

THE STATE OF NEW HAMPSHIRE  
BEFORE THE  
NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION

**APPLICATION FOR A PUBLIC INTEREST FINDING  
TO MODIFY SCHILLER STATION GENERATING FACILITY  
AND  
REQUEST FOR COST RECOVERY OF SUCH MODIFICATION**

Docket No. DE 03-XXX

TESTIMONY OF  
GARY A. LONG,  
WILLIAM H. SMAGULA,  
ELIZABETH H. TILLOTSON  
AND  
RHONDA J. BISSON

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- 1 Q. Please state your names, business addresses and positions.  
2 A. My name is Gary A. Long. My business address is PSNH Energy Park, 780  
3 North Commercial Street, Manchester, New Hampshire. I am President and Chief  
4 Operating Officer for PSNH.  
5 A. My name is Willam H. Smagula. My business address is PSNH Energy Park,  
6 780 North Commercial Street, Manchester, New Hampshire. I am the Director of  
7 Generation for PSNH.  
8 A. My name is Elizabeth H. Tillotson. My business address is also PSNH Energy  
9 Park, 780 North Commercial Street, Manchester, New Hampshire. I am PSNH's  
10 Generation Technical Business Manager.

1 A. My name is Rhonda J. Bisson. My business address is also PSNH Energy Park,  
2 780 North Commercial Street, Manchester, New Hampshire. I am a Senior  
3 Analyst in PSNH's Rate and Regulatory Services department.

4 Q. Have each of you previously testified before the Commission?

5 A. Yes. Collectively we have testified on numerous occasions before the  
6 Commission.

7 **OVERVIEW**

8 Q. What is the purpose of your testimony?

9 A. The purpose of our testimony is to support PSNH's request for a finding that it is  
10 in the public interest to proceed with a modification of PSNH's Schiller Unit 5  
11 under RSA 369-B:3-a and other applicable statutes. Essentially, PSNH is asking  
12 the Commission to approve the replacement of the existing older coal/oil boiler at  
13 Schiller Unit 5 with a new and modern boiler that is capable of efficiently burning  
14 low-grade wood or coal, but with the plan and design for primarily burning low-  
15 grade wood.

16 Q. How does RSA 369-B:3-a pertain to this request?

17 A. RSA 369-B:3-a was enacted during the 2003 legislative session. This statute  
18 provides that "...PSNH may modify or retire such generation assets if the  
19 commission finds that it is in the public interest of retail customers of PSNH to do  
20 so, and provides for the cost recovery of such modification." In our joint  
21 testimony, we will describe the public interest that is served by PSNH modifying  
22 its Schiller Unit 5 as well as the method that is proposed to be used to recover the  
23 cost as required by RSA 369-B.

24 Q. Please summarize the planned modification.

25 A. PSNH's Schiller generating station consists of three fossil-fired units which can  
26 burn either coal or oil as a fuel, as well as a combustion turbine generator. The  
27 three fossil-fired unit boilers were originally built in the 1950's. Units 4 and 5

1 were originally designed to burn coal, but within six months were converted to  
2 burn oil. Unit 6 was originally designed to burn oil. In 1984, per an Order from  
3 this Commission, Units 4, 5, and 6 were converted from burning oil to burning  
4 coal as the primary fossil fuel source, while retaining the capability to burn oil.  
5 Because of their low fuel cost, the units generally run as “base load” units. The  
6 planned project is to install a new high efficiency, low emission boiler capable of  
7 using wood or coal as its fuel in Unit 5 to replace the original boiler. The existing  
8 Unit 5 turbine will continue to be used. No change to the boilers for the other two  
9 units is planned at this time. After this fuel conversion is completed, Schiller  
10 Station will have the same rated power generating capacity as existed before the  
11 conversion.

12 Q. Why does PSNH plan to modify its existing Schiller Unit 5?

13 A. The modification of Schiller Unit 5 directly and positively impacts at least the  
14 following important public interests:

- 15 • It provides a sustainable market for low-grade wood products, thus enhancing  
16 the state economy;
- 17 • It lowers the overall emissions at PSNH’s Schiller Station, thus contributing to  
18 PSNH’s compliance with RSA 125-O, the Multiple Pollutant Reduction  
19 Program, and the goal of improving air quality;
- 20 • It provides a source of Renewable Energy Credits in New England, thus  
21 aiding the renewable energy market in the region; and
- 22 • It provides a continued economic and reliable power supply for PSNH’s  
23 customers, and increases PSNH’s fuel diversity and thereby, its energy  
24 security.

