## In Re:

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\begin{gathered}
\text { DE 10-195 } \\
\text { PSNH/LAIDLAW BERLIN BIOPOWER }
\end{gathered}
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## DAY 5 - MORNING SESSION ONLY <br> February 8, 2011

SUSAN J. ROBIDAS, LCR NO. 44

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| 1 | State of new hampshire | 1 | IN DEX |
| 2 | public utilities Commission | 2 |  |
| 3 |  | 3 | witness panel: $\begin{aligned} & \text { George McCluskey } \\ & \text { Thomas Frantz }\end{aligned}$ |
| 4 | February 8, 2011-9:14 a.m. DAY 5 | 4 |  |
| 5 | Concord, New Hampshire $\begin{gathered}\text { MORNING } \\ \text { PUBLISSIS }\end{gathered}$ | 5 |  |
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| 21 |  | 21 |  |
| 22 | Reptg. Edrest Properties, LLC: Jonathan Edwards | 22 |  |
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|  | APPEARANCES: (CONTINUED) | 1 | PR OCEEDINGS |
| 2 | Reptg. OCA: <br> Meredith A. Hatfield, Esq. | 2 | CHAIRMAN GETZ: Okay. Good morning, |
| 3 | Kenneth E. Traum, Asst. Consumer Advocate Office of Consumer Advocate | 3 | everyone. We'll resume the hearings in Docket DE |
| 4 | Reptg. Staff: | 4 | 10-195 concerning the Laidlaw purchase power |
| 5 | Suzanne G. Amidon, Esq. Edward N. Damon, Esq. | 5 | agreement with Public Service Company of New |
| 6 | Thomas C. Frantz, Director/Electric Div. George R. McCluskey, Electric Division | 6 | Hampshire. I think we were about to hear the direct |
| 7 |  | 7 | testimony of Mr. Frantz and then move on to |
| 8 |  | 8 | cross-examination. |
| 9 |  | 9 | But before we do that, are there any |
| 10 |  | 10 | issues we need to address this morning? I know that |
| 11 |  | 11 | at one point there was some discussion of trying to |
| 12 |  | 12 | reach some agreement on briefing, which we could get |
| 13 |  | 13 | on the record now or do at the end of the day. So is |
| 14 |  | 14 | there any preference among the parties? Are there |
| 15 |  | 15 | any other issues? Ms. Hatfield. |
| 16 |  | 16 | MS. HATFIELD: Thank you, Mr. |
| 17 |  | 17 | Chairman. It wasn't until yesterday that I was able |
| 18 |  | 18 | to reach out to the other parties to inquire about |
| 19 |  | 19 | interest in briefs, so it probably would be best if |
| 20 |  | 20 | we dealt with that at the end of the day. |
| 21 |  | 21 | CHAIRMAN GETZ: Okay. Anything else? |
| 22 |  | 22 | MS. HATFIELD: One other thing. I had |
| 23 |  | 23 | raised the issue of a legislative hearing today, and |
| 24 |  | 24 | the OCA does not need to have the hearing stop for |



Shapiro that, if the net economic impact of the project is positive from a ratepayer perspective, something that would be quite different from the results contained in Mr. McCluskey's testimony, or that of Mr. Traum, my conclusion of net economic harm would indeed change.
Q. Thank you. In her rebuttal testimony, Dr. Shapiro states that, even if the PPA results in over-market costs of $\$ 26$ million per year, the economic development benefits of the project would still be positive. Do you agree?
A. (Mr. Frantz) Well, her conclusions depend on a number of assumptions, including that the information provided by Laidlaw in the SEC filing is reasonably accurate and represents the direct effects of the project, because they form the basis for the construction and biomass shocks that are used in the RIMS II multiplier effect. To the extent those numbers are less than she modeled, the results will similarly be reduced. The model assumes no substitution effects and that the output can be increased to whatever level's needed without affecting other industries, such as other biomass facilities. If other plants can't get the wood, or
the prices increase to those facilities, affecting their operations, then some of those positive effects that are included in her testimony and rebuttal testimony would be reduced. One should keep in mind that multiplier effects work in both directions.

