BEFORE THE STATE OF NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION

In the matter of:)
DE 10-195	Ó
Public Service Company of New Hampshire	Ó
Petition for Approval of Power Purchase Agreement with	Ó
Laidlaw Berlin BioPower, LLC	í

Direct Prefiled Testimony

of

Kenneth E. Traum

on behalf of

the Office of the Consumer Advocate

Revised: January 20, 2011

1	Q.	Please state your name, business address and position.
2	A.	My name is Kenneth E. Traum. I am employed as the Assistant Consumer Advocate
3		by the New Hampshire Office of the Consumer Advocate (OCA), which is located at
4		21 South Fruit Street, Suite 18, Concord, New Hampshire 03301. The OCA is
5		charged by RSA 363:28 with representing the interests of residential ratepayers in
6		cases before the New Hampshire Public Utilities Commission (Commission), as well
7		as in other forums.
8		
9	Q.	How long have you been employed for the OCA?
10	A:	I have been employed by the OCA for approximately 21 years.
11		
12	Q:	Is a summary of your experience attached to this testimony?
13	A:	Yes. Attachment KET - 1 is my résumé.
14		
15	Q:	Have you previously testified before the Commission?
16	A:	Yes. I have testified before the Commission on behalf of the OCA on many
17		occasions in adjudicatory proceedings involving electric, natural gas, water, and
18		telecommunications utilities.
19		
20	Q:	What is the purpose of your testimony in this case?
21	A:	The purpose of my testimony is to explain the OCA's recommendations with respect
22		to Public Service Company of New Hampshire's (PSNH's) request for approval of a
23		long term Purchase Power Agreement (PPA) with Laidlaw Berlin Bio Power, LLC
24		(Laidlaw). For the reasons discussed in my testimony, including the 20-year term of

1	the PPA, the over-market costs that result from the proposed pricing terms which
2	would be paid by PSNH's Default Energy Service (ES) customers, and the right of
3	first refusal to purchase the plant, the OCA recommends that the Commission reject
4	the PPA as proposed.

5

4

Q: Please briefly describe PSNH's proposal in this case.

A: On July 26, 2010 PSNH filed a petition under RSA 362-F:9 for approval of a long-7 term PPA with Laidlaw. If approved, the PPA would require PSNH to purchase the 8 net output of Laidlaw's plant including energy, capacity, and NH Class 1 Renewable Energy Certificates (RECs) for a term of 20 years, starting in 2014. Below I discuss 10 each aspect of the proposed PPA in detail. 11

12

13

Q: Please begin with the energy pricing terms and briefly explain them.

14 A: As described in Section 6.1.2(a) of the PPA, the base energy price is set at \$83/MWh. This base energy price is subject to a quarterly adjustment, up or down, using a 15 "Wood Price Adjustment" or "WPA." The calculation of the WPA begins with the 16 17 difference between the actual average \$/ton that PSNH pays for Biomass Fuel at its Schiller Station biomass unit, and \$34/ton. The difference between the two amounts 18 is then multiplied by a factor of 1.8 and added to the base price. For example, if the 19 price that PSNH pays for wood at Schiller Station is \$40/ton, then the WPA would be 20 \$10.80. That amount would then be added to the \$83/MWh for a total cost of 21 22 \$93.80/MWh.

23

24

¹ Costs for biomass fuel at Schiller Station are paid by ratepayers who take PSNH's Default Energy Service through the Energy Service rate, which is set annually in a Commission proceeding.

I	Q:	Please describe the capacity terms of the PPA.
2	A:	As described in Section 6.1.2 (b) of the PPA, PSNH's Energy Service ratepayers will
3		also be required to purchase capacity from the facility at the rate of \$4.25/kW-month
4		of capacity for each of the first five operating years. For each subsequent operating
5		year, the capacity price would be increased by \$0.15 per kW-month.
6		
7	Q:	Please turn now to the REC terms of the PPA, and briefly explain them.
8	A:	As described in Section 6.1.2 (c) of the PPA, for the first five years of the PPA,
9		PSNH's ES ratepayers will be required to purchase NH Class 1 RECs delivered to
10		PSNH equal to 80% of the then-applicable "Renewable Products Payment." The
11		"Renewable Products Payment" is defined in Section 1.57 of the PPA as the
12		Alternative Compliance Payment (ACP) pursuant to RSA 362-F:10, and updated by
13		the Commission annually. For years six through ten, the payment declines from 80%
14		of the applicable ACP to 75%. For years eleven through fifteen, the payment is based
15		on 70% of the applicable ACP, while for the remaining years the payment will be
16		based on 50% of the applicable ACP. As I discuss in more detail below, the current
17		market rate for NH Class 1 RECs is approximately 30% of ACP.
18		
19	Q:	Have your reviewed the pricing terms of the PPA in order to assess how they
20,		compare to market prices?
21	A:	Yes.
22,		
23	Q:	Are the pricing terms comparable to prices that PSNH would pay for energy
24		and capacity in the market?
25	A:	No. According to PSNH's base case forecast, the costs for energy which ES

1		customers would pay, are above market for each of the 20 years of the PPA, for a
2		total of more than \$140 million. See Attachment KET-2 (PSNH's Response to Staff
3		01-011, Attachment 2) and Attachment KET-3 (PSNH's Response to Staff 01-011,
4		Attachment 3). The pricing terms for capacity are also above market for the first six
5		years of the PPA. See Attachment KET-2.
6		
7	Q:	How do the REC pricing terms compare to market?
. 8	A:	PSNH did not forecast market prices for REC's, and instead assumed that the
9	Wa-	percentage discounts of the ACP required in the PPA would reflect market prices.
10		See Attachment KET-3. Based on my own analysis, which I discuss in detail below,
11		the PPA is likely to result in REC payments that also exceed market prices.
12		
13	Q:	Did you calculate the projected annual and cumulative over market costs for
.14		energy that would result under the PPA?
15	A:	Yes. I calculated estimates of over market energy costs utilizing PSNH's base case
16		annual energy forecast, as well as their projected annual energy payments under the
17		PPA. I have provided my calculations in Attachment KET- 4. My calculations show
18		that under the PPA, PSNH's ES customers would pay approximately \$7 million over
19		market every year, or a total of \$144 million over the 20 year term of the PPA. This
20 ⁻	•	result is consistent with PSNH's calculations. See Attachment KET- 3.
21	•	
22	Q:	What does your analysis of capacity costs under the PPA show?
23	A:	Using PSNH's projections, for the first six years of the PPA Laidlaw would receive
24		payments that exceed market costs for capacity totaling \$6.3 million. See Attachment
25		KET-4. Starting in year seven, under PSNH's base case projections, the capacity

price under the PPA will be below market. Therefore, the net effect of the payments for capacity over the term of the PPA, assuming that PSNH's forecast for capacity prices is correct, result in the PPA capacity costs being \$11 million under market. It is important to note, however, that forecasts generally tend to be less certain over longer time periods, as I discuss later in this testimony.

Did you perform similar calculations to analyze the REC costs under the PPA?

Q:

A:

Yes. As I stated above, PSNH did not provide a forecast of REC prices but instead used a percentage of ACP prices to project future REC costs under the PPA. In my analysis I considered several data points, including the current ACP price for NH Class 1 RECs, which is \$60.93 for 2010 pursuant to the Commission's update of the ACP under RSA 362-F:10. I also reviewed an example of a recent market-based transaction for RECs in order to determine the current relationship between ACP and market prices for RECs. Specifically, I reviewed an October 14, 2010 press release by a company called Evolution Markets² announcing the results of a recent auction for University of New Hampshire 2010 and 2011 Class 1 RECs, which sold for

I also noted that in discovery, PSNH referenced 2012 Class 1 REC price forecasts in Massachusetts of \$20/REC. See Attachment KET-6 (PSNH Response to Staff 06-001). Finally, I considered recent REC pricing information provided by PSNH in a redacted discovery response in the Company's 2011 Default Energy Service rate proceeding, DE 10-257. See Attachment KET-7 (PSNH Redacted Response to Staff

\$13.16 and \$18.90 per REC, respectively. See Attachment KET-5.

² Evolution Markets is a trading firm that provides brokerage services for energy and environment products including RECs. *See* <u>www.evomarkets.com</u>.

01-012). In that response PSNH indicated that they were forecasting a market price of \$18.45 for Class 1 RECs for 2011.

Under the current RPS pricing scheme, it is fair to assume a minimal increase in the ACP for 2011, so that the ACP will be similar to the \$60.93 set by the Commission for 2010. Using that amount, I then compared the market pricing information that I discussed above and calculated that those recent market prices and forecasts show that current market prices for Class 1 RECs in 2010 and 2011 are about 30% of the ACP. Therefore, for the purposes of my analysis of how the REC prices in the PPA compare to the market, I used amounts equal to 30% of the future ACPs over the life of the PPA as a proxy for future REC market prices. In contrast, the percentages of ACP specified in the PPA start at 80% in 2014 and drop to 50% over the term of the PPA.

Q:

What does your analysis regarding the costs of RECs under the PPA suggest?

A: Based on my assumptions for REC prices as described above, my analysis shows that in Year 1 (2014) alone, the cost for RECs under the PPA would be more than \$14 million over market. See Attachment KET-4. If future REC prices continue to be significantly below the ACP cost, Attachment KET-4 also shows that these over market costs would continue for every year of the PPA, resulting in cumulative over market payments for RECs that could be as high as \$276 million. I understand that it is very difficult to forecast the future costs of RECs, and that my analysis may over or understate the costs of RECs in the future. That said, the significant amounts over market that ES customers could pay for energy alone is a sufficient basis to reject the PPA as proposed, and the potential for over market REC costs makes it even riskier

1		for customers.
2		
3		Also, as I discuss later in my testimony, the migration of PSNH's large customers
4	-	impacts the amount of RECs that PSNH is required to purchase. Consequently,
5		locking into REC purchases at a time when there are high levels of large customer
6		migration increases the risk that the PPA will result in the purchase of RECS that
7		PSNH may not even need.
8		
9	Q:	What does your analysis indicate are the total over market costs that PSNH
10		customers could face under the PPA?
11	A:	In the first year of the PPA alone, Attachment KET-4 shows that ES customers would
12		pay as much as \$22 million over market for energy, capacity and RECs from
13		Laidlaw. Over the 20 year term of the PPA the over market payments could exceed
14		as much as \$400 million.
15		
16		Forecasts generally tend to be less certain over longer time periods. Nevertheless,
17		because of the conservative nature of my calculations, I conclude that the risks to
18		PSNH's ES customers of substantial overpayment to Laidlaw far outweigh the
19		benefits of the PPA.
20		
21	Q.	How are your calculations conservative?
22	A.	First, my analysis used PSNH's base-case which assumed net output of 58 MWhs
23	•	and capacity factor of 86%. According to Laidlaw's initial application to the Site
24		Evaluation Committee (SEC), Laidlaw was then projecting a net output of 64MWhs
25		and a 70 - 100% capacity factor. See Attachment KET-8 (Laidlaw Application to

1 Site Evaluation Committee, December 15, 2009, at p. 38 and 44). In addition, page 2 32 of the PPA itself states: "The facility will be designed to have a net electric output 3 at standard conditions of approximately 64 MW (winter) and 61 MW (summer)." If my analysis had been based on output of approximately 61 - 64 MWhs as opposed to 58 MWhs, the cumulative over market payments included in ES rates would increase 5 by up to 10%, to approximately \$450 million. 8 My analysis is also conservative because I used PSNH's base energy price. To 9 calculate its base energy price, PSNH assumed a 2011 market energy price of 10 \$59.99/MWh (as shown in Attachment KET-3), and projected the later years to grow from that price, so that in 2014 PSNH's base case market energy price is 11 12 \$66.63/MWh. However, in PSNH's 2011 Default Energy Service rate docket, DE 13 10-257, the Company used the amount of \$45.10 per MWh as the market figure for 2011, which is \$14.89 lower than the PSNH base case used for purposes of 14 15 calculating the over-market costs of the PPA. See Attachment KET-9 (PSNH 16 Response to Tech-01, Q-TS-04 in DE 10-257). If this difference in the market price , of energy were forecast to remain for the life of the PPA, then the over market 17 18 payments under the PPA would be increased by another \$130 million, to \$580 million. 19 20 21 In addition, a recent analysis of historical and forecasted Henry Hub spot market

In addition, a recent analysis of historical and forecasted Henry Hub spot market prices for natural gas from 1990 to 2035 in 2008 dollars, prepared by the US

Department of Energy confirms that PSNH's base energy price is too high. See

Attachment KET-10 (Report # DOE/EIA-0383(2010), Figure 69). Natural gas prices, which generally set the marginal electricity price in New England, have declined

22

23

24

25

1 significantly since PSNH developed its base energy price forecast in 2008. Further, 2 PSNH provided the Henry Hub Gas prices from August 14, 2008, which at that time 3 projected the 2011 price to be \$8.89/MMbtu. See Attachment KET-11, PSNH Response to CSC 04-001, p.3). By comparison, PSNH's current estimate for the 4 5 2011 gas price to be below \$6.00/MMbtu. Attachment KET-9. This recent gas price 6 data supports my characterization of my forecast as conservative and increases my 7 confidence that my forecast appropriately depicts the risk resulting from the PPA of 8 substantial overpayment by PSNH ES customers. 9 10 Q: Does PSNH propose to mitigate the above market payments that result from the 11 PPA? 12 A: Yes, but PSNH's proposal is not effective in my view. PSNH proposes to create a "cumulative reduction" mechanism by which a negative or positive adjustment will 13 14 be determined for each MWh of energy delivered under the PPA. See, e.g., Direct Testimony of Richard C. Labrecque, p. 8, line 1, through p. 9, line 2. PSNH proposes 15 16 to aggregate these negative and positive adjustments over the 20 year term of the PPA and, if the aggregate balance is negative, to use this quantity (i.e., the "Cumulative 17 18 Reduction") for the purposes of reducing the purchase price of the Project as 19 provided in the Purchase Option Agreement. Id. See also Section 6.1.3 of the PPA

22

23

24

25

20

21

Energy Payments").

It is important to note that the cumulative reduction only applies to the over market payments for energy, not those for capacity or RECs, and is only intended to reduce the potential purchase price of the plant. In addition, PSNH does not propose to pay

(the cumulative reduction is a "Reduction of Facility Purchase Price for Over-Market

1		ES customers interest on the over market costs under the cumulative reduction, which
2		I have estimated at \$4.7 million. See Attachment KET-4.
3		
4	Q:	What is your concern with the cumulative reduction mechanism?
5	A:	Simply put, the cumulative reduction mechanism does not change the fact that
6		ratepayers are likely to pay hundreds of millions of dollars in over market energy
7		costs under the PPA, as it is currently structured, over its 20 year term. This alone
8		makes the PPA too risky for ES customers.
9 ·		
10		In addition, if the cumulative reduction provides any benefit, it is only a hypothetical
11		benefit that would accrue to future ratepayers, \underline{if} PSNH seeks to purchase the plant, \underline{if}
12		that purchase is found to be in the interest of ratepayers under a future regulatory
13		regime, and $\underline{i}\underline{f}$ the value of the plant exceeds the cumulative reduction amount. The
14		cumulative reduction does not compensate current ratepayers for the over market
15		energy costs that they will pay under the PPA. Consequently, there is not a
16	• .	"matching" of those who pay the costs, and those who receive the benefits. As a
17		result, the cumulative reduction mechanism, at best, results in intergenerational cost
18		shifting and is therefore unfair to customers.
19		
20		Finally, although I am not a lawyer, it is my understating that under RSA 374-F, the
21		state's electric restructuring law, PSNH does not have the legal authority to purchase
.22		the plant. Therefore, in order for customers to get any of the hypothetical benefits
23		from the cumulative reduction, the law must be changed. Importantly, the plant must
24		also still have value at least equal to the cumulative reduction when PSNH
25		hypothetically purchases the plant, which could be as late as 2033.

