements; PSNH confirmed that Liberty had been provided all data that was available.

It has been common practice among utility fuel supply organizations reviewed by Liberty to maintain records comprehensive enough to demonstrate that the procurement process has been a fair and complete one, and that substantial efforts have been made to find coal supplies that will result in the lowest reasonable cost to produce electrical energy. Coal procurement involves very significant costs; it is good utility practice to do and to demonstrate the accomplishment of the following tasks: (a) adequate marketplace canvassing, (b) securing of legitimate bids from multiple suppliers, (c) thorough, accurate, and impartial bid analysis, and (d) application of a sound decision process. The absence of important records of RFPs and bids from suppliers makes it impossible to determine that the optimum coal supply has been obtained. Major gaps in PSNH records make it impracticable to validate that PSNH carried out major procurements effectively and economically.

C. Portfolio Strategy

Utility fuel procurement involves a number of risks and uncertainties, for example:

- A supplier may default on his commitments to deliver, for any number of reasons
- A transportation mode may be disrupted due to weather, labor or other problems
- Market conditions may be unfavorable when major commitment terms expire
- Index-based pricing may prove volatile
- Plant availability may differ from projections
- The spread between purchased power prices and own-generation costs may vary.

Utility fuel procurement organizations have typically developed what is termed a “portfolio strategy” to help manage these and other fuel procurement risks and uncertainties. These strategies generally address the following goals:

- Supplier diversity
- Supply region diversity
- Transportation diversity
- Diversity of contract term
- Commodity diversity
- Approaches to handling price volatility

These goals have generally self-evident benefits. Good practice particularly requires the creation of a mix of long-term, medium-term and spot contracts that will establish a portfolio with agreements entered at different times and having different durations. They should not all expire

within a narrow time window, in order to mitigate the potential for needing to fill too great a percentage of supply at disadvantageous times.

The PSNH fuel procurement organization does not operate under any formalized strategy that documents specific portfolio goals. PSNH representatives do recognize the value of maintaining some degree of diversity, but do not pursue it by seeking to develop a portfolio with measured quantities or ranges for specific elements. PSNH, even though it does not have a formalized portfolio strategy, has achieved diversity of transportation between ocean and rail, because of its favorable location. The Company has also achieved diversity of supply through procurement of both foreign and domestic coal. However, these actions have not been guided by any specific targets or ranges of the type one would normally expect to see as part of a structured approach to portfolio creation and maintenance.

Liberty also observed that the PSNH strategy from late 2003 through mid 2006 included efforts to measure prices offered against fuel management's collective sense of the future direction of market prices. Successful implementation of this approach requires an ability to be more often right than wrong about price direction; *i.e.*, to "outguess the market" with more than random or average success. Liberty observed in particular that reasons for procuring or not procuring coal depended specifically on internal views of where the prices in the coal market were headed. For example, procurement recommendations from the Fuel Principal, Coal often included statements that PSNH should buy coal because "the market appears to be getting very tight at this time", or in post-procurement justifications, PSNH has stated that this was a good time to buy because "at this time, the market was on the verge of taking off".

Liberty fundamentally disagrees with an approach that assumes a greater than average or random ability to predict future market prices. Coal prices simply demonstrate too much variability, particularly in the international coal market in which PSNH participates. Liberty has not found in its experience that even much larger utilities have the capabilities to succeed under such an approach. In fact, good performers tend to reject this approach as a general one, confining their use of market predictions to: (a) brief periods where there is evident disruption (*e.g.*, in the immediate aftermath of the 2005 hurricanes), or (b) in deciding where within an established percentage range to fall with respect to particular contract types (*e.g.*, to remain for six months at 10 percent for spot purchases under a portfolio goal that allows a range of 10-20 percent in expectation of a significant, near-term increase in ocean-transport vessel availability).

An electric utility, even one with much larger requirements than PSNH, simply cannot expect that it will succeed in predicting with a comforting degree of certainty what the fuel markets are going to do in the future. Therefore, experienced utility fuel managers typically employ portfolio strategies and build their fuel management plans and strategies around the uncertainty and the volatility of the fuel markets. That said, however, the more important point is that no firm, single-point or unidirectional predictions should form the basis for inflexible coal procurement plans and strategy. Good practice dictates that they be structured in recognition of the uncertainty that comprises an essential characteristic of the coal market. The portfolio approach to fuel management has been found to be the optimum strategy for addressing this uncertainty.

D. Contract Policy and Management

1. Contract Language

Liberty's analysis of the coal contracts employed by PSNH found that the terms and conditions of these documents in most cases typified what one would find in coal contracts currently in effect in the coal industry. Liberty did find, and interviews with PSNH representatives confirmed, however, that the Company's coal contracts were not strong in establishing remedies for supplier default on delivery quantities. This weakness did not apply to force majeure provisions; PSNH contracts adequately cover such situations. The area of concern rather applies to cases where a supplier fails to deliver required coal quantities for other, non-force majeure reasons.

PSNH experienced such supplier failures a number of times from late 2003 through 2006. PSNH relied upon its good relationships with suppliers and on supplier efforts eventually to make up shortages in scheduled coal deliveries. PSNH also had to go to the coal market on some occasions to secure needed make-up supplies. Section 3 below discusses the overall impact on PSNH customers of supplier delivery default during the time in question.

PSNH fuel managers stated that they have sought in the past to obtain coal contracts that included remedy language covering situations of supplier default on delivery. They reported that they failed to have success. They also indicated that they have now started to be more aggressive in this area of coal contract language, and have recently negotiated more firmly with coal suppliers to strengthen non-delivery remedies. PSNH fuel managers are now reporting that a current RFP for future coal supplies is accompanied by a model contract that does contain new language relating to remedies for situations of supplier default on delivery.

