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Exhibit No.	#4
Witness	Fanelli
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STATE OF NEW HAMPSHIRE
BEFORE THE
NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION

Docket No. DE 10- ____

DIRECT TESTIMONY OF
TERRANCE J. LARGE

Request for Approval of Power Purchase Agreement
Between
Public Service Company of New Hampshire
and
Laidlaw Berlin BioPower, LLC

July 26, 2010

1 other matters set forth in RSA Chapter 362-F:9. In addition, I will provide
2 some background on the Laidlaw Berlin BioPower Project and how its
3 expected operation will impact regional renewable power supply.
4

5 **BACKGROUND ON THE LAIDLAW BERLIN BIOPOWER, LLC FACILITY**
6

7 **Q. Please provide a brief description of the Laidlaw Berlin BioPower**
8 **facility.**

9 A. Laidlaw Berlin BioPower (“Laidlaw” or “LBB”) is developing a 70 MW (gross)
10 electric power generating station which will primarily utilize whole tree wood
11 chips as its fuel. The Project is located in Berlin, New Hampshire, on the site
12 of the former Fraser Paper Pulp mill, which closed in 2006. While most of the
13 building and equipment from the pulp mill operation have been removed
14 from the site, a “Black Liquor Recovery Boiler” and its associated facilities
15 were retained. This Recovery Boiler will be converted to a bubbling fluidized
16 bed boiler as a part of the Project, and will supply steam to a newly installed
17 turbine generator to produce electric power. This Project will supply a source
18 of clean, carbon neutral renewable energy that will help support New
19 Hampshire’s goal of supplying 25% of the state’s energy needs via renewable
20 sources by 2025.

21
22 The fuel for the Project is projected to come from an 11 million acre wood
23 basket that is within a 100 mile radius of the facility. When operating at full
24 capacity the facility will utilize approximately 750,000 tons of wood biomass
25 fuel per year.

1 The facility will be interconnected to PSNH's East Side substation in Berlin,
2 New Hampshire, via a new interconnection line from the step-up transformer
3 at the LBB site. The interconnection application is currently under review by
4 ISO-NE in accordance with Schedule 22 of the ISO New England Open
5 Access Transmission Tariff (OATT). The resulting interconnection
6 agreement will be filed with FERC and is not a subject of this petition.

7
8 Laidlaw has made application for its project permits to the New Hampshire
9 Site Evaluation Committee. Laidlaw expects to start construction in late
10 2010, upon approval of the Site Evaluation Committee and the awarding of
11 the necessary permits. It is anticipated that the facility will begin
12 construction in the fourth quarter of 2010 and achieve initial operation
13 during the second quarter of 2013. Comprehensive details concerning the
14 Project can be found in Laidlaw's Site Evaluation Committee application
15 docketed as SEC Docket No. 2009-02.

16
17 **PSNH'S NEED FOR A PPA TO ACQUIRE ENERGY AND CLASS I**
18 **RENEWABLE ENERGY CERTIFICATES (RECS)**
19

20 **Q. Please describe PSNH's needs for energy and Class I New Hampshire**
21 **RECs.**

22 **A.** PSNH has a legal obligation to provide default energy service to our
23 customers who are unable or do not elect to take energy service from
24 competitive energy suppliers. PSNH is required by law to utilize its owned
25 generation assets to provide this energy service to customers. In addition to

1 its owned assets, PSNH also purchases the output from a number of
2 Independent Power Producer (“IPP”) facilities operating in New Hampshire.
3 However, the output of PSNH’s assets in conjunction with purchases from
4 IPP’s does not fully satisfy the projected energy requirements of customers.
5 In addition to energy, PSNH provides for the capacity, ancillary services, and
6 Renewable Portfolio Standard (RPS) requirements associated with those
7 customers taking Energy Service from PSNH.

8
9 In the Least Cost Plan filed in Docket DE 07-108, PSNH forecasted that it
10 would need to purchase between 4-5 million MWh of energy annually,
11 between 900 and 1,000 MW of capacity, and more than 250,000 Class I RECs
12 from qualified resources. In that Least Cost Plan filing, PSNH proposed to
13 add at least one 50 MW biomass plant to its portfolio of assets as one means
14 to close the gap between anticipated need and supply.

