

STATE OF NEWHAMPSHIRE
PUBLIC UTILITIES COMMISSION

DE 10-195

In the Matter of:
Public Service Company of New Hampshire
Petition for Approval of Proposed
Power Purchase Agreement with Laidlaw
Berlin Biopower, LLC.

Direct Testimony
of
George R. McCluskey

December 17, 2010

DIRECT TESTIMONY
OF
GEORGE R. McCLUSKEY

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
II.	SUMMARY OF KEY PRICE AND NON-PRICE TERMS IN PPA.....	4
III.	PPA PROVISIONS OF INTEREST.....	10
	A. PSNH’s Obligation to Purchase All of the Output of the Facility.....	10
	B. PSNH’s Need for Class 1 Renewable Energy Certificates.	12
	C. Proposed Wood price Adjustment.....	15
	D. Purchase Option and Right of First Refusal.....	17
	E. Cost-Effectiveness Tests.....	22
	(i) Pricing for Comparable Renewable Energy Projects.....	24
	(ii) Market Price Projections.....	25
	(iii) Financial Analysis.....	29
IV.	PUBLIC INTEREST ANALYSIS	40
	A. Efficiency and Cost-Effectiveness.....	40
	B. Restructuring Policy Principles.....	42
	C. Least Cost Integrated Resource Planning.....	45
	D. Administrative Efficiency and Market-Driven Competitive Solutions.....	45
	C. Economic Development and Environmental Benefits.....	46
V.	RECOMMENDATIONS	47
	Exhibit GRM-1	48
	Exhibit GRM-2	51
	Exhibit GRM-3	52
	Exhibit GRM-4	53
	Exhibit GRM-5	54
	Exhibit GRM-6	58
	Exhibit GRM-7	60
	Exhibit GRM-8	61
	Exhibit GRM-9	62
	Exhibit GRM-10	63
	Exhibit GRM-11	64
	Exhibit GRM-12	65
	Exhibit GRM-13	66
	Exhibit GRM-14	67
	Exhibit GRM-15	68
	Exhibit GRM-16	70
	Exhibit GRM-17	72

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

6

Public Service Company of New Hampshire)

Docket No. DE 10-195

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Petition for Approval of Proposed Purchased)

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Power Agreement with Laidlaw Berlin)

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Biopower LLC.)

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**DIRECT TESTIMONY
OF
GEORGE R. McCLUSKEY**

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17

I. INTRODUCTION

18

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

19

A. My name is George McCluskey and my business address is the New Hampshire Public Utilities Commission (“Commission”), 21 South Fruit Street, Suite 10, Concord, NH 03301.

22

23

Q. WHAT IS YOUR POSITION WITH THE COMMISSION?

24

A. I am an analyst within the Electric Division.

25

26

Q. PLEASE DESCRIBE YOUR BACKGROUND AND EXPERIENCE.

27

A. I am a utility ratemaking specialist with over 30 years experience in utility economics. I rejoined the Commission in March 2005 after working as an energy consultant for La Capra Associates for five years. Before joining La Capra Associates, I directed the Commission’s electric utility restructuring division and before that I was manager of least

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1 cost planning, directing and supervising the review and implementation of electric utility
2 least cost plans and demand-side management programs. I have participated in
3 restructuring-related activities in New Hampshire, Arkansas, Pennsylvania, California
4 and Ohio and have presented or filed testimony before state regulatory authorities in New
5 Hampshire, Maine, Ohio and Arkansas and before the FERC. I have also testified on a
6 variety of cost-of-service, rate design and power procurement topics. A copy of my
7 resume is included as Exhibit GRM-1.

8

9 Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

10 A. My testimony will address the Power Purchase Agreement (“PPA”) entered into
11 by Public Service Company of New Hampshire (“PSNH”) and Laidlaw Berlin
12 Biopower, LLC (“Laidlaw”) which was filed with the Commission on July 26,
13 2010. The PPA governs the purchase by PSNH of all of the electrical energy,
14 capacity and renewable energy certificates (“RECs”) produced by the Laidlaw
15 wood-fired electric generating facility during its 20-year term. I provide an
16 analysis of whether the PPA is in the public interest pursuant to the public interest
17 criteria set forth in RSA 362-F:9. A focal point of that analysis is whether the
18 PPA prices reflect the lowest prices necessary for the facility to receive financing
19 and earn a reasonable return. A related issue, which is also examined, is whether
20 PSNH is required to purchase more of the facility’s output than is necessary for
21 Laidlaw to receive financing and earn a reasonable return.

22

1 Q. DOES YOUR TESTIMONY ALSO ADDRESS THE LOCAL ECONOMIC
2 BENEFITS ATTRIBUTED TO THE LAIDLAW PROJECT?

3 A. No, that issue will be addressed in the testimony of Thomas Frantz.
4

5 Q. WHO IS LAIDLAW BERLIN BIOPOWER?

6 A. Laidlaw is the developer of the project and will be responsible for the day-to-day
7 operations and management of the facility. Laidlaw is 100% owned by NewCo
8 Energy, LLC (“NewCo”), a single purpose entity formed solely for the purposes
9 of constructing and operating the facility.¹ The plant and the land on which it will
10 be located will not, however, be owned by Laidlaw. The real property and assets
11 will be owned by PJPD Holdings, LLC (“PJPD”), an affiliate of Laidlaw. PJPD,
12 like Laidlaw, is 100% owned by NewCo. PJPD will lease the use of the land and
13 its assets to Laidlaw, pursuant to a long-term lease agreement. Under the lease
14 agreement, all operating expenses of any nature will be the responsibility of
15 Laidlaw.
16

17 Q. YOU SAID THAT PSNH HAS COMMITTED TO PURCHASE ALL OF THE
18 ENERGY, CAPACITY AND RECs PRODUCED BY THE FACILITY DURING
19 THE FIRST 20 YEARS. DOES PSNH HAVE A NEED FOR THAT OUTPUT?

20 A. PSNH needs to purchase sufficient energy and capacity to reliably supply the
21 loads of its retail customers. It also needs to purchase specific quantities of RECs
22 to satisfy the requirements of RSA 362-F, New Hampshire’s Renewable Portfolio
23 Standard (“RPS”). Since each of these products can be purchased in existing
24 organized markets, PSNH does not have a “need” for the output of the facility in

¹ NewCo’s owners include both the former and current managing partners of the consulting firm Accenture Utilities Practice, as well as other individuals associated with Accenture.

1 the sense that if the agreement was not approved it would fail to supply the loads
2 of its customers and fail to meet its RPS obligations. That said, PSNH is
3 generally able to use energy, capacity or RECs that is priced below what it would
4 otherwise pay in the market. The question of need should, therefore, begin with
5 the question of whether the products are priced competitively. If the answer is
6 yes, the next question should be whether PSNH is physically able to utilize all
7 that is offered to it. If the answer to that question is no, then PSNH's need for the
8 output is constrained.

9

10 Q. HOW IS YOUR TESTIMONY ORGANIZED?

11 A. In Section II, I provide a description of the Laidlaw project and summarize the
12 key price and non-price terms in the PPA. Section III comprises five subsections,
13 each addressing a different aspect of the PPA. The first subsection addresses
14 PSNH's obligation to purchase all of the output of the facility. The second
15 addresses PSNH's need for Class I RECs. The third addresses the proposed
16 Wood Price Adjustment (WPA). The fourth addresses the cost-effectiveness of
17 the PPA. The fifth and last subsection addresses the provisions dealing with the
18 Purchase Option and the Right of First Refusal. Using the criteria set forth in
19 RSA 362-F:9(II), I provide in Section IV an analysis of whether the PPA is in the
20 public interest. Finally, in Section V, I provide my recommendations.

21

22 **II. SUMMARY OF KEY PRICE AND NON-PRICE TERMS IN PPA**

23 Q. PLEASE PROVIDE A BRIEF DESCRIPTION OF THE LAIDLAW PROJECT.

1 A. Laidlaw has proposed to develop a 70 MW (gross) wood-fired electric generating facility
2 that produces electrical energy, capacity and RECs. The facility is to be located in
3 Berlin, New Hampshire, on the site of the former Fraser Paper Pulp mill. While most of
4 the building and equipment from the pulp mill operation have been removed from the
5 site; a black liquor recovery boiler and its associated facilities were retained. This
6 recovery boiler will be converted to a bubbling fluidized bed boiler, which will supply
7 steam to an existing turbine generator to produce electricity. Homeland Renewable
8 Energy, Inc. will operate the facility under contract with Laidlaw.
9 According to Laidlaw’s application to New Hampshire’s Site Evaluation Committee
10 (“SEC”),² the facility has been designed to incorporate advanced emissions control
11 technologies and monitoring systems which will allow it to meet the definition of
12 “eligible biomass technologies” under New Hampshire’s RPS and hence qualify it for
13 New Hampshire Class I REC status.

14 The capital cost of the project is currently estimated at \$167 million, which is to
15 be financed with \$137 million of debt and \$30 million of equity.³ The debt
16 financing will be provided by various institutional investors and will be secured
17 by the property owned by PJPD. The term of the debt is expected match the term
18 of the PPA, which is 20 years beginning June 1, 2014. The equity capital will be
19 provided by a combination of NewCo investors and a grant from the federal
20 government.