2. Force Majeure Situations

From 2004 through 2006 to date, several of the suppliers providing coal to PSNH made force majeure ("F.M.") claims. Those claims were as follows:

Vendor	Mine	F.M. Start	F.M. End	Cause	Tons Lost
IAC	Mina Norte	11/22/2004	02/14/2005	Bridge washout from floods	None*
CONSOL	Pocahontas	02/16/2005	07/08/2005	Fire in mine	146,000
CONSOL	Pocahontas	09/19/2005	12/20/2005	Failure of mine skip hoist	86,000
TOTAL					232,000

* All tons to be delivered, per discussion below.

PSNH procurement files demonstrated that it had conducted a thorough review of U.S. coal mining literature and publications that documented both force majeure occurrences at the CONSOL Pocahontas mine. Therefore, PSNH decided not to conduct its own investigation, but to rely on the validity of the claims submitted by CONSOL. PSNH personnel did not visit the Pocahontas mine in order to validate the force majeure claims. Liberty found the action taken by PSNH appropriate to this situation.

The Mina Norte coal mine is located in Venezuela. PSNH did take independent action to verify the legitimacy of the force majeure claim submitted by the vendor, Inter-American Coal ("IAC"). First, PSNH used its own Venezuelan contacts that were independent of the vendor and the mine. The Company deals with two different coal laboratories in South America; contacts at these labs were helpful in confirming the flooding in Venezuela that washed out the bridge. PSNH also uses an individual in Venezuela to monitor the loading of coal into vessels on behalf of the Company. This individual verified the bridge washout. PSNH also confirmed the bridge washout through an international consulting firm with which it has a relationship. Finally, the PSNH Manager, Fuel Purchasing and Supply, and the Fuel Principal, Coal made a trip to Venezuela in June 2005 to visit the Mina Norte mine and to inspect the route of coal shipments from the mine to the port. This on-site inspection confirmed that the bridge washout did eliminate the only route for shipment of coal from the mine to the port. Liberty found PSNH confirmatory actions to be appropriate.

The vendor, supplying coal to PSNH from the Mina Norte mine in Venezuela, IAC, has agreed to make up the tonnage lost due to the force majeure claim by delivering it in 2007 and at original contract prices. The tonnage that IAC and PSNH have agreed to carry over into 2007 is 200,000 tons. The agreement resulted from effective negotiations between PSNH and IAC. Any receipt of force majeure makeup coal in 2007 would be coal that contractually IAC was not obligated to provide. This will also benefit PSNH from an overall cost perspective since it is highly likely that the 2007 deliveries at original contract prices will be at prices that are lower than 2007 market prices.

PSNH's access to 200,000 tons of force majeure makeup tonnage in 2007 represents a potentially positive coal supply arrangement, but comes with some uncertainty. IAC provided PSNH a seven-page, July 18, 2006 letter describing a Venezuelan energy-policy change that created financial uncertainty for IAC. The possibility exists that there could be changes to the tonnage commitment, the price, or both.

The preceding table shows that the CONSOL tonnage subject to force majeure, and not to be made up, amounted to 232,000 tons. Liberty calculated that PSNH procured seven shipments in order to make up the lost tonnage. Liberty has calculated that the incremental cost to procure this tonnage (as compared with the CONSOL contract price) was \$5,313,162. Liberty believes that this sum represents a reasonable cost to respond to the contract-authorized loss of coal from CONSOL.

3. Delayed Coal Deliveries

During the period starting in 2003 and continuing through 2005, PSNH experienced a variety of supplier and transportation conditions that caused coal to not be delivered in accordance with originally established schedules. During this time, a total of 1,045,540 tons of coal were involved and PSNH was able to work with its suppliers to reschedule deliveries of this coal at a later time. In most cases, the rescheduling of deliveries was sufficient to meet operational requirements for coal. However, during the eight month period from June 30, 2004 to February 28, 2005, rescheduling of deliveries was not sufficient to meet operational requirements, and PSNH had to go to the market on an emergency basis ten times to procure coal required to sustain its operations. During this period of time, a total of 237,378 tons of coal were procured on an

emergency basis. PSNH has calculated, and Liberty concurs, that the additional costs to procure this coal were \$9,695,175 because it had to go into the market on an instant basis during this time period, without having the strength of any bargaining position, and procure 237,378 tons of coal at much higher spot prices.

However, there were future savings for PSNH that offset the costs of procuring these 237,378 tons of coal. PSNH negotiated with the suppliers involved in the 1,045,540 tons of delayed coal, and the suppliers agreed that they would deliver this coal in the future (to be called delayed or carryover coal), and that at the time of the future delivery of this coal, it would be delivered at the price that would have been in effect earlier at the time of originally scheduled delivery. The savings resulted because market prices of coal were rising, and these deliveries of delayed coal at original contract prices enabled PSNH to avoid paying the higher current market prices for coal.

There were four suppliers involved in these delayed shipments of coal, IAC, CONSOL, Glencore and RAG. The coal from IAC was delayed because of conditions that could have been claimed as force majeure. PSNH fuel managers have reported that on four of these occasions, there were circumstances at the IAC coal mines in Venezuela that could have been classified as force majeure situations. These situations related to road flooding, mine flooding, and washout of small bridges. PSNH worked with IAC on each of these four events to avoid having IAC claim force majeure, and arranged for delivery of the tonnage not delivered at the time to eventually be delivered in the future, and to be delivered at the original contract prices.

Three different coal shipments from CONSOL were delayed because of the inability of the NS and Boston & Maine Railroads to meet the required delivery schedules. One shipment of coal from Glencore and two shipments of coal from RAG were delayed because of the unavailability of the limited number of self-unloading shipping vessels. As was the case with IAC, PSNH was able to negotiate with each of these three suppliers such that the delayed shipments of coal would be delivered in the future, and delivered at the original contract prices. The negotiations with CONSOL were especially meaningful because the coal contract with CONSOL specified that in the event of rail delays, there were no obligations to deliver the required coal.