Q: Do you have any concerns regarding the Wood Price Adjustment Mechanism (WPA)?

Yes. As I described earlier, the WPA would result in a quarterly adjustment equal to the difference between the actual average \$/ton that PSNH pays for Biomass Fuel at its Schiller Station biomass unit, and \$34/ton. The difference is then multiplied by a factor of 1.8 and added to the base price of energy. The main concern that I have with the structure of the WPA is that it is based on the prices that PSNH pays at its own Schiller Station, rather than a true market-based price. This could cause wood prices to be higher for ratepayers at both plants, as the Schiller plant has a limited area from which to draw wood fuel, which may overlap with that of the proposed Laidlaw facility. In addition, setting the WPA based on the wood price paid at Schiller could generally put upward pressure on wood prices, which would impact the costs passed on to ratepayers for energy produced at both plants. Therefore, we believe that if a WPA is necessary, it should be designed to ensure that PSNH ES customers benefit from the lowest wood prices possible.

A:

A:

Q: Please summarize the OCA's concerns about the proposed 20 year term of the PPA.

First, we believe that locking into pricing that is not tied to market prices presents an unacceptable level of risk for ES customers. In fact, in PSNH's 2010 Least Cost Integrated Resource Plan (DE 10-261) filed on September 30, 2010, on page 19, Section B.1, the Company acknowledges this. It states, "PSNH does not utilize long-term forecasts greater than five years for financial and business planning purposes because of uncertainty in the market and the inherent inaccuracy of forecasts." We only have to remember the above-market costs of the old wood plant (IPP) rate orders

1	paid by ratepayers, as PSNH points out, as an illustration of why fixed-cost long term
2	contracts are generally not in the best interests of ratepayers. See Direct Testimony
3	of Richard C. Labrecque, page 9 (Bates page 098). PSNH also stated at the
4	prehearing conference in this proceeding that ratepayers have paid more than \$2
5	billion in over market costs for the IPP contracts. Therefore, we believe that any PPA
6	proposed by a utility should be more closely tied to market prices, such as the PPA
7	between PSNH and the Lempster Wind facility that was approved by the
8	Commission in 2009. The Lempster PPA, unlike the proposed Laidlaw PPA, is
9	based on pricing "that is calculated as a percentage of the ISO-NE energy price,
10	subject to a \$/MWh floor." Order No. 24,965 in DE 08-077 (May 12, 2009) at p. 7.3
11	
12	Second, we believe that this PPA must be considered in the context of the significant
13	migration of large customers that PSNH is experiencing due to low market prices and
14	its management of its ES portfolio. As has been discussed at length in DE 10-160,
15	the Commission's investigation into PSNH's ES migration, as large customers
16	migrate to competitive suppliers, costs have shifted to smaller customers. Those who
17	now must shoulder the costs related to PSNH's decisions about how to generate and
18	purchase energy for its Default Energy Service are largely residential and small
19	business customers who do not in reality have retail competitive electric choice.
20	

³ In its approval of the Lempster PPA, the Commission noted:

Order No. 24,965 in DE 08-077 (May 12, 2009) at p. 17 (emphasis added).

Energy and capacity pricing in the power purchase agreement are both established by reference to actual prices experienced in the ISO-NE market, therefore allowing PSNH to pay energy and capacity prices that align with movements of market prices. Regarding the energy floor price, we find that the inclusion of this pricing term, while providing income protection to Lempster Wind, does so at a price level that is <u>significantly discounted from current market energy prices</u>.

1		As shown in Attachment KET-12 (PSNH's Response to Staff 05-002), the percentage
2		of PSNH total retail load served by competitive suppliers reached an all time high of
3		33% in September 2010. This level of migration not only means that an increasingly
4		smaller group of ES customers will have to pay the above market costs of the PPA
5		under PSNH's proposal, but it also raises the question about PSNH's need for RECs
6		under RSA 362-F:9. To meet PSNH's current REC obligations, the Company has
7		stated in discovery that in 2014 and 2015 the Laidlaw RECs would cover more than
8		100% of PSNH's ES Class 1 REC requirement. See Attachment KET-13 (PSNH
9		Response to Staff 06-003). This means that in addition to paying over market prices
10		for the Laidlaw RECs, PSNH is buying RECs that it may not need.
11		
12	Q:	Does the OCA have any other concerns about the PPA's potential impact on
13		customers?
14	A:	Yes, we have three additional concerns. First, in response to discovery, PSNH
15		acknowledged that it is possible under the PPA for Laidlaw to expand the facility,
16		which could increase the amount of over market payments by ES customers. See
17		Attachment KET-14 (PSNH Response to Staff 05-001). This means that the PPA
18		could be even more costly and more risky for customers.
19		
20		Second, we are concerned that PSNH is not taking advantage of offers from other
21		renewable energy producers that could be at lower costs than Laidlaw. In response to
22		discovery, PSNH provided information about recent offers received from other
23	·	renewable energy plants who seek to sell their output to PSNH. In one response,
24		provided in Attachment KET-15 (PSNH Response to Staff 01-032-RV01,
25		Attachment 1 Revised), the Company provided information that compared offers

from Clean Power Development and Concord Steam to the Laidlaw PPA. In addition, PSNH also provided confidential information in an updated discovery response regarding proposals made by renewable energy developers since the time that negotiations with Laidlaw began. See Attachment KET-16 (PSNH Confidential Responses to Staff 1-017 RV01 and Staff 05-006 RV01). This information suggests that other options exist that should be evaluated, and that it may be appropriate for PSNH to utilize a competitive process, such as an RFP, for its REC and energy needs.

Finally, the proposed term of the PPA extends beyond the current RPS statute, RSA 362-F, which currently sets renewable portfolio standard requirements until 2025. However, the PPA commits PSNH ES customers to purchasing RECs beyond the period currently required, out to 2033. There is also the risk that the RPS statute could be amended or repealed, which could make the RECs potentially worthless to customers who would be locked into paying for them.

A:

Q: Please summarize your testimony.

In summary, the OCA believes that the Commission must reject the PPA as proposed. The pricing terms in the PPA are significantly above market, and could result in more than \$400 million in over market payments by ratepayers between 2014 and 2033. We also believe that the purported benefits of the "cumulative reduction" mechanism are illusory at best, and if they do materialize through the required change in the restructuring law, they will accrue only to future ratepayers and not to those who would pay the over market costs required by the PPA. In sum, the risks of substantial overpayment by PSNH ES customers under the PPA far outweigh any of the purported benefits of long-term price stability and the hypothetical price reduction of

1		the plant many years from now.
2		
3		We understand that there is a strong desire on the part of many to site a new wood to
4		energy plant in the North Country, and the OCA is certainly supportive of renewable
5		energy development. However, as proposed, the terms of the PPA expose PSNH's
6		ES ratepayers to undue risk and financial exposure.
7		
8	Q:	Do you have any final comments?
9	A:	At this time the OCA has not been provided access to the confidential Site Evaluation
10		Committee (SEC) transcripts in Docket 2009-02, even in redacted form. Therefore,
11		we wish to reserve our rights regarding that information in the event that the
12		Commission considers it in making its determinations in this case.

Kenneth E. Traum Qualifications

My name is Kenneth E. Traum. I am the Assistant Consumer Advocate for the Office of Consumer Advocate (OCA). My business address is 21 S. Fruit Street, Suite 18, Concord, New Hampshire 03301. I have been affiliated with the OCA for approximately twenty one (21) years.

I received a B.S. in Mathematics from the University of New Hampshire in June, 1971, and an MBA from UNH in June, 1973. Upon graduation, I first worked as an accountant/auditor for a private contractor and then for the New Hampshire State Council on Aging, before going to the New Hampshire Public Utilities Commission (NHPUC) in February, 1976. At the NHPUC I started as an Accountant III, advanced to a PUC Examiner and later become Assistant Finance Director.

In my positions with the NHPUC, I was involved in all aspects of rate cases, assisted others in the preparation of testimony and presented direct testimony, conducted cross examination of witnesses, directed and participated in audits of utilities, and performed other duties as required. While employed at the NHPUC, I was a member of the NARUC Regulatory Studies Program at Michigan State.

In 1984, I left the NHPUC for Bay State Gas Company. With Bay State, I was involved in various aspects of financial analysis for Northern Utilities, Inc., Granite State Gas Transmission, Inc., and Bay State Gas Company, as well as regulatory activities with regard to Maine, New Hampshire, Massachusetts and the FERC.

In early 1986, I returned to New Hampshire to join the EnergyNorth companies, where my areas of responsibility included cash management, regulatory affairs, forecasting and other financial matters. While with EnergyNorth, I was a member of the New England Utility Rate Forum and the New England Gas Association. I also represented the utility, which is the largest natural gas utility in New Hampshire, over a two year period in the generic Commission docket (DE 86-208) which developed a methodology for conducting gas marginal cost studies.

In 1989 I joined the Office of Consumer Advocate with overall responsibility for advising the Consumer Advocate and its Advisory Board on all Financial, Accounting, Economic and Rate Design issues which arise in the course of utility ratemaking or cases concerning determinations of revenue responsibility, competition, mergers, acquisitions and supply/demand issues. I assist the Consumer Advocate and the OCA Advisory Board in formulating policy, and in implementation of that policy. In that role, I have testified before the NHPUC on many occasions. In early 2005, I was promoted to Assistant Consumer Advocate.

I am a member of the NASUCA (National Association of State Utility Consumer Advocates), Committees on Electricity and Gas. I am currently on the Board of Directors for Granite State Independent Living (GSIL) and formerly served as Chair as well as a member on the GSIL's Finance and Audit Committees.

160												
DE 10-195 Q-STAFF-01-011	Attachment 2	. 80%	Year 20	2033	\$104.36 S8.85	\$107.52 \$205.53	\$125.23 \$8 85	\$107.52 \$247.91	\$83.49 \$8 85	\$107.52	\$119.64 \$6.50	\$11.13 \$53.76 \$184.53
DE TAFF	Attac	80%,	Year 19	. 2032	\$101.82	\$104.90	\$122.18	\$104.90 \$241.86	\$81.45	\$104.90	\$117.25 \$6.35	\$10.87 \$52.45 \$180.57
Q-S		80%	Year 18	2031	\$99.33	\$102.34 \$195.83	\$119.20	\$102.34 \$235.96	\$79.47 \$8.43	S102.34 S145.06	\$114.92	\$10.62 \$51.17 \$176.71
		80%	Year 17	2030	\$96.91	\$99.84 \$190.86	\$116.29	\$99.84 \$230.21	\$77.53 \$8.22	\$99.84 \$141.52	\$112.65	\$10.36 \$49.92 \$172.93
	•	%08	Year 16	. 2029	\$94.52	\$97.41 \$186.18	\$113.43 \$8.02	\$224.56	\$75.62	\$138.05	\$110.44 \$	\$48.70 \$48.70 \$169.24
		%08	Year 15	2028	\$7.82	\$181.51	\$110.63	\$219.05	\$73.75	\$134.66	\$108.27 (\$5.75	\$184.64
		%08	Year 14 ·	2027	\$89.92	\$177.21	\$7.66	\$213.73	\$71.94	\$131.41	\$105.16 \$5.60	\$64.90
		%08.	Year 13	2026	\$87.70	\$172.94	\$105.24 \$7.52 \$90.45	\$208.57	\$70.16 \$7.52	\$128.26	\$5.45 \$9.33	\$63.32 \$176.76
	į			2025	\$85.54 \$7.36 \$88.24	\$168.74	\$102.65 \$7.36 \$88.24	\$203.50	\$68.43 \$7.36 \$88.24	\$125.16	\$102.10 8 \$5.30 \$9.08	\$61.77
	Š	00% Year 11	5	2024	\$83.43 \$7.05 \$86.09	\$164.38	\$100.12 \$7.05 \$85.09	\$198.28	\$56.75 \$7.05 \$86.09	\$121.86	\$100.14 \$5.15 \$8.82	A 1
,	80	Year 10	200	£023	\$6.49 \$6.49 \$83.99	\$159.68	\$97.65 \$6.49 \$83.99	\$192.76	\$65.10 \$6.49 \$83.99	\$118.21	\$98.23 \$5.00 \$8.56	\$62,99 \$169.79
	80%	Yearg	2002	£70.27	\$5.95	\$155.11	\$95.24 \$5.95 \$81.94	\$187.38	\$5.95 \$5.95 \$81.94	\$114.66	\$4.85	\$166.13
	80%	Year 8	2021	\$77.53	\$5.35	\$150.65	\$93.04 \$5.35 \$79.95	3162.14	\$5.35	91.1.16	\$94.55 \$4.70 \$8.05	\$162.55
	80%	Year 7	2020	\$75.67	\$78.00	77'0516	\$90.80 \$4.79 \$78.00	00.7	\$4.79	2	\$92.77 \$4.55 \$7.79 \$58 50	\$159.06
	80%	Year 6	2019	\$73.80	\$4.29 \$76.09	e 146.02.	\$88.56 \$4.29 \$76.09		\$59.04 \$4.29 \$76.09		\$91.04 \$4.40 \$7.53,	\$155.65
	80%	Year 5	2018	\$71.92	\$3.21 \$74.24 \$136.81		\$86.31 \$3.21 \$74.24 \$166.04		\$57.54 \$3.21 \$74.24 \$100.15		\$89.35 \$4.25 \$7.28 \$59,39	\$156.02
	80%	Year 4	2017	\$70.06	\$1.64 \$72.43 \$130.81		\$84.07 \$1.64 \$72.43 \$159.30	! !	\$1.64 \$1.64 \$72.43 \$95.07		\$87.71 \$4.25 \$7.28 \$57.94	\$152.92
	80%	Year 3	2016	\$58.32	\$1.75 \$70.66 \$127.85	į	\$1.75 \$1.75 \$70.66 \$155.65	964 56	\$1.75 \$70.66 \$92.99			\$149.90
	80%	Year 2	2015	\$56.60	\$2.80 \$68.94 \$126.55	92	\$2.80 \$68.94 \$153.65	\$53 28	\$2.80 \$68.94 \$92.54	100	\$4.25 \$7.28 \$55.15	\$146.96
	80%	Year 1	2014	\$66.63	\$67.26 \$67.26 \$125.23	£70 08	\$2.80 \$67.26 \$152.01	\$53.31	\$2.80 \$67.26 \$91.73	482 00	\$4.25 \$7.28 \$53.80	90.44.08
	REC Market (% of ACP)		Base Case	Markel Energy Price (\$/MWh) Markel Capacily Price (\$/kW-Mo)	e (S/MWh) F	High Market Case 120% Market Energy Price (\$/MWh)	Mo) Pitce (\$/MWh) 1%CF	Low Market Case (\$/MWh)	700% Market Capacity Price (\$RKW-Mo) : .: 50% REC Alternative Compilance Price (\$RMWh) All-in Mkt Price (\$IMMh) at 80%CF	Contract Payment Confract Energy Payment (\$fMWh)	Mo) h)	

Assumptions . Net MVVs . Capacity Factor

DE 10-195 Q-STAFF-01-011 Attachment 3

<u> </u>	
03-09-10.	
3-06	
sis (
паly	
Je A	
Val	
aw PPA Value	
ak	
aid	
lawi	
Laid	
菱	
ecis	
ద	
ata)(
eptde	
ë	