25 **PLANT MODIFICATION**

26 Q. Please describe the physical plant changes that will be required for this fuel  
27 conversion.

28 A. A high efficiency, low emission wood-burning fluidized bed boiler will be built to  
29 replace the existing conventional pulverized coal-fired unit. This new boiler will

1 be designed to burn 100% wood. It will also have the capability to burn 100%  
2 coal if the need were to arise. The current plan is to construct the new fluidized  
3 bed boiler adjacent to the station's existing boilers, requiring the demolition of the  
4 dock boiler house and the relocation of the settling basin for the waste treatment  
5 facility. The existing boiler will remain in operation until the new boiler is ready  
6 to provide steam to the 45 MW turbine/generator. This will minimize the amount  
7 of time that this generating unit will be out of service.

8 Wood burning at Schiller will require the addition of a wood storage area, fuel  
9 handling and conveying equipment, wood storage bin (day bunker), boiler,  
10 particulate control equipment and stack. Much of the associated auxiliary  
11 equipment and systems currently in place will be used with the new equipment.

12 The wood chips will be delivered by truck to a receiving yard adjacent to the coal  
13 storage area. Covered storage will be built to house a ten to twenty-day supply of  
14 wood chips with additional uncovered capacity available. A dedicated storage  
15 vessel for ash will be added. In Attachment 1, a graphically enhanced photograph  
16 illustrates the proposed layout for the described modifications.

17 Q. Can wood be brought to Schiller Station by means other than trucks?

18 A. Possibly. However, delivery by trucks is currently the most economical and  
19 feasible method of fuel delivery. Schiller Station is accessible by ship and, to a  
20 lesser extent, by rail, but these means of delivery are not advantageous over truck  
21 delivery given our interest in obtaining fuel substantially from New Hampshire  
22 sources.

23 Q. Will this conversion to a wood-burning boiler have any effect on plant  
24 operations?

25 A. The operation of the plant will remain essentially unchanged except for the  
26 addition of one more operator per shift. PSNH's generation organization will  
27 manage and operate this unit in the same manner as it manages and operates

1 PSNH's existing fleet of generators. PSNH's Fossil Fuel Management  
2 organization, which currently manages the procurement of PSNH's coal, oil, and  
3 gas fuels, will also manage the procurement of PSNH's wood fuel.

4 Q. Please provide additional detail specific to the construction schedule.

5 A. The major project activities with expected durations are as follows:

6	Planning and zoning	6 months
7	Environmental permitting	12 months
8	Financing	4 months
9	Designing and purchasing	8 months
10	Materials deliveries	12 months
11	Erection of equipment	18 months
12	Startup and testing	1 month

13 Since many of these activities run concurrently, the estimate for the total duration  
14 of the project is between 24 to 28 months.

15 Q. What is the targeted completion date of the modification?

16 A. The targeted completion date is December 31, 2005. PSNH is aware of proposed  
17 federal legislation which could provide additional value if the Schiller Station  
18 modification is completed by December 31, 2005. Proposed legislation could  
19 provide a federal production tax credit based on the megawatt-hour output of  
20 approved open-loop biomass renewable generation facilities. PSNH is working  
21 with congressional delegates to obtain a December 31, 2005 in-service date  
22 requirement. Although the final version of this legislation is not yet available, if  
23 enacted this tax credit will be an economic opportunity that could significantly  
24 offset the cost of the proposed modification.

25 Q. Why does PSNH plan to install a new boiler rather than modify an existing boiler  
26 to allow for the combustion of wood fuel?

27 A. The cost associated with retrofitting an existing boiler and installing pollution  
28 control equipment, which would be required should PSNH make major

1 modifications to an existing boiler, would be substantially more than the cost of  
2 replacing an existing boiler with a new boiler. Also, by installing a new boiler,  
3 the existing boiler does not have to be taken out of service until the new boiler is  
4 ready to be connected to the existing turbine, thereby avoiding a loss of economic  
5 generation to serve customers.

6 **AIR QUALITY BENEFITS**

7 Q. How will the emissions from a new wood/coal boiler compare to emissions from  
8 the existing coal/oil boiler?

9 A. The inherent design of the new boiler – fluidized bed technology equipped with  
10 various emissions control technologies – will result in lower emissions of oxides  
11 of nitrogen (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), mercury (Hg), and carbon dioxide  
12 (CO<sub>2</sub>). Initial estimates of the emissions reductions as a result of this project  
13 suggest NO<sub>x</sub> will be reduced over 70%, SO<sub>2</sub> over 95%, and mercury  
14 approximately 90%. Renewable energy projects such as this are considered CO<sub>2</sub>  
15 neutral providing 100% reduction of CO<sub>2</sub>.