21
22 Q. HOW WILL THE FACILITY BE CONNECTED TO PSNH’S TRANSMISSION
23 SYSTEM?

² SEC Docket No. 2009-02.
³ See Laidlaw Response to Staff 3-3 attached as Exhibit GRM-2.

1 A. A new switchyard will be built and connected to the existing East Side Substation
2 300 operated by PSNH. A new 115kV transmission line will be installed for this
3 purpose. Portions of the transmission line will run both underground and
4 overhead. The underground portion will run for an estimated length of 3,200 feet
5 and the overhead portion is estimated to be 800 feet.

6

7 Q. PLEASE PROVIDE A SUMMARY OF THE KEY PRICE AND NON-PRICE
8 TERMS IN THE PPA.

9 A. During the 20-year term of the PPA, PSNH is obligated to purchase 100% of the
10 products produced by the facility, which include energy, capacity and renewable
11 energy attributes. Although each product is priced separately under the PPA, the
12 starting bundled price is estimated at \$143.5 per megawatt-hour (MWh) in 2014
13 rising to \$183.6 per MWh in the last year of the agreement.⁴ Over the term of the
14 agreement the contract prices are equivalent to a levelized bundled price of about
15 \$162 per MWh. This is approximately twice the level of PSNH's current energy
16 service rate when expressed on a MWh basis.

17 The projected energy prices recover, among other things, the cost of wood fuel
18 consumed in the facility, which is assumed to start at \$34/ton in 2014 and rise at
19 an annual rate of 2.5%.⁵ If the price of wood fuel deviates from these

⁴ See Exhibit GRM-3. Note that the bundled energy prices differ slightly from the bundled prices contained in Attachment RCL-1 to Mr. Labrecque's testimony. The difference is attributable to the use in my analysis of Laidlaw's claimed capacity factor for the facility of 87.5% instead of the 85% used by Mr. Labrecque.

⁵ More accurately, the energy prices reflect the projected cost of wood fuel consumed by Schiller Unit 5 rather than by the Laidlaw facility.

1 assumptions, the difference will be charged or credited to PSNH through a Wood
2 Price Adjustment (“WPA”) to the contract energy price.

3 Over the 20-year term, PSNH will pay approximately \$1.6 billion to Laidlaw for
4 the products produced by the facility. About one-third of this total payment will
5 be for the production and delivery of RECs to PSNH, a huge sum for a relatively
6 small project. Energy payments will account for most of the remaining \$1 billion.

7

8 Q. WHAT IS THE ENERGY PRICE UNDER THE PPA?

9 A. Energy prices will vary over the term of the agreement, starting in 2014 at \$83
10 plus the WPA for every MWh delivered to the designated delivery point. The
11 \$83/MWh price is referred to as the base energy price and comprises two
12 components. One component, equal to \$61.2/MWh, is the product of the base
13 fuel price of \$34/ton and a conversion factor of 1.8 tons/MWh. As noted, PSNH
14 assumes in its analyses that the base fuel price will increase at an annual rate of
15 2.5%. The other component, equal to \$21.8/MWh, does not change over the term
16 and appears to represent the levelized charge that will collect over the 20-year
17 term the estimated O&M costs for the facility. These costs were also assumed to
18 increase annually at a rate of 2.5%. In summary, the energy prices in the PPA are
19 designed to recover: (i) the cost of wood fuel on a reconciled basis; and (ii) the
20 estimated costs of O&M.

21

22 Q. YOU INDICATED THAT THE WPA COULD BE POSITIVE OR NEGATIVE.
23 HOW IS THAT ADJUSTMENT CALCULATED?

1 A. The WPA is simply the product of a factor that converts tons of fuel to MWh and
2 the difference in dollars per ton between the unit cost of fuel consumed at Schiller
3 Unit 5 and the base fuel price of \$34/ton. The actual conversion factor is 1.8
4 tons/MWh, the same factor used to convert the base fuel price to \$/MWh.

5
6 Q. WHAT IS THE CAPACITY PRICE UNDER THE PPA?

7 A. The capacity price also varies over the 20-year term. Over the first five years,
8 PSNH will pay \$4.25 per kW-month of capacity. For each subsequent year, the
9 payment will increase by \$0.15 per kW-month. Thus, capacity prices are fixed by
10 the terms of the PPA whereas energy prices depend on the cost of fuel consumed
11 at Schiller Unit 5, which is currently unknown.

12
13 Q. HOW ARE THE REC PRICES DEVELOPED IN THE PPA?

14 A. Over the first five years, the REC price is 80% of the “Renewables Products
15 Payment“ applicable to the period during which the RECs were produced. During
16 the next five years, the REC price is 75% of the applicable Renewable Products
17 Payment. During the subsequent five years, the REC price is 70% of the
18 applicable Renewables Products Payment. Finally, during the remaining five
19 years of the term, the REC price is 50% of the applicable Renewable Products
20 Payment.

21 The Renewable Products Payment is defined in the PPA as the alternative
22 compliance payment (ACP) schedule set forth under RSA 362-F for RECs
23 produced by NH Class I renewable facilities, as adjusted by the Commission.

1 Although RSA 362-F does not contain a “schedule” of Class I ACPs, it does
2 contain an initial Class I ACP that will be adjusted each year by the Commission
3 using the Consumer Price Index. Thus, assuming the initial Class I ACP plus the
4 annual adjustments comprise the schedule referenced in the PPA, it is reasonable
5 to view the REC prices as essentially fixed.

6

7 Q. YOU SAID THAT PSNH WOULD PAY APPROXIMATELY \$1.6 BILLION
8 TO LAIDLAW OVER THE 20-YEAR TERM OF THE PPA. COULD THE
9 FINAL PRICE TAG BE HIGHER?

10 A. It could. My estimate is based on the capacity factor claimed by Laidlaw before
11 the SEC. That figure, however, is considerably lower than the capacity factors
12 achieved by some of the wood-fired generators selling to PSNH in recent years.⁶
13 Thus, if the Laidlaw facility achieves the level of performance achieved by the
14 high performers, the total power bill will increase because PSNH is obligated to
15 purchase 100% of the products produced by the facility during the term.

16

17 Q. YOU ALSO SAID THAT PSNH WOULD PAY ABOUT \$500 MILLION OVER
18 THE 20-YEAR TERM FOR RECs. DOES THE MAGNITUDE OF THOSE
19 PAYMENTS RAISE A RED FLAG?

20 A. It does. The stated purpose of RSA 362-F, New Hampshire’s RPS, is to stimulate
21 investment in low emission renewable generation technologies. To achieve this
22 purpose, the statute mandates that a certain percentage of each electricity
23 provider’s end-use load be supplied with eligible renewable resources. This

⁶ See Exhibit GRM-4. Prior to November 2008, the Indeck plant was mothballed.

1 requirement, along with the issuance of RECs to eligible resources for each MWh
2 generated, has the effect of providing an additional revenue stream for the
3 developers of those resources. The expectation was that this additional revenue
4 stream would make it economically feasible for renewable resources to compete
5 with conventional generating units.

6 If the REC market price is insufficient for this purpose, renewable resources
7 would not be built and the resulting supply shortage would force prices to rise to a
8 level that stimulated investment. Similarly, if the REC market price is too high,
9 the resulting supply excess would force prices to fall until investment was slowed.

10 Thus, in an efficient market, the REC price would always approach the
11 uneconomic variable cost of renewable generation. In this proceeding, however,
12 the REC payments total approximately three-quarters the total cost of wood fuel,
13 which suggests that wood is either a very uneconomic fuel for electricity
14 generation or the negotiated prices are too high and would over stimulate biomass
15 investment if they were made generally available.

16

17 **III PPA PROVISIONS OF INTEREST**

18 **A. PSNH's Obligation to Purchase All of the Output of the Facility**

19 Q. ARTICLE 5.1 TO THE PPA STATES THAT PSNH SHALL PURCHASE 100%
20 OF THE PRODUCTS PRODUCED BY THE FACILITY. WHAT IS YOUR
21 CONCERN WITH THIS PROVISION?

1 A. My concern is that the provision does not place an absolute limit on the amount of
2 products that PSNH must purchase under the PPA. As a result, the above-market
3 prices under the PPA may encourage Laidlaw to increase the output of the facility
4 resulting in PSNH paying for the incremental products at the PPA prices.

5
6 Q. DOES LAIDLAW HAVE THE ABILITY UNDER THE PPA TO INCREASE
7 THE OUTPUT OF THE FACILITY?

8 A. According to PSNH, the PPA is silent on Laidlaw's right to expand the facility.
9 One interpretation of this response is that the PPA does not prohibit Laidlaw from
10 increasing the facility's output. In fact, Laidlaw has already filed papers
11 informing ISO-NE of its intention to increase the output to 75 MW gross and 67.5
12 MW net. Laidlaw projects that this expansion will increase the annual net output
13 to approximately 504,711 MWh from the 482,895 MWh referenced in the SEC
14 proceeding.⁷

15
16 Q. DOES PSNH BELIEVE THAT IT IS OBLIGATED TO PURCHASE THE
17 INCREMENTAL PRODUCTS IF LAIDLAW INCREASES THE OUTPUT OF
18 THE FACILITY?