DE 10-195 PSNH Laidlaw PPA OCA Testimony of Traum Attachment KET -3

Starting variable Costs	. \$2,979,889										
		Base Case	Base Case	Base Case	Base Case	Year 1	Year 2	Year3	Year 4	>	
Year		2010	2044	c c		ISD 1/1/2014	dase Case	Base Case	Base Case	Base Case	Year 6 Base Case
Time Penod		2	- 707	21.02	2013	2014	2015	2016	į		3
Capacity Payment (5/kW.Mg)		\$34.00	\$34.00	\$34.00	. 0 \$34.00		73	9 6	2017 A	2018	2019
Class I Alternative Compliance Price (\$/MWh)					O Control	34.00 34.25	\$34.85	\$35.72	\$36.61	537.53	ត្ត រួ
REC Adjustment (PSNH Option)		55.00¢	\$62,45	\$64.01	\$65.61	\$67.26	PB 895	\$4.25	\$4.25	\$4,25	4,00.47
· CPI Adjustment		80	%n	%0	%0	80%	%08 80%	80%	\$72.43	\$74.24	\$76.09
Market Capacity Price (\$/MWh)		\$56.46	. \$59.99	\$51.25	EP E95	100.00%	102.50%	105.00%	107.50%	80%	75%
(DIALANCE) BOLL SUBJECT	è	\$4.19	\$3.59	\$2.78	\$2.69	\$2.80	\$66.60	\$68.32	\$70.06	\$71.92	112.50%
Adjusted Basis Price (\$/MWh)							00:50	\$1.75	\$1.64	\$3.21	\$4.29
Cumulalive Reduction Value						\$83.00 (\$7,068.599)	\$84.53 (\$7.742.98E)	\$86.10	\$87.71	1989 1989 1989	. 070
Buyout Value of Plant	:					(\$7,068,599)	(\$14,810,894)	(\$7,675,746) (\$22,486,641)	(\$7,621,431)		(\$7,447,855)
Revenue									(200,000,000)		(\$45,084,025)
Capacity				· .	•6 7	62,039,380 \$	63.781 0.47 e	,			
Energy					645		2.958.000 \$	9 923,755 \$	65,858,281 \$	67,195,420 \$	87.027.278
RECS	•				69 6		36,505,802 \$	37,183,079 \$	2,958,000 \$	2,958,000 \$	3,062,400
Expenses				,		, 25,235,335 \$	23,817,245 \$	24,412,676 \$	25,022,993 \$	25,648,557 ¢	39,318,205
Lease Payment	•										24,046,570
Variable O&M						20,000,000 \$	20,000,000 \$. 20,000,000 \$	20.000 000 €	200	
Fuel Costs	•	•			∍ 6 >	2,979,889 \$	6,150,000 \$	6,300,000 \$	6,450,000 \$	5,600,000 \$ 6,600,000 \$	20,000,000
NADC Royally Payment Management Fee					€ 9 €5	26,430,322 \$	27,091,080 \$	27,768,357 \$	3,203,381 \$.28,462,566 - \$	3,277,878 \$	3,352,375
Total Expenses							1 1	1 I		A 69	29,903,483
Net Profit (as defined by agreement)	•				57 -	55,410,211 .\$	56,295,466 \$	57,197,240 \$	58,115,946 \$	59,052.008 \$	- c
Percentage Rent at 15%	. C				67 2	6,629,169 \$	\$ 182,581	7,356,514 \$	7,742,334 \$	R 143 412	000000000000000000000000000000000000000
	?					\$994,375	\$1.047.837	64 400 411	t.		, 1417
re-tax rrollt					·	# K07 707 #		7,100,10	\$1,161,350	\$1,221,512	\$1,053,213
Calculated Tax at 40%		-				5,457,184	5,937,744 \$	6,253,037 \$	6,580,984 \$	6,921,900 \$	5.968.205
Net Income					60	2,253,918 \$	2,375,097 \$.	2,501,215 \$	2,632,394 \$	2,768,760 \$. 282 282 6
Profit Margin			į		СР	3,380,876 \$	3,562,646 \$	3,751,822 \$	3,948,590 \$		202, 202,
Average Profit Margin	4.91%					5.45%	5.63%	5.81%	8.00%		5780,000
										6.18%	5.34%

1.79%

Assumptions Net MWs Year 17 Base Case

2030

\$50.47 \$6.05 \$99.84 50% 140.00% \$96.91 \$8.22

\$112.65 (\$6,798,229) (\$123,524,347)

74,420,528 4,210,800 48,650,683 21,559,045

20,000,000 8,400,000 4,171,845 39,235,961

71,807,806

2,612,722 \$391,908 2,220,814

\$ 3,166,800 \$ 3,271,200 \$ 3,480,000 \$ 2,480,000 \$ 3,480,000 \$ 3,747,769 \$ 4,242,572 \$ 4,244,400 \$ 3,686,800 \$ 3,744,400 \$ 3,686,800 \$ 3,480,000 \$ 2,5,262,837 \$ 25,894,408 \$ 26,441,768 \$ 27,205,312 \$ 4,242,572 \$ 4,242,572 \$ 4,242,776 \$	Factor 3 Annual MWHrs ergy Price (\$MWth) ord Cost (\$Non) el Factor (Tons/MWH) srgy Margin s Rate pacity nodex 38.M Arriable Costs Arriable Costs (\$MWth) Permant (\$FWWh) Permant (\$FWWh) paparior (\$FWWh) paparior (\$FWWh) strong Price (\$FWWh)	Vear 7 Base Case 2020 2020 7 539.43 \$4.55 \$15.00% \$75.67 \$82.77 (\$7,397,413) \$82.77 (\$62,471,438)	Year 8 Base Case 2021 8 44.70 \$4.70 \$79.95 77.53 \$77.53 \$5.35 \$84.55 (\$7.348,792) (\$59,820,230)	Year 9 Base Case 2022 9 \$41.43 9 \$41.46 120.00 120.00 120.00 \$5.95 \$5.95 \$5.95 \$5.95 \$5.95 \$5.95	Year 10 Base Case 2023 10 \$42.46 \$5.00 \$83.99 75% 1722.50% \$1.22.50% \$6.49 \$58.49 \$7.87.279.078) (\$7.47.99.590.3	Year 11 Base Case 2024 11 \$43.62 \$5.15 \$86.09 125.00% \$83.43 \$7.05 \$100.14 (\$7.216.101) (\$61,655,699)	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 (t) 10 mm or 10 mm or 10 mm	Year 14 Base Case 2027 14 \$46.87 \$5.60 \$9.77 70% 132.60% \$89.92 \$7.06 (\$7,016,060)	Year 15 Bese Case 2028 15 \$48.04 \$5.75 \$92.09 135.00% \$12.09 \$108.27 \$6945.500) (\$109,853,209)	Year 16 Base Case 2029 2029 55.90 85.90 897.41 50% 137.50% \$8.02 \$110.44 (\$6.872.909)
\$ 20,000,000 \$ 7,0	Capacity S Energy S RECS . S	2 44		71,534,871 3,375,600 41,617,503 26,541,768	73,107,885 3,480,000 42,422,572 27,205,312	72,858,584 3,584,400 43,247,769 26,026,416	74,459,471 \$ 3,688,800 \$ 44,093,595 \$ 26,677,076 \$			79,490,368 4,002,000 46,760,075 28,728,993	
by agreement \$ 7,517,487 \$ 8,028,961 \$ 8,556,224 \$ 9,099,671 \$ 7,800,676 \$ 8,331,240 \$ 8,876,108 \$ 9,441,572 \$ 10,022,165 \$ 7,217,683 \$ 1,127,623 \$ 11,204,344 \$ 1,204,344 \$ 1,204,344 \$ 1,204,344 \$ 1,204,344 \$ 1,204,344 \$ 1,204,344 \$ 1,204,344 \$ 1,204,344 \$ 1,204,344 \$ 1,204,344 \$ 1,304,470 \$ 1,814,635 \$ 1				20,000,000 7,200,000 3,575,867 32,202,780	20,000,000 7,350,000 3,650,364 33,007,850 64,008,214	20,000,000 7,500,000 3,724,862 33,833,046 - 65,057,908				20,000,000 8,100,000 4,022,850 37,345,353	
\$ 6,389,864 \$ 6,824,616 \$ 7,727,790 \$ 7,734,720 \$ 6,630,575 \$ 7,081,554 \$ 7,546,359 \$ 8,025,336 \$ 8,518,840 \$ 1,83 \$ 2,565,946 \$ 2,729,847 \$ 2,909,116 \$ 3,093,888 \$ 2,652,230 \$ 2,832,621 \$ 3,016,544 \$ 3,210,135 \$ 3,407,536 \$ 77 \$ 3,833,918 \$ 4,094,770 \$ 4,333,574 \$ 4,640,832 \$ 3,978,345 \$ 4,248,932 \$ 4,527,815 \$ 4,815,202 \$ 5,111,304 \$ 1,12 5,60% 5,88% 6.10% 6.35% 5,46% 6.71% 5,95% 6.19% 6.43%	y agreement		8,028,961	8,556,224	9,099,671					10,022,165	•
\$ 2,555,946 \$ 2,729,847 \$ 2,909,116 \$ 3,093,888 \$ 2,652,230 \$ 2,832,621 \$ 3,018,544 \$ 3,210,135 \$ 3,407,536 \$ 75 \$ 3,833,918 \$ 4,094,770 \$ 4,383,674 \$ 4,640,832 \$ 3,978,345 \$ 4,248,932 \$ 4,248,932 \$ 4,248,932 \$ 4,248,932 \$ 4,248,932 \$ 4,248,932 \$ 4,248,932 \$ 4,248,932 \$ 4,248,932 \$ 4,248,932 \$ 6,111,304 \$ 1,12			6,824,616		\$1,364,951 7,734,720						
5.60% 5.85% 6.10% 6.35% 5.46% 5.71% 5.95% 6.19% 6.43% 6.43% 6.43% 6.46% 6.48% 6.71% 6.95% 6.19% 6.43%	ax at 40%		2,729,847		3,093,888						<i>-</i> -
	Profit Margin · Average Profit Margin	5.60%	5.85%	_	6.35%			_	_		1,125,56 1.55

Year 29 Base Case 2042 2042 857.88 \$134.27 5134.27 \$5130.33	92,976,156 7,694,738 56,286,899 28,994,518	10,200,000 5,055,812 52,768,005 - 68,033,817 24,942,338	24,942,338 9,976;935 14,965,403 16.10%
Year 28 Base Case 2041 28 \$66.23 \$131.00 50% 167.50% \$127.15 \$10.79	90,708,444 \$ 7,507,062 \$ 54,914,048 \$ 28,287,335 \$	10,050,000 \$ 4,991,314 \$ 51,460,981 \$ 66,522,285 \$	24,186,149 \$ 9,574,460 \$ 14,511,689 \$ 16.00%
Year 27 Base Case 2040 27 \$64.61 \$127.80 50% 165.00% \$124.05	88,496,043 \$ 7,323,953 \$ 53,574,681 \$ 27,597,400 \$	9,900,000 \$ 4,916,817 \$ 50,225,347 \$ 65,042,164 \$ 23,453,879 \$	23,453,879 \$ 9,381,552 \$ 14,072,327 \$ 15.90%
Year 26 Base Case 2039 26 \$63.03 \$124.69 50% 182.50% \$121.03 \$10.27	86,337,603 \$ 7,145,330 \$ 52,267,901 \$ 26,924,293 \$	9,750,000 \$ 4,842,320 \$ 49,000,339 \$ 63,592,659 \$ 62,744,945 \$	22,744,945 \$ 9,097,978 \$ 13,646,967 \$ 15.81%
Year 25 Base Case 2038 25 \$61.50 \$121.65 50% 160.00% \$118.08 \$10.02	84,231,808 \$ 6,971,053 \$ 50,993,152 \$ 26,267,603 \$	9,600,000 \$ 4,767,823 \$ 47,805,209 \$ 62,173,031 \$ 22,058,777 \$	22,058,777 \$ 8,823,511 \$ 13,235,266 \$
Year 24 Base Case 2037 24 \$50.00 \$118.68 50% 157.50% \$115.20	82,177,374 \$ 6,801,028 \$ 49,749,417 \$ 25,826,929 \$	9,450,000 \$ 4,633,325 \$ 46,639,228 \$ 560,782,553 \$ 21,394,820 \$	21,394,820 \$ 8,557,928 \$ 12,836,892 \$ 15,62%
Year 23 Base Case 2036 23 \$56.53 \$115.78 1155.00% \$112.39 \$9.53	80,173,048 \$ 6,635,149 \$ 48,536,016 \$ 25,001,882 \$	9,300,000 \$ 4,618,828 \$ 45,501,686 \$ 59,420,514 \$ 20,732,534 \$	20,752,534 \$ 8,301,013 \$ 12,451,520 \$ 15.53%
Year 22 Base Case 2035 22 \$57.11 \$112.96 152.50% \$109.65	78,217,607 \$ 6,473,316 \$ 47,352,211 \$ 24,392,080 \$	9,150,000 4,544,331 44,391,888 58,086,220 50,131,388 \$	20,131,388 \$ 8,052,555 \$ 12,078,833 \$ 15.44%
Year 21 Base Case 2034 \$55.71 \$110.21 50% 150.00% \$106.97 \$9.07	76,309,861 \$ 6,315,430 \$ 46,197,279 \$ 23,797,152 \$	9,000,000 \$ 4,469,834 \$ 43,309,159 \$ 56,778,993 \$	7,812,347 \$ 7,812,347 \$ 11,718,521 \$ 15,36%
Year 20 Base Case Base Case Base Case Find of PPA Find o	201 - 201 -		
Year 19 Base Case End 2032 19 \$535.03 \$6.35 \$14.00 50% 145.00% \$117.25 \$117.25 \$117.25	77,707,075 4,419,600 50,637,004 22,650,471 20,000,000	8,700,000 4,320,839 8,41,222,281 74,243,121 3,463,955 5519,593	2,944,361 1,177,745 1,766,517 2,27%
Year 18 Base Case 2031 18 \$51.74 \$6.20 \$102.34 50% 142.50% \$89.33 \$89.33 \$8143 \$5114.92 (\$6,732,816) (\$130,257,163) (\$	76,044,803 \$ 4,315,200 \$ 22,098,021 \$ 20,000,000 \$	8,550,000 \$ 40,216,860 \$ 40,216,860 \$ 73,013,202 \$ 3,031,601 \$ \$454,740	2,376,861 \$ 1,030,744 \$ 1,546,117 \$ 2.03%
Starting Variable Costs Year Time Period Actual Schiller Wood Cost (\$\text{sTon}\$) Class I Alternative Compilance Price (REC Adjustment (\$\text{SNH}\$) Option) Adjustment (PSNH Option) Market Energy Price (\$\text{SNHVH}\$) Market Cappacity Price (\$\text{SNHVH}\$) Adjusted Basis Price (\$\text{SNHVH}\$) Over Market Value Cumulative Reduction Value (\$\text{SNHVH}\$) Buyout Value of Plant	Revenue Capacity Samengy RECs Expenses Lease Payment Fixed O&M	Variable O&M - \$ Fuel Costs - \$ NADC Royally Payment \$ Management Fee - \$ Total Expenses - Net Profit (as defined by agreement \$ Percentage Rent at 15%	Calculated Tax at 40% \$ Net Income \$ Profit Margin