16 Q. What are the economic benefits associated with reduced emissions as a result of  
17 the installation of the new boiler?

18 A. The regulation of emissions under various state statutes and federal Clean Air Act  
19 requirements has an economic impact on PSNH's customers. On the federal  
20 level, oxides of nitrogen and sulfur dioxide are regulated under emissions trading  
21 and banking programs. On the state level, oxides of nitrogen, sulfur dioxide,  
22 mercury, and carbon dioxide are also regulated under an emissions trading and  
23 banking program. These programs establish a commodities market and, in effect,  
24 establish an economic cost associated with each ton of emissions. By reducing  
25 emissions at Schiller Station, PSNH minimizes its need to purchase emissions  
26 allowances on the open market, which will reduce the cost of compliance. In  
27 addition, emissions reductions made prior to the regulatory compliance deadline  
28 may be banked for future use by PSNH or sold on the open market, creating an  
29 additional economic incentive.

1 Q. What are the costs associated with emissions reduction requirements contained in  
2 the New Hampshire Multiple Pollutant Reduction Program?

3 A. New Hampshire's Multiple Pollutant Reduction Program is an emissions trading  
4 and banking program that applies to PSNH's existing fossil fuel burning steam  
5 electric generating units, namely Merrimack Units 1 and 2, Schiller Units 4, 5,  
6 and 6, and Newington Unit 1, excluding any units that are re-powered. Under this  
7 program, PSNH receives an annual allocation for oxides of nitrogen, sulfur  
8 dioxide, mercury, and carbon dioxide emissions. PSNH is required to either  
9 reduce its emissions and/or purchase allowances on the open market such that any  
10 emissions above the annual allocation are offset. Currently, established NO<sub>x</sub> and  
11 SO<sub>2</sub> trading markets exist; however, CO<sub>2</sub> and mercury markets do not. The cost  
12 of purchasing NO<sub>x</sub> and SO<sub>2</sub> allocations on the open market varies. The present  
13 cost of an SO<sub>2</sub> credit is over \$180 per ton and is expected to increase. An ozone  
14 season NO<sub>x</sub> credit has ranged over the past six months between \$2,700 and  
15 \$8,100 per ton, with current August pricing around \$3,000 per ton.

16 **FUEL USE AND PROCUREMENT**

17 Q. How much wood will be used by the new boiler?

18 A. PSNH expects the boiler to use approximately 400,000 tons of wood annually.

19 Q. Explain PSNH's fuel procurement strategy.

20 A. PSNH's fuel procurement strategy will be designed to satisfy environmental  
21 considerations. The New Hampshire Department of Environmental Services  
22 (NHDES), Air Resources Division (ARD), will issue a permit for the boiler  
23 limiting air emissions; the permit limitations will thus impact the fuel selected to  
24 operate the boiler. In addition, air emissions limits are prescribed by Renewable  
25 Portfolio Standards ("RPS") established in other New England states. The  
26 Renewable Portfolio Standards in Massachusetts and Connecticut must be met in  
27 order to qualify as an approved generator of Renewable Energy Certificates  
28 ("RECs").

- 1 Other considerations in the fuel procurement process include the following:
- 2 a. There is an existing infrastructure in place that should facilitate the use of
- 3 wood from within the State. PSNH will utilize this existing infrastructure
- 4 whenever it can do so economically.
- 5 b. There is a natural season to wood supply due to New England weather.
- 6 Inventories will be managed to ensure supply and maximize lower cost
- 7 opportunities.
- 8 c. Fuel handling and unloading facilities will be designed to optimize truck
- 9 delivery to lower transportation costs. At this point, the plan is to have wood
- 10 fuel delivered by truck to the station. Transportation costs will be minimized
- 11 by the purchase of wood from proximate sources whenever possible.
- 12 d. Delivery of a blended inventory of fuel will be relied on to maintain a
- 13 consistent quality of wood to burn (consistent heat rate, moisture level, etc.) to
- 14 provide lower average fuel costs.
- 15 e. In addition, longer-term fuel purchase agreements will be pursued to establish
- 16 a level of economic certainty for both suppliers and PSNH.

17 Q. What wood sources will be considered in developing a fuel blend?

18 A. Wood supply will include whole tree chips (forestry, non-forestry, and land-

19 clearing), sawmill residues and other RPS-eligible fuels.