19 A. PSNH states that Article 1.18 of the PPA defines the "Facility" as the generating
20 plant in Appendix A. It goes on to say that if and when the Facility is expanded
21 such that the description in Appendix A is no longer valid, "it will determine the
22 appropriate course of action consistent with the PPA terms and conditions."
23

⁷ See Exhibit GRM-5.

1 Q. IS THIS A SATISFACTORY RESPONSE, IN YOUR OPINION?

2 A. No, it is not. Given the high above-market cost of the products purchased under
3 the PPA, I believe that the public interest demands that PSNH purchase no more
4 than it is absolutely obligated to purchase. To remove any uncertainty as to what
5 that level might be, I recommend the Commission establish a specific output level
6 expressed in MW above which PSNH would have no purchase obligation.

7

8 Q. DOESN'T THE LANGUAGE IN APPENDIX A ESTABLISH THAT LIMIT?

9 A. Appendix A states that the facility will be designed to have a net electrical output
10 at standard conditions of approximately 64 MW (winter) and 61 MW (summer).
11 However, the undefined terms winter, summer, and standard conditions, as well
12 as the vagueness of the word "approximately," plus Laidlaw's claim that the net
13 output of the facility is 63 MW, create significant opportunities for future
14 disagreements.

15

16 **B. PSNH's Need for Class I Renewable Energy Certificates.**

17 Q. ARTICLE 5.1 TO THE PPA REQUIRES PSNH TO PURCHASE ALL OF THE
18 RECs PRODUCED BY THE FACILITY. IS THIS OBLIGATION
19 CONSISTENT WITH PSNH'S CLASS I OBLIGATION UNDER THE RPS?

20 A. No, for two reasons. First, RSA 362-F:3 requires each provider of electricity to
21 obtain and retire RECs sufficient in number and class type to meet or exceed
22 specified percentages of "total megawatt-hours of electricity supplied by the
23 provider to its end-use customers." For example, in 2014 PSNH must acquire

1 sufficient Class I RECs to meet 5% of its retail energy service load. Stated
2 differently, suppliers of RECs will be paid for energy delivered to PSNH's end-
3 use customers rather than to PSNH's distribution system. The cost associated
4 with the difference (i.e., distribution system losses) is to be shouldered by the
5 REC supplier. Under the PPA, however, PSNH's REC payment obligation is
6 based on the number RECs delivered to its distribution system, which means
7 that the cost of the lost RECs will be shouldered by PSNH customers. The net
8 result is that PSNH retail customers will face REC prices that are higher than
9 indicted in the PPA.⁸

10 Second, when account is taken of the Class I RECs already under contract to
11 PSNH and the Class I RECs produced by Schiller Unit 5, PSNH does not have a
12 need to acquire additional Class I RECs until 2016. The PPA, however, obligates
13 PSNH to purchase all of the RECs produced by the Laidlaw facility as early as
14 2014. Even after 2016, the RECs delivered by Laidlaw will exceed PSNH's
15 estimated need through 2023 based on an assumed migration rate of 31%.⁹
16 These facts appear to be in conflict with the plain meaning of RSA 362-F:9(I),
17 which envisions approval of multi-year purchase agreements for RECs "to meet
18 reasonably projected renewable portfolio requirements." Given that over the first
19 10 years of the PPA, PSNH will be required to purchase from Laidlaw over 3
20 million RECs¹⁰ that it does not expect to need, representing approximately one-

⁸ For example, in 2014 retail customers will actually pay \$57.50 per MWh consumed instead of the \$53.80 price shown in Mr. Labrecque's Attachment RCL-1.

⁹ See Exhibit GRM-6. Note that during this period, 2016 to 2023, other suppliers will effectively be shut out of PSNH's portion of the New Hampshire Class I REC market and will have to compete with PSNH in the non-PSNH markets.

¹⁰ Ibid.

1 third of the total RECs produced by the facility, it is difficult to envision how this
2 obligation can be consistent with meeting “reasonably projected” needs.
3 Finally on this issue, the Wood-Fired IPPs have argued that there is no
4 requirement for the purchase of REC after 2005 in the RPS. If this is correct, all
5 of the RECs scheduled to be purchased during the 2026-2033 period will be in
6 excess of need absent modification of the RPS by the legislature. In other words,
7 PSNH will have taken on the very significant cost risk that the legislature will not
8 extend the RPS beyond 2025.¹¹

9

10 Q. IS IT LIKELY THAT PSNH WILL BE ABLE TO SELL THE EXCESS RECs
11 TO OTHER BUYERS IN NEW HAMPSHIRE OR ELSEWHERE?

12 A. Yes, but not at the price it paid for them. The REC prices under the PPA are
13 substantially above current and expected future market prices for Class I RECs.
14 Using the current market price as a benchmark, PSNH would only recoup about
15 \$50 million of the \$175 million excess cost. The above-market cost of \$125
16 million would have to be collected from the declining number of energy service
17 customers, thus increasing energy service prices and adding to the pressure for
18 further migration.

19

20 Q. YOUR ESTIMATE OF THE EXCESS RECs TO BE PURCHASED BY PSNH
21 IS BASED ON PSNH’S DEMAND FORECAST AND AN ASSUMED 31%

¹¹ This statement assumes that the Commission has the authority to approve cost recovery for a non-existent REC obligation.

1 MIGRATION RATE. IS THERE A SIGNIFICANT RISK THAT MIGRATION
2 IN THE FUTURE COULD EXCEED THAT RATE?

3 A. Yes, because the 31% figure used by PSNH to determine its need for RECs does
4 not represent a forecast for the future but simply the current level of migration.
5 Moreover, that rate has already been exceeded in three out of last twelve
6 months.¹² Thus, if the current migration rate is exceeded, the first year that PSNH
7 can use all of the RECs produced by the Laidlaw will be pushed out beyond 2023.

8

9 Q. WHAT ARE YOUR CONCLUSIONS?

10 A. I conclude that PSNH has committed to purchase more RECs from Laidlaw than
11 it is likely to need during the term of the PPA resulting in unnecessary additional
12 costs for PSNH customers.

13

14 **C. Proposed Wood Price Adjustment**

15 Q. EARLIER YOU SAID THAT IF THE PRICE OF WOOD CONSUMED AT
16 SCHILLER DEVIATES FROM THE BASE WOOD PRICE OF \$34/TON THE
17 DIFFERENCE WILL BE CHARGED OR CREDITED TO PSNH THROUGH A
18 WOOD PRICE ADJUSTMENT TO THE ENERGY BASE PRICE. YOU ALSO
19 SAID THAT THE AMOUNT CHARGED OR CREDITED WILL EQUAL THE
20 PRODUCT OF THE WPA AND A CONVERSION FACTOR. DO YOU HAVE
21 ANY CONCERNS WITH THE CONVERSION FACTOR INCLUDED IN THE
22 PPA?

¹² See PSNH Response to Staff 5-2 attached as Exhibit GRM-7.

1 A. I do. My initial reading of the PPA and Mr. Labrecque's testimony left the
2 impression that the WPA was simply a dollar-for-dollar pass-through of any
3 increase or decrease in the price of wood relative to the base wood price. That,
4 however, is not the case. In order to have a dollar-for-dollar pass-through of the
5 cost associated with a change in the price of wood, the conversion factor would
6 have to be 1.55 tons per MWh for an electric generating plant of the size and
7 operating characteristics claimed by Laidlaw. Because the factor in the PPA is
8 not 1.55 but 1.8 tons per MWh, Laidlaw will actually collect through the WPA
9 mechanism more than the actual incremental cost if wood prices rise above
10 \$34/ton. In other words, the WPA is potentially another source of income for
11 Laidlaw.

12
13 Q. WHAT IS THE MAGNTUDE OF THIS ADDITIONAL INCOME?

14 A. For every dollar increase in the price of wood, I estimate Laidlaw will collect an
15 additional \$113,000 per year.

16
17 Q. WAS PSNH AWARE OF THIS WHEN IT ENTERED INTO THE
18 AGREEMENT?

19 A. Yes, PSNH has stated that agreement on the 1.8 tons per MWh factor was part of
20 the overall contract negotiation.¹³

21

22 Q. DOES PSNH EXPECT WOOD FUEL PRICES TO INCREASE?

¹³ See PSNH response to Staff 3-19 attached as Exhibit GRM-8.

1 A. Yes, its base case assumption is that wood fuel prices will increase at an annual
2 rate of 2.5%.

3

4 Q. PLEASE EXPLAIN WHY YOU BELIEVE THE APPROPRIATE
5 CONVERSION FACTOR FOR THIS FACILITY IS 1.55 TONS PER MWH.

6 A. In testimony before the SEC, Laidlaw witnesses stated that the facility would
7 consume 750,000 tons annually when operating at its planned capacity factor of
8 87.5%. The witnesses also state that the net output of the facility will be 63 MW.
9 Since 750,000 tons per year equates to 97.84 tons per hour at a capacity factor of
10 87.5%, the equivalent quantity on a MW basis is 1.55 tons per MW per hour.

11

12 Q. USING THE 1.55 TONS/MWH FACTOR TO CONVERT THE BASE WOOD
13 PRICE OF \$34/TON TO \$/MWH PRODUCES A FIGURE OF \$52.7/MWH.
14 WHY IS THE PPA ENERGY PRICE SO MUCH HIGHER THAN THIS
15 FIGURE?