15
16 As a result of the downturn in the economy, PSNH’s sales have not met
17 forecasted levels. In addition, in recent months, PSNH has seen an increase
18 in the number of customers that have elected to take energy service from a
19 competitive supplier. This number of customers has increased substantially
20 from the low levels experienced at the time of the 2007 Least Cost Plan filing.
21 Currently about 30% of PSNH’s distribution service load (total load) is being
22 supplied by competitive suppliers. These factors have reduced PSNH’s near-
23 term need to obtain energy, capacity, and RECs from the market; however a
24 gap still exists. For 2014, the energy gap between resources and supply is
25 projected to range from 1,100,000 to 3,746,000 MWh per year and the

1 capacity gap is projected to range from 401 to 1073 MWs (the range is
2 associated with varying forecasts of customer sales and migration to
3 competitive retail suppliers). For 2014, PSNH is projecting a need for an
4 additional 224,000 to 355,000 Class I RECs. The projected range of RECs
5 needed increases to between 942,000 and 1,397,000 by 2025. The contract
6 with LBB would fulfill a portion of PSNH's anticipated need for energy,
7 capacity, and RECs once the unit becomes operational in 2013. Annually, the
8 Project is expected to produce over 474,000 MWh of energy and associated
9 RECs and to provide approximately 65 MWs of capacity.

10
11 Execution of the contract with LBB is consistent with the planning concept
12 put forward by PSNH in Docket No. DE 07-108 to add at least 50 MW of
13 Class I renewable biomass power to PSNH's supply portfolio.

14
15 **RPS AND PPA ALIGNMENT WITH PROCUREMENT PRINCIPLES IN**

16 **RSA CHAPTER 362-F**

17
18 **Q. Please describe your understanding of the requirements of RSA**
19 **Chapter 362-F.**

20 **A.** Simply put, RSA Chapter 362-F requires PSNH and other retail electricity
21 suppliers to produce or purchase enough renewable energy, or the
22 environmental attributes thereof, to meet the minimum needs under RSA
23 362-F:3. Furthermore, the statute outlines the criteria that entities can use
24 to establish purchase agreements with renewable generation resources.
25 Given this statutory mandate, PSNH believes that the proposed PPA with

1 LLB is entirely consistent with RSA Chapter 362-F and will help PSNH to
2 comply with the requirements of the statute.

3

4 **Q. Do you believe that LLB will qualify as a Class I renewable resource**
5 **for compliance with the RPS?**

6 A. Yes. According to the materials submitted to the New Hampshire Site
7 Evaluation Committee by Laidlaw, and their representations made to PSNH
8 during our negotiations, I believe that the LLB Project will qualify to receive
9 Class I RECs in New Hampshire. PSNH's obligations under the PPA are
10 conditioned upon the Project receiving certification to produce NH Class I
11 RECs.

12

13 **Q. Can you describe how the PPA complies with the procurement**
14 **principles outlined in Section 362-F:9?**

15 A. Certainly. Section I of RSA 362:F-9 allows the Commission to approve the
16 request of an electric distribution company to enter into multi-year purchase
17 agreements with renewable energy sources for certificates, in conjunction
18 with or independent of purchased power agreements from such sources, to
19 meet reasonably projected renewable portfolio requirements and default
20 service needs if it finds the agreements to be in the public interest.

21

22 As discussed earlier, PSNH projects that it will have a limited, identifiable
23 need for RECs, energy, and capacity in order to fulfill its RPS and default
24 service needs. In this case, PSNH is asking the Commission for approval of a

1 20-year PPA with LLB for the provision of energy, capacity, and RECs to be
2 produced at the Project.

3

4 **Q. Please discuss Section II of RSA 362:F-9.**

5 A. Section II outlines five factors for the Commission to utilize in determining if
6 the PPA is in the public interest. Those factors are:

7 (a) The efficient and cost-effective realization of the purposes and goals
8 of this chapter;

9 (b) The restructuring policy principles of RSA 374-F:3;

10 (c) The extent to which such multi-year procurements are likely to
11 create a reasonable mix of resources, in combination with the company's
12 overall energy and capacity portfolio, in light of the energy policy set forth in
13 RSA 378:37 and either the distribution company's integrated least cost
14 resource plan pursuant to RSA 378:37-41, if applicable, or a portfolio
15 management strategy for default service procurement that balances potential
16 benefits and risks to default service customers;

17 (d) The extent to which such procurement is conducted in a manner
18 that is administratively efficient and promotes market-driven competitive
19 innovations and solutions; and

20 (e) Economic development and environmental benefits for New
21 Hampshire.