20 **RENEWABLE ENERGY REQUIREMENTS IN NEW ENGLAND**

21 Q. In addition to generating energy will any other saleable products be produced?

22 A. Yes. In addition to generating energy, a generating unit that qualifies under a

23 particular state's RPS will receive a saleable product called Renewable Energy

24 Certificates ("RECs"). One REC is received for each megawatt-hour of energy

25 generated by a qualifying generating unit as long as the generating unit remains

26 within a prescribed maximum level of air emissions. RECs are measured and

27 validated by the Independent System Operator of New England (ISO-NE).

28 Individual states also maintain an auditing role over the state-approved qualifying

1 generators. ISO-NE maintains records of every REC produced in New England  
2 and tracks the ownership of each REC. Owners of RECs may sell them to electric  
3 energy suppliers or other interested entities at market prices.

4 Q. Which states in New England have enacted an RPS?

5 A. The states of Massachusetts, Connecticut and Maine have enacted an RPS.

6 Q. Please describe the RPS enacted by the states of Massachusetts and Connecticut  
7 in greater detail.

8 A. The RPS enacted by the states of Massachusetts and Connecticut include a  
9 requirement that a certain percentage of each energy supplier's or load holding  
10 entity's power supply portfolio be generated by an approved renewable power  
11 source as defined by each state. The Massachusetts RPS began in 2003 and  
12 includes a requirement that one percent (1%) of each energy supplier's or load  
13 holding entity's power supply portfolio be generated by an approved renewable  
14 power source in 2003. The percent requirement increases annually by one-half  
15 percent (1/2%) from 2004 through 2009, and then increases annually by one  
16 percent (1%) from 2010 through 2012. The Connecticut RPS begins in 2004. In  
17 contrast to the Massachusetts RPS, the Connecticut RPS defines two requirement  
18 classes (Class I and Class II) with annual percent requirements defined for each  
19 class. Class I is more restrictive than Class II in its definition of a renewable  
20 power source. Overall, the percent requirement of the two classes combined  
21 increases from six percent (6%) in 2004 to ten percent (10%) in 2012.

22 The annual percentages for Class I and Class II are summarized below.

	<u>Class I</u>	<u>Class II</u>
2004	0.5%	5.5%
2005	1.0%	3.0%
2006	2.0%	3.0%
2007	3.5%	3.0%
2008	5.0%	3.0%
2009	6.0%	3.0%
2010	7.0%	3.0%
2011	7.0%	3.0%
2012	7.0%	3.0%

1 Q. Will the modifications planned for Schiller Unit 5 meet the Massachusetts and  
2 Connecticut RPS requirements and result in the production of RECs?

3 A. Each state has detailed specifications on the types of technologies and air  
4 emissions limits that will meet the RPS requirements of each state. Upon initial  
5 review, PSNH believes the wood-fired fluidized bed boiler planned for Schiller  
6 Unit 5 meets the technical requirements of the RPS in Massachusetts and  
7 Connecticut and will result in the production of RECs. Based on PSNH's review  
8 of the Connecticut RPS, the Schiller project will qualify as a Class I renewable  
9 project. In fact, this boiler design is the only wood burning technology that meets  
10 the RPS requirements. Older stoker or traveling grate boilers, such as those used  
11 in the existing wood burning power plants in New Hampshire, do not meet the  
12 RPS requirements.

13 Q. Is there an approval process to qualify a generating station as a renewable power  
14 source under the RPS?

15 A. Yes. PSNH has already initiated the approval process in Massachusetts, and has  
16 met with representatives from the Massachusetts Division of Energy Resources  
17 (DOER) to discuss the applicability of the Schiller Station boiler design to the  
18 RPS. The DOER has provided specifications for an acceptable design to PSNH to  
19 ensure the Schiller Station boiler design will meet the Massachusetts RPS. To  
20 further expedite this approval process and tight construction schedule, PSNH has  
21 submitted a request to the Massachusetts DOER for an Advisory Ruling to  
22 determine if the Schiller Station boiler as currently designed will meet the  
23 Massachusetts RPS. PSNH also intends to obtain preliminary approval from the  
24 State of Connecticut before proceeding with this project and has initiated this  
25 preliminary approval process in Connecticut.

26 Q. What is the status of the Massachusetts DOER Advisory Ruling?

27 A. The DOER, in conjunction with the Massachusetts Department of Environmental  
28 Protection, has issued a draft Advisory Ruling providing preliminary approval of  
29 the Schiller Station boiler design. PSNH expects a final Advisory Ruling in early

1           September. This approval provides greater confidence that the Schiller Station  
2           boiler design will meet the technical requirements of the RPS in Massachusetts  
3           and will result in the production of RECs.

4    Q.     How does the expected level of Schiller Unit 5 RECs compare to the overall  
5           requirements or demand for RECs in New England?