PSNH has calculated that there will be an approximate savings on the delivery of the 1,045,540 tons of delayed coal of \$27,761,882 because at the time of eventual delivery of these tons, the market price of coal will have risen significantly from price levels that had been in effect at the earlier time the coal was originally scheduled to be delivered.³ Thus, this delivery of delayed coal replaced higher priced coal that did not have to be purchased by PSNH. The estimated savings of \$27,761,882 associated with receipt of the delayed coal shipments more than offset the costs of \$9,695,175 that were required to purchase replacement coal on an emergency basis.

These carryover arrangements allowed PSNH to receive in 2004 through 2007 coal that should have been delivered in 2003 through 2006. Prices originally established for 2003 through 2006 delivery applied, but PSNH did have to pay the transportation rates prevailing at the time of actual delivery, except under contracts that provided for pricing on a delivered basis. PSNH was willing to enter into arrangements to have this carryover tonnage delivered in the future because it believed that future coal prices would be higher than the prices under the contracts associated

³ Response to Liberty DR-063.

with this carryover coal tonnage. In the case of IAC, PSNH believed that receipt of 704,002 tons of low priced coal in the future was a better alternative than having the supplier claim force majeure and consequently not receive any of this low-priced coal in the future. In the case of CONSOL, PSNH believed that receipt of 217,316 tons of coal in the future was a better alternative than having the supplier not deliver these tons, even though the contract excused this delivery in these circumstances. The delayed Glencore coal involved one vessel shipment that slipped from one year to the next because of unavailability of geared vessels. The delayed RAG coal involved two vessel shipments, roughly one year apart, that slipped from one year to the next because of unavailability of geared vessels. Thus, none of these ten delayed shipments of coal were within the control of either PSNH, or its suppliers, and could not be considered any type of delivery default.

Delivery of the carryover tonnage is continuing through 2007, and is scheduled to be completed by the end of 2007. Calculations by PSNH have already shown that this delivery of delayed coal (carryover tonnage) in 2004 through 2006 has resulted in a significant savings that mitigates the price premium PSNH paid earlier to replace some of this coal on an emergency basis. This has resulted because market prices at the time of actual delivery have been higher than the contract prices paid on the carryover tonnage. The carryover deliveries in essence displaced purchases that PSNH would otherwise have made during the period of actual delivery.

4. Boston & Maine Railroad

The Boston & Maine Railroad, also known as Guilford Rail, or Pan Am railways, delivers Merrimack Station coal. This rail line runs approximately 200 miles from its connection near Albany, New York with Norfolk Southern, across Massachusetts and up into the Merrimack Station in New Hampshire. Movements on this railroad proved exceedingly slow during the 2004-2005 winter. PSNH moved several trains to Baltimore, where the coal was loaded onto barges and then delivered into both New Haven, CT and Providence, RI. From these two ports, the coal moved by rail, first on the Providence & Worcester Railroad and then on Guilford Rail from Gardner, MA to the Merrimack Station.

The problems with slow movements on the Boston & Maine in 2004 and 2005 have been well documented in other proceedings. PSNH has taken actions to address and improve this situation through senior level management meetings between the Company and the railroad. Such meetings have not produced significant improvement. In addition, a consortium of New England companies, including PSNH, took their concerns to the Surface Transportation Board. Those efforts also have not produced significant improvement in Boston & Maine rail service. Liberty found PSNH's approach and actions in addressing rail problems on the Boston & Maine to be reasonable.

The slow rail deliveries on the Boston & Maine have forced PSNH into the marketplace to procure spot coal it would not have needed, had Boston & Maine transport supported normal commitments from PSNH's coal suppliers for Merrimack Station. PSNH has also had to devise alternative delivery routes to maintain Merrimack coal inventory levels at acceptable levels. Such alternatives included the alternate arrangements described above, and have also included delivery of coal for Merrimack to the Schiller Station via water, and then truck delivery to

Merrimack. PSNH has experienced both increased costs and transportation costs as a result of problems with the Boston & Maine.

Liberty sought to quantify the impact of slower rail deliveries on the Boston & Maine. PSNH identified several coal procurements in 2005 that resulted at least in part from rail delays.⁴ Subsequently, as Liberty sought to separate the effects of other delays in shipments occurring at this same time, PSNH stated that some of the incremental 2005 procurements it had identified were actually due to mining operations at the Mina Norte mine in Venezuela.⁵ Liberty concluded that there probably were some extra costs incurred in 2005 due to rail delays, but that they are included in the delayed coal delivery calculations presented in the prior item, #3.

5. Inventory Control

Inventory control comprises an important aspect of contract management; coal contracts feed coal inventory, and ineffective management of coal inventories can cause disruptions to plans for coal procurement. Such an unplanned disturbance occurred in early 2004.

The coal fired units at the Merrimack station had been running especially well in late 2003 and early 2004, resulting in higher than normal coal consumption. In early 2004, Merrimack Station personnel advised the Fuel Department that the station had on hand only 15,000 tons, or half of the 30,000 tons of high sulfur coal shown on coal-inventory records. PSNH knew that its normal contract supply of high sulfur coal from the Emerald Mine was not available because the mine was then operating in a seam of low sulfur, high ash fusion temperature coal that was not acceptable. Therefore, PSNH had to undertake immediate procurement action in order not to jeopardize the Commission's minimum inventory requirements. PSNH made the following purchase of high sulfur coal:

Date	Tons	\$/ton FOB Mine
01/27/04	20,000	37.00

PSNH's contract price for high-sulfur contract coal was approximately \$30/ton at the time of this purchase. The purchase therefore came at a premium of \$7.00/ton. Liberty therefore calculates the penalty paid by PSNH as a result of this procurement as follows:

Date	Tons	Penalty - \$/ton	\$ Penalty
01/27/04	20,000	7.00	140,000

Had proper inventory control measures been in effect, Liberty believes that the urgency in securing coal would not have existed. Any declines in high sulfur coal inventory could have been corrected on a more gradual basis under the existing contracts by using the monthly variability options as provided in the contracts. Even under the urgent conditions that came to pass, Liberty would have expected that PSNH would have at least been able to demonstrate that the market had been canvassed through phone, FAX or e-mail inquiries in order to confirm that the best

⁴ Response to Liberty Data Request Q-LIB-029.