Her analysis also includes all three -- direct, indirect and induced effects in the RIMS II model. And one should be very cautious of using induced effects, as they depend highly on household income and its distribution of savings and expenditures.
Q. Thank you. Did you review the article that PSNH provided as an exhibit, and it was in the Berlin newspaper, about a new company that had tentative agreements to locate with Laidlaw, or co-locate?
A. (Mr. Frantz) I did look at it.
Q. You did? Do you have any comments about that article?
A. (Mr. Frantz) My first thought was: Good. To the extent that that facility locates there and creates new jobs, that's certainly something beneficial to Berlin. But we really don't know much about the project. We don't know who owns it. We don't really know what the agreement is between Laidlaw and that project and its developer. We don't know the effect

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24 A. (Mr. Frantz) I don't have that one in front of me.


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Q. Thank you. And Mr. Frantz, you just a few moments ago spoke about the economic benefit of the project. Do you recall that?
A. (Mr. Frantz) Yes.
Q. And is it true that $362-\mathrm{F}$, the RPS statute, in
Q. I wanted to ask you a few questions related to that testimony.
A. (Mr. McCluskey) If you could just give me a moment so I can locate it.

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(Pause in proceedings)
A. (Mr. McCluskey) Okay.
Q. If you would turn to Page 11, please.
A. (Mr. McCluskey) Okay.
Q. And starting on Line 27 there's a question, and it
        states, "How does a company like PSNH meet the
        State's renewable energy goals and statute which
        provides for long-term PPAs with in-state renewable
        resources when the developer needs some form of price
        assurance when future market prices are not known?"
        Do you see that question?
    A. (Mr. McCluskey) Yes, I do.
    Q. And is one response to that question, about how PSNH
        meets the State's renewable energy goals, that the
        Company can buy RECs on the market?
    A. (Mr. McCluskey) Yes, it can buy in what we refer to
        as the short-term REC market.
    Q. And could the Company also make payments to the
        renewable energy fund, according to the alternative
        compliance payment price?
    A. (Mr. McCluskey) It could, if the REC price offers
    that it received were equal to or higher than the
    alternative compliance price, the Company has the
    option of simply deciding not to purchase from the
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Going on to Page 15, PSNH talks about an issue that you raised, that the cumulative reduction fund does not accrue interest. Do you recall that?
A. (Mr. McCluskey) Yes.
Q. And at the top of Page 15, PSNH says, "These complaints about the lack of interest as relatively insignificant..." Do you see that?
A. (Mr. McCluskey) I do.
Q. Is it possible that interest, just the interest, if there was interest on all portions of the cumulative reduction fund, that that could amount to a significant sum?
A. (Mr. McCluskey) Yes. The amount of the interest obviously depends on what interest rate you use and also on the amount of the above-market payments. If

2
3
4
5


Page 18
1 payments, depending on the market value of the plant at that time. And as I've said in my testimony, that will depend on the conditions in the market. And also, the situation regarding the RPS, would it exist? If so, what level of RPS payments would a project of this kind receive? So there's some considerable uncertainty as to what the value, the market value of the plant is, and how big the cap will be when it comes to determining how much ratepayers should receive at the end of the day.
Q. Do you recall hearing Mr. Sansoucy testify that it had been his estimate that the plant would be worth somewhere around $\$ 130$ million at the end of the PPA? A. (Mr. McCluskey) Yes, I did.
Q. And was this hearing the first time that you had heard that figure?
A. (Mr. McCluskey) Yes.
Q. And if that is an accurate estimate, does that cause you concern that there might be more than that amount in the CRF?
A. (Mr. McCluskey) Yes. I think PSNH itself did an analysis of what could be the balance in the CRF at the end of 20 years, based on market prices that it developed in 2009. That figure, I recall, I think it
was \$143-, $\$ 144$ million. But importantly, it was based on market prices that are higher than if you were to redo the analysis that PSNH did, using more current NYMEX numbers. It would produce a lower forecast of market energy prices, which would have the effect of increasing the balance in the account. Then, if you add interest onto that account, and you also include interest from RECs, which has been suggested, you can imagine that it's quite possible that the balance in the account is significantly above the $\$ 132$ million estimate of Mr. Sansoucy. So it's highly likely that we could have a situation where a substantial sum of money paid in by consumers to Laidlaw will not be returned to customers through a reduction in the value of the plant -- or reduction in the purchase price of the plant, I should have said.
Q. And I believe you also testified that the cumulative reduction fund violates the used and useful principle of rate-making; is that correct?
A. (Mr. McCluskey) That's correct.
Q. And can you just simply explain why you believe that's the case?
A. (Mr. McCluskey) Yes. I think it's best to consider

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the following hypothetical: Assume that there is no Laidlaw contract and PSNH is purchasing energy it needs to meet customer demands from the wholesale power market. Further assume that PSNH approaches the Commission and asks for permission to charge customers. Not only do the market energy prices change at any hour, but they include in a 10-percent premium on those hourly market energy prices. And it does so for a 20-year period, with the reason being so that it can pre-fund the purchase of a renewable energy plant in 20 years' time.