6    A.     As shown in Attachment 2, the expected level of Schiller Unit 5 RECs, while  
7           sizeable, will meet only a small portion of the increasing requirements for  
8           renewable energy presently legislated in Massachusetts and Connecticut.

9    Q.     Please discuss the current market price of RECs.

10   A.     The renewable energy market, while new, is in place in Massachusetts.  
11          Wholesale suppliers of energy must obtain a sufficient level of RECs to  
12          demonstrate compliance with the RPS. To demonstrate compliance, a supplier  
13          may either have entitlement to renewable generation with qualifying attributes or  
14          purchase RECs from the renewable energy market. RECs may be purchased from  
15          brokers or generators of RECs. Recent market activity has yielded REC prices for  
16          the year 2004 in the range of \$35 - \$40 per REC.

17   Q.     Is there an upper limit to the market price of RECs?

18   A.     Yes. To ensure compliance with the RPS, states have established default or  
19          penalty prices for insufficient compliance. If a supplier does not obtain a  
20          sufficient level of RECs, the supplier must pay a penalty to the state based on the  
21          level of RECs the supplier is deficient. In Massachusetts the penalty price is \$50  
22          per deficient REC, while in Connecticut the penalty price is \$55 per deficient  
23          REC.

24   Q.     Are there any other potential buyers of Schiller Unit 5 RECs?

25   A.     Yes. The Massachusetts Technical Collaborative (MTC) has been established to  
26          support the Massachusetts RPS program and potential renewable energy projects.  
27          The MTC has been fully briefed on the proposed Schiller Unit 5 project. The

1 MTC recently issued a Request for Quotation (RFQ) for generators of RECs to  
2 submit proposals for purchase and sales agreements of future RECs. The MTC  
3 plans to select a variety of purchase options to develop a portfolio of new  
4 renewable generation. In response to this RFQ, PSNH will submit a proposal in  
5 September for the purchase and sale of future RECs to be generated at Schiller  
6 Station. The MTC has specified that projects with an in-service date prior to  
7 December 31, 2005 will have the highest level of priority. This is consistent with  
8 the planned in-service date of the Schiller Unit 5 project. PSNH expects to learn  
9 the outcome of its MTC proposal by the end of 2003. In addition, brokers have  
10 also approached PSNH investigating the opportunity to purchase entitlements to  
11 the future Schiller Unit 5 RECs. Although these discussions are still in the  
12 preliminary stages, it further highlights the potential future market for RECs in  
13 New England.

14 Q. Please explain your contract/sales strategy for RECs.

15 A. PSNH plans to seek sales contracts at prices equal to or above those needed for  
16 the Schiller Station Project to break even.

### 17 **PROJECT ECONOMICS**

18 Q. Please discuss the costs associated with the Schiller Unit 5 project.

19 A. The costs associated with the Schiller Unit 5 project consist of capital costs and  
20 variable and fixed operating costs. Capital investment of approximately \$69  
21 million is required for this project. The variable costs associated with the new  
22 wood boiler are expected to be approximately 10% higher than the variable costs  
23 of the existing boiler, and include costs such as fuel, fuel handling and ash  
24 management. The fixed operating costs associated with the new boiler are  
25 expected to be only slightly higher than the existing boiler, and include costs such  
26 as labor and maintenance expenses. As a result of this project, PSNH expects the  
27 overall operating costs at Schiller Station to increase approximately 2% annually.

1 Q. Please provide a breakdown of the capital investment costs associated with this  
2 project.

3 A. The breakdown of the capital investment costs associated with this project are as  
4 follows:

5	Purchase and installation of new boiler, stack	
6	and environmental equipment	\$30.0M
7	Fuel handling facility	\$12.1M
8	Balance of plant/civil additions and modifications	\$10.8M
9	Engineering, permitting and construction	\$10.6M
10	AFUDC	\$ 4.5M
11	Removal	<u>\$ 1.0M</u>
12	TOTAL	\$69.0M

13 Q. Are there any sources of either new revenue or avoided costs which offset or  
14 mitigate this increase in capital costs?

15 A. Yes, there are. There are five possible sources of either new revenue or avoided  
16 costs which are expected to collectively offset the additional capital investment  
17 cost. These sources include:

- 18 1) Additional generation of low-cost power. Additional generation of low-cost  
19 power will be available to meet the Transition or Default Service energy  
20 requirements of PSNH's customers due to the higher availability and capacity  
21 factors of the new boiler. This will result in lower energy costs.
- 22 2) Reduction in air emissions. A reduction in air emissions will lower air  
23 emission compliance costs.
- 24 3) Sales of RECs. Renewable Energy Certificate sales will result in additional  
25 revenue.
- 26 4) Federal Production Tax Credit. If enacted, the Federal Production Tax Credit  
27 will result in reduced costs.
- 28 5) Incentives available through New Hampshire's Multiple Pollutant Reduction  
29 Program and NO<sub>x</sub> Budget Program. Allowances awarded through these  
30 programs will be utilized to reduce costs.