16 A. The difference amounts to \$30.3/MWh. Most of this difference, equal to
17 \$21.8/MWh, is the levelized charge negotiated by the parties that recovers over
18 the 20-year term the estimated O&M costs for the facility. The remaining amount
19 is attributable to using a conversion factor of 1.8 instead of 1.55 tons/MWh.

20

21 **D. The Purchase Option and Right of First Refusal**

22 Q. PLEASE PROVIDE A BRIEF DESCRIPTION OF THE PURCHASE OPTION.

1 A. The proposed PPA provides PSNH with the option to purchase the facility and the
2 site on which it is located at the end of the 20-year term. The purchase price will
3 equal the fair market value of the facility at the end of the term less the balance in
4 the so-called Cumulative Reduction account, provided that the net of the two
5 values is not less than zero. The Cumulative Reduction account tracks and
6 aggregates the amount by which the adjusted base energy price¹⁴ in each hour
7 differs from the ISO-NE's energy price in the hour multiplied by the MWhs
8 delivered. These positive or negative amounts will be aggregated over the term of
9 the PPA to determine the cumulative net positive or negative adjustment to the
10 fair market value. A cumulative net negative adjustment will serve to reduce the
11 purchase price of the facility. A cumulative net positive adjustment will have no
12 impact on the purchase price.

13 PSNH can also acquire the facility prior to the end of the 20-year term under its
14 Right of First Refusal. Under this provision, if Laidlaw elects to sell the facility
15 to a third-party PSNH has the right to match the third-party offer and purchase the
16 facility. Because Article 7.1.2 requires that a third-party owner of the facility
17 assume all rights and obligations of the Laidlaw, including those with respect to
18 the Cumulative Reduction account, the purchase price under the Right of First
19 Refusal will also reflect the value in this account.

20

21

22 Q. MR. LABRECQUE DESCRIBES THE CUMULATIVE REDUCTION
23 ACCOUNT AS A MECHANISM THAT PROTECTS CUSTOMERS FROM

¹⁴ The adjusted base energy price is defined as the base energy price plus the WPA.

1 PAYING PPA PRICES THAT EXCEED THE MARKET PRICE. DO YOU
2 AGREE?

3 A. Not at all. First, PSNH is obligated to pay the PPA energy prices regardless of
4 whether those prices are above or below market energy prices. Second, because
5 there is no provision in the PPA for above-market payments to accumulate
6 interest, the balance in the cumulative reduction account at the end of the 20-year
7 term is likely to be far less than if customers had paid only market energy prices
8 and deposited the difference in an interest bearing bank savings account or
9 invested it in stocks.¹⁵ The magnitude of the benefit that customers forego by not
10 receiving interest on their above-market payments can be estimated using the
11 results of an analysis performed by PSNH in 2008. In that analysis, PSNH
12 compared the proposed PPA prices to a forecast of market energy prices and
13 calculated that Laidlaw would receive more than \$144 million in above-market
14 payments over the 20-year term without paying a penny in interest. If PSNH had
15 insisted on Laidlaw treating the above-market payments as loans requiring interest
16 to be accumulated at, say, 5% annually, the cumulative reduction balance would
17 have been about \$77 million higher at \$221 million. Not accumulating interest is
18 a detriment to customers, and a benefit to PSNH, because it requires PSNH to
19 make a larger investment to acquire the facility and a consequent higher return on
20 rate base.

¹⁵ My argument assumes for simplicity that the PPA energy prices always exceed market energy prices.

1 Q. YOU SAID THAT THE PPA DOES NOT PROVIDE FOR INTEREST TO BE
2 PAID ON THE PRINCIPAL. IS REPAYMENT OF THE PRINCIPAL
3 GUARANTEED?

4 A. No.¹⁶ In the answer to the first question in this subsection, I noted that the
5 purchase price will equal the fair market value of the facility at the end of the term
6 less the balance in the cumulative reduction account, *provided that the net of the*
7 *two values is not less than zero.* The italicized phrase is important. If the fair
8 market value is low compared to the balance in the cumulative reduction account,
9 then customers will not receive the full value of their above-market payments. In
10 fact, it is possible that very little of the above-market payments is returned to
11 customers.

12
13 Q. IS THAT OUTCOME REALISTIC IN YOUR OPINION?

14 A. I think there is a good chance that the facility will have little value after the PPA
15 ends. Once the lucrative prices in the PPA terminate, the value in the facility will
16 depend on: (i) whether the Laidlaw wood-fired facility can compete head-to-head
17 with the marginal generating units in the region, which typically are fired with
18 natural gas; and (ii) whether New Hampshire's RPS continues to exist and, if so,
19 whether the REC market prices will be high or low. If the Laidlaw facility cannot
20 compete directly with gas-fired units, which is very likely given the historic
21 relationship between natural gas and wood prices and the projected downward
22 pressure on the future price of natural gas caused by US shale gas production, its
23 market value will depend almost exclusively on the level of Class I REC prices

¹⁶ In the example above, the principal corresponds to the \$144 million.

1 during the remaining life of the plant.¹⁷ Based on Synapse’s supply/demand
2 study for Class I RECs, the facility’s market value will be low and unable to
3 support payment of the Cumulative Reduction balance.

4

5 Q. IS THERE A MORE FUNDAMENTAL PROBLEM WITH THE PROPOSED
6 CUMULATIVE REDUCTION ACCOUNT?

7 A. Yes. The Cumulative Reduction account effectively tracks and aggregates above-
8 market energy payments since it is unlikely that market energy prices will exceed
9 the energy prices in the PPA for extended periods of time. At the end of the 20-
10 year term, the cumulative amount of these payments will be applied against an
11 agreed purchase price for the facility with PSNH paying the seller a one-time
12 payment to cover any shortfall.¹⁸ Once acquired, PSNH’s investment in the
13 facility will presumably be added to its generation rate base. The recovery of
14 such above-market payments through rates before the acquisition is complete is,
15 however, contrary to a long-standing ratemaking principle that prevents utilities
16 from collecting through rates costs for investments that are not yet included in
17 rate base. Although the facility will have been operating for 20 years by the time
18 PSNH acquires it under the Purchase Option, the investment will not be providing
19 useful service at the time the payments are made and collected through rates
20 because those payments relate to acquiring the rights to the output of the facility
21 over its remaining life, not the first 20 years. Interestingly, the Commission as
22 recently as June of this year denied a request by Unifil Energy Services to collect

¹⁷ This value in turn depends on an extension of the New Hampshire RPS beyond 2025. If the RPS is not extended, the facility is unlikely to have much value.

¹⁸ Assuming PSNH elects to purchase the facility under the Purchase Option.

1 in advance the cost of distributed energy resource investments that had been
2 found to be in the public interest but had yet to be completed, citing the used and
3 useful standard as the basis for its decision.¹⁹

4

5 **E. Cost-Effectiveness Tests**

6 Q. DID PSNH ISSUE A COMPETITIVE SOLICITATION FOR THE PRODUCTS
7 THAT IT IS PROPOSING TO PURCHASE FROM LAIDLAW?

8 A. No, it did not. PSNH apparently believes that it can achieve better results for
9 customers through bilateral negotiations.

10

11 Q. ABSENT BIDS FROM A COMPETITIVE SOLICITATION, WHAT OPTIONS
12 DID PSNH HAVE TO DETERMINE WHETHER THE PRICES NEGOTIATED
13 WITH LAIDLAW REPRESENT THE BEST POSSIBLE OUTCOME FOR
14 CUSTOMERS?

15 A. One option was to compare the negotiated product prices with the pricing for
16 other comparable projects that offer the same products. Another was to compare
17 the negotiated prices with market price projections for the products to be
18 purchased. Still another option was to perform a financial analysis of the
19 proposed project to determine whether the negotiated product prices result in a
20 reasonable return on investment for investors. If the results of those analyses
21 indicated that the negotiated prices do not represent the best possible outcome for
22 customers (i.e., they are high relative to either market price projections or the

¹⁹ See Order No. 25,111, page 38.

1 prices accepted by developers of comparable projects or they result in an
2 unreasonably high rates of return for investors), PSNH could either have
3 demanded lower prices for the products or withdrawn from the negotiations.
4

5 Q. REGARDING THE THIRD OPTION, WHY SHOULD THE COMMISSION
6 CARE ABOUT THE RETURN EARNED BY NEWCO ON ITS
7 INVESTMENT?

8 A. In most circumstances it would not care because the products would be purchased
9 through a competitive solicitation where potential suppliers are required to
10 compete on price and quality for the business. This is almost always the case
11 when the purchase involves large dollar expenditures, although the present
12 transaction is clearly at odds with this guiding principle.²⁰ The theory is that in
13 competitive markets, profit margins are driven down by the actions of competitors
14 to levels that are neither too high nor too low. Unfortunately, this outcome cannot
15 be assumed in this instance. The very fact that PSNH elected not to bring other
16 potential suppliers into the negotiations to compete with Laidlaw raises serious
17 doubts about the efficacy of the process. In other words, can the Commission be
18 sure that the process lead to the most competitive economic outcome? Whenever
19 doubt exists, the Commission can and should use every tool at its disposal,
20 including financial analysis, to ensure the public interest has been protected.

²⁰ Personally, I am not aware of any utility expenditure in excess of \$1 billion dollars that what was not put out to bid.