DE 10-195 PSNH Laidlaw PPA OCA Testimony of Traum Attachment KET -3

Year 20 - 2033	\$119.64 \$104.36	\$15.28	\$6,598,943 \$143,522,692	\$6.50 \$8.85	-\$2.35 696,600	-\$1,637,010 -\$11,023,452	, , ,	50,701,5 50%	\$53.76	\$32.26	\$21.50	451,858 \$9.286,889	\$276,465,267	\$14,248,823	\$408,964,507	\$79,413,811 \$1,434,117,331	. •	\$144,703,243 \$4,702,855	\$148,225,548	
Year 19 Ye	\$117.25	\$15.43	\$6,663,723 \$136,923,749 \$	\$6.35 \$8.64	-\$2.29	-\$1,595,214 -\$9,386,442		\$104.90 50%	\$52.45	\$31.47	\$20.98	431,868				\$77,711,410 \$1,354,703,520 \$1		\$137,846,827		
Year 18	\$114.92	\$15.59 431,868	\$6,732,822 \$130,260,026	\$6.20	-\$2.23	-\$1,553,418 -\$7,791,228		\$102.34	\$51.17	30%	\$20.47	431,868	\$258,117,787	\$14,018,878	\$380,586,585	\$76,047,876		\$130,921,219	\$134,514,966	
Year 17	\$112.65	\$96.91 \$15.74 431,868	\$6,797,602 \$123,527,204	\$6.05	-\$2.17	\$1,511,622 \$2,511,622	2000	\$99.84	\$49.92	30%	\$19.97	431,868	\$8,623,540 \$249,278,312	\$13.909.521	\$366,567,706	\$74,423,211		\$123,926,275	\$4,027,504 \$127,554,808	
Year 16	\$110.44	\$94.52 \$15.92 431.868	\$6,875,339 \$116,729,602	\$5.90	-\$2.12	696,600 -\$1,476,792	-54,720,100	\$97.41	\$48.71	30%	\$29.22	431,868	\$8,413,652 \$240.654,772	¢13 817 199	\$352,658,186		\$1,126,521,023	\$116,857,612	\$3,797,872 \$120,527,474	
Year 15	\$108.27	\$92.19 \$16.08 431.868	\$6,944,437 \$109,854,263	\$5.57	57.82	696,600	-53,249,396	\$95.03	70% \$66.52	30%	\$28.51	431,868	\$16,416,166	NAC 500 100	\$338,845,987		\$1,053,681,451	\$109,713,207	\$3,565,679 \$113,419,942	
Year 14	\$106,16	\$89.92	431,858 \$7,013,536 \$102,909,826	\$5.60	\$7.66 -\$2.06	.\$1,434,996	-\$1,682,046	\$92.71	70% \$64.90	30%	\$27.81	431,868	\$16,015,393	555,044,555	\$21,593,933 \$317,052,733		\$974,314,749, \$	\$102,497,312	\$3,331,163 \$106,240,988	
Year 13	\$104.11	\$87.70	431,868 \$7,086,954 \$95,896,289 \$	\$5.45	\$7.52	696,600 -\$1,441,962	-\$247,050	\$90.45	70% 563 37	30%	\$27.14	\$35,18 431,868			\$21,269,976 \$295,458,800 \$		\$896,539,745 \$	\$95,207,843 \$		
· Year 12	\$102.10	\$85.54	431,868 \$7,151,734 \$88,809,336	\$5.30	\$7.36	696,600	\$1,194,912	\$88.24	70%	30% 30%	\$26.47	\$35,30			\$20,959,951 \$274,188,824	\$74,461,325		\$87 847.101	\$2,855,031 \$91,664,366	
Year 11.	¢100.14	\$83.43	431,868 \$7,216,514 \$81,657,601	\$5.15	\$7.05	696,600	\$2,629,908	\$86.09	70%	30%	\$25.83	\$34.44	431,888 \$14,871,806	\$168,941,363	\$20,764,781 \$253,228,873	\$72,860,413		¢on 410 477	\$2,613,633 \$2,613,633 \$84,271,234	
Vasr 10	C 000	\$81.38	431,868 \$7,276,976 \$74,441,087	\$5.00	\$6.49	69.75- 009,969	\$3,953,448	\$83.99	75%	\$62.99	\$25.20	\$37.80	431,868 \$16,322,667	\$154,069,557	\$22,561,709 \$232,464,092	¢73 109 839	\$673,116,036	177	\$7,5927,133 \$2,370,133 \$76,811,220	
IH Laidlaw PPA y of Traum :T -4	reary	\$79.37	431,868 \$7,341,756 \$67,164,111	20	\$5.95	696,600	-\$/86,280 \$4,991,382	\$81 94	75%	\$61.46	\$24.58	\$36.87	431,868 \$15,924,269	\$137,746,890	\$22,499,765 \$209,902,383				\$65,370,998 \$2,124,557 \$69,288,669	
DE 10-195 PSNH Laidlaw PPA OCA Testimony of Traum Attachment KET -4	Year 8	\$94.55 \$77.53 \$17.02	431,868 431,868 \$7,350,393 \$59,822,355		\$5.35	696,600	-\$452,/90 \$5,757,642	70.05	75%	\$59.96	30%	\$35,98	431,868	\$121,822,621	\$22,435,134		\$70,003,024 \$528,468,121		\$57,777,376 \$1,877,765 \$61,700,120	
,	Year 7	\$92.77	\$17.10 431,868 \$7,384,943 \$52,471,962		\$4.55	-\$0.24 696,600	-\$167,184 \$6,210,432		578.00	\$58.50	30%	\$35.10	431,868	\$106,285,090	\$22,376,326	בחר וחפידמדל	\$68,498,202 \$458,465,096		\$50,160,539 \$1,630,218 \$54,102,180	
	Year 6	\$91.04	\$17.24 431,868 \$7,445,404 \$45,087,019		\$4.40	\$0.11	\$76,626 \$6,377,616		\$76.09	\$57.07	30%	\$22.03	431,868	\$14,787,370 \$91,126,523	\$22,309,407	\$142,591,136	\$67,027,930 \$389,966,894	. ~	\$42,493,783 \$1,381,048 \$46,468,067	
llaw PPA	Year 5	\$89.35	\$17.43 431,868 \$7,527,459 \$37.641,615		\$4.25 \$3.21	\$1.04	\$724,464 \$6,300,990		\$74.24	\$59.39	30%	\$22.27	431,868	\$16,030,940 \$76,339,147	\$24,282,863	\$120,281,752	\$67,197,460 \$322,938,964		\$34,752,811 \$1,129,466 \$38,771,081	
SNH/Laid	Year 4	\$87.71	\$17.65 431,868 \$7,622,470 \$30,114,156		\$4.25	\$2.61	\$1,818,126 \$5,576,526		\$72.43	\$0%	30%	\$21.73	431,868	\$15,640,100 \$60,308,207		\$95,998,889	\$65,863,852 \$255,741,504		\$26,920,801 \$874,926 \$30,989,082	: .
Costs of F	Year 3	\$86.10	\$17.78 431,868 \$7,678,613	525,431,000	\$4.25	\$2.50	\$1,740,000		\$70.66	80% \$56.53	30%	\$21.20	431,868	\$15,257,896 \$44,668,107	\$24,676,509	\$70,918,193	\$64,554,469 \$189,877,652		\$19,011,707 \$617,880 \$23,109,566	
e Market	Year 2	\$84.53	\$17.93 431,868 \$7,743,393	\$14,813,072	\$4.25	\$1.45	\$1,009,200 \$2,018,400		\$68.94	80%	30%	\$20.68	\$34.47 431,868	\$14,886,490	\$23,639,083	\$46,241,683	\$63,282,186 \$125,323,183		\$11,056,258 \$359,328 \$15,172,401	12 11 1-11
and Abov	Year 1 - 2014	\$83.00	\$16.37 \$14.368 \$7,069,679	57,069,679	\$4.25	\$2.80	\$1,009,200	1	\$67.26	80%	30%	\$20.18	\$33.63 431.868	\$14,523,721	\$22,602,600	\$22,602,600	\$62,040,997 \$62,040,997	,	ve Reduction" \$3,534,840 \$114,882 \$7.184.561	100,101,10
CA Calculation of Total and Above Market Costs of PSNH/Laidlaw PPA																, which			If interest at the Prime Rate were applied to the "Cumulative Reduction" \$3,534,848 Average Balance of Cumulative Reduction \$1,534,848 Annual Interest (using Prime Rate of 3,25%) \$114,88	erest
Calculation		<u>;</u>	rprice (1) kt energy price Market		th (2)	ice (1) t Market	2 months (3) Market		.(1)	· (E)	10,000	% of ACP (4)		's (1) over Market		Annual Total Over Mkt for Energy, Lapacity, مريد ع Cumulative Over Mkt Energy, Cap, & REC's	inder PPA nts under PPA		Rate were applied to nulative Reduction prime Rate of 3.25%	Reduc including Interest
0		se \$/MWh (1)	psNH Base Case Mkt Energy price (1) Difference vs PSNH's Est Mkt energy price Expected Annual MWH's (1) Total Annual Pavment over Market	over Market	Capacity Costs	PSNH Base Case est. mkt. price (1) Difference versus PSNH's est Market	Expected kW-Month over 12 months (3) Total Annual Payment over Market	over Market	REC Costs	Contract Price as a % of ACP (1)	se Rate per REC		Difference versus Market	Expected Annual MWh's (1) Total Annual Payment over	over Market	Over Mkt for Over Mkt Energ	Est Total Annual Payments under PPA		If Interest at the Prime Rate were applied Avenge Balance of Cumulative Reduction Annual Interest (using Prime Rate of 3.25	
DE 10-195		Energy Costs Contract price \$/MWh	PSNH Base C Difference v Expected And Total Angual	Cumulative over Mark	Capacity Costs	PSNH Base C	Expected kW Total Annua	Cumulative over Mark	REC Costs	Contract Pric	Contract Price Rate per	Current Mkt Price as a	Difference v	Expected Annual MWh Total Annual Payment	Cumulative over Mark	Annual Total Over Mk Cumulative Over Mkt	Est Total And	באו ומומו	If Interest at the Prime Average Balance of Cul Annual Interest (using	Yr End Balance of Cum

(1) Source: PSNH Response to Staff 01-011, Attachment 3, which is Attachment KT-3 (2) Source: PSNH Response to Staff 01-011, Attachment 2, which is Attachment XT-2 (3) Source: PSNH Response to Staff 01-011, Attachment 3, (KT-3), Capacity Revenues divided by Capacity Payment (4) Source: PSNH Response to Staff 01-011, Attachment 3, (KT-3), Capacity Revenues divided by Capacity Payment (4) Source: PSNH Response to Staff 01-011, Attachment 3, (KT-3), Capacity Revenues divided by Capacity Revenues 4tt KT-5, Evo Markets auction of UNH Class 1 REC's for 2010 at \$13.16 when the ACP was \$60.93, 2011 REC's priced at \$18.90, and a \$20 price per the PSNH response to Staff 06-001, Attachment KT-6, as well as the redacted Attachment KT-7 (4) Source: Att KT-5, Evo Markets auction of UNH Class 1 REC's for 2010 at \$13.16 when the ACP was \$60.93, 2011 REC's priced at \$18.90, and a \$20 price per the PSNH response to Staff 06-001, Attachment KT-6, as well as the redacted Attachment KT-7 (4) Source: Att KT-5, Evo Markets auction of UNH Class 1 REC's for 2010 at \$13.16 when the ACP was \$60.93, 2011 REC's priced at \$18.90, and a \$20 price per the PSNH response to Staff 06-001, Attachment KT-6, as well as the redacted Attachment WT-7.



EVO3@

DE 10-195 PSNH Laidlaw PPA OCA Testimony of Traum Attachment KET -5

EVOLUTION MARKETS

From The Desks | About Us | Newsroom | Resources | Careers | Contact Us (2000 00 1) | Lecture mediatrical and sup-

Home > From The Desks > Renewable Energy > Post

CLICK TO LOG IN

ENVIRONMENT

ENERGY

FINANCE

DROWSE PLOGS

- > All Blogs
- > BloFuels > Carbon
- > Carbon-California
- > Coal > Emissions
- > EvoFinance
- > Evolndia > Natural Gas Basis
- > Natural Gas Options > Nuclear Fuel
- > Renewable Energy
- > Weather.

EVOL® EVO HISTORY

For more information on renewable energy markets please call:

+1.914.323.0257 (East Coast) +1.415,963,9120 (West

recdesk@evomarkets.com

From the Renewable Energy Desk

Evolution Completes REC Auction for University of New Hampshire

Sale on the EvoAuction(tm) Platform of 35,000 New England RECs Yields Nearly \$540,000.

The University of New Hampshire successfully completed the sale of 35,000 vintage 2010 and 2011 New England renewable energy certificates (RECs) using Evolution Markets"online auction platform, EvoAuctionTM.

The RECs on offer are generated at UNH's landfill gas-to-energy project that uses methane gas from the Rochester Landfill as the primary fuel for a 7.9 MW cogeneration plant and a 4.6 MW landfill gas-to-energy power plant. The plant is part of the University's EcoLine TRA project, which develops sustainable energy sources for the campus.

The 20,000 vintage 2010 RECs, which are eligible as Class I certificates in Massachusetts, New Hampshire, Connecticut, and Maine, sold for an average price of \$13.16. The 15,000 vintage 2011 RECs, which are also eligible as Class I certificates in Massachusetts, New Hampshire, Connecticut, and Maine, sold for an average price of \$18.90.

You can read more about the auction in our press release or view the full auction results on our web site.

FEEDS

> Renewable Energy

эмпалы жалыние

- > November 2010 (1)
- > October 2010 (1)
- > September 2010 (2)
- > August 2010 (1)
- > July 2010 (3)
- > May 2010 (2)
- > April 2010 (1)
- > March 2010 (1)
- > January 2010 (2) > December 2009 (3)

DISTRIE REMEMABLE ENERGY BLOG

Evolution to Host NE REC Auction

Nov. 10

10.14.10 Evolution Completes REC Auction for University of New Hampshire

9,22,10

Evolution to Host REC Auction for University of New Hampshire

Upheaval In CA Legislature leads to the demise of SB 722

© 2010 Evolution Markets, All Rights Reserved. | Frivacy Policy | Terms & Conditions | Sitemap

Evolution Markets Inc. and its suppliers believe the information or data contained herein was obtained from reliable sources. Nevertheless, Evolution Markets Inc. does not guarantee Evolution Markets Inc. and its suppliers believe the information or data contained herein was obtained from reliable sources. Nevertheless, Evolution Markets Inc. does not guarantee the accuracy and/or the completeness of the information or data included herein, to you or to any other person or entity, and Evolution Markets Inc. shall have no iability for any errors or omissions with respect to such information or data. Evolution Markets Inc. makes no express or implied warranties to you, or to any other person or entity, and expressly disclaims all warranties or merchantability or fitness for a particular purpose or use, with respect to the information or data included herein. Without limiting any of the foregoing, in no event shall Evolution Markets Inc. have any liability for any special, punifitye, indirect, or consequential damages (including lost profits), even if notified of the possibility of such damages. Prices and or bids/offers reflect (I) data from completed transactions, (II) data from pending transactions, (III) firm bids to buy and/or firm offers to sell, (iv) prices purchasers have expressed a villingness to pay, but for which we have not received, or are not aware of, a firm offer to sell and/or (v) our judgment of the price(s) at which transactions could be concluded based on any combination of the above information. © Copyright 1999-200e, Evolution Markets Inc.

DE 10-195 PSNH Laidlaw PPA OCA Testimony of Traum Attachment KET -6

Public Service Company of New

Hampshire

Docket No. DE 10-195

Data Request STAFF-06

Dated: 11/30/2010 Q-STAFF-001

Page 1 of 1

Witness:

Richard C. Labrecque

Request from:

New Hampshire Public Utilities Commission Staff

Question:

Ref. PSNH Response to Staff 1-8. Please specify the year to which the \$20 REC price relates.

Response:

The \$20 REC price referenced in the response in Staff 1-8 is the 2012 MA REC price.