⁵ Response to Liberty Data Request Q-LIB-054.

possible price was being obtained for the coal required. Given the operational conditions known for some time in advance of this purchase, both in terms of Merrimack operations, and conditions at the Emerald Mine, Liberty believes that the urgent procurement at high prices should not have been necessary.

PSNH fuel managers reported that after this occurrence, they instituted improved communication between personnel at the station and the Fuel Department in order to improve awareness of coal inventory status, and also developed a plan for the Fuel Principal, Coal to visit the station more frequently in order to conduct visual inspections of the coal piles.

However, in spite of these measures, a second instance of inventory control problems occurred in late 2005 when Merrimack Station personnel advised that the station did not have the 35,000 tons of high sulfur coal shown on inventory records, but only 18,000 ton of available high sulfur coal. At this time, PSNH was no longer under any obligation to maintain minimum inventory levels, per a recent Commission Order. Station personnel were aware that consumption of high sulfur coal had been higher than normal, and in fact extra coal had been ordered under the existing coal contract such that all available coal had been used before the end of the contract year. Overall, station coal inventory levels were sufficient, but PSNH did procure an extra 7,935 tons of high sulfur coal on the spot market in order to ensure good unit operation through the winter months.

E. The Siwertell Unloader

For many years, PSNH has used an auger type unloader (called the "Siwertell"), at the Schiller Station to unload ocean vessels and barges. However, the Siwertell saw only limited use from late 2003 through mid 2006, because of its deteriorating condition. PSNH structured its ocean transportation of coal into Schiller to rely on belted self-unloading, or geared, ocean vessels, which do not require the Siwertell's use. The availability of such vessels has been limited during this period; therefore, PSNH has not been able to rely upon them to meet its schedule requirements consistently. PSNH did use the Siwertell to unload some barges at Schiller, but on a limited basis.

PSNH recognizes that the reduced use of the Siwertell for vessels that cannot self-unload at Schiller has handicapped operations and limited delivery options. The Company is consequently evaluating all of its options for improving coal handling and unloading at Schiller, including a complete refurbishment of the existing equipment or the replacement of the Siwertell. PSNH commissioned two separate studies to help in the evaluation of this matter. The first consisted of a study of alternatives for unloading coal at Schiller, which its consultant, Power Engineers, completed in the spring of 2006.⁶ This study evaluated various factors, considerations, and costs associated with a number of discharge equipment installations or refurbishments. The second study, currently underway is broader, including an evaluation of overall coal handling and unloading strategy and consideration of such issues as size of ships, dock modifications, conveying systems, use of other ports, and environmental considerations. This study is estimated to be completed later in 2007.

⁶ Response to Liberty Data Request O-LIB-050.

PSNH has indicated that there are provisions in the 2007 budget to deal with the unloading situation at Schiller. The Company has not yet selected its preferred option, but anticipates the availability of some type of improved coal unloading system in operation at Schiller in late 2008. While the eventual option for resolution of the Siwertell situation has not been selected, Liberty does believe that it is reasonable for PSNH to make some investment at Schiller in order to improve the coal unloading situation and provide additional flexibility in coal procurement operations.

The general unavailability of the Siwertell to unload certain types of vessels at Schiller began to affect PSNH procurement decisions as early as the last quarter of 2003. Comments in procurement files at that time note the selection of a certain type of procurement because of the decreasing availability of self-unloading vessels.⁷ An early 2004 procurement recommendation stated that an "option would be to get high sulfur barges out of Norfolk and take our chances with the Siwertell. There are no self-unloaders available for the remainder of the year."⁸ Another early 2004 comment addressed the limitations imposed by the inability of the Siwertell to unload gearless vessels by noting that:⁹

As discussed in our meeting with Schiller personnel, the Siwertell will not be a viable option to bring bulk vessels in. Any upgrade to the unloading system will most likely occur in late 2005 or spring of 2006, if at all. Schiller has no option but to receive belted ships. This reduces the coal mines due to the fact that the larger mines will have first option on the belted ships.

The available information makes clear that Siwertell issues have restricted PSNH coal procurement from late 2003 through 2006. These issues have affected Schiller and Merrimack. A significant portion of Merrimack coal arrives first at Schiller and is then transshipped via truck to Merrimack. The impacts have affected the mines that PSNH considers as sources of supply and the transportation modes (belted versus non-belted, or gearless, vessels) for delivering coal to Schiller. Given the restrictions on sourcing and transportation alternatives, Liberty believes that PSNH has not moved with sufficient dispatch to address the situation.

PSNH has stated that part of the reason for lack of investment in better unloading facilities at Schiller has been the possible sale of PSNH generating stations. Liberty does not view that possibility as an impediment to optimizing plant operations. The earliest data available to Liberty indicates that the problem was acknowledged as early as late 2003; it appears likely that the problem was influencing coal procurement even earlier. The first sign of definitive corrective action, in the data available to Liberty, was the commissioning of the Power Engineers study sometime in early 2006. Once a decision is made on the appropriate course of action to improve the coal unloading situation at Schiller, it will take approximately another two years before any such improvements can begin to have a positive impact on coal and transportation supply options.

⁷ Response to Liberty Data Request Q-LIB-019, #2.

⁸ Response to Liberty Data Request Q-LIB-019, #4.

⁹ Response to Liberty Data Request Q-LIB-019, #5.

Liberty believes that PSNH has reduced its flexibility in coal procurement by continuation of the unloading equipment issues. Essentially, PSNH has been restricting its options for procuring coal in the international market, because it must rely on obtaining use of the few belted self unloaders available, or on buying coal from a mine that controls sufficient numbers of belted self unloaders. Only seven or eight belted self unloading vessels operate in the PSNH market area. PSNH has stated that the larger coal mines have the first option on the few belted vessels that might be available. PSNH has therefore had to buy coal from those coal mines having control over belted self unloaders.