1 PSNH apparently shares, or shared, this view because it conducted a financial
2 analysis of the project back in 2008 without any prodding from interested parties.

3
4 **(i) Pricing for Comparable Renewable Energy Projects**

5 Q. DID PSNH REVIEW OR CONSIDER THE PRICE OF OTHER RENEWABLE
6 RESOURCE PROJECTS WHEN IT NEGOTIATED THE PRICING IN THE
7 PPA?

8 A. PSNH has said that the process of negotiating the pricing provisions in the PPA
9 was not directly influenced by the price of other renewable projects.²¹ This
10 response, when considered in isolation, suggests that cost minimization was not
11 high on the Company's list of objectives for the PPA. I say this because the list of
12 comparable renewable energy projects should include a project that recently
13 received from PSNH a long term PPA – the Lempster wind project. PSNH
14 negotiated an agreement with Lempster in 2009 that involves the purchase of
15 energy, capacity and Class I RECs, the same products that PSNH is proposing to
16 purchase from Laidlaw. Although the Lempster project is smaller and produces
17 fewer RECs than Laidlaw, the primary difference between the two PPAs relates to
18 pricing. The levelized bundled price under the Laidlaw PPA is approximately
19 \$162/MWh over the first 15 years. The same products can be purchased under
20 the Lempster PPA at about half that price, indicating substantial cost savings for
21 customers. See Exhibit GRM-10.

22

²¹ See PSNH response to Staff 1-10 attached as Exhibit GRM-9.

1 Q. DID PSNH ALSO RECIEVE UNSOLICITED OFFERS FOR ENERGY,
2 CAPACITY AND RECS?

3 A. Yes, in 2008 PSNH received unsolicited long-term offers from two proposed
4 biomass projects, Clean Power Development (“CPD”) and Concord Steam
5 (“Concord”), and four existing biomass facilities. Both proposed biomass
6 projects and one of the four existing facilities offered to supply PSNH the same
7 products that Laidlaw is proposing to supply. Although all four submitted prices
8 that in bundled form undercut the Laidlaw bundled prices, the discounts do not
9 come close to bridging the gap between the PPA prices and today’s market
10 projections. It is also apparent from the structure of the offers that all four
11 suppliers had detailed knowledge of the PPA, which in my opinion substantially
12 reduces their value as an independent measure of the reasonableness of the PPA
13 prices. At most they provide support for the view that PSNH could have achieved
14 a much better outcome for its customers had it issued a properly structured
15 competitive solicitation or involved itself in a multi-party negotiation.

16
17 **(ii) Market Price Projections**

18 Q. DID PSNH COMPARE THE NEGOTIATED PRICES WITH MARKET PRICE
19 PROJECTIONS FOR THE PRODUCTS IN QUESTION? IF SO, WHAT DID
20 THAT COMPARISON SHOW?

21 A. Yes, but most of the market prices or price projections used in those comparisons
22 were prepared in 2008, in some cases two years before the PPA was filed. As a
23 result, those comparisons do not reflect current market conditions or the

1 conditions at the time of the filing. Even so, the comparisons generally show that
2 the negotiated product prices are significantly above-market. For example, in an
3 analysis performed in 2008 for the purpose of evaluating the Purchase Option,
4 PSNH used the long-term market energy price forecast shown in Exhibit GRM-
5 11. Alongside that forecast are the proposed energy prices as well as the
6 difference between the two. The exhibit shows that on average over the 20-year
7 term the PPA energy prices were expected to be about 18% higher than the
8 market energy prices.

9 Since that time, however, natural gas prices, the primary driver of wholesale
10 market energy prices, have fallen to the point where the energy prices under the
11 PPA are now about 30% above the market energy price forecast. See Exhibit
12 GRM-12. From a financial standpoint this indicates PSNH would pay Laidlaw
13 approximately \$285 million in above-market energy costs over the 20-year term
14 of the agreement.

15

16 Q. HOW DO THE REC PRICES IN THE PPA COMPARE TO LONG TERM
17 MARKET PRICE PROJECTIONS?

18 A. It appears PSNH did not prepare or obtain a long-term REC price projection to
19 benchmark the negotiated REC prices. Instead, PSNH used broker quotes for
20 2009 and 2010 for several New England states. These data indicated an average

1 2010 price in the region of \$37. More recent information, however, points to
2 Class I market prices for 2010 and 2011 less than half that price.

3

4 Q. ARE YOU FAMILIAR WITH A LONG TERM REC PRICE FORECAST THAT
5 COULD BE USED TO BENCHMARK THE REC PRICES IN THE PPA?

6 A. Yes, Synapse Energy Economics, Inc. (“Synapse”) was selected by a group of
7 New England electric and gas utilities (including PSNH) to provide projections of
8 energy supply costs avoided by the use of energy efficiency programs in the
9 electricity, natural gas, and heating oil sectors. One of the avoided electric supply
10 costs investigated by Synapse was the cost to purchase RECs. Synapse’s original
11 2007 report was updated in 2009 and included for each New England state a
12 projection of Class I REC prices covering the full term of the Laidlaw PPA.
13 However, because Synapse defined the cost to purchase RECs as the premium
14 over wholesale energy market prices that a purchaser would have to pay to
15 acquire renewable energy, it appears that Synapse’s REC price forecast is tied to
16 its forecast of wholesale energy market prices. That is, if energy market prices
17 are expected to increase, the premium required to purchase renewable energy will
18 be expected to decrease and vice versa. Because my analysis of above-market
19 energy costs was based on an energy market price forecast that is approximately
20 30% lower than the energy price forecast used by Synapse to calculate in
21 premiums, I have increased the Synapse REC price forecast for New Hampshire
22 by the same percentage.

1 A comparison of the adjusted REC price forecast for New Hampshire and the
2 REC prices in the PPA is shown in Exhibit GRM-13. It shows Synapse prices in
3 nominal dollars starting at over \$40 in 2014, climbing to about \$53 in 2018, and
4 falling to below \$5 in 2026.²² In contrast, the PPA prices vary from a low of \$49
5 to a high of \$67. Over the full 20-year term, the PPA will require PSNH to pay
6 Laidlaw approximately \$280 million more in REC payments than under
7 Synapse's view of the market. However, as noted above, a substantial portion of
8 this above-market cost would be avoided if PSNH purchased only the RECs it
9 needs to meet its RPS obligations.

10

11 Q. HOW DO THE CAPACITY PRICES IN THE PPA COMPARE TO LONG
12 TERM MARKET PRICE PROJECTIONS?

13 A. During the negotiations on the PPA, PSNH had available a long-term projection
14 of FCM prices developed by Errichetti and Levitan. That projection had prices
15 starting at \$2.95/kW-month in 2014 and ending at around \$12.5/kW-month in
16 2031. Exhibit GRM-14 shows that over the 20-year term the capacity prices in
17 the PPA are about 55% lower than Levitan's projection of FCM prices. In other
18 words, PSNH believes the PPA capacity prices are below-market. Because I have
19 had insufficient time to review the Levitan price projection, I am unable to
20 comment on this claim.

21

²² Given that current market prices for NH Class I RECs are below \$20, the near term adjusted Synapse prices could reasonably be described as being too high.

1 Q. WHAT DO YOU CONCLUDE FROM THESE MARKET COMPARISONS?

2 A. I conclude that the proposed prices for the energy and REC products have been
3 set at levels that are substantially above current market expectations. As for the
4 capacity product, the analysis is not conclusive.

5
6 **(iii) Financial Analysis**

7 Q. DID PSNH PERFORM A FINANCIAL ANALYSIS OF THE PROJECT AS
8 PART OF ITS ASSESSMENT OF THE REASONABLENESS OF THE
9 PROPOSED PRICES?

10 A. Yes, the Company conducted several cash flow analyses which were provided in
11 response to discovery request Staff 1-15. The first was performed in July 2008
12 during the early stages of the negotiations. This analysis used internal PSNH
13 estimates of the cost to construct and operate the facility plus a set of product
14 prices that the Company initially claimed “ultimately became what was presented
15 in the final PPA.” PSNH modeled the project as having a 2010 start date. Two
16 additional cash flow analyses were performed, each with different pricing
17 assumptions. One allegedly incorporated the pricing in the proposed PPA. The
18 other included so-called interim prices but in reality the prices differ from the
19 proposed prices only in regard to the REC prices in years 2026 through 2029.²³

20

21 Q. WHAT WERE THE RESULTS OF THE COMPANY’S FIRST FINANCIAL
22 ANALYSIS?

²³ Specifically, the REC prices in 2026 through 2029 were set to zero. This model run would appear to be consistent with a scenario in which PSNH has no RPS obligation beyond 2005.

1 A. Using an initial set of product prices, PSNH calculated the cash flows for
2 Laidlaw, the lessee, and PJPD, the lessor. For Laidlaw, it determined that after
3 tax net income would increase from about \$2.6 million in 2010 to \$26 million in
4 2029 for a total of \$275 million. For PJPD, it determined that after tax net income
5 would fall from about \$20 million in 2010 to \$11.3 million in 2029 for a total of
6 \$316 million. Since both Laidlaw and PJPD are 100% owned by NewCo, the end
7 result of PSNH's initial analysis was net income from the project totaling \$590
8 million. This compares to the capital cost for the facility of just \$96 million.
9 Clearly, this initial set of product prices was very lucrative for NewCo.