Public Service Company of New Hampshire Docket No. DE 10-257

Data Request STAFF-01 Dated: 10/21/2010 Q-STAFF-012-SP01 Page 1 of

Witness:

Frederick White

Request from:

New Hampshire Public Utilities Commission Staff

DE 10-195 PSNH Laidlaw PPA
OCA Testimony of Traum

Attachment KET - 7

Question:

Reference Attachment RAB-2, page 3, line 40. Please provide, in a format similar to the response to NSTF-01, Q-STAFF-014 in DE 09-180, the following information regarding PSNH's estimated costs of compliance with the NH RPS:

- a. Breakdown of the \$10.808 million by RPS class;
- For each class, supporting information as to whether and to what extent PSNH currently
 estimates it will be acquiring RECs, using RECs from its own facilities, or making alternative
 compliance payments;
- c. Details concerning any contracts PSNH has entered into to acquire RECs from other facilities (such details to include class, amount, price and duration); and
- d. For each of PSNH's qualified renewable resources, detailed information concerning how many RECs from that resource are under contract for sale during 2011 and future years, the contracted price(s), and in which state market(s) the RECs will be sold.

Response:

a. The \$10.808 million RPS total is detailed in the table below (in thousands of dollars):

	<u>Total</u>
NH RPS Compliance Costs Class I	\$2,072
NH RPS Compliance Costs Class II	\$186
NH RPS Compliance Costs Class III	\$7,192
NH RPS Compliance Costs Class IV	\$1,358
Total RPS Costs ·	\$10,808

b. <u>Class I</u> - The current expense estimate (\$2,072,000) assumes a total requirement of BEGIN CONFIDENTIAL [] END CONFIDENTIAL RECs; of which BEGIN CONFIDENTIAL [

] END CONFIDENTIAL. The current forecast assumes additional contracting at a market price of \$18.45 per REC.

<u>Class II</u> - The expense estimate (\$186,000) will be updated via the final filing in this docket. BEGIN CONFIDENTIAL [

J END CONFIDENTIAL.

<u>Class III</u> - The current expense estimate (\$7,192,000) assumes a total requirement of BEGIN CONFIDENTIAL [

I END CONFIDENTIAL

Class IV - The current expense estimate (\$1,358,000) assumes a total requirement of BEGIN CONFIDENTIAL [

JEND CONFIDENTIAL.

DE 10-195 PSNH Laidlaw PPA OCA Testimony of Traum Attachment KET - 7

Data Request STAFF-01 Dated: 10/21/2010 Q-STAFF-012-SP01 Page 2 of 2

c. Please see table below:

BEGIN CONFIDENTIAL[

] END CONFIDENTIAL.

d. There are currently no contracted sales of RECs from PSNH's qualified renewable resources during 2011 and future years.



11 South Main Street, Suite 500 - Concord, NE 03301 Tel: 603.226.0400 - www.mclane.com MANCHESTEL CONCORD PORTSMOUTH WOBURN, MA

BARRY NEEDLEMAN
Email: barry.needleman@mclane.com
Licensed in NH

December 15, 2009

Via Hand Delivery

Thomas S. Burack, Chairman Site Evaluation Committee N.H. Department of Environmental Services 29 Hazen Drive Concord, NH 03302-0095

Re: Application of Laidlaw Berlin Biopower, LLC for a Certificate of Site and Facility for a Renewable Energy Facility in Berlin, New Hampshire

Dear Chairman Burack:

I enclose for filing with the New Hampshire Site Evaluation Committee an original and eighteen (18) copies of the Application of Laidlaw Berlin BioPower, LLC for a Certificate of Site and Facility for a renewable energy facility in Berlin, New Hampshire pursuant to RSA 162-H. I also enclose a disc containing an electronic pdf version of the Application and supporting materials.

Laidlaw Berlin BioPower, LLC ("LBB") is proposing to convert and upgrade much of the remaining facility equipment and infrastructure located at the former Fraser Pulp Mill in Berlin, New Hampshire in order to develop a biomass-fueled energy facility. LBB will use whole tree wood chips and other low-grade clean wood as fuel, and will be capable of generating up to nominally 70 megawatts (MW) of electric power (gross output).

The Project is a renewable energy facility under RSA 162-H:2. XII and is therefore subject to the review process and time frames established in RSA 162-H:6-a and Administrative Rule Site 301.05. The Project also qualifies for review by a subcommittee pursuant to RSA 162-H:4, V(b) and Administrative Rule Site 301.02 and 301.03.

The Application contains pre-filed testimony, exhibits and other information sufficient for the Subcommittee to commence its review. In preparing the Application, we have followed the format and content requirements of Administrative Rule Site 301.02 and 301.03.

Thomas S. Burack, Chairman December 15, 2009 Page 2

LBB will assist the Subcommittee and its staff in any way necessary to facilitate an expeditious review of this Application. Assuming that the Application is deemed complete pursuant to RSA 162-H:6-a, we request that a prehearing conference be conducted to establish a procedural schedule for the duration of the adjudicative proceeding.

LBB looks forward to working with the subcommittee to arrange for the public comment hearing required under RSA 162-H:6-a, IV in Berlin. LBB also respectfully requests, pursuant to Administrative Rule Site 202.13, that the subcommittee and public counsel visit the site of the proposed facility. We suggest that visit coincide with the public hearing in Berlin.

Please do not hesitate to contact me if you have any questions. Thank you for your assistance with LBB's Application.

Very truly yours,

Barry Needleman

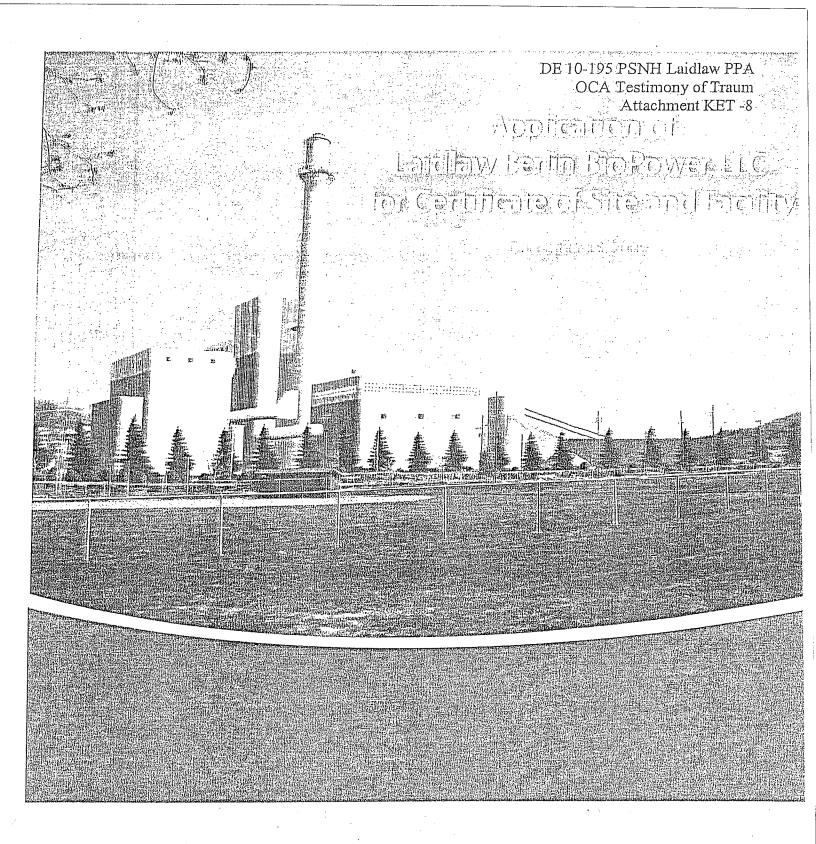
Enclosures

cc:

Attorney General Michael L. Delaney

City of Berlin

Laidlaw Berlin BioPower, LLC



Submitted to: New Hampshire Site Evaluation Committee Docket No. 2009-XX Prepared by:



Laidlaw Berlin BioPower, LLC 90 John Street, 4th Floor New York, New York 10038

LADEAN LAURO

Supported by:



ESS Group, Inc. 888 Worcester Street, Suite 240 Wellesley, MA 02482

The McLane Law Firm Waldron Engineering & Construction, Inc. The Babcock & Wilcox Company Stantec Engineering, Inc.

APPLICATION OF LAIDLAW BERLIN BIOPOWER, LLC FOR **CERTIFICATE OF SITE** AND FACILITY

BERLIN BIOPOWER COOS COUNTY, NEW HAMPSHIRE

SUBMITTED TO

New Hampshire Site Evaluation Committee

Docket No. 2009 -

PREPARED BY

Laidlaw Berlin BioPower, LLC

90 John Street, 4th Floor New York, New York 10038

SUPPORTED BY

ESS Group, Inc.

888 Worcester Street, Suite 240 Wellesley, Massachusetts 02482

IN ASSOCIATION WITH

The McLane Law Firm

Waldron Engineering & Construction, Inc.

The Babcock & Wilcox Company

Stantec Engineering, Inc.

December 15, 2009

Application of Laidlaw Berlin BioPower, LLC for Certificate of Site and Facility
December 15, 2009

(f) RENEWABLE ENERGY FACILITY INFORMATION

(1) Make, model and manufacturer of the unit

The Facility will be comprised of all of the individual components required to produce electrical energy from the fuel described below. The make, model and manufacturer of the majority of the components will not be finalized until the detailed engineering and procurement phase of the Project. One of the major components that is currently known is the existing boiler which will be converted to a bubbling fluidized bed boiler by Babcock and Wilcox, the original manufacturer.

(2) Capacity, in megawatts, as designed and as intended for operation

The rated electrical output of the steam turbine generator is expected to be approximately 70 MW. It is expected that the net electrical output of the Facility, after allowance for all internal "parasitic" loads, will be approximately 64 MW.

(3) Type of unit, including:

a. Fuel utilized

The biomass boiler will be fueled with clean biomass as defined in New Hampshire's Renewable Portfolio Standard (HB 0873, 2007 Session)⁹, and ULSD auxiliary fuel used for boiler start-up and flame stabilization.

b. Method of cooling condenser discharge

The steam turbine condenser will be cooled with recirculating water from an open cycle wet cooling tower. The warmed cooling water will be cooled by direct contact with counter flowing ambient air that will be drawn through the cooling tower and exhausted vertically upward by electric motor driven fans.

c. Whether the unit will serve base, intermediate or peaking loads

The Facility is designed to serve base load duty, with occasional intermediate dispatch.

d. Unit efficiency

Based on the annual average heat input rate provided by B&W at a fuel moisture content of 37.6% (932 MMBtu/hr) and a gross power output of 70 MW, the Facility will have a gross heat rate of approximately 13,300 Btu/kWh. This equates to a fuel to gross power output efficiency of approximately 25%. This efficiency will vary to some degree with fuel moisture content, as added heat input is required to vaporize water contained in fuels with higher moisture content than the design fuel. The efficiency may be further improved during more detailed design engineering. Further, when completely designed and incorporated, the

⁹ "Biomass Fuels" means plant-derived fuel including clean and untreated wood such as brush, stumps, lumber ends, and trimmings, wood pallets, bark, wood chips or pellets, shavings, sawdust, and slash, agricultural crops, biogas, or liquid biofuels, but shall exclude any materials derived in whole or in part from construction and demolition debris. RSA 362-F:II.

Application of Laidlaw Berlin BioPower, LLC for Certificate of Site and Facility

December 15, 2009

(h) ADDITIONAL INFORMATION

(1) A description in detail of the type and size of each major part of the proposed facility

The Facility will be a base loaded electric energy generating facility with an expected nominal gross electrical output of approximately 70 MW. The heart of the Facility will be a BFB boiler; a highly efficient and advanced technology for the conversion of biomass fuel to energy. The boiler and other major components of the Project are described below.

(i) Biomass Boiler & Steam Generator

The existing B&W recovery boiler will be converted to a biomass-fueled BFB boiler with air-locked hopper bottoms for removal of bed sand particles and other non-combustible materials. An air distribution system consisting of fluidizing air and overfire air will be added to assure efficient fuel combustion. A flue gas recirculation system will be utilized to adjust the bed temperature depending on the moisture content of the incoming fuel. The existing feedwater economizer, which will preheat the feedwater to the boiler drum, will be modified to optimize boiler efficiency. The use of a tubular air pre-heater will ensure efficient use of the energy released in the boiler.

The boiler will be capable of generating up to 600,000 pounds per hour of steam at temperatures up to 900°F and 850 psig. Stable operation and compliant emission levels will be maintained over the range of expected operating loads from 70% to 100% of maximum steam output. A series of double sided retractable soot blowers will be utilized on heat transfer surfaces within the superheater and convective sections of the boiler to maintain design performance levels.

The boiler will be capable of firing clean biomass and has been designed to handle variable fuel moisture contents ranging from 35% up to 50%. At an average moisture content of 37.6%¹⁰, the wood fuel will have a higher heating value of approximately 5,060 Btu/lb. The heat input rate to the boiler will vary primarily depending on the moisture content of the wood fuel. The average heat input rate at maximum steam load will be 932 MMBtu/hr with 37.6% moisture content fuel. The maximum heat input rate will be 1,013 MMBtu/hr with 50% moisture content fuel. Individual fuel feeders will be equipped with adjustable air swept distributors to adjust the flow of fuel into the boiler. The fuel chutes will each be equipped with backdraft dampers.

The boiler will also be equipped with four No. 2 distillate oil fired burners for use during startup, with a maximum expected heat input capacity of 240 MMBtu/hr. The Facility will also include a 500 kW emergency diesel generator set and a 288 horsepower diesel fire pump. The boiler startup burners, the emergency generator, and the diesel fire pump will be

¹⁰ This fuel moisture content has been established as the design point for equipment supplier performance guarantee purposes.

DE 10-195 PSNH Laidlaw PPA OCA Testimony of Traum Attachment KET -9

Public Service Company of New

Technical Session TECH-01

Hampshire

Docket No. DE 10-257

Dated: 11/19/2010

Q-TS-004

Page 1 of 2

Witness:

Frederick White

Request from:

New Hampshire Public Utilities Commission Staff

Question:

Ref. Staff 01, Q-STAFF-006. Please show how you derived the ISO-NE forward energy market price for 2011

Response:

Please see attached file (Tech-01, Q-TS-4, Page 2 of 2) and associated notes explaining the derivation of monthly forward market energy prices for 2011.

DE 10-195 PSNH Laidlaw PPA OCA Testimony of Traum Attachment KET -9

Public Service Company of New Hampshire
Docket No. DE 10-257

Data Request TECH-01 Dated: 11/19/2010

> Q-TS-04 Page 2 of 2

Derivation of ISO-NE Forward Market Energy Prices

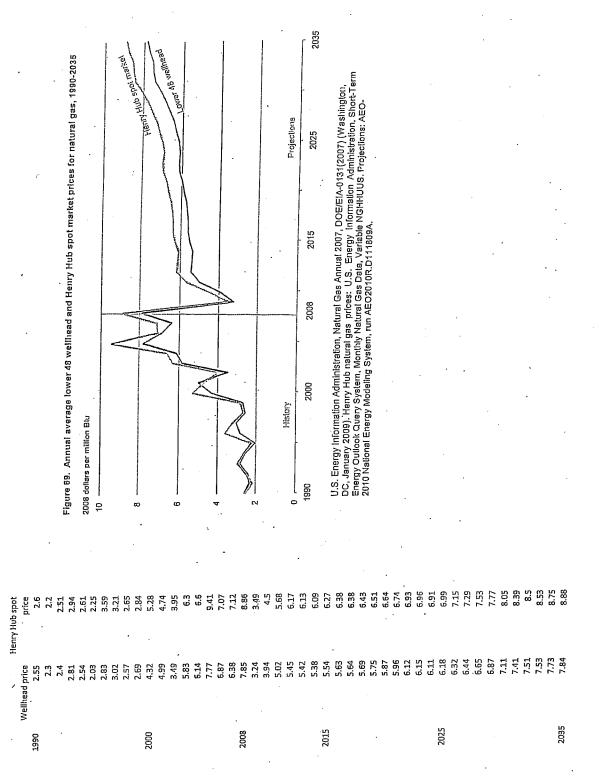
				•			_			
	(a)	(b)	(c)	(d)	(e)	· (f)	(g)	(h)	(i)	
2011 Jan Feb Mar Apr May Jun Jul Aug Sep Oct	55.7 55.7 55.7 49.5 45.5 46.7 48.1 57.0 57.0 48.0	NYMEX Prio IE Power WWh Off-Peak 45.7 45.7 37.7 37.7 36.6 36.8 40.2 40.2 37.2		Q4 NG Price <u>Distribution</u>	<u> 150-N</u>	MWh Off-Peak 37.1	Peak 55.7 55.7 49.5 45.5 46.7 48.1 57.0 57.0 48.0	Forward Mark \$/MWh Off-Peak 45.7 45.7 37.7 37.7 36.6 36.8 40.2 40.2 37.2	24 Hr 50.2 50.5 43.6 41.4 41.2 42.3 47.4 48.5 42.3	
Nov Dec	50.2 50.2	40.0 40.0	5.371 5.966	98.2% 109.1%	49.3 54.7	39.3 43.6	46.5 49.3 54.7	37.1 39.3 43.6	41.3 44.0 48.7	
Total							51.1	39.8	45.1	!