22

23 First Factor

24 To meet the first factor (efficient and cost-effective realization of the purposes
25 and goals of the RPS law) PSNH has employed a direct negotiation process

1 with Laidlaw in order to bring this PPA to the Commission for approval in a
2 timely manner. Mr. Labrecque will provide further detail concerning the cost
3 effectiveness of this PPA in his testimony.

4
5 One purpose of RSA Chapter 362-F is to provide fuel diversity to the state
6 and New England through the use of local renewable resources that lowers
7 regional dependence on fossil fuels. The statute further states that this has
8 the potential to lower and stabilize future energy costs by reducing exposure
9 to rising and volatile fossil fuel prices. It states that the use of renewable
10 technologies can help keep investment dollars in the state to benefit New
11 Hampshire's economy and reduce emissions, thus improving air quality and
12 public health.

13
14 The PPA with LLB is a long-term contract which clearly is consistent with
15 the purpose of RSA Chapter 362-F. A 65 MW (net) wood-fired base load
16 facility will reduce the need for reliance on 65 MW of fossil fueled resources.
17 The 20-year term will assist in providing for price stability, especially since
18 the pricing is not dependent on the cost of fossil fuel. Finally, LLB will make
19 a significant investment in New Hampshire during construction, and will
20 provide jobs once the unit is operational.

21
22 Second Factor

23 The second factor is the PPA's adherence to the restructuring policy
24 principles of RSA 374-F:3. In my opinion, approval of this PPA is consistent
25 with the principles outlined in RSA 374-F:3.

1 Subsection V.(f) of the restructuring policy principles calls for utilities to offer
2 a Renewable Energy Source default service option. PSNH was the first
3 utility in New Hampshire to obtain Commission approval for a “Green
4 Energy Rate” in Docket DE 09-186. This PPA supports efforts that develop
5 the market for renewable power, which is consistent with this policy
6 principle.

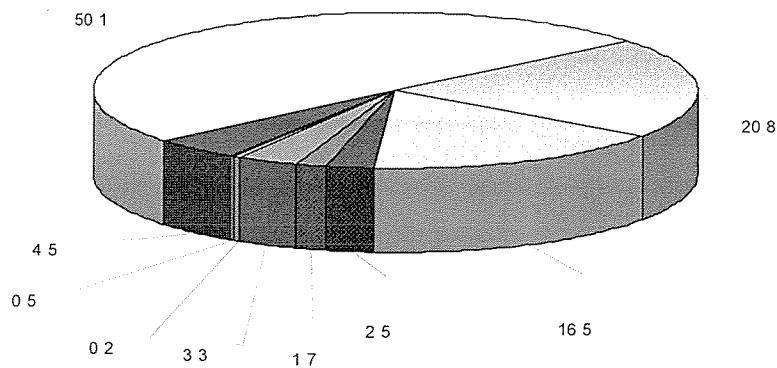
7
8 Subsection IX of the restructuring policies states, among other things, that
9 “over the long term, increased use of cost effective renewable energy
10 technologies can have significant environmental, economic and security
11 benefits.” The Project and the PPA will adhere to this principle. Similarly,
12 Subsection VIII of the restructuring policy principles calls for encouragement
13 of environmental protection and long term environmental sustainability.
14 When completed, the LLB facility will have virtually no emissions of sulfur
15 dioxide and low emissions levels of NOx and mercury. It is expected that the
16 LLB facility will not be required to obtain CO₂ allowances under the RGGI
17 program. (This assumption is consistent with PSNH’s operation of the
18 Northern Wood power facility in Portsmouth.) Therefore, the LLB facility
19 will provide significant environmental benefit because it will emit very little
20 or none of the four pollutants that are the subject of the New Hampshire
21 Clean Power Act.