1 Q. Please describe each of the sources listed above in greater detail.

2 A. Each source listed above is described in greater detail below.

3 1) Additional generation of low-cost power.

4 Additional generation of low-cost power will result from the new wood boiler  
5 due to the higher availability and capacity factors of the new boiler. The  
6 availability and capacity factors of the new boiler are expected to be in the  
7 range of 90 - 95 %. The existing coal boiler has historically achieved an  
8 availability factor in the range of 80 - 85% and a capacity factor in the range  
9 of 70 – 75%. The fixed portion of the operating costs will not increase as a  
10 result of this additional generation, and PSNH expects the variable or  
11 incremental cost of producing this additional generation to be significantly  
12 lower than the spot energy market price in New England, thus producing  
13 savings for PSNH’s customers. For example, based upon a 10% increase in  
14 Schiller Station Unit 5’s capacity factor, an assumed variable or incremental  
15 cost of \$21.90 to produce the additional generation and an energy market  
16 price of \$37.40 per megawatt-hour, an annual savings of over \$600,000 will  
17 result. Please see Attachment 3 entitled “Overall Value of Incremental  
18 Generation” for a range of potential annual savings based on different levels  
19 of capacity factors and energy market prices.

20 2) Reduction in air emissions. The new fluidized bed wood-fired boiler will  
21 result in lower air emissions. Lower air emissions will result in lower  
22 compliance costs. PSNH has estimated that 2,250 fewer tons of SO<sub>2</sub> per year  
23 will be emitted from the wood-fired boiler. PSNH purchases SO<sub>2</sub> credits to  
24 comply in part with the State of New Hampshire’s SO<sub>2</sub> cap on PSNH’s power  
25 plants. The present cost of an SO<sub>2</sub> credit is approximately \$180 per ton of  
26 SO<sub>2</sub> and is expected to increase over time. Therefore, during the first three  
27 years the boiler is in-service PSNH estimates an annual savings in SO<sub>2</sub>  
28 compliance cost of approximately \$720,000 based upon a forecasted SO<sub>2</sub>  
29 credit cost of \$320 per ton. In addition, PSNH has estimated that 200 less  
30 tons of NO<sub>x</sub> in the ozone season and 200 less tons in the non-ozone season  
31 will be emitted from the wood-fired boiler. Over the past six months, an

1 ozone season NO<sub>x</sub> credit has ranged from \$2,700 to \$8,100 per ton, with  
2 current credit pricing around \$3,000 per ton. The price of a non-ozone season  
3 NO<sub>x</sub> credit is estimated at \$250 per ton. Based upon current NO<sub>x</sub> credit  
4 pricing, PSNH estimates an annual savings in NO<sub>x</sub> compliance cost of  
5 approximately \$650,000. Overall, the SO<sub>2</sub> and NO<sub>x</sub> reductions will provide  
6 savings projected to total \$1.4 million annually. Please see Attachment 4  
7 entitled “Overall Value of Less Air Emissions” for a range of potential annual  
8 savings based on different levels of SO<sub>2</sub> and NO<sub>x</sub> credit amounts.

9 3) Sales of RECs. RECs will be sold into the renewable energy market. The  
10 number of certificates sold into the market is dependent on the level of  
11 megawatt-hours generated by the wood-fired boiler. For example, if the  
12 boiler operates at a 90% capacity factor and the market price of a Renewable  
13 Energy Certificate is \$30, the revenue generated from the sale of RECs would  
14 total \$10.6 million. The potential revenue from the sale of RECs ranges from  
15 a low of \$6.3 million (assuming an 80% capacity factor and a certificate price  
16 of \$20 per megawatt-hour) to a high of \$16.9 million (assuming a 95%  
17 capacity factor and a certificate price of \$45 per megawatt-hour). Please see  
18 Attachment 5 entitled “Overall Value of Renewable Energy Certificates” for a  
19 range of potential revenues based on different levels of capacity factors and  
20 Renewable Energy Certificate market prices.