Just prior to finalization of this report, Liberty was provided information from PSNH that did indicate the Gypsum Centennial vessel had been chartered by PSNH for regular service between South America and New Hampshire. However, Liberty believes that one such self-unloading vessel is not sufficient to resolve the constraints imposed by the unloading equipment issues at Schiller. Further, the Gypsum Centennial is restricted to certain loading ports and coal mines because she has no cranes to self-load.¹⁰

The cost impact of this restriction on coal procurement is difficult to quantify, because PSNH has not had the ability to compare market opportunities for gearless cargo vessels against those available with belted self-unloading vessels. The only accurate method for comparing alternatives would have been for PSNH to request quotations for supply of coal on both geared, and gearless, cargo vessels; the material supplied to Liberty did not provide any evidence that such comparisons had been conducted. However, based on the wide range of coal prices typically seen in response to PSNH solicitations, it would not be unreasonable to estimate that such cost impact could amount to \$1.00 per ton of coal on the 700,000 tons of ocean delivered coal moving through the Schiller Station on an annual basis. Liberty believes that there would probably not have been any freight rate differences between gearless cargo vessels and belted self-unloading vessels. PSNH is in a favorable position with respect to its existing freight rates on belted self-unloaders, because the few available vessels are operating continuously in East Coast trade, and only one day away from a return cargo to Venezuela or Columbia. Thus, the Company is not paying freight rates based on empty ballast returning to the coal mines, but instead on full cargos for each leg of the round trip between the coal mines to PSNH and return.

In summary, the availability of the Siwertell, or its equivalent would have offered PSNH the option to take gearless vessels, thus enabling the Company to participate in a coal market with access to a broader field of coal mines, which would allow for more robust competition among suppliers. As a general matter, increasing the level of competition among suppliers can be expected to produce lower coal prices.

¹⁰ Response to Liberty Data Request Q-LIB-019, #25 & #28.

III. Conclusions

- A. The procedures for procurement of fossil fuel do not explicitly address the full scope of fuel management activities. (*Recommendation IV.A*)**

The objective of fuel procurement, as stated in existing procedures, (Procedure FF 1.00, Revision 4, Fossil Fuels Procurement and Inventory Management) is too vague. The objective statement is unnecessarily open-ended and it does not establish sufficient direction to accomplish a concisely stated goal. A further significant weakness of the PSNH procedures is that guidance and strategy statements are not provided as to what kind of a fuel supply portfolio is acceptable, and how this portfolio will be created and maintained in order to balance diversity of the essential elements of fuel procurement such as commodity, contract term, supplier and price in an effort to mitigate the inherent risks associated with fuel procurement. The concept of hedging in fuel procurement is not directly mentioned, other than to state that use of derivative products is prohibited in fuel procurement. Hedging encompasses more than just the use of derivative products, and these broader hedging tools are not mentioned. Finally, the procedures do not address the necessary mechanics related to the details of fuel solicitations and procurement evaluations, or establish the necessary framework for controls of this important process.

PSNH does maintain a separate strategy document entitled "Fuel and Emission Strategy." This document does provide overall fuel procurement strategy in terms of procuring fuel on the lowest evaluated cost basis, but it is a stand-alone document and not linked to the fuel procurement procedures as it should be.

- B. Documentation gaps render PSNH unable to demonstrate that it has procured coal that will result in production of the lowest reasonable cost of electrical energy delivered to the busbar. (*Recommendation IV.B*)**

Three weaknesses in the PSNH fuel procurement operation have put it in a position of not being able to demonstrate that it has procured coal that will result in the production of the lowest reasonable cost of electrical energy delivered to the busbar:

- The appropriate levels of management have not consistently approved procurements.
- Procurements have not consistently resulted from a full solicitation of the marketplace; for some major procurements, there have not been any market solicitations.
- Procurement records have major gaps in important areas; *i.e.*, what suppliers were contacted when procurement was necessary, and what kinds of bids were received from suppliers.

A less significant concern is that PSNH does not take into consideration the full range of ash-content impacts when it analyzes offers.

Liberty examined procurement records provided by PSNH in support of 29 purchases of coal from late 2003 through mid 2006. Liberty's conclusions have been developed as a result of examination of these records, as well as interviews on the contents of these records.

A utility should base coal procurement on processes that clearly demonstrate thoroughness in seeking the best possible combination of coal prices, terms and conditions. The end result should be a coal supply that produces the lowest reasonable cost of electrical energy delivered to the busbar. It is not sufficient for a fuel procurement organization to claim that it knows the marketplace, and therefore knows what suppliers to contact, or that it knows whether or not an unsolicited and offered price for coal is as good as some other supplier might offer. The only effective assurance that a fuel procurement organization can have over time is to make a routine practice (subject to reasonably controlled exceptions) of actually contacting the marketplace through broad solicitations. The positive effect of broad solicitations is that they will uncover coal supplies, and prices, that the utility did not know about. Further, such solicitations will continue to inform the marketplace of the ongoing requirements of the utility so that in the future, suppliers may better position themselves in order to respond.

Liberty found significant gaps in procurement records. Among the 29 procurements examined, there were 23 cases where the RFP, the bid, or both, were not available. Some of the largest procurements exhibited such a lack of documentation.

The time period examined during this project was unusual for PSNH because of several supplier force majeure situations and persistent delays of coal shipments on the railroad. In these situations, prompt action is required to obtain the necessary fuel supplies, but this does not mean that the necessary procedures for longer term commitments can or should be bypassed, as was the case at PSNH. Five different procurements for supply covering a two or more year period were finalized without the appropriate market solicitations; such longer term procurements were for more than just replacement of force majeure tonnage, or to compensate for slow rail deliveries. Liberty does not believe that such conditions provide sufficient justification for compromising normal procedures for full market solicitations and analyses.