10

11 Q. THE COMMISSION COULD BE EXCUSED FOR QUESTIONING THE
12 VALIDITY OF AN ANALYSIS THAT PRODUCES AN AFTER TAX NET
13 INCOME TOTALING \$590 MILLION ON A \$96 MILLION INVESTMENT.
14 IS IT POSSIBLE TO INDEPENDENTLY TEST THE LEGITIMACY OF THE
15 RESULT WITHOUT EXAMINING EVERY ASSUMPTION AND
16 CALCULATION?

17 A. Yes, it is. Leaving aside for the moment the fact that the net income figure is the
18 sum of annual cash flows expressed in nominal dollars,²⁴ the legitimacy of the
19 result can be assessed once it is understood that two of the three major cost
20 components of the biomass project (i.e., fuel and O&M) are effectively collected
21 on a dollar-for-dollar basis through the energy prices in the PPA.²⁵ As a result,
22 the energy prices, which account for about \$1 billion of the \$1.6 billion total

²⁴ That is, the cash flows have not been adjusted for the time value of money.

²⁵ As noted earlier, the energy prices contribute in a small way to net income by the inclusion in the pricing formula of a conversion factor that is not supported by the plant assumptions.

1 revenue, contribute very little to net income. The third major cost component is
2 the capital cost for the facility, which in this analysis was assumed to be \$96
3 million. Almost all of this cost is covered by the capacity payments, leaving a
4 small residual amount to be covered by the REC payments. Since there is no cost
5 associated with the production of RECs, almost all of the \$550 million REC
6 revenues must go to NewCo's bottom line. In summary, a financial analysis of
7 the Laidlaw project that does not produce net income of the order of \$500 million
8 should be suspected of containing errors and/or inaccuracies.

9

10 Q. WHAT IS THE PRESENT VALUE OF THE ABOVE CASH FLOWS?

11 A. To calculate present value, PSNH used a discount rate of 11.6% that was based on
12 a 70/30 debt to equity ratio, a debt cost of 8% and an equity cost of 20%.²⁶ Using
13 this rate, the present value of NewCo's cash flows is approximately \$114 million
14 after taking into account the capital cost of \$96 million (i.e., the net present value
15 or NPV).

16

17 Q. WHAT DOES THIS RESULT MEAN?

18 A. An NPV equal to zero means that NewCo would recover its capital investment
19 and earn a return on investment equal to the discount rate. The fact that the NPV
20 is greater than zero means that the initial set of product prices produces a higher
21 return on investment than the discount rate. This can be observed in Table 1
22 below which shows the return on equity, after annual interest and loan repayment,

²⁶ See PSNH response to Staff 3-7 attached as Exhibit GRM-15

1 for NewCo in each year of the contract. Clearly, these ROEs are far higher than
 2 the 20% assumed by PSNH for the project.

3

Table 2										
Return on Equity After Interest and Loan Repayment										
	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
NewCo ROE	49%	53%	57%	61%	66%	70%	75%	80%	84%	89%
	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>
NewCo ROE	73%	78%	83%	87%	92%	97%	102%	107%	112%	117%

4

5

6 Q. YOU SAID THAT THE COST OF EQUITY FOR THE LAIDLAW PROJECT
 7 WAS ASSUMED BY PSNH TO BE 20%. DO YOU AGREE WITH THAT
 8 ASSUMPTION?

9 A. No, a 20% ROE is equivalent to assuming the project carries a risk similar to a
 10 merchant power plant. Unlike merchant power plants, the Laidlaw project carries
 11 relatively little risk for its investors. Merchant power plants by definition do not
 12 have long-term power purchase contracts. As a result, the output from such plants
 13 is fully exposed to price volatility in power markets and hence the investment
 14 carries the risk that future income will not be paid resulting in lower than
 15 expected profits. This can arise when a merchant power plant is not dispatched
 16 because its variable cost exceeds the market price. These plants are also exposed
 17 to price volatility in fuel markets. Thus, an unexpected rise in fuel prices could
 18 render the merchant power plant uncompetitive, further increasing the probability
 19 of lower than expected profits.

20 In contrast, the PPA fully protects Laidlaw from the risk of not finding a buyer for
 21 its output and from price volatility in both fuel and power markets. This is

1 because the PPA obligates PSNH to purchase 100% of the products produced by
2 the facility at prices that are either fixed, as with capacity and RECs, or track
3 changes in wood fuel prices, as is the case with the energy product. In addition,
4 the risk of Laidlaw not recovering its O&M expenses is low because the energy
5 price includes a component that is designed to collect the estimated O&M costs
6 over the 20-year term. Laidlaw, however, is subject to the risk of capital cost
7 overruns, higher than expected inflation on O&M, and catastrophic failure of the
8 plant.

9
10 Q. IN ADDITION TO FUEL MARKET AND POWER MARKET RISKS, A
11 PRIMARY RISK FOR MERCHANT POWER PLANTS IS REGULATORY
12 RISK. IS REGULATORY RISK A MAJOR CONCERN FOR LAIDLAW?

13 A. Not if the PPA is approved. Although a significant component of Laidlaw's total
14 revenue is projected to come from the fixed REC prices in the PPA, Laidlaw
15 appears to have insulated itself from the risk that the RPS statute could be
16 repealed or amended in a way that substantially reduces that revenue stream. This
17 was done by the inclusion in the PPA of a provision that provides for REC prices
18 to be tied to the alternative compliance payments under the current version of the
19 statute rather than some future version. In other words, PSNH may be required
20 under the PPA to make REC payments even if the existing statute were amended
21 or repealed.

22 In addition, by imposing a contractual obligation on PSNH to purchase all of the
23 RECs produced after 2025, Laidlaw appears to have shifted to PSNH the
24 regulatory risk that the legislature will not extend the RPS beyond that year.

1

2 Q. ARE THERE OTHER INDICATORS THAT THE PROJECT CARRIES A LOW
3 RISK?

4 A. Yes, the proposed capital structure. Although PSNH assumed in its analyses a
5 70/30 debt to equity ratio, Laidlaw has since stated that it will employ a capital
6 structure comprising 82% debt and 18% equity. In comparison, equity
7 investments for merchant power plants are typically much higher. The decision to
8 proceed with such a highly leveraged capital structure suggests that Laidlaw's
9 project is considered by institutional investors to be a low risk venture.

10

11 Q. GIVEN THESE ARGUMENTS, WHAT IS AN APPROPRIATE DISCOUNT
12 RATE FOR THE LAIDLAW PROJECT?

13 A. A more appropriate cost of equity for this project would be somewhat higher than
14 the 9.81% ROE authorized for PSNH's generation investments, say 11%. This
15 cost combined with the 70/30 debt to equity ratio assumed by PSNH results in a
16 discount rate of 8.9%. Using this discount rate, the present value of cash flows
17 from PSNH's initial analysis is \$160 million.

18

19 Q. YOU HAVE TESTIFIED THAT THE RISKS UNDR THE PPA ARE NOT
20 SUBSTANTIALLY DIFFERENT TO THE RISKS THAT PSNH FACES WITH
21 ITS OWN GENERATING FACILITIES. WHAT WOULD THE PRESENT
22 VALUE OF THE CASH FLOWS BE IF PSNH RATHER THAN LAIDLAW

1 CONSTRUCTED AND OPERATED THE FACILITY AND INCLUDED THE
2 INVESTMENT IN ITS RATE BASE?

3 A. Assuming the facility has the exact same size and operating characteristics as the
4 facility modeled by PSNH and that it receives the same ratemaking treatment
5 received by PSNH's Schiller Unit 5, the present value of the after tax net cash
6 flows over an assumed 30 year facility life would be negative \$1.5 million. In
7 short, customers will pay approximately \$160 million more in present value terms
8 to have Laidlaw host the facility under the terms of the PPA than to have PSNH
9 include it in its rate base.

10

11 Q. HOW DID PSNH UTILIZE THE RESULTS OF ITS INITIAL FINANCIAL
12 ANALYSIS?

13 A. How PSNH responded to the results of its analysis is not known because it was
14 not required to disclose the offers and counter offers made by each party. I do
15 know, however, that PSNH ultimately agreed to a set of product prices that
16 produce about 10% less revenue for Laidlaw than the initial set. Using these
17 prices while retaining the other assumptions in the initial analysis, the total cash
18 flow is lower at \$496 million. However, the NPV remains high at around \$132
19 million.

20

21 Q. YOU NOTE IN YOUR ANSWER THAT THE UPDATED NPV WAS BASED
22 ON THE INPUT ASSUMPTIONS USED BY PSNH IN ITS INITIAL CASH
23 FLOW ANALYSIS. DO YOU AGREE WITH THOSE ASSUMPTIONS?