21 4) Federal Production Tax Credit. Proposed federal legislation that provides a  
22 three-year production tax credit to open-loop biomass projects that are in-  
23 service before December 31, 2005 could potentially provide significant value  
24 to offset the capital investment cost of this project. It should be noted that this  
25 legislation has gone through a number of iterations and the final outcome may  
26 not be known until the end of 2003. Under the current proposed legislation,  
27 open-loop biomass renewable energy projects would receive a tax credit of  
28 \$15 per megawatt-hour generated. At a 90% capacity factor, the potential tax  
29 credit resulting from this legislation would equal \$5.3 million per year.

30 5) Incentives available through New Hampshire’s Multiple Pollutant Reduction  
31 Program and NO<sub>x</sub> Budget Program. Allowances awarded through

1 New Hampshire's Multiple Pollutant Reduction Program and NO<sub>x</sub> Budget  
2 Program may also be utilized to offset the capital investment cost of this  
3 project. These programs reflect the State's commitment to energy efficiency,  
4 energy conservation, renewable energy, and the reduction of emissions.  
5 Under the Multiple Pollutant Reduction Program (RSA 125-O:5,III), the  
6 Department of Environmental Services shall provide bonus allowances to  
7 PSNH equivalent to the expenditure on new renewable energy projects.  
8 Similarly, under the NO<sub>x</sub> Budget Program, the DES shall provide emission  
9 allowances for new renewable energy projects based on an analysis of  
10 resulting reduced NO<sub>x</sub> emissions.

11 Q. Does PSNH expect the five possible sources of new revenue or avoided costs to  
12 collectively offset the additional capital investment costs?

13 A. Yes. PSNH's financial analysis shows that various combinations of these five  
14 possible sources of new revenue or avoided costs will provide sufficient value to  
15 offset the cost to customers of investing in a new wood-fired boiler at Schiller  
16 Station. Of course, it is possible to imagine a set of unfavorable conditions that  
17 would result in a slight increase in overall costs. However, PSNH believes this  
18 project will result in at least a "breakeven" financial result for customers.  
19 Attachment 6 entitled "Overall Impact on Schiller Station Revenue  
20 Requirements" represents a summary of a conservative financial scenario  
21 showing the net impact this project will have on overall Schiller Station revenue  
22 requirements. This analysis summarizes the first three in-service years of the new  
23 wood-fired boiler. In 2006, incremental revenue requirements of Schiller Station  
24 increase \$12.1 million due to the costs of the new wood-fired boiler. This amount  
25 is decreased by the value of the additional generation, the emissions cost savings  
26 and the revenue from the sale of RECs resulting in an overall increase in Schiller  
27 Station revenue requirements of \$681,000. It should be noted that 2006 includes  
28 a one-time cost of \$4 million (Unit 5 boiler retirement of \$3 million and removal  
29 costs of \$1 million). In 2007, the capacity factor of the wood-fired boiler is  
30 expected to increase from 80% to a more typical 90 - 95% which results in a

1 higher value for incremental generation and increased revenue from the sale of  
2 RECs. As a result, overall Schiller Station revenue requirements are expected to  
3 decrease \$1.47 million in 2007 and \$1.89 million in 2008. It should be noted that  
4 this financial scenario is conservative since it does not include the Federal  
5 Production Tax Credit or incentives available through the New Hampshire  
6 Multiple Pollutant Reduction Program or NO<sub>x</sub> Budget Program.

7 Q. Why didn't PSNH include the Federal Production Tax Credit or the incentives  
8 available through the New Hampshire Multiple Pollutant Reduction Program or  
9 NO<sub>x</sub> Budget Program in the conservative financial scenario?

10 A. The proposed federal legislation defining the potential production tax credit may  
11 not be finalized until the end of 2003. Since this credit is not available under  
12 today's laws, PSNH did not include it in the conservative financial scenario.  
13 With respect to the incentives available through the New Hampshire Multiple  
14 Pollutant Reduction Program and NO<sub>x</sub> Budget Program, PSNH did not include  
15 the allowances in its conservative financial scenario because PSNH has not yet  
16 been granted emissions allowances under either of these programs.

17 Q. Has a breakeven analysis been completed showing the price required per REC?

18 A. Yes. Please see Attachment 7 entitled "Price per Renewable Energy Certificate  
19 Required to Break Even." The graph shows the price per REC required for the  
20 Schiller Unit 5 project to break even from 2006 through 2020. In 2006, a price of  
21 \$32 per REC is required for the project to break even. In 2007, a price of \$25  
22 is required for the project to break even. From 2008 to 2020, the price per REC  
23 required for the project to break even steadily declines from \$24 per REC in 2008  
24 to less than \$10 per REC in 2020.