Most utility fuel supply organizations maintain comprehensive procurement records that demonstrate that their procurement process has been a fair and complete one. Coal procurement involves very large expenditures; it is important to demonstrate that the marketplace has been adequately canvassed, that there have been legitimate bids from multiple suppliers, that these bids have been adequately and impartially analyzed, and that there has been a sound decision process. Without records of RFPs or bids from suppliers, it is not possible to determine that the optimum coal supply has been obtained.

**C. PSNH fuel procurement is not based on a formalized portfolio approach that comprises an important element of good fuel procurement practice.
(Recommendation IV.C)**

The PSNH fuel procurement processes do not follow from a formal strategy, but consist more of reacting to the marketplace and its prices, unsolicited offers, and perturbations in supply due to inventory problems, rail delays or coal mine production problems. PSNH does not have a formal plan or a strategy that concisely addresses the issues of:

- Supplier diversity
- Supply region diversity
- Transportation diversity

- Diversity of contract term
- Commodity diversity
- Approaches to handling price volatility.

PSNH fuel procurement is also based on the premise that observations by Fuel Department personnel about the direction of market prices should form a central element in making procurement decisions. The problem with this approach is that variable and volatile coal prices, especially in the international coal market in which the Company participates, make it unwise to place a helpful degree of certainty on internal or external predictions of future prices. The important point is that no one can predict with a comforting degree of certainty what the fuel markets are going to do in the future. The more important point is that no firm, single-point or unidirectional predictions should form the basis for inflexible coal procurement plans and strategy. Prudence dictates that they be structured in recognition of the uncertainty that comprises an essential characteristic of the coal market.

**D. PSNH coal-contracts do not fully address non-delivery remedies.
(Recommendation IV.D)**

In general, with one exception, Liberty found that the coal contracts employed by PSNH contained terms and conditions typical of coal contracts currently in effect in the coal industry. The exception relates to the lack of any provision in these contracts for remedies in the event of supplier default on delivery of coal. The exception is notable in view of the fact that coal contracts held by other utilities with the same suppliers used by PSNH do contain remedy language to cover events of supplier default on delivery of coal.

From late 2003 through mid 2006, PSNH did experience delays in coal deliveries that were not due to force majeure, and had to rely on its good relationships with these suppliers to work out arrangements for delivery of this coal at a later date. However, without contract remedy language, there have been no provisions to compensate PSNH for the fact that on instances of supplier delivery default, PSNH has been forced into the marketplace to procure coal on an instant basis. The economic consequences of this are discussed in Conclusion III.F.

E. PSNH has experienced several situations where coal suppliers have made legitimate claims of force majeure.

During the period from 2004 through 2006 to date, several of the suppliers providing coal to PSNH submitted force majeure (F.M.) claims. These claims were as follows:

Vendor	Mine	Start of F.M.	End of F.M.	Tons of Coal Forfeited	Cause of F.M.
Inter-American Coal	Mina Norte	11/22/2004	02/14/2005	All tons to be delivered	Bridge washout due to floods
CONSOL	Pocahontas	02/16/2005	07/08/2005	146,000	Fire in mine
CONSOL	Pocahontas	09/19/2005	12/20/2005	86,000	Failure of mine skip hoist
TOTAL				232,000	

While not required under force majeure situations, the vendor, IAC, supplying coal to PSNH from the Mina Norte mine in Venezuela has agreed to make up the 200,00 tons of force majeure coal not delivered by delivering it in 2007, and at original contract prices.

The 232,000 tons of CONSOL tonnage subject to force majeure will not be made up. Liberty has calculated that the incremental cost to procure replacement tonnage for this lost tonnage was \$5,313,162, and that this sum represents a reasonable cost to respond to the contract –authorized loss of coal from CONSOL.

F. PSNH has responded adequately to delays in delivery of its coal supplies.

PSNH experienced ten occasions between 2003 through 2005 where 1,045,540 tons of coal were not delivered on originally established schedules. Through effective negotiations, PSNH was able to work with its coal suppliers and have all of these tons of coal delivered in the future. The suppliers involved were IAC, CONSOL, Glencore and RAG. The missed deliveries from IAC were due to conditions that could have been claimed as force majeure by IAC, but were not because of negotiations between PSNH and the supplier. The missed deliveries from CONSOL were due to railroad delays; the contract with CONSOL excused such deliveries in the event of rail delays, so the negotiations leading to delivery of this coal at contract prices was an important accomplishment for PSNH. The missed deliveries from Glencore and RAG were due to unavailability of the required self-unloading vessels. Thus, none of these situations could be considered any type of delivery default.

Liberty and PSNH have calculated that there were savings on this “delayed or carryover” coal, which was generally delivered in later years at the originally contracted price. This savings resulted because the prices in the market at delivery times exceeded the contract prices associated with delivery of the carryover coal. This savings of \$27,761,882 on delivery of 1,045,540 tons of delayed coal, delivered over a three-year period, more than offset the costs of \$9,695,175 associated with procurement of 237,378 tons replacement coal that had to be obtained on an emergency basis during an eight month period from mid 2004 into 2005.

G. PSNH has responded adequately to delivery delays on the Boston & Maine Railroad.

The problems with slow movements on the Boston & Maine in 2004 and 2005 have been well documented in other proceedings. Liberty does not duplicate earlier proceedings, but does note in summary that PSNH has seriously tried to improve this situation through senior level management meetings between the Company and the railroad. Such meetings have not produced significant improvement in Boston & Maine rail service. Also, a consortium of New England companies, including PSNH, took their concerns related to the Boston & Maine to the Surface Transportation Board. Similarly such efforts have not produced significant improvement in Boston & Maine rail service. Liberty has found no reason to fault management’s approach and actions in addressing rail problems on the Boston & Maine.