Third Factor

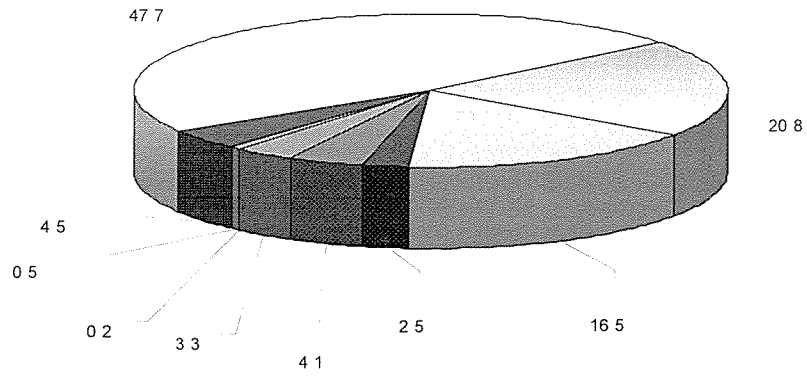
The third factor is the extent to which such multi-year procurements are likely to create a reasonable mix of resources, in combination with the company's overall energy and capacity portfolio.

The charts below show PSNH's forecast of capacity resources and energy supply by resource type for calendar year 2014, the first full year of operation of LLB. The charts illustrate the positive impact of the Project on the diversification of PSNH's resource portfolio.

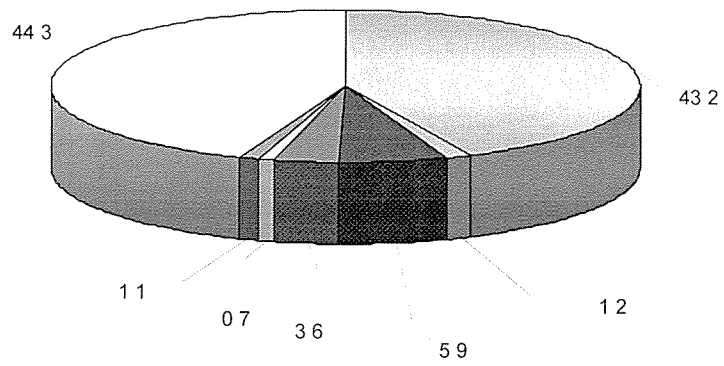
PSNH's 2014 Capacity Resources without Laidlaw



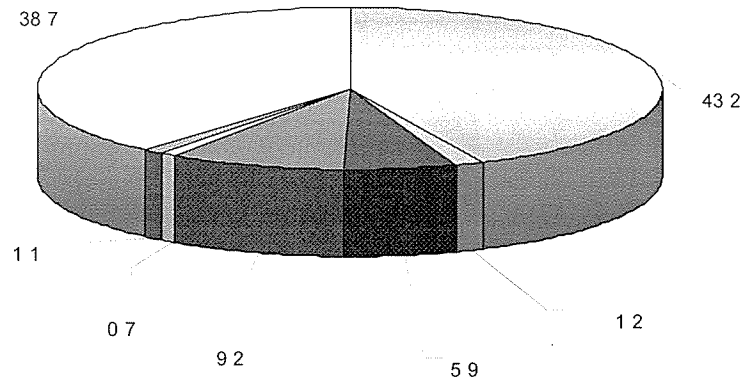
PSNH's 2014 Capacity Resources with Laidlaw



2014 Energy Supply Resources without Laidlaw



2014 Energy Supply Resources with Laidlaw

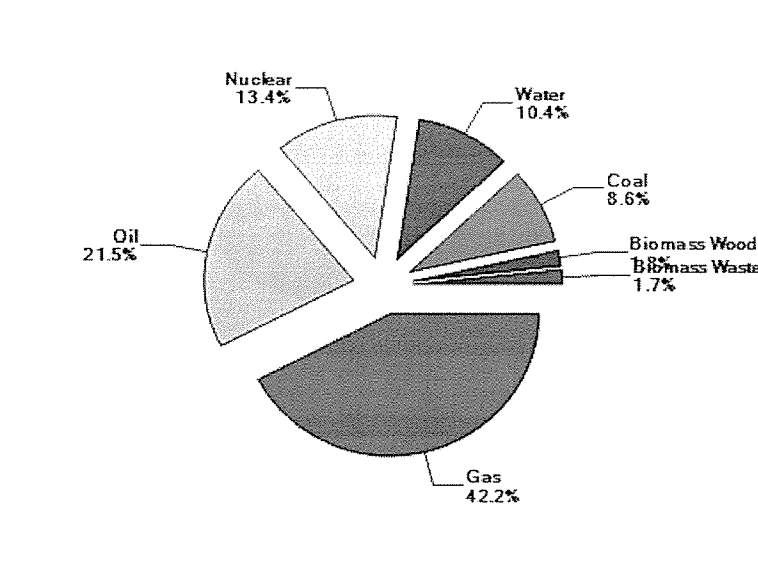


2 The LLB Project will add fuel diversity to the State's and New England's
3 generation supply through use of local renewable fuels and resources. In
4 addition, LLB will be employing low emission forms of such technologies that
5 will reduce the amount of greenhouse gases, nitrogen oxides, and particulate
6 matter emissions in the State, which will improve air quality, public health,
7 and lessen the risks of climate change.