So the question is: What do you think the Commission would say with regard to that question? I believe that the Commission will say that customers are not in the business of pre-funding the acquisition of power plants because it would violate the used and useful principle. Used and useful principle prohibits being included in rate base any property that is both not in service and providing useful service. Importantly, the effect of the prohibition is to prevent the utility from receiving a return on and of its investment until the plant is in service.

In the hypothetical, customers would be required


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$1 \quad$ PSNH has suggested.
Q. And is that why you believe that Schiller RECs need to be considered when trying to determine PSNH's need for RECs?
A. (Mr. McCluskey) Yes.
Q. Do you know what PSNH's most recent migration percentage is?
A. (Mr. McCluskey) Yes. The calculations that I've done use the 31-percent migration rate that PSNH -- I'm not sure whether it referred to it in its testimony, but it certainly referred to it in discovery responses.

Yesterday we received, I believe it's a quarterly report that PSNH is required to file with the Commission, which showed the migration percentage for the months of October, November, and although it was listed as September, I believe the report should have said December. And those -- that report shows that migration rate was, in the first month of October, I believe it was close to 35 percent; in November, it was close to 34 percent; in December, it was close to 36 percent, I believe was the figure. Those are rounded numbers. So, clearly, what is happening out there is indicating that PSNH is more

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1 at risk of losing load rather than at less risk.
2 I'll just leave it at that.
Q. And that would impact their need for RECs and energy?
A. (Mr. McCluskey) Yes. It has this effect in the calculations that I did. I was able to show that, if Schiller RECs were used to meet PSNH's RPS obligations, that PSNH would not have a need for all of the RECs produced by Laidlaw until 2023. What an increase in the migration rate does is to push out that date. I haven't done -- I haven't re-calculated the need analysis. But I suspect it's going to push out the year that PSNH would need all of the RECs from Laidlaw to well past 2023. So it increases what I call the excess RECs, which adds costs to consumers.
Q. Mr. McCluskey, do you have a copy of your testimony that you filed in this docket?
A. (Mr. McCluskey) Yes, I do.
Q. Could you please turn to Bates Page 65, which is your Exhibit GRM-12.
A. (Mr. McCluskey) Yes, I've got that.
Q. The third column from the left is titled "Adjusted Market Energy Price Projections." Do you see that? A. (Mr. McCluskey) I do.
Q. Can you explain what you mean by "adjusted"?
A. (Mr. McCluskey) Okay. Earlier I was describing that in 2009, PSNH developed a forecast of the market energy prices, which is included -- developed a forecast of market energy prices, which it included in a discovery response issued by Staff. That forecast was based on NYMEX electricity price and natural gas price data. And it was based on a look at those NYMEX forwards in, I think August of 2009.

Since we've passed that date and there have been developments in the market, both for electricity in New England and also natural gas, what I did was to essentially use the very same model that PSNH used and simply updated the NYMEX electricity and natural gas prices, and the result is as shown in this column. I think it might have been better to label it "modified" or "updated" rather than "adjusted." But that's the intent. It's simply an update of the price developed by PSNH, taking into account more current NYMEX data.

MS. HATFIELD: Mr. Chairman, do the
Commissioners have the record requests at this point? CHAIRMAN GETZ: Yes.
MS. HATFIELD: Thank you.

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## 1 BY MS. HATFIELD:

Q. Mr. McCluskey, do you have the copy of the record request that the Company filed on February 4th?
A. (Mr. McCluskey) I just have one, the rate-impact analysis? That's the only one I have.
Q. And that one is numbered HD-02 Q-RR-005?
A. (Mr. McCluskey) That's correct.
Q. And it's dated January 26th, 2011?