1 A. Not completely. My main concerns are the assumptions relating to: (i) the size of
2 the facility; (ii) the capital cost and capital structure of the project; (iii) the tax
3 credits available from the federal government; and (iv) the fuel cost estimates for
4 the facility. Concerning the first issue, PSNH modeled the facility as having a net
5 capacity of 58 MW and a capacity factor of 85%. Laidlaw, however, designed the
6 facility to have a net capacity of 63 MW and a capacity factor of 87.5%.²⁷
7 Concerning the second issue, PSNH assumed the cost would be \$96 million and
8 be financed with 70% debt and 30% equity. Laidlaw, in contrast, estimates the
9 capital cost to be \$167 million financed with 82% debt and 18% equity.²⁸ As to
10 the third issue, while PSNH assumed that PJPD would receive approximately \$5
11 million per year for 10 years in federal Production Tax Credits (“PTC”), Laidlaw
12 has stated that it intends to forego those credits in favor of a cash grant under the
13 American Recovery and Reinvestment Act (“ARRA”) that is equivalent in value
14 to what would otherwise be available under the federal Investment Tax Credit
15 (“ITC”). This is consistent with a study by the Lawrence Berkeley National
16 Laboratory that found that the ITC is financially more attractive than the PTC in
17 every combination of capital cost and capacity factor for open-loop biomass
18 generation facilities.²⁹ That said, for ease of modeling I have assumed that PJPD
19 will receive tax credits under the federal PTC program. In addition, PJPD expects
20 to receive \$12 million in upfront equity capital in the form of proceeds from the

²⁷ See SEC Docket 2009-02, Transcript, Day 1, Afternoon Session. At page 94, Laidlaw witness Strickler states that the planned capacity factor for the facility is 87.5%. At page 90, Laidlaw witness Bravakis states that the net output of the facility is 63 MW.

²⁸ See Exhibit GRM-2. The document allegedly supporting this cost estimate was not made available to the parties in this proceeding.

²⁹ PTC, ITC, or Cash Grant? An Analysis of the Choice Facing Renewable Power Projects in the United States. Lawrence Berkeley National Laboratory, LBNL-1642E, March 2009.

1 federal New Market Tax Credit Program.³⁰ Finally, although energy revenues
2 were modeled by PSNH as rising over time to reflect the expectation that fuel
3 costs would increase, the fuel cost line item in PSNH's analysis was not escalated
4 because PSNH stated that it was unable to reconcile the aggregate of the cost
5 components to match the estimate of total operating expenses that Laidlaw
6 provided. In my analysis, the O&M expenses are lower than the expenses used by
7 PSNH but fuel costs increase consistent with the assumed increase in energy
8 revenue.

9

10 Q. WHAT EFFECT DO THESE CHANGES HAVE ON PROJECT CASH
11 FLOWS?

12 A. Some of the changes increase the project cash flows while others decrease them.
13 Overall, total cash flow increases to \$527 million but the NPV decreases to \$94.5
14 million due in large part to the substantial increase in the capital cost of the
15 facility.³¹ Consistent with this decrease in NPV, the equity returns for NewCo
16 (net of annual interest and loan repayment) shown in Table 2 are lower than under
17 the initial analysis but continue to be well outside of the range of returns that
18 developers of merchant power plants located in the US could reasonably expect.
19

³⁰ See Laidlaw response to Staff 2-2 attached as Exhibit GRM-16. This reduces the required equity contribution from NewCo investors from \$30 million to \$18 million.

³¹ See Exhibit GRM-17.

Table 3										
Return on Equity After Interest and Loan Repayment										
	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>
NewCo ROE	61%	66%	71%	77%	82%	82%	88%	94%	100%	106%
	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>
NewCo ROE	66%	71%	76%	81%	86%	60%	65%	69%	74%	77%

1

2

3

Q. NEITHER PSNH’S INITIAL CASH FLOW ANALYSIS NOR YOUR
 ADJUSTMENTS TO IT TAKE INTO ACCOUNT LAIDLAW’S OBLIGATION
 TO PAY PSNH AT THE END OF THE 20-YEAR TERM THE BALANCE IN
 THE CUMULATIVE REDUCTION ACCOUNT. DOES THIS MEAN THAT
 THE ABOVE REFERENCED CASH FLOWS OVERSTATE THE TRUE
 VALUE OF THE PROJECT TO NEWCO?

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A. No. Although the PPA provides for Laidlaw to reduce the purchase price for the
 facility by the balance in the Cumulative Reduction account at the end of the 20-
 year term, the actual amount of the reduction also depends on the market value of
 the plant. If the market value of the plant is greater than the balance in the
 Cumulative Reduction account, the purchase price will be reduced by the full
 amount of the balance. If the market value of the plant is less than the balance in
 the Cumulative Reduction account, the reduction in the purchase price is capped
 at the market value. Under the first scenario, NewCo would be left with a
 positive post-PPA net income equal to the difference between the market value
 and the Cumulative Reduction balance. Under the second scenario, NewCo

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1 would have zero post-PPA net income. In either case, the project cash flows
2 would not be overstated.³²

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4 Q. ARE THERE FACTORS THAT COULD INCREASE THE PROJECT'S CASH
5 FLOWS?

6 A. Yes. The most obvious is the capacity factor of the Laidlaw facility. As I have
7 stated, PSNH used an 85% capacity factor in its analyses whereas Laidlaw used
8 87.5%. Both, however, are substantially below the level of performance achieved
9 by two New Hampshire wood-fired generating facilities, Bethlehem and
10 Tamworth, which sell to PSNH. Since January 2008, Bethlehem's capacity factor
11 has averaged 92% while Tamworth's was a little lower at 90%. If the Laidlaw
12 facility achieves even the Tamworth level of performance, which is very likely
13 given the tremendous incentive to maximize output in the proposed prices, the
14 NPV could increase by over \$7 million.

15 Another factor is the size of the facility. If Laidlaw increases the output of the
16 facility and is able to sell the incremental output at PPA prices, the NPV for the
17 project after accounting for the cost of the expansion could be even higher.

18

19 Q. WHAT CONCLUSIONS DO YOU DRAW FROM YOUR FINANCIAL
20 ANALYSIS?

21 A. I have concluded that the equity returns for NewCo shareholders are likely to be
22 well outside of the range that developers of merchant power plants located in the

³² Any market value remaining after payment of the Cumulative Reduction balance would add to the value of the project as would the addition of salvage at the end of the facility's life.

1 US could reasonably expect. Since the Laidlaw facility will experience less rather
2 than more risk under the PPA than merchant power plants, this conclusion
3 indicates that the prices in the PPA are too high and should be lowered.
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5 **IV. PUBLIC INTEREST ANALYSIS**

6 Q. RSA 362-F:9(I) AUTHORIZES THE COMMISSION TO APPROVE LONG-
7 TERM AGREEMENTS BETWEEN DISTRIBUTION COMPANIES AND
8 RENEWABLE ENERGY GENERATORS FOR THE PURCHASE OF RECs,
9 WITH OR WITHOUT THE POWER, TO MEET REASONABLY PROJECTED
10 RENEWABLE PORTFOLIO REQUIREMENTS AND DEFAULT SERVICE
11 NEEDS. IN YOUR OPINION, DOES THE LAIDLAW PPA SATISFY THIS
12 CONDITION?

13 A. No. For the reasons detailed in Section III above, the PPA does not satisfy this
14 condition because it obligates the Company to purchase substantially more RECs
15 than it needs to “meet reasonable projected renewable portfolio requirements.”
16 Thus, the PPA falls at the very first hurdle.

17
18 Q. IF THE COMMISSION DISAGREES WITH YOUR INTERPRETATION OF
19 RSA 362-F:9(I), IS THE PPA SUBSTANTIALLY CONSISTENT WITH THE
20 PUBLIC INTEREST CRITERIA SET FORTH IN RSA 362-F:9(II)?

21 A. I do not believe so.
22

23 **A. Efficiency and Cost-Effectiveness**

1 Q. ADDRESSING EACH CRITERION IN TURN, PLEASE EXPLAIN YOUR
2 PREVIOUS ANSWER.

3 A. The first criterion is the efficient and cost-effective realization of the purposes and
4 goals of RSA 362-F, which in summary are to stimulate investment in low
5 emission renewable energy generation technologies located in New England. The
6 PPA fails on both counts. Regarding efficiency, which I understand to mean the
7 process used to produce the PPA since the terms economic efficiency and cost-
8 effective are synonymous, there can be no dispute that the parties took an
9 unusually long time to come to agreement on the terms and conditions. As a
10 result, the scheduled start date for the project is now two years later than
11 originally planned. Further, despite the inordinate amount of time spent
12 negotiating the agreement, many unanswered questions remain about the meaning
13 of certain provisions as well as what rights and obligations PSNH has under
14 different scenarios. For example, if the Commission approved the PPA, could the
15 Company purchase the facility under the Right of First Refusal or the Purchase
16 Option without Commission review of either the purchase decision or the price to
17 be paid? Another unanswered question is whether the Commission has any
18 jurisdiction over the PPA after it is approved.

19 Other unanswered questions include but are not limited to the following:

- 20 (i) Whether PSNH's Right of First Refusal is triggered as a result of a
21 proposed sale of NewCo.'s stock as opposed to the proposed sale of
22 the facility.
23 (ii) The implications for PSNH's Right of First Refusal and its Purchase
24 Option of the fact that the "Seller" under the PPA does not own
25 either the facility or the facility site.