8
9 The addition of the LLB Project will positively impact fuel diversity and
10 energy security and independence in the region, supporting the policy set
11 forth in RSA 378:37.

12
13 In 2008, in the ISO-NE region, approximately 34,000 MW of Capacity Supply
14 Obligations existed. Of that amount, 1,193 MW or 3.5% were classified as
15 bio-mass fueled resources (see chart below). The addition of 65 MW (net)
16 from the LLB facility will increase biomass capacity in the region by 0.2%.

2008 ISO-NE Operating Plant Capacity by Fuel Type



Source: SNL Interactive

Furthermore, today about 4,354 MW or 12.6% of the capacity in the region is from renewable or CO₂ neutral sources. The addition of 65 MW (Net) from the LLB facility will increase the amount of these resources to 12.8%. In each instance, the addition of LLB will have a positive, though small impact on the region's fuel diversity and CO₂ portfolio.

As for energy security and independence, the approximately 474,000 MWH per year that are expected to be produced at the LLB facility will use wood produced local to the facility, mainly in New Hampshire and Maine. These states are two of the most heavily forested states in the nation, which suggests that wood resources are more prevalent here than in comparison to other areas in the country. If LLB manages this resource in a sustainable way, it will further enhance our region's energy independence. With LLB operational less energy in the region will be produced by fuels that are not

1 native to New England. Again, while the improvement may be small, the
2 addition of LLB to the ISO-NE system will make positive movement toward
3 fuel diversity and energy security in the region.

4
5 Fourth Factor

6 The fourth factor is the extent to which such procurement is conducted in a
7 manner that is administratively efficient and promotes market-driven
8 competitive innovations and solutions.

9
10 Laidlaw's use of an existing power boiler and its infrastructure, in an area of
11 the State long known for employing biomass resources for industrial use, in
12 combination with newer emission controlling technologies, certainly qualifies
13 as a solution to a market-driven need for renewable energy. Over the long-
14 term LLB may further allow the development of local community combined
15 heat and power installations, such as has been considered by the City of
16 Berlin, or the supply of process steam or hot water to the existing paper
17 mills, still in operation in the region.

18
19 Furthermore, PSNH engaged in a direct negotiating process with Laidlaw in
20 order to bring this proposed PPA to the Commission in a timely manner.

21
22 Fifth Factor

23 The fifth factor pertains to economic development and environmental benefits
24 for New Hampshire. PSNH witness Dr. Shapiro will address the regional
25 economic benefits to be derived from this Project in her testimony. It is clear

1 from her analysis and testimony that significant economic benefits will
2 accrue to the region, as a result of LLB becoming operational.
3

4 **Q. Mr. Large, is it your opinion that each of the factors outlined in RSA**
5 **362-F:9, II have been met?**

6 A. Yes. As described above, I believe that each of the factors defined in 362-F:9,
7 II are met, and that this Power Purchase Agreement should be found to be in
8 the public interest.
9

10 **RATEMAKING ISSUES**

11

12 **Q. Mr. Large, how does PSNH propose to recover the costs associated**
13 **with this PPA with LLB?**

14 A. PSNH proposes that the costs associated with the PPA be recovered in the
15 Default Energy Service rate. This approach is consistent with the method
16 approved by the commission for the Lempster Wind transaction in Docket No.
17 DE 08-077.
18

19 **CONCLUSION**

20

21 **Q. Please summarize your recommendation concerning approval of this**
22 **PPA.**

23 A. Considerable thought and deliberation went into developing this unique
24 power purchase agreement. I truly believe approval of this PPA to be in the
25 public interest. We respectfully ask the Commission to approve the PPA and

1 authorize this Project to move forward quickly for the economic benefit of the
2 region.

3

4 Q. Does this complete your testimony?

5 A. Yes, it does.