9 A. (Mr. McCluskey) I don't have the cover page, so I couldn't confirm that.
Q. Will you accept that, subject to check?
A. (Mr. McCluskey) Yes, I will.
Q. And the request that PSNH is answering is: Please provide the assumed rate impact for 2015 , using a range of assumptions for market prices, wood prices and REC prices; is that correct?
A. (Mr. McCluskey) I believe that's what we asked, yeah.
Q. And if we look at Page 2 of 2, that's where PSNH provided the analysis; is that right?
A. (Mr. McCluskey) That's correct.
Q. And if we look at this page, there are different scenarios that the Company has utilized; is that right?
A. (Mr. McCluskey) Correct.

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talking about the numbers that you used and not that it shows that the PPA itself is reasonable?
A. (Mr. McCluskey) I'm talking about the market price inputs I think are reasonable as a base case.

If I could just add? That $\$ 3.50$ impact is based on migration rate of 31 percent. If we change the migration rate -- I haven't done this calculation. But if we change the migration rate to 34,35 and 36 percent, which has been shown in the Company's recent quarterly report, then we're going to push up that impact significantly, because what's happening is there's a smaller energy sales base in order to spread over the economic cost of the PPA. So the higher the migration rate, the greater the impact on the consumers. This $\$ 3.50$ is based on 31 percent. So, in a sense, it's a conservative number.
Q. Mr. McCluskey, do you have a copy of Mr. Sansoucy's rebuttal with you?
A. (Mr. McCluskey) I do.
Q. Would you please turn to Page 47.
A. (Mr. McCluskey) Okay.
Q. At Line 1, Mr. Sansoucy is asked the following question: "On Page 45, Mr. McCluskey, starting at Line 9, talks about the conflict with least cost

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integrated resource planning. What is your opinion?"
Do you see that?
A. (Mr. McCluskey) Yes.
Q. And then at Line 4, at the beginning of his answer he
states, "Least cost planning and the development of
new Class I RECs are mutually exclusive." And then
at Line 7 he states, "To compare this" -- meaning, I
believe, the PPA -- "to least cost integrated
resource planning and then condemn the PPA with
Laidlaw is misleading and should be ignored by the
Commission." Do you see that?
A. (Mr. McCluskey) I do.
Q. Do you believe that the Commission should ignore the
least cost planning statute?
A. (Mr. McCluskey) Absolutely not.
Q. And do you agree with Mr. Sansoucy, that lease cost
planning and the development of new Class I RECs are
mutually exclusive?
A. (Mr. McCluskey) No.
Q. And PSNH is complying with the RPS law right now; is
that right?
A. (Mr. McCluskey) It is. It's required to purchase a
Q. And would you believe that PSNH is trying to comply with the RPS law in a way that is consistent with both the least cost planning statute and with its own least cost plan?
A. (Mr. McCluskey) Well, I'm not the analyst that reviews the Company's energy service filings. But I'd be very surprised if the Company were not trying to minimize the cost of making the RPS law by buying least cost RECs available, whatever class it's purchased in.
Q. And would you agree, in reviewing the PPA under the RPS law, the Commission must consider it in the context of RSA 378, the sections that include the least cost planning statute?
A. (Mr. McCluskey) Yes.
Q. Thank you. I have nothing further.

CHAIRMAN GETZ: Thank you.
Mr. Shulock.
CROSS-EXAMINATION
BY MR. SHULOCK:
Q. Good morning, Mr. McCluskey.
A. (Mr. McCluskey) Good morning.
Q. I'd like to direct your attention back to Record

Request No. 5 and then the analysis that you

Page 40
1 conducted.
A. (Mr. McCluskey) Give me that? Which record request?
Q. It's Record Request No. 5.
A. (Mr. McCluskey) Is that the rate impact analysis?
Q. Yes, it is.
A. (Mr. McCluskey) Yeah.
Q. Now, PSNH developed a number of scenarios to demonstrate the impacts of the PPA on energy service rates in 2014. You subsequently revised that analysis using inputs you thought were more reasonable and came up with higher impacts; is that right?
A. (Mr. McCluskey) Correct. I believe the year that PSNH was using was 2015.
Q. I stand corrected.

What, if anything, does the impact on the energy service rates in 2015 tell us about the reasonableness of the rates in the PPA over a 20-year period?
A. (Mr. McCluskey) The cost-effectiveness of the rates?
Q. Yes.
A. (Mr. McCluskey) They don't tell us anything.