NOTES: 1) Columns a, b, & c are NYMEX settlement prices used in PSNH's preliminary 2011 ES filling. For column c reference Staff-01, Q6a.

- 2) Column d percentages are the relative values of column c Q4 values, to the column c Q4 3-month average. e.g. Column c Oct. value of 5.068 is 92.7% of the column c Oct-Dec average of 5.468.
- 3) Columns e & f are column d values times columns a & b, respectively. i.e. Q4 average power prices in columns a & b are distributed consistent with Q4 natural gas prices.
- 4) Columns g & h are columns a & b for Jan-Sep and columns e & f for Oct-Dec, respectively. Reference Staff-01, Q6d (columns g & h).
- 5) Column i is the 24 hour average of columns g & h based on the number of peak & off-peak hours in each month. Annual averages are also shown.

Figure 69. Annual average lower 48 wellhead aud Henry Hub spot market prices for natural gas, 1990-2035 (2008 dollars per million Btu)

Roport #:DOE/EIA-0383(2010) Release Dale: May 11, 2010 Noxt Release Dale: December 2010



Public Service Company of New

Hampshire

Docket No. DE 10-195

Data Request CSC-'04

Dated: 11/30/2010

Q-CSC-001 Page 1 of 3

Witness:

Richard C. Labrecque

Request from:

Concord Steam Corporation

Question:

Please explain and provide the calculations and work papers for the cost of wood fuel delivered to Schiller Station provided in the attachments to Q-Staff-011 (Set 1) and Q-Staff-011 (Set 3).

Response:

The analyses provided via Staff 1-11 RV01 index the initial wood price by an inflation escalator (calculation provided in the attachment). The analyses in attachments 3, 4, 5, and 7 to Staff 1-11 use an escalator of 2.5%. The analysis in attachment 6 uses an escalator of 0.50%. Both of these values are estimates and are not based on any study, report, forecast or calculation. The initial wood price of \$34/ton is an estimate and is not based on any study, report, forecast or calculation.

The analyses provided via Staff 3-11 RV01 index the initial wood price by the year-to-year change in the NYMEX natural gas forward market prices from Aug 14, 2008 (calculation provided in the attachment). The initial wood price of \$38/ton is an estimate and is not based on any study, report, forecast or calculation.

Assumed Wood P	rice Inflation Index
2.50%	0.50%

		Fuel Cost (\$/ton)
	STAFF 1-11	STAFF 1-11
	Attachments 3, 4, 5, 7	Attachment 6
2010	34.00	34.00
2011	34.00	34.00
2012	34.00	34.00
2013	34.00	34.00
2014	34.00	34.00
2015	34.85	34.17
2016	35.72	34.34
2017 .	36.61	34.51
2018	37.53	34.69
2019	38.47	34.86
2020	39.43	35.03
2021	40.42	35.21
2022	41.43	35.38
2023	42.46	35.56
2024	43.52	35.74
2025	44.61	35.92
2026	45.73	36.10
2027	46.87	36.28
2028	48.04	36.46
2029	49.24	36.64
2030	50.47	36.82
2031	51.74	37.01
2032 2033	53.03	37.19
2033	54,35	37.38
2034	55.71 57.44	37.57
2036	57.11 58.53	37.75
2030	60.00	37.94
2038	61.50	38.13
2039	63.03	38.32
2040	64.61	38.52
2041	66.23	38.71 ° 38.90
2042	67.88	39.10
2043	69.58	39.29
2044	71.32	39.49
2045	73.10	39.69
2046	7 4. 93	39.88
2047	76.80	40.08
2048	78.72	40.28
2049	80.69	40.48
2050	82.71	40.69
2051	84.77	40.89
2052	86.89	41.10
2053	89.07	41.30

Г			Year / Year
	STAFF 3-11	Henry Hub Gas (\$/Mbtu) - NYMEX	Change
ļ	Schiller Delivered Fuel Cost (\$/ton)	(from Aug 14, 2008)	in NYMEX Price
2010	38.00	9.17	
2011	36.84	8.89	96.95%
2012	35.82	8.64	97.22%
2013	35.04	8.45	97.84%
2014	34.95	8.43	99.72%
2015	35.49	8.56	101.55%
2016	35.94 .	8.67	101.26%
2017	36.41	8.78	101.31%
2018	36.91 س	8.90	101.38%
2019	37.49	9.04	101.57%
2020	. 38.23	9.22	101.99%
2021	38.83	9.37	101.56%
2022	39.44	9.51	101.56%
2023	40.06	9.66	101.56%
. 2024	40.68	9.81	101.56%
2025	41.32	9.97 . `	101.56%
2026	41.96	10.12	101.56%
2027	42.62	10.28	101.56%
2028	43.28	10.44	101.56%
2029	43,96	10.61	101.56%

Public Service Company of New

Hampshire Docket No. DE 10-195 Data Request STAFF-05

Dated: 11/01/2010 Q-STAFF-002 Page 1 of 1

Witness:

Richard C. Labrecque

Request from:

New Hampshire Public Utilities Commission Staff

Question:

Ref. PSNH Response to Staff 1-19. Please provide for the period October 2008 through September 2010 the percentage of PSNH's monthly retail load met by competitive suppliers.

Response:

The percentage of PSNH's total retail load served by competitive suppliers for October 2008 through September 2010 is as follows:

Oct-08	2.9%
Nov-08	6.0%
Dec-08	7.4%
Jan-09	7.5%
Feb-09	10.4%
Mar-09	12.1%
Apr-09	13.5%
May-09	15.7%
Jun-09	17.8%
Jul-09	18.8%
Aug-09	19.7%
Sep-09	22.6%
Oct-09	25.7%
Nov-09	26.2%
Dec-09	26.8%
Jan-10	24.7%
Feb-10	26.4%
Mar-10	28.5%
Apr-10	30.6%
May-10	31.9%
Jun-10	31.8%
Jul-10	30.1%
Aug-10	30.6%
Sep-10	33.0%

Public Service Company of New

Hampshire

Docket No. DE 10-195

Data Request STAFF-06

Dated: 11/30/2010 Q-STAFF-003 Page 1 of 1

Witness:

Richard C. Labrecque

Request from:

New Hampshire Public Utilities Commission Staff

Question:

Ref. PSNH Response to Staff 1-19. Please explain why the energy service forecast is 73% of the delivery service forecast instead of 69%.

Response:

In the response to Staff 1-19, the delivery service forecast was adjusted upward using a delivery efficiency factor of 0.945 to adjust load to the pool transmission level in addition to adjusting for migration. The formula used to calculate Energy Service sales is Delivery Sales x (1-Migration Rate) x (1/Delivery Efficiency Factor).

The proper calculation of RPS requirements would not have used the delivery efficiency, since RPS obligations are a percentage of end-use customers sales (as measured at the meter). The table provided in the response to Staff 1-19 has been corrected below.

·	2011	2012	2013	2014	<u>2015</u>
Delivery Service Forecast w/EE/DSM (MWh)	7,788,024	7,877,125	7,903,333	7,995,366	8,064,644
Migration Rate (Base case)	31%	31%	31%	31%	31%
Energy Service Forecast	5,373,737	5,435,216	5,453,300	5,516,803	5,564,604
Class I RPS Requirement (%)	2.00%	3.00%	4.00%	5.00%	6.00%
Class I RPS Requirement (MWh)	107,475	163,056	218,132	275,840	333,876
Laidlaw RECs Produced	0	0	203,232	406,464	406,464
% of Class I Requirement met by Laidlaw	0%	0%	93%	147%	· 122%

Public Service Company of New Hampshire Docket No. DE 10-195

Data Request STAFF-05

Dated: 11/01/2010 Q-STAFF-001 Page 1 of 1

Witness:

Richard C. Labrecque

Request from:

New Hampshire Public Utilities Commission Staff

Question:

Article 5.1 states that seller shall sell and deliver and PSNH shall purchase and accept delivery of 100% of the Products produced by the Facility. Article 1.18 defines the term Facility as the generating plant described in Appendix A. Appendix A states that the Facility will be designed to have a net electric output at standard conditions of approximately 64 MW (winter) and 61 MW (summer). Please respond to the following:

(i) Does the PPA allow Laidlaw to expand, at any time before or during the term, the output of the Facility above the level specified in Appendix A? If the answer is yes, please specify

where in the PPA Laidlaw is provided that right.

If Laidlaw expands the output of the facility above the level specified in Appendix A, is PSNH obligated to purchase the incremental products produced as a result of that expansion? If the answer is yes, please specify where in the PPA PSNH incurs that obligation.

Response:

(i) The PPA is silent on the ability of Laidlaw to expand the facility.

Regarding plant expansion, the relevant language in the PPA is Article 1.18 and Article 5.1. Article 1.18 defines the "Facility" as the generating plant described in Appendix A. If and when the Facility is expanded such that the description in Appendix A is no longer valid, PSNH will determine the appropriate course of action consistent with the PPA terms and conditions.

Public Service Company of New

Hampshire

Docket No. DE 10-195

Data Request STAFF-01

Dated: 10/08/2010 Q-STAFF-032-RV02

Page 1 of 9

Witness:

Richard C. Labrecque

Request from:

New Hampshire Public Utilities Commission Staff

Question:

Ref. Labrecque Testimony, page 3. Regarding NH RSA Chapter 362-F, identify all other long-term renewable resource options that PSNH considered for meeting its New Hampshire Class I REC obligations. Provide all evaluations, studies, reports, spreadsheets, correspondence, notes, presentation materials, and work papers related to these renewable resource options.

Response:

As is more fully detailed in Docket DE 09-067, PSNH received proposals from both Clean Power Development, LLC and Concord Steam Corporation in July 2009, several months after negotiations with Laidlaw were in progress. These proposals are attached to the response to Q-STAFF-017.

Attachment 1 to this response is a comparison of the two proposals (CPD, CSC) to the Laidlaw PPA using the forward market prices provided in response to Q-STAFF-003.

Attachment 2 is an additional comparison of the three proposals.

DE 10-195 PSNH Laidlaw PPA OCA Testimony of Traum Attachment KET -15

DE 10-195
Data Requests 10/08/2010
Q-STAFF-01-032-RV01
Attachment 1
Revised

Summary of Biomass PPA Proposals 2012-2031

	رج ح	Concord		aidlaw
Capacity (MW) Energy (MWh)/RECs	19.5 163,000	10.2 75,949	43.	58 431.868
Offer Comparison: NPV, 2012 Levelized 2012-2031 (\$/kWh)	\$1,578.01	\$1,507.90	\$1,7	\$1,725.58 \$0.1564
Market Comparison:	Aug-09	Aug-09	Aug-08	Aug-09
Levelized 2012-2031 (\$/kWh)	\$1,469.86 \$0.1333	\$1,482.37 \$0.1344	\$1,888.48	\$1,888.48 \$1,482.37
			71 /1.	90. I344
Lifetime Over (Under) Market (\$M)	\$22.9	(\$1.6)	(\$182.6)	\$152.0
NPV, 2012	\$17.6	\$1.9	(\$70.4)	\$105.0
			Sand Sand Sand Sand Sand	The Carlo Charles and Company of the Strategy

Assumptions:

All proposals used a 2.5% inflator

Capacity payments begin in 2013 for Concord and Laidlaw

Wood prices assumed to start at \$32.50/ton

Laidlaw's Base Energy Price is assumed to be able to go below \$83/MWh wood prices go below \$34/ton

CPD and Concord market comparison is based on Aug 4, 2009 market prices; Laidlaw market comparison is based on Aug 1, 2008 market prices Note: Laidlaw market comparison and 1, 2008 market prices Note: Laidlaw market comparison and 1, 2008 market prices

2023 1,231,159 315,000	916,159 484,291
2022 1,120,488 315,000	805,488 373,620
2021 1,012,803 315,000	697,803 265,935
2020 908,041 0	908,041 476,173
2019 802,311 0	802,311 370,443
2018 704,836 0	704,836 272,968
2017 608,366 0	176,498
2016 516,364 0	84,496
2015 424,392 0	7,476)
2014 337,726 0	(94,142)
2013 253,892 0 0	(177,976)
2012 172,168 0 172,168	(259,700)
REC Need* NWP RECs REC Need with NWP	REC Need with Laidlaw

2025 1,461,728 315,000 1,146,728

1,344,884

714.860

598,016 315,000 2024

*Assumes 8,000 RECs for Smith Hydro, 60,549 RECs for Lempster, and 34,355 Class IV Hydro RECs