H. Inventory control problems at Merrimack have caused increased coal procurement costs. (Recommendation IV.E)

PSNH has experienced a situation where poor inventory control at the Merrimack Station forced it to enter the coal market and instantly procure coal. In this situation, the inventory of high sulfur coal was realized to be significantly less than the amount carried on inventory records. Such procurement was necessary in order that the Commission minimum inventory not be jeopardized. The situation occurred in early 2004 when the inventory of high sulfur coal was only 15,000 tons instead of the 30,000 tons as indicated on inventory records.

Liberty believes that operational conditions were such that PSNH should have realized there was unusual pressure on high sulfur coal inventory. Urgent procurement at high prices should not have been necessary. Liberty believes that PSNH could have anticipated the operational pressures on high sulfur coal inventories because the Merrimack units were operating so well. Liberty believes that PSNH should also have known well in advance that its normal high sulfur supply from Emerald was not available, given mine operation in a low sulfur seam of coal, instead of a high sulfur seam. Liberty believes that PSNH could have monitored inventory levels more closely, and could have used the normal coal contract provisions for variability in deliveries to correct any imbalances on a more gradual basis. Further, even though prompt action was required by PSNH to obtain the necessary coal supplies, Liberty would have expected to find, but did not find, evidence that PSNH had canvassed the market through phone, FAX or e-mail inquiries in order to confirm that the best possible price was being obtained for the coal required.

PSNH procured 20,000 tons of coal at a price higher than current contract prices for similar coal. Liberty has calculated the penalty incurred by PSNH as a result of this purchase was \$140,000. Thus, the total extra cost associated with poor inventory control at Merrimack was \$140,000.

I. Inaction on the part of PSNH to correct a restrictive coal unloading situation at the Schiller Station has caused PSNH to suffer reduced flexibility in coal procurement. (Recommendation IV.F)

For many years, PSNH has used an auger type unloader at the Schiller Station, called the Siwertell, to unload ocean vessels and barges. However, during the period examined by Liberty from late 2003 through mid 2006, the Siwertell has seen limited use because of its deteriorating condition. As a result, PSNH has structured its ocean transportation of coal into Schiller on only self-unloading, or geared, ocean vessels. During this time, the availability of such vessels has been limited, and they have not always been available on the schedule desired by PSNH.

The general unavailability of the Siwertell to unload non-self-unloading, or gearless, vessels at Schiller was beginning to impact PSNH procurement decisions as early as the last quarter of 2003 when there are comments in the procurement files indicating that a certain procurement was recommended because the availability of self-unloading vessels was decreasing. PSNH continued to comment in its procurement records that the condition of the Siwertell was constraining coal deliveries into Schiller.

Siwertell related restrictions on PSNH coal procurement have continued for at least the three year period covering late 2003 through 2006. Impacts on PSNH have related both to coal supply for Schiller as well as for Merrimack, since a significant portion of Merrimack coal arrives first at Schiller and is then transshipped via truck to the Merrimack Station. And the impacts also have been on availability of coal mines to consider as sources of supply, as well as the transportation mode (belted versus non-belted, or gearless, vessels) to deliver coal into Schiller.

Clearly, with competition restricted, and options limited, PSNH has been unusually slow to respond to this situation. PSNH has stated that part of the reason for lack of investment in better unloading facilities at Schiller has been the possible sale of PSNH. However, Liberty believes that such potential does not justify failure to invest in improved unloading capability at Schiller, especially to the extent that such lack of investment has led to sub-optimal purchasing decisions.

Liberty believes that PSNH has compromised its flexibility in coal procurement as a result of the continuation of the unloading equipment issues. Essentially, PSNH has been restricting its options for procuring coal in the international market, because it must rely on obtaining use of the few belted self unloaders available, or on buying coal from a mine that controls sufficient numbers of belted self unloaders. The cost impact of this restriction on coal procurement is difficult to quantify since PSNH has not been in a position to compare market opportunities using either gearless cargo vessels or belted self-unloading vessels.

The availability of the Siwertell, or its equivalent would have offered PSNH the option to take gearless vessels, thus enabling the Company to participate in a coal market with access to a broader field of coal mines, which would allow for more robust competition among suppliers. As a general matter, increasing the level of competition among suppliers can be expected to produce lower coal prices.

IV. Recommendations

A. Revise the current procedures for fuel procurement – Procedure FF 1.00, Revision 4, Fossil Fuel Procurement and Inventory Management. (*Conclusion III.A*)

A reasonable objective statement for the fuel procurement process would be to “provide the methods for obtaining and maintaining adequate fuel supplies that will minimize busbar cost over time consistent with the required fuel quality necessary for generation of electrical energy and compliance with environmental requirements.” The procedures must address the issue of fuel portfolio strategy, and establish both the philosophy supporting a fuel portfolio strategy, as well as identify the general parameters and ranges that are important in accomplishing this strategy.

Recommendation IV.C provides additional detail regarding those concepts typically found in utility fuel portfolio strategy documents. The procedures must address the issue of fuel price volatility and how procurement will be structured in order to minimize the risks to which PSNH is exposed as a result of the unpredictable swings in prices of fuels. Fuel hedging must be addressed as part of any discussion related to minimizing the risks associated with fuel price

volatility. The procedures must establish the procedures for solicitations and bid evaluations, as well as the necessary controls to ensure both the confidentiality of incoming fuel bids, as well as the impartiality of bid analyses. These standards are necessary for effectiveness of the current organization, as well as for training of any personnel additions or replacements to the existing organization. Revised procedures must strike the proper balance between control and flexibility in the fuel procurement process, so the Fuel Department has the ability to move quickly in the dynamic energy marketplace, and yet not be constrained by unnecessary bureaucracy or time consuming ritual that no longer has meaning in today's environment.

Liberty also believes that the current strategy document, "Fuel and Emissions Strategy" should either be combined with the current fuel procedures, or linked to the fuel procedures through references in the fuel procedures to this strategy document.