25 Q. What is PSNH's conclusion regarding the financial viability of this project from  
26 the perspective of PSNH's customers?

27 A. PSNH believes that it is highly likely that the benefits of this project outweigh the  
28 projected costs. It is our belief that customers will at least "break even," and that

1 a viable opportunity exists to achieve additional energy cost savings that would  
2 not otherwise exist absent the Schiller Unit 5 project.

3 **COST RECOVERY**

4 Q. Please describe how the costs of the Schiller Unit 5 project will be recovered.

5 A. RSA 369-B:3-a requires the Commission to provide for the cost recovery of this  
6 modification if such modification is found to be in the public interest. PSNH  
7 seeks to recover the costs of the Schiller Unit 5 project through the existing  
8 Transition Service and Default Service energy component within the existing  
9 Stranded Cost Recovery Charge Mechanism. No tariff changes or modifications  
10 to the Restructuring Settlement are required to recover the costs of the Schiller  
11 Unit 5 project.

12 Q. Please describe the cost recovery mechanism in greater detail.

13 A. Once each year, PSNH files with the Commission a proposed Transition Service  
14 rate for effect during a subsequent 12-month period. Through the Transition  
15 Service rate, PSNH recovers, among other costs, the revenue requirements  
16 associated with PSNH's generating assets. Once actual Transition Service costs  
17 are known, Transition Service revenues and costs are reconciled, with the net of  
18 the two resulting in an adjustment to Part 3 stranded costs for that period. When  
19 Transition Service revenues exceed Transition Service costs, the difference is  
20 credited to Part 3 costs for that period resulting in an acceleration of the full  
21 recovery of Part 3 stranded costs. When Transition Service costs exceed  
22 Transition Service revenues, the difference is added to Part 3 costs for that period  
23 resulting in an increase to the unrecovered balance of Part 3 stranded costs and a  
24 corresponding delay to the full recovery of those costs. PSNH will include the  
25 cost of the Schiller Unit 5 project as a Transition Service cost in the reconciliation  
26 of costs and revenues, and will therefore recover the cost as a Part 3 stranded cost.  
27 The projected cost of Transition Service used to determine the Transition Service  
28 rate will include the estimated revenue requirements of the Schiller Unit 5 project.

1 Q. Once Part 3 stranded costs are fully recovered, how will PSNH thereafter recover  
2 the costs of the Schiller Unit 5 project?

3 A. Under the Restructuring Settlement once recovery of Part 3 costs ends, any going  
4 forward costs related to PSNH's generating assets shall thereafter become Part 2  
5 costs with continued recovery. Therefore, the Transition Service reconciliation  
6 described above will be applied to Part 2 stranded costs once Part 3 stranded cost  
7 recovery ends. At the time Part 3 stranded cost recovery ends, PSNH will  
8 calculate a Part 2 stranded cost recovery charge to be billed during each  
9 prospective six-month period. Any difference between the amounts to be  
10 recovered through Part 2 during any six-month period and the revenue received  
11 through the billing of Part 2 during that period will be refunded or recovered with  
12 a return during the subsequent six-month period by either reducing or increasing  
13 Part 2 for the subsequent six-month period. As a result, when Transition or  
14 Default Service revenues exceed Transition or Default Service costs, the  
15 difference (otherwise known as the Transition or Default Service Adjustment)  
16 will be credited to Part 2 stranded costs for the period resulting in a lower  
17 stranded cost recovery charge in the subsequent six-month period. When  
18 Transition or Default Service costs exceed Transition or Default Service revenues,  
19 the difference will be added to Part 2 stranded costs for the period resulting in a  
20 higher stranded cost recovery charge in the subsequent six-month period.

21 Q. What incremental impact will the Schiller Unit 5 project have on the Transition  
22 Service or Default Service rate?

23 A. As discussed previously, based upon PSNH's financial analysis of the project,  
24 there are several sources of either new revenue or avoided costs that are expected  
25 to more than offset the capital investment cost of this project and will result in a  
26 positive impact on customer rates. Overall, PSNH estimates the projected  
27 additional revenues and avoided costs will exceed the capital investment cost by  
28 approximately \$2.7 million over the first three years (2006-2008), which will  
29 result in a lower Transition Service rate. This estimate does not include the  
30 proposed federal legislation that could provide a production tax credit to open-

1           loop biomass projects that are in-service before December 31, 2005. If this  
2           legislation is passed, an additional \$15.0 million can be added to the \$2.7 million  
3           figure above, resulting in a \$17.7 million impact over the first three years.

4    Q.     Does this complete your testimony?

5    A.     Yes, it does.