DE 10-195 Data Requests 10/08/2010 O-STAFF-01-032-RV01 Attachment 1

20 203 257.55 535.10 584.63 5177.28	\$2.70 19.500 \$104.88 \$51.95 \$52.95 \$84.53 \$17.53 \$12.42 \$17.63 \$13.14 \$13.89) \$63.89 \$11.63
19 2030 855.15 835.10 882.57	\$2.70 19.500 19.500 19.502 5102.32 \$50.59 \$50.59 \$72.42 \$12.42 \$12.42 \$12.42 \$12.42 \$12.42 \$12.42 \$12.42 \$12.42 \$12.53 \$17.11 \$17.16 \$17.16
16 2029 554.78 535.10 580.55	\$2.70 \$2.70 \$2.70 \$2.70 \$15.00 \$15.00 \$2.7
2028 S53.44 S35.10 S78.59 S167.13	\$2.70 19.500 597.39 \$48.25 \$48.25 \$58.38 \$75.59 \$11.78 \$54.93 \$11.78 \$11.78 \$11.78 \$11.78 \$16.91 \$16
15 2027 552.14 552.14 535.10 515.57	\$2.70 19.500 195.010 \$95.01 \$95.01 \$47.07 \$57.93 \$75.79 \$11.24 \$11.24 \$11.24 \$15.10 \$16.19 \$16.00 \$16.00 \$1
15 2025 250.87 550.87 535.10 574.80	\$2.70 183,000 892,70 \$45,92 \$74,80 \$92,06 \$10,84 \$15,56 \$15,56 \$15,56 \$15,56 \$15,50 \$119,90
2025 2025 549.63 535.10 572.88	\$2.70 \$2.70 19.500 19.5
13 2024 \$48.42 \$35.10 \$71.20	\$2.70 19.500 183.000 \$86.23 \$43.71 \$53.80 \$71.20 \$15.53 \$15.75 \$15.75 \$15.75 \$15.75 \$15.75 \$15.75
12 2023 \$47.24 \$35,10 \$68.46 \$151.80	\$2.70 19.500 19.500 19.000 542.64 \$99.46 \$10.35 \$14.85 \$14.85 \$14.85 \$14.85 \$14.85 \$14.85 \$14.85 \$14.85
2022 S46.08 S35.10 S67.77 S148.95	52,70 19,500 163,000 541,50 551,20 561,77 883,40 56,53 51,36 54,30 54,30 57,33,819
2021 S44.95 S35.10 S66.11 S146.17	\$2.70 19,500 \$81,93 \$40,59 \$61,17 \$81,37 \$81,37 \$1,37 \$1,072,514 \$1,072,514
2020 2020 543.85 535.10 564.50 5143.46	\$2.70 165,000 579.93 \$39.60 \$48.74 \$64.50 \$7.27 \$10.44 \$45.08 \$139.528 \$1.395,528
8 2019 \$42.79 \$35.10 \$62.93 \$140.82	\$2,70 19,500 57,000 57,18 \$38,63 \$47,55 \$6,23 \$6,23 \$6,23 \$6,23 \$6,23 \$1,702,903 \$1,702,903
7 2018 \$41.75 \$35.10 \$61.39 \$138.24	\$2.70 19.500 576.08 \$37.69 \$37.69 \$46.39 \$61.39 \$61.39 \$61.39 \$61.39 \$1.55 \$1.
6 2017 \$40.73 \$35.10 \$59.90 \$135.73	82.70 162.000 162.000 17.300 17.306.77 858.77 858.80 858.8
2016 \$39.74 \$35.10 \$58.44 \$133.27	\$2.70 163.000 \$72.41 \$35.87 \$44.15 \$54.15 \$54.15 \$17.92 \$1.79 \$1.70 \$1.7
2015 2015 S38,77 S35,10 S57,01 \$130,88	\$2.70 \$2.70
3 2014 S37.82 S35.10 S55.62 S128.54	52.70 163,000 588,93 534,15 542,03 556,45 52,95 52,95 52,95 52,95 5111,56 5111,56 516,58 516,58
2013 2013 S35.90 S35.10 \$54.26 \$126.26	\$2.70 19,500 163,000 \$67.24 \$33.31 \$67.8 \$2.95 \$4.25 \$4.25 \$4.25 \$100.94 \$100.94 \$100.94
2012. \$36,00 \$35,10 \$52,94 \$124,04 \$1,578,01 \$14,05	\$0,00 \$2,70 \$19,500 \$19,500 \$19,500 \$19,500 \$19,500 \$19,500 \$19,500 \$10,500 \$1
Year Non-lite! Variable O&M - Electricity price escalated (\$MNM) Fixed - Electricity price energy fixed (\$MNM) Fuel - Electricity price Fuel (\$MNM) Fuel - Electricity price Fuel (\$MNM) 2012 Discount Rale (based on PSNH WACC) NPV, 2012 Levelized 2012-2031	Foolnolas: Capacily Value Starting in 2013 (SKKVLMo) Amusal Capacily (KNV) Amusal Energy Production (MMN) Alternative Compliance Payment of NH REC (SMAVM) Assumed CPP Wood Price (STOn) Wood Price Saseline (STOn) Wood Price Adjustment (WPA) (STOn) Wood Price Adjustment (WPA) (STOn) Capacily (SMAVM) Capacily (SMAVM) Capacily (SMAVM) Capacily (SMAVM) Tolal Energy Price (SMAVM) Tolal Energy Price (SMAVM) Over (Under) Market (SYMVM) Cover (Under) Market (SYMVM) Utilitime Over (Under) Market (S) NPV, 2012

(515,03)

(\$14.26)

(512.92) (5881 398)

(511,51)

DE 10-195 Data Requests 10/08/2010 Q-STAFF-01-032-RV01 Attachment 1 Revised 2031 58.80 58.80 58.83 57.410 57.410 3.50 10.300 75.549 \$104.89 \$104.16 \$12.42 \$20.02 \$56.16 \$51.35 3.80 S 10.200 75,549 \$102.32 \$101.52 \$12.42 \$20.02 \$57.71 \$50.59 \$99.14 \$12.10 \$19.50 \$56.30 3.50 10.200 75,949 \$99.62 3.60 \$ 10.200 75.949 \$97.39 2029 55.80 53.80 53.50 550.92 558.81 \$99.72 \$11,78 \$18.68 \$54.63 \$170,64 3,50 S 10,200 75,249 \$95,01 (\$8.95) (\$756.375) 594,35 \$11,24 \$18,11 \$53,59 \$166,07 \$47.07 15 2026 \$5.80 \$33.50 \$48.47 \$65.49 \$153.26 (\$8.55) 3,60 10,200 75,949 \$92,70 \$92.06 \$10.84 \$17.47 \$52.28 \$161.81 \$45,92 2025 \$5.80 \$33.50 \$47.28 \$63.89 3.50 (10.200 75,949 \$90.44 (\$8.02) (\$609,346) \$89.82 \$10.97 \$17.68 \$51.00 \$158.50 13 2024 \$5.50 \$33.50 \$46.13 \$62.34 3.50 10.200 75,249 \$88.23 (\$5.95) \$87.63 \$10.76 \$17.34 \$49.76 \$154.73 543,71 3.60 S 10.200 75,949 \$86.08 2023 \$5.80 \$33.50 \$45.00 \$145,12 (55.60) \$85.49 \$10.35 \$15.68 \$48.55 \$150.72 \$42,64 2022 \$5.80 \$33.50 \$43.91 \$58.33 (53.59) \$83.40 \$9.53 \$15.36 \$47.36 \$146.13 3,60 10,200 75,949 \$83.98 2021 \$5.30 \$33.50 \$42.84 \$57.88 3.60 10,200 75,949 \$81.93 (\$1,04) (\$79,348) \$81.37 \$8.37 \$13.49 \$46.21 2020 SS.30 \$33.50 \$41.79 \$56.47 3.60 10.200 75,949 \$79.93 \$79.39 \$7.27 \$11.72 \$45.08 \$136.18 \$1.38 \$105,043 2019 \$5.80 \$33.50 \$40.77 \$55.10 3.60 10.200 75,949 \$77.98 \$77.45 \$6.23 \$10.04 \$43.98 \$131.47 \$3,70 \$280,877 2018 \$5.80 \$33.50 \$38.78 \$53.75 3.60 \$ 10.200 75,949 \$76.08 \$75.56 \$5.24 \$8.44 \$42.91 \$5,92 \$449,406 3.60 \$ 10.200 75,949 \$74,23 52017 \$5.80 \$33.50 \$38.81 \$52.44 \$73.72 \$4.30 \$6.93 \$41.86 \$122.51 \$8.04 3,60 \$ 10,200 75,949 \$72,41 5 2016 \$5.80 \$33.50 \$37.86 \$51.16 \$35.87 \$71.92 \$3.43 \$5.53 \$40.84 \$10.04 \$762,221 3.60 \$ 10,200 75,949 \$70,65 2015 \$5.80 \$33.50 \$36.94 \$49.91 \$70.17 \$2.95 \$4.75 \$39.84 \$11.39 \$864,946 2014 \$5.80 \$33.50 \$36.04 \$48.70 3,60 10,200 75,949 \$68,93 \$68.45 \$2.95 \$4.75 \$38.87 \$11.95 2013 \$5.80 \$33.50 \$35.16 \$47,51 3,60 10,200 75,949 \$67,24 \$12,50 \$66.78 \$2.95 \$4.75 \$37.93

2012 \$0.00 \$33.50 \$34.30 \$46.35 \$114.15

Capacity Price (S/MV/N)
Fixed Energy (\$/MW/N)
Variable Enrugy Price (\$/MW/N)
Fuel Changa (\$/MW/N)
Total Price Proposal (\$/MW/N)

CONCORD POWER & STEAM - CONCORD AUG-2009 PROPOSAL PRICES

6.49% \$1,507.90 \$136.71

2012 Discount Rate (based on PSNH WACC) NPV, 2012 Levelized 2012-2031

10,200 75,948 \$65,60 2.5% \$46.35

Capacity Value Stating in 2013 (Strowtel)
Ret Annual Capacity (Kny) (90% of 17 May)
Annual Eneugy Production (MMN) (53% CF
Alternative Compliance Payment of NH REC (SMMn)
Base freing Price (SMM)
Base freingy Price (SMM)

\$1,482.37

NPV, 2012 Levelized 2012-2031

]	DE 10-19	05 PSNH Laidlaw PPA
8/2010 V01	20 203 5 10,23 5 115 3.23 552,44 8 577,89	6.25 85.00 80.10 80.10 81.17 8	(553.83) 23.244.8051	\$104,14 \$12.42 \$20.02 \$59.15	Organia Germania	A Testimony of Traum Attachment KET -15
5 uests 10/0; -01-032-R) nt 1	2030 2030 2030 2031 2031 2031 2031 2031	5.00 5 431,600 5102,37 5102,37 5102,37 5104,3 5124,12 5124,2 5124,2 512,4 512,	(\$52,46) 22,697,524) (8	\$101.52 \$12.42 \$30.02 \$57.71	(53,15) (\$2,224,888)	
DE 10-195 Data Requests 10/08/2010 O-STAFF-01-032-RV01 Atlachment 1 Revised	2020 2020 89-75 8-1-0-8-1 8-4-9-9-1	5.05 \$ 5.000 \$	(\$50.52) 21.852.5401 (\$	599,14 512 10 519 50 556,30	(81,88,88)	
	2028 2028 50.51 5109 54 5155 58	5.00 5.00	(\$48.82) 21,064,1501 (\$	\$96.72 \$11.78 \$19.98 \$54.93 \$170.64	(97,83) (97,83)	
	16 2027 \$9.27 \$106.53 \$47.51 \$163.30	5.7.5 S 93.000 431.688 595.01 547.07 523.53 5124.54 518.11 567.35	(\$45,70) 20.199,6511 (\$:	\$94,35 \$11,24 \$18,11 \$53,59 \$165,07	(51,194,633)	
	15 2025 \$9 02 \$104.46 \$54.69 \$178.37	5.60 S 5.00 S 5.00 C 5.1.65 5.2.70 5.1.50 5.	(525.30) 11.359.739) (S	\$92,06 \$10,94 \$17.47 \$52,28 \$191,81	\$16.55 \$7,151,313 (
	2025 2025 58.78 5102.44 563.31 5174.53	5.45 \$ 55.000 \$50.004 \$131.893 \$90.44.80 \$19.44 \$11.854 \$11.6.54 \$510.97	(\$25,79) (\$1,135,877)	\$10.97 \$10.97 \$17.58 \$51.00 \$158.50	\$15,03 \$5,922,585	
	2024 2024 58.54 \$100.49 \$51.75	5.20 S 5.30 S 5.	(\$1,254) (\$1,483) (\$2,24,73) (\$23,41) (\$24,75) (\$25,79) (\$25,79) (\$45,70) (\$48,22) (\$50,52) (\$52,49) (\$53,416,809) (\$5,404,182) (\$52,64,759) (\$1,105,871) (\$11,105,871) (\$11,105,871) (\$11,105,871) (\$20,155,167) (\$20,155,167) (\$21,054,150) (\$	597,63 \$10.75 \$17.34 \$49,76 \$154,73	\$16,05 \$6,931,522	
	12 2023 \$8.30 \$9.56 \$60.25 \$167.11	5.15 5 5.6000 431,659 865.08 842.64 818,56 8112.83 810.35 816.35 816.35 816.35 816.35	(\$23,41) 10,108,991) (\$	\$85,49 \$10.35 \$16.58 \$48.55 \$150.72	\$16,39 \$7,080,361	
~	2022 \$8.05 \$8.05 \$58.79 \$163.53	5.00 S 55.00 S 55.00 431,698 583,98 541,60 813,69 515,35 516,35 516,35 516,35	(\$21,43) \$9,254,755) (\$	59.53 \$9.53 \$15.36 \$47.36 \$145.13	\$17,40	
	10 2021 \$7.82 \$94.86 \$61.45 \$164,12	\$ 4.85 \$ 5000 43,000 43,000 43,000 \$81.93 \$40.59 \$10.73 \$10.73 \$13.49	(\$14.83) \$5.404,182) (\$	\$61.57 \$8.37 \$13.49 \$46.21 \$141.07	\$23,05 \$9,959,891	
	2020 27.27 27.57 293.08 559.95	5 4.70 8 431,668 579,030 579,93 539,60 510,77 57,27 51,72 51,72 51,73 51,73	(\$5,416,909) (\$5,416,909)	\$1.72 \$11.72 \$45.08 \$136,18		•
	2019 \$7.33 \$91.34 \$51.34 \$58.49 \$157.16	\$ 4.55 \$ 8000 431.658 \$ 538,030 \$ 538,030 \$ 58.34 \$ 58.34 \$ 58.34 \$ 58.34 \$ 58.34 \$ 58.30 \$ 58.34 \$ 58.30 \$ 58	(\$10.37) (\$4,479,349)	\$10.04	\$25.88 \$23.69 \$11,605,534 \$11,093,356 \$10,545,113	
	7 2018 57.09 589.64 \$57.06 \$153.79	\$ 4.40 4.11.858 576.08 537.68 \$ 5.24 \$ 5.24 \$ 5.24 \$ 5.34 \$ 5.34 \$ 162.09	(\$3,584,348) (\$3,584,348) \$75,56	\$5.24 \$8.44 \$42.91 \$125.91	\$25.88	
	50.77 50.72 50.73 50.73 51.03 51.50.51	\$ 4.25 43.1800 43.1800 574.23 \$4.29 \$4.39 \$4.39 \$4.39 \$4.39 \$4.39 \$4.39 \$4.39 \$4.39	(\$2.62) (\$6.33) (\$257,111) (\$2,731,717) (\$71.92 \$73,72	\$4.30 \$6.93 \$41.86 \$122.51	\$28.00 \$12,090,607	
	2016 2016 84.85 875.33 857.33 \$151.15	\$ 4.25 58.000 431.659 \$72.41 \$35.87 \$3.37 \$3.43 \$5.53 \$5.53 \$5.53 \$5.53 \$1.53 \$1.53		53,43 55,53 540,84 \$118,29	\$32,94 \$33.17 \$33.40 \$32.87 \$28.00 \$14,227,302 \$14,324,696 \$14,425,133 \$14,193,593 \$12,090,507	
	2015 2015 55.85 594.80 555.52 \$148.7	\$1.25 \$3.000 \$11.865 \$77.65 \$1.80 \$1.80 \$1.80 \$1.80 \$1.52 \$1.52 \$1.52 \$1.53 \$1.50 \$1	is .	\$2,95 \$4,75 \$39,84 \$114,76	\$33.40 \$14,425,133	
	2014 2014 56.85 583.25 555,14 \$15,25	55.000 431.856 431.856 55.030 534.15 534.15 534.35 534.35 534.35	<i>ν</i>	\$3.95 \$38.87 \$112.08	533,17 514,324,996	
	2013 2013 55.85 58.175 553.80 5142.41	4.25 98.000 411,656 897,24 \$33,31 \$1,24 \$2,75 \$47,75 \$47,76 \$47,76 \$47,76 \$1,7	iñ	\$2,95 \$4,75 \$37,93 \$109,46	\$32.94 \$14,227,302	
	2012 50.00 880.30 852.48 \$132.78 6.493, 51,725.59 \$186,44	25,000 25,000 25,000 25,500 25	\$0.29 \$125,415 (\$182,547,989) (\$70,352,974)	\$3.02 \$0.00 \$37.00 \$102.21 \$1,482.37 \$134.39	\$30.57 \$13.202.553 \$151.982.205 \$105.025.249	
•	ı	s (Anna)		f		
LAW - GERLIN - 2008 PROPOSAL PRICES	eity Picc (Status), py Fleic (Status) py Fleic (Status) Picc (Status) Picc Proposal (Status) Price Proposal (Status)	cicky Value Storing in 2013 (SRVVA.16) Manual Canonity (RAV) Miss Treep Preduction (LIVAN) 85% CF make CFP Mindre Compliance Price (SRIAVA)) Mindre Compliance (SRIAVA) Mindre Compliance (SRIAVA) Mindre Compliance (SRIAVA) Factor	(Under) Market (SMANA) (Under) Market (S) (Under) Market (S) (2010 Late A. 2009 Market Price Forecast per (SMANANA)	ady (\$ANTA) To FECE (\$ANAN) Henergy Piec (\$ANAN) 1.2012	r (Under) Marbet (SMMM) (Under) Marbet (S) (To 12 (2012	45