- 1 (iii) Whether upon completion of the purchase under PSNH's Right of
- 2 First Refusal the PPA terminates and, if so, whether PSNH's
- 3 investment in the facility will be added to its generation rate base.
- 4 (iv) If the Commission approved the PPA, would it be barred from
- 5 ordering any revisions inclusive of pricing terms?
- 6 (v) Whether PSNH would continue to be required to make REC
- 7 payments under the PPA if: (i) the legislature were to repeal RSA
- 8 362-F; or (ii) the RPS eligibility requirements for NH Class I RECs
- 9 were to change such that the facility were to become ineligible for
- 10 such certificates.
- 11 (vi) Whether under Article 8.1, PSNH is seeking pre-approval to recover
- 12 any capital expenditure made or expense incurred by Laidlaw or
- 13 PJPD in order to continue to produce RECs if a change in law
- 14 occurs.
- 15

16 Regarding cost-effectiveness, I have already demonstrated in considerable detail
17 in Section III that the PPA is uneconomic based on all of the standard cost-
18 effectiveness tests. In fact, the term uneconomic does not do justice to the extent
19 to which PSNH's energy service customers would be overcharged if the PPA is
20 approved as filed.

21

22 **B. Restructuring Policy Principles**

23 Q. THE SECOND CRITERION IS CONSISTENCY WITH THE
24 RESTRUCTURING POLICY PRINCIPLES OF RSA 374-F:3. WHAT IS
25 YOUR OPINION?

26 A. I believe the PPA is consistent with some provisions but inconsistent with others.
27 Regarding the latter, the PPA is clearly inconsistent with the requirement that
28 generation services be subject to market competition and minimal economic
29 regulation. See RSA 374-F:3(III). As already noted, the terms of the PPA will
30 shield Laidlaw from the market price and fuel price risks that are the defining
31 characteristics of merchant power plants. Consequently, competition within those

1 two markets will be harmed. As for minimal economic regulation, despite being
2 owned and operated by an independent (i.e., unregulated) power producer, the
3 Laidlaw facility will be subject to a form of cost plus rate regulation that produces
4 for its investors a return on equity that vertically integrated utilities could only
5 dream about. This is so because the energy prices are designed to track and
6 collect changes in wood-fuel costs, the single largest and most volatile cost
7 component for a biomass facility. The energy prices also include a component
8 that collects, on a levelized basis, the estimated O&M costs over the life of the
9 facility. Furthermore, the capacity and REC prices have been set at levels that
10 provide for the return of the initial investment plus an abnormally high return on
11 that investment.

12 In addition, because PSNH is proposing to collect the costs of the PPA from
13 default service customers, it becomes subject to the principle that default service
14 be procured from the competitive market. The Company, however, has
15 acknowledged that it did not issue a competitive solicitation for the products it
16 proposes to purchase from Laidlaw. Nor is it able to claim that the prices for
17 energy and capacity are based on market prices for those products, as is the case
18 with the Lempster wind power project. For these reasons, I contend that the PPA
19 is not consistent with RSA 374-F:3(V)(c).

20 Finally, the PPA is not consistent with the principle that default service be
21 designed to minimize customer risk, not unduly harm the development of
22 competitive markets, and mitigate against price volatility without creating new
23 deferred costs. See RSA 374-F:3(V)(e). This is so for the following reasons:

1 First, the use of fixed energy, capacity and REC prices in the PPA shifts the
2 market price risk for all three products from Laidlaw to PSNH's customers. The
3 inclusion in the PPA of a WPA also shifts fuel price risk from Laidlaw to PSNH's
4 customers. Finally, basing the REC prices in the PPA on the existing RPS
5 legislation rather than potential future legislation shifts to PSNH customers the
6 regulatory risk that the existing legislation will be repealed or amended in a way
7 that reduces the benefits paid to eligible resources. In other words, PSNH
8 customers may in the future over pay for the renewable attributes received from
9 the Laidlaw facility.

10 Second, the PPA is harmful to the development of competitive markets because it
11 unfairly protects Laidlaw from the risks of market competition. Because of the
12 cost-based energy pricing in the PPA, the Laidlaw facility will have an incentive
13 to bid into the New England spot market at or near zero instead of its short-run
14 variable cost to be assured of being dispatched by ISO-NE. As a result, Laidlaw
15 has less incentive to cut its operating costs so as to maximize its profits, which
16 undermines the competitiveness of the wholesale power market. The primary
17 example of this reduced incentive to minimize costs is the WPA. Because any
18 increase in fuel costs is covered by an increase in revenues through the WPA
19 mechanism, Laidlaw has less incentive to bargain hard with wood suppliers for
20 lower wood prices or to change fuel suppliers.

21 Third, while the pricing in the PPA will reduce the level of price volatility
22 experienced by PSNH's energy service customers, it does so by requiring those
23 same customers to shoulder significant above-market costs. Furthermore, because

1 the number of customers to absorb those costs is continually declining, the
2 remaining captive customers will experience higher and higher prices. In short,
3 the cost of reduced price volatility is too great.

4

5 **C. Least Cost Integrated Resource Planning**

6 Q. THE THIRD CRITERION IS CONSISTENCY WITH THE LEAST COST
7 ENERGY PLANNING REQUIREMENTS AS SET FORTH IN RSA 378:37. IS
8 THE PPA CONSISTENT WITH THOSE REQUIREMENTS?

9 A. The statute provides in effect that the energy needs of New Hampshire's
10 customers shall be met at the lowest reasonable cost while maintaining reliability,
11 diversity, and the physical environment of the state. In my opinion, this mandate,
12 which I interpret broadly to relate to the energy, capacity and REC needs of
13 customers, cannot be met if each product is priced well above its market level, as
14 is the case with the Laidlaw PPA. The reason is simple: purchasing products at
15 above-market prices involves the displacement of purchases priced at market
16 levels, resulting in cost increases and higher rates for customers. Even if PSNH
17 were mandated to purchase the energy and capacity produced by a renewable
18 energy facility that is supplying it with RECs, it would be contrary to the "lowest
19 reasonable cost" requirement to pay above-market prices for those products if
20 they could be purchased at market prices. Paying above-market prices for energy
21 and capacity when the purchases are discretionary, as is the case here, is clearly
22 contrary to the plain meaning of the statute.

23 **D. Administrative Efficiency and Market-Driven Competitive Solutions**

1 Q. THE FOURTH CRITERION IS CONSISTENCY WITH ADMINISTRATIVE
2 EFFICIENCY AND THE PROMOTION OF MARKET-DRIVEN
3 COMPETITIVE INNOVATIONS AND SOLUTIONS. WHAT IS YOUR
4 OPINION?

5 A. My opinion on whether the negotiation of the PPA was conducted in an
6 administratively efficient manner was presented above in Subsection A:
7 Efficiency and Cost-Effectiveness.

8 Whether the second goal, promotion of market-driven competitive innovations,
9 has been met depends on one's interpretation of the phrase. I interpret market-
10 driven to mean a non-utility project and competitive innovations to mean a
11 procurement process that promotes competition between prospective suppliers of
12 novel solutions. Since the developer of the Laidlaw project can reasonably be
13 described as an IPP, I consider the market-driven requirement to be met. I do not,
14 however, consider the sole source procurement process used by PSNH as
15 promoting competition between prospective suppliers. For this reason, I believe
16 the PPA is at odds with this particular criterion.

17

18 **E. Economic Development and Environmental Benefits**

19 Q. THE FIFTH AND FINAL CRITERION IS CONSISTENCY WITH THE
20 GOALS OF ECONOMIC DEVELOPMENT AND ENVIRONMENTAL
21 IMPROVEMENT. WHAT DID MR. FRANTZ CONCLUDE?

22 A. As to economic development, Mr. Frantz concluded that the economic harm to
23 New Hampshire caused by the PPA's over-market costs more than offsets any

1 economic benefit derived from the project. Regarding environmental impact, Mr.
2 Frantz recommended that the Commission take administrative notice of the
3 Laidlaw proceeding before the SEC.

4

5 **V. RECOMMENDATIONS**

6 Q. PLEASE PROVIDE YOUR RECOMMENDATIONS.

7 A. For the reasons set forth in Section IV, I conclude that on balance the proposed
8 PPA does not satisfy the public interest criteria in RSA 362-F:9(II). That said,
9 and assuming the Commission decides that the RPS does not terminate in 2025 as
10 argued by the Wood-Fired IPPs, I believe the PPA can be amended in ways that
11 address the concerns expressed in this testimony. Accordingly, I recommend that
12 the Commission condition its approval of the PPA on the parties agreeing to the
13 following changes:

- 14 (i) Eliminate the Cumulative Reduction provision and make the
15 Purchase Option conditional on PSNH having the legal authority to
16 acquire new generation;
- 17 (ii) Base the PPA energy prices on hourly ISO-NE spot market energy
18 prices with a floor price to address volatility and financing concerns;
- 19 (iii) Base the PPA capacity prices on actual prices realized in ISO-NE's
20 FCM;
- 21 (iv) Adjust the PPA REC prices such that NewCo is provided a
22 reasonable opportunity to earn a reasonable return on its documented
23 investment taking into account the risks under the amended PPA;
- 24 (v) Amend the PPA such that PSNH is obligated to purchase no more
25 RECs than it needs to meet its RPS obligations;
- 26 (vi) Establish a specific output level for the facility expressed in MW
27 above which PSNH would have no obligation to purchase.
28

29 Q. DOES THAT CONCLUDE YOUR TESTIMONY?

30 A. Yes.

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