B. Overhaul its coal procurement processes to permit them to demonstrate that PSNH has used solicitation and evaluation processes that result in the lowest reasonable cost to produce electrical energy at the busbar. (Conclusion III.B)

PSNH must overhaul its coal procurement processes to incorporate the following features on an ongoing basis:

- Assure ongoing adherence to the designated approval authorities of each level of management involved in coal procurement.
- Consistently (with delineated exceptions for defined circumstances) procure coal on the basis of solicitations issued to the full marketplace, and justify procurements resulting from unsolicited offers through either an RFP process, or other legitimate marketplace cross-checks of the prices, terms and conditions being offered.
- Modify the procurement evaluation models currently being used to account for ash impacts on O&M costs at both Schiller and Merrimack, and on ash disposal costs/credits at Merrimack.
- Diligently maintain procurement records so that the files of the Fuel Department demonstrate the market to which solicitations have been issued, the full responses of bids from this marketplace, and the analyses conducted on the bids, so that the complete package of documentation demonstrates that PSNH has in fact procured coal that will result in the lowest reasonable cost to produce electrical energy at the busbar.

C. Develop a formalized and documented portfolio strategy that supports coal procurement by addressing and mitigating the risks associated with essential elements of fuel procurement such as commodity, contract term, supplier and price. (Conclusion III.C)

PSNH should develop a formalized and documented portfolio strategy that supports coal procurement by incorporating the following elements:

- Definitions and parameters for supplier diversity so that coal supply is not unduly concentrated in one coal supplier.
- Definitions and parameters for supply region diversity so that coal supply is not unduly concentrated in any one coal supply basin or region.

- Definitions and parameters for transportation diversity so that transportation of coal is not unduly concentrated in any one transportation provider, or mode of transportation.
- Definitions and parameters for diversity of contract term that defines the acceptable mix, or acceptable percentage ranges, of long-term, medium-term and spot contracts so that the portfolio will represent commitments made at different times, and for different periods of time, and so that all contracts do not expire at the same time, thereby forcing the utility into the market at a time that may be disadvantageous.
- Definitions and parameters for commodity diversity that indicate the ranges of the percentage mix between coal, fuel oil, natural gas and wood.
- Policies and procedures for fuel hedging that address issues of fuel price volatility.

Utility portfolio strategies do not specify rigid adherence to fixed percentage compliance with the above goals, but rather specify ranges that are generally acceptable. Thus, even smaller utilities the size of PSNH have the opportunity to develop portfolio strategies that provide guidance for establishing ranges of parameters related to commodity, contract term, supplier and price that minimize the risks associated with fuel procurement. Such strategies can be developed without adversely impacting utility costs or bargaining positions. The important point is that the strategy should recognize the variables in fuel contracting that must be considered in advance of contracting, as opposed to after the fact rationalization for action taken.

While the focus of Liberty's report is on coal, it is important to note that typical portfolio strategies address all fuels used for power generation. Such strategies therefore provide a broader view of fuel diversity and indicate how the ranges of diversity available between the various fuels can be used to optimize the mix between lowest price generation, fuel supply reliability, and fulfillment of environmental goals.

The intent of a portfolio strategy is that the fuel procurement process becomes more ordered, and not so reactive to all of the many variables, risks, and uncertainties of the marketplace. It addresses the reality that it is very difficult for a Fuel Department to predict future prices with any degree of certainty. It also acknowledges that such a strategy is the basis experienced utility fuel managers typically employ to create their fuel management plans and deal with the uncertainty and the volatility of the fuel markets.

D. Attempt to negotiate the addition of language in new coal contracts that deals with remedies in the event of supplier default on delivery of coal. (Conclusion III.D)

PSNH acknowledges that there is an opportunity for improvement in its contract language in this area, and has indicated that in the future it will be more aggressive in working with suppliers to write contracts that do contain language covering remedies in the event of supplier delivery default. PSNH has indicated that new RFPs for coal supply now contain a new model contract that includes suggested language for remedy in the event of supplier default.

E. Do not pass increased coal procurement costs resulting from inventory control problems at Merrimack to customers. (Conclusion III.H)

Liberty believes that proper inventory control is an important aspect of fuel management, and that when actual coal inventory levels continue to be in line with book inventory levels, then coal procurement can continue in an orderly fashion, and in accordance with plans. When there are unexpected variations between actual coal inventory levels, and book inventory levels, then fuel procurement must occur almost instantaneously. In such cases, the utility is essentially at the mercy of the coal market and must pay whatever the current prices for spot coal happen to be. The basic principle is that instantaneous coal procurement is not consistent with good utility fuel management, and any associated costs should not be passed on to ratepayers.

In the situation where PSNH had to enter the coal market and buy coal on an instantaneous basis, it suffered extra costs, above and beyond its normal coal contract costs, of \$140,000. These costs were incurred because of fuel management problems, and should not be passed on to ratepayers.

In addition, PSNH must continue to enforce the inventory control measures it implemented after this occurrence in order to prevent the recurrence of such inventory control problems at Merrimack.

F. Expedite efforts to correct the restrictive coal unloading situation at the Schiller Station. (Conclusion III.I)

PSNH has known since at least late 2003 that its inability to unload gearless vessels on a consistent basis at the Schiller Station has adversely impacted coal procurement operations. Definitive corrective action was not taken until early 2006, when a study to be conducted by the Power Engineers consulting firm was commissioned. The purpose of the study was to evaluate various factors, considerations and costs associated with a number of discharge equipment installations or refurbishments. A second study is currently underway to evaluate the overall coal handling and unloading operations at Schiller. The results of these studies should provide PSNH with sufficient information to make optimum decisions related to Schiller coal handling and unloading operations. PSNH has indicated that there are provisions in the 2007 budget to deal with the unloading situation at Schiller, and that while an exact option has not yet been selected, it is anticipated that in approximately two years there will be some type of improved coal unloading system in operation at Schiller.

PSNH must expedite resolution of this coal delivery problem at the Schiller Station such that the Siwertell, or its equivalent, will be available to PSNH as soon as possible. The option to take gearless vessels would enable PSNH to gain access to a broader field of coal mines with the associated increase in competition and the subsequent lower coal prices that result.