DE 10-195 PSNH Laidlaw PPA OCA Testimony of Traum Attachment KET -15

DE 10-195 Data Requests 10/08/2010 O-STAFF-01-032-RV01 Attachment 1 Revised

CPI-U All Urban Consumers, Not Seasonally Adjusted, U.S. city average, All items

	Actual			Forecast	
Year	Annual	% Chg	Year	Annual	% Chg
2000	172.2		2000	1.722	
2001	177.1	2.8%	2001	1.770	2.8%
2002	179.9	1.6%	2002	1.799	1.6%
2003	184	2.3%	2003	1.840	2.3%
2004	188.9	2.7%	2004	1.889	2.7%
2005	195.3	3.4%	2005	1.953	3.4%
2006	201.6	3.2%	2006	2.016	3.2%
2007	207.342	2.8%	2007	2.073	2.9%
2008	215.303	3.8%	2008	2.152	3.8%
Avg 2001-2	8008	2.8%	2009	2.139	-0.6%
			2010	2.174	1.6%
Source: BLS			2011	2.217	2.0%
http://www.l	ols.gov/cpi/hon	ne.htm	2012	2.261	2.0%
			2013	2.304	1.9%
			2014	2.351	2.0%
			2015	2.402	2.2%
			2016	2.455	2.2%
			2017	2.510	2.2%
			2018	2.566	2.2%
			2019	2.623	2.2%
			2020	2.680	2.2%
			2021	2.739	2.2%
			2022	2.799	2.2%
			2023	2.860	2.2%
			2024	2.922	2.2%
٠			2025	2.985	2.2%
			2026	3.049	2.1%
			2027	3.114	2.1%
			2028	3.180	2.1%
			Avg 2009-20	028	2.0%

Source: Economy.com

DE 10-195 PSNH Laidlaw PPA OCA Testimony of Traum Attachment KET -15

DE 10-195 Data Requests 10/08/2010 Q-STAFF-01-032-RV01 Attachment 1 Revised

GDP Implicit Price Deflator

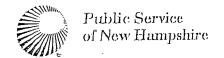
•				
Actual			Forecast	
Annual	% Chg	Year	Annual	% Chg
88.647		2000	1.0000	
90.650	2.3%	2001	1.0240	2.4%
92.118	1.6%	2002	1.0419	1.7%
94.100	2.2%	2003	1.0640	2.1%
96.770	2.8%	2004	1.0945	2.9%
100.000	3.3%	2005	1.1303	3.3%
103.257	3.3%	2006	1.1667	3.2%
106.214	2.9%	2007	1.1981	2.7%
108.483	2.1%	2008	1.2242	2.2%
008	2.6%	2009	1.2427	1.5%
		2010	1.2459	0.3%
Ą		2011	1.2588	1.0%
ea.gov/natio	nal/nipaweb/TableVid	2012	1.2765	1.4%
		2013	1.2959	1.5%
		2014	1.3159	1.5%
		2015	1.3374	1.6%
		2016	1.3603	1.7%
		2017	1.3835	1.7%
		2018	1.4070	1.7%
		2019	1.4308	1.7%
		2020	1.4546	1.7%
•	•	2021	1.4789	1.7%
	•	2022	1.5034	1.7%
•		2023	1.5278	1.6%
		2024	1.5527	1.6%
		2025	1.5772	1.6%
		2026	1.6018	1.6%
		2027	1.6263	1.5%
		2028	1.6507	1.5%
	Ā	vg 2009-20	028	1.5%
	Annual 88.647 90.650 92.118 94.100 96.770 100.000 103.257 106.214 108.483	Annual % Chg 88.647 90.650 2.3% 92.118 1.6% 94.100 2.2% 96.770 2.8% 100.000 3.3% 103.257 3.3% 106.214 2.9% 108.483 2.1% 008 2.6% A rea.gov/national/nipaweb/TableVia	Annual % Chg 88.647 2000 90.650 2.3% 2001 92.118 1.6% 2002 94.100 2.2% 2003 96.770 2.8% 2004 100.000 3.3% 2005 103.257 3.3% 2006 106.214 2.9% 2007 108.483 2.1% 2008 2010 2010 2011 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028	Annual 88.647 2000 1.0000 90.650 2.3% 2001 1.0240 92.118 1.6% 2002 1.0419 94.100 2.2% 2003 1.0640 96.770 2.8% 2004 1.0945 100.000 3.3% 2005 1.1303 103.257 3.3% 2006 1.1667 106.214 2.9% 2007 1.1981 108.483 2.1% 2008 1.2242 2010 1.2459 2010 1.2459 2011 1.2588 Pea.gov/national/nipaweb/TableVic 2012 1.2765 2013 1.2959 2014 1.3159 2015 1.3374 2016 1.3603 2017 1.3835 2018 1.4070 2019 1.4308 2020 1.4546 2021 1.4789 2022 1.5034 2023 1.5278 2024 1.5527 2025 1.5772 2026 1.6018 2027 1.6263

Source: Economy.com

DE 10-195 Data Requests 10/08/2010 Q-STAFF-01-032-RV01 Attachment 1 Revised

						RPS	3eguirem	RPS Renuirements Analysis	veie								
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2000	,	
Delivery Service Forecast (MWH)	7,916,354	7,858,039	7,935,127	8,023,918				8 355 901	R 461 435	9 503 100	1 000			7707	2707	2024	2025
Cite(y) Service Forecast (MWH)	7,916,354	7,858,039	7,935,127	123,918	8,051,017	8,125,506 8	8,215,681	8,355,901	8,461,436	8,593,166	8,708,603	8,878,095	9.011.267	9.145,435	9.283.533	9,422,887	9.554.231
RPS Requirement (%)														2	200,000	2,424.00/	4,554,231
Class 1	0.50%	1.00%	2.00%	3.00%	4 00%	2000	è	2	į								
Class II	0.00%	0.04%	0.08%	0.15%	0.20%	0.30%	30%	200.0	8.00%	8.00%	10.00%	11.00%	12.00%	13.00%	14.00%	15,00%	16.00%
Class	4.50%	5.50%	6.50%	6.50%	6.50%	6 50%	2000	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0 30%
Class IV	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	6.50% 1.00%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	5.50%
RPS Requirement (MMH)									2	200		1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
Clase																	
Class II	39,582	78,580	158,703	240,718	322,441	406,275	492,941	584,913	676.915	773 385	020 078	107 050					
Class II	0	3,143	6,348	12,036	16,122	24,377	24,647	25,068	25 384	05,27	26 426	975,591	1,081,352	1,189,037	1,299,709	1,413,433	1,530,277
Class III	356,236	432,192	515,783	521,555	523,966	528,158	534,019	543,134	549.993	558.7.5	50,120 566 060	25,634	27,034	27,439	27,851	28,269	28,693
2 6590	79,164	78,580	79,351	80,239	80,610	81,255	82,157	83,559	84.614	85.932	87.086	97,7,0	585,732	594.518	603,436	612,488	621,575
Current Supply Sources (MWH)										!		0,,00	50,113	91,464	92,836	94,229	95,642
Class I	072 03	071															
Olass	9,00	96,548	58,549	68,549	68,549	68,549	68,549	68,549	68,549	68.549	68 549	68 540	200				
Olass III	> 0	> (וכ	0	0	0	0	0	D		-	5	6 to 0	98,048	68,549	68,549	68,549
Class IV	2 1	- !	9	٥	0	0	0	0	0			> 0	5 (5 (0	0	0
	34,355	34,355	34,355	34,355	34,355	34,355	34,355	34,355	34,355	34,355	34 355	34 355	0 24 26 5	0 10 70	0	0	0
Potential Supply Sources (MWH)										•	-	2	000,40	54,533	34,333	34,355	34,355
Class I	c	c	•	ć	000 707		:										
S Class II	o c	•		> 0	431,868	431,868	431,868	431,868	431,868	431,868	431,868	431,868	431.868	431 868	431 869	000	
Class III				0 6	5 (0	0	0	0	0	D			000	00,	200	431,858
Class IV	0	0 0	0 0	9 6	- 6	o c	o c	0 5	Б.	0	0		0	0 0	00	0	D C
State of the state of the state of					,	,	•	•	5	D	0	Ö	0	D	0	0	. 0
CHEST CENTER WAY												•					
Class	(28,967)	10,031		172,168	(177,976)	(94,142)	(7,476)	84,496	176 498	977 9AB	370 443	720					
1 2 2 2 2	0	3,143					24,647	25,068	25,384	25.779	26 126	26.034	580,835	688,620	799,291	913,018	028.850
Class IV	356,236	432,192	515,783			528,158	534,019	543,134	549,993	558,556	566.059	577,078	450,12	27,439	27,851	28.259	28,593
	44,009	44,225					47,802	49,204	50,259	51,577	52,731	54 426	55.758	384,518	603.435	512.488	621.675
CPI (%)	2.1%	2.2%	2.2%	2.3%	2.3%	2.3%	2 3%	2 2%	60 0	ò					07.00	04.0/2 4	51,287
							:		6.7.70	4.2%	7.7%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
ACP (\$/MWH)																i	
Class	\$60.92	\$62.25	\$63.64	\$65.14	\$66.67	\$68.21	\$69.78	\$71.35	27.7 05	1.6	0	1					
Classes III	\$159.98	\$163,46	\$167.14	\$171.06	\$175.07	\$179.13	\$183.25	\$187.38	\$191.57	\$ 195.86	\$200.25	\$77.95	579.69	581.47	\$83.29	\$85.14	\$87.04
Class IV	\$29.87	\$30.52	\$31,21	\$31.94	\$32.69	\$33.45	\$34.22	\$34.99	\$35.77	\$36.57	\$37.39	\$38.22	\$39.07	5213.94	5218.72	\$223.50	\$228.58
			7	t	932.09	\$33,45	\$34.22	\$34.99	\$35.77	\$36.57	\$37.39	\$38.22	\$39.07	\$39.95	540.84	541.75	242.53
Assumplions:																?	944.99

Energy Service Forecast - Assumes no migration.
Energy Service Forecast - Assumes no migration.
Smith Hydro - PSNH receives RECs for everything above a minimum threshold amount. Can generate between 0 and 31,000 RECs in a given year. Assumed 8,000 for this analysis.
Langster - Has the option to sell a portion of RECs to a 3rd party if the price is higher than the contract price. Assumed that they would sell gook to PSNH for this analysis.
Laidaw - Assumed 315,000 RECs



DE 10-195 PSNH Laidlaw PPA OCA Testimony of Traum Attachment KET-16

PSNH Energy Park 780 North Commercial Street, Manchester, NH 034

Public Service Company of New Hampshire P.O. Box 330 Manchester, NH 03105-0330 (603) 669-4000 www.psnh.com

The Northeast Utilities System

December 3, 2010

Ms. Debra A. Howland
Executive Director & Secretary
State of New Hampshire
Public Utilities Commission
21 S. Fruit Street, Suite 10
Concord, NH 03301-2429

Re: Docket No. DE 10-195 - Laidlaw PPA

Dear Ms. Howland:

Enclosed for filing are PSNH's responses to STAFF-01 Q-STAFF-017-RV01 and STAFF-05 Q-STAFF-006-RV01 with confidential attachments.

STAFF-01 Q-STAFF-017-RV01

Based on Order 25,174 (page 13) the Commission has ruled that this information is confidential and should be protected from disclosure. However, the order directed PSNH to provide to the Wood-Fired IPPs an aggregated summary of proposals received, including the range of price and products offered, but without information identifying the suppliers. That summary is being provided in the response to STAFF 1-17 RV02.

Based on the ruling in Order 25,174, PSNH will not be filing a motion for confidential treatment, but requests that the attachments to this response be handled as confidential.

STAFF-05 Q-STAFF-006-RV01

Based on Order 25,174 (page 15) the Commission has ruled that this information is confidential and should be protected from disclosure. Therefore, PSNH will not be filing a motion for confidential treatment, but requests that the attachment to this response be handled as confidential.

If you have any questions, please contact me.

Very truly yours,

RC Chym

Richard C. Labrecque, Manager Supplemental Energy Sources

cc: Suzanne Amidon Ken E. Traum

QS6161 REV 11-09

49

DE 10-195 PSNH Laidlaw PPA OCA Testimony of Traum

Public Service Company of New Hampshir Attachment KET-16 Docket No. DE 10-195

Data Request STAFF-01 Dated: 10/08/2010 Q-STAFF-017-RV01 Page 1 of 10

Witness:

Terrance J. Large

Request from:

New Hampshire Public Utilities Commission Staff

Question:

Please provide each and every offer, bid or proposal made by a renewable energy developer to sell renewable energy certificates, energy, or capacity to PSNH which was received after negotiations with Laidlaw began.

Response:

Since the original filing of PSNH's response to STAFF 1-17 (Oct 18, 2010) PSNH has received both new and revised proposals. As such, PSNH is providing the revised response. See attachments 1, 2, and 3 for the new and revised proposals.

Based on Order 25,174 (page 13) the Commission has ruled that this information is confidential and should be protected from disclosure. However, the order directed PSNH to provide to the Wood-Fired IPPs an aggregated summary of proposals received, including the range of price and products offered, but without information identifying the suppliers. That summary is being provided in the response to STAFF 1-17 RV02.

Based on the ruling in Order 25,174, PSNH will not be filing a motion for confidential treatment, but requests that the attachment to this response be handled as confidential.

This page has been intentionally left blank

DE 10-195 PSNH Laidlaw PPA OCA Testimony of Traum Attachment KET – 16

Public Version

This page has been intentionally left blank

This page has been intentionally left blank

DE 10-195 PSNH Laidlaw PPA OCA Testimony of Traum Attachment KET – 16

Public Version

This page has been intentionally left blank

This page has been intentionally left blank

This page has been intentionally left blank

DE 10-195 PSNH Laidlaw PPA OCA Testimony of Traum

Public Service Company of New Hampshirettachment KET-16 Docket No. DE 10-195

Data Request STAFF-05 Dated: 11/01/2010 Q-STAFF-006-RV01 Page 1 of 8

Witness:

Terrance J. Large

Request from:

New Hampshire Public Utilities Commission Staff

Question:

Regarding the proposals provided to Staff by PSNH in response to Staff 1-17, please provide copies of all correspondence between PSNH and the developers concerning such proposals including PSNH's final response.

Response:

Since the original filing of PSNH's response to STAFF 5-6 (Nov 8, 2010) PSNH has received and/or provided additional correspondence related to the proposals provided in Staff 1-17 and Staff 1-17 RV01. As such, PSNH is providing this revised response. See attachments 1 for the additional correspondence.

Based on Order 25,174 (page 15) the Commission has ruled that this information is confidential and should be protected from disclosure. Therefore, PSNH will not be filing a motion for confidential treatment, but requests that the attachment to this response be handled as confidential.

This page has been intentionally left blank

DE 10-195 PSNH Laidlaw PPA OCA Testimony of Traum Attachment KET – 16

Public Version

This page has been intentionally left blank

This page has been intentionally left blank

This page has been intentionally left blank

DE 10-195 PSNH Laidlaw PPA OCA Testimony of Traum Attachment KET – 16