3 Q. Okay.
A. (Mr. McCluskey) Let me retract that.

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The cost-effectiveness cannot be demonstrated through the rate impact analysis, which indicates little impact. The cost-effectiveness study essentially is comparing the cost of the products purchased with the, say the market price of those products. We can avoid doing that if we have competitive solicitation, and the bidders will determine what is the most appropriate price for a particular product. But absent that, we have to do this kind of analysis to determine whether it's cost-effective against using those standard tests.

Now, if when you do your rate impact analysis you include in -- you include in the avoided cost estimates, the market energy prices that you use in the cost-effectiveness study, I can say there's some connection. But the problem with a rate impact analysis is that the costs -- let's assume that it's -- that the particular project that's been analyzed is above market and there's a significant cost impact. What the rate impact analysis does is it spreads those costs over a much larger load, and it can have the effect of reducing what appears to be the impact of that on an economic project. So that's the danger in using the results of a rate impact

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above-market REC costs through 2025; is that right?
A. (Mr. McCluskey) That's what it says here.
Q. And do you remember what percentage -- what interest rate you applied in calculating that?
A. (Mr. McCluskey) I believe I used 5 percent. I think it says in the second paragraph of the response, 5 percent per annum.
Q. And then we asked you to calculate interest on above-market REC payments through 2033; correct?
A. (Mr. McCluskey) Correct.
Q. And your conclusion was that, using a 5-percent interest rate, the above-market -- or the interest on the above-market cost of those RECs would be $\$ 211$ million; is that correct?
A. (Mr. McCluskey) That's correct.
Q. And then you concluded that the total above-market REC payment with interest would be $\$ 399$ million; is that right?
A. (Mr. McCluskey) That's correct. I want to add this important assumption here. As I said earlier, the interest added to the cumulative reduction account is dependent not just on the interest rates but on the assumed market price for the product. Here I'm using the current price for Class I RECs, $\$ 6.50$, which is

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24 A. (Mr. McCluskey) It has to do with the difference in


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| 1 | I don't believe forestry practices are exempt from |
| :--- | :--- |
| 2 | supply and demand. |
| 3 | Q. |
| 4 | Assuming there are six operating facilities in the |
| 5 | North Country, with a combined output, let's say, of |
| 6 | approximately 120-megawatts, is it your opinion that |
| 7 | these plants offer more direct and indirect jobs than |
| 8 | A. |
| 9 | (Mr. Frantz) I haven't looked at each individual |
| 10 | project and don't have the data for each individual |
| 11 | project to know whether or not what their direct |
| 12 | employment is or their indirect employment associated |
| 13 | with those direct purchases of wood. To the extent |
| 14 | input, uses, if they're larger, they probably have a |
| 15 | somewhat significant effect on indirect and induced |
| 16 | effects. But I did not look directly at those |
| 17 | facilities. |
| 18 | Q. |

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Mr. McCluskey, the expert for the City of Berlin, Skip Sansoucy, has stated that the existing infrastructure should save considerable capital costs. Do you agree with that concept?
A. (Mr. McCluskey) Capital cost of the plant? Is that what you're referring to?
Q. The existing infrastructure should save considerable capital costs. I'm wondering if you agree with that concept.
A. (Mr. McCluskey) Well, if he's referring to the existing infrastructure which Laidlaw would continue to use in the development of the plant, then, potentially, yes, it could avoid the need to acquire capital, acquire new assets. So, in theory, I can imagine the more plant that exists, the less that has to be spent by the developer.
Q. So, given the savings, would you agree this should lead to reduced debt service?
A. (Mr. McCluskey) It should result in a capital cost that's lower than it otherwise would be, which would have the effect of, under a certain capital structure, would reduce the amount of loans that they have to make and, hence, reduce the interest on those loans.
Q. So if the project has less debt service, would you agree the project should produce cheaper power than a Greenfield project?
A. (Mr. McCluskey) Not necessarily. There's capital costs, just one element of the cost of a project. It's possible that a Greenfield project might use equipment that's more efficient and, hence, reduce the operating costs. So the net effect could be a reduced average cost for the facility than using -than starting with a facility with an existing potentially inefficient power plant.
Q. In your opinion, have the savings in debt service been reflected in the rate structure now being considered in this PPA?
A. (Mr. McCluskey) I cannot comment on that. I don't know what effect the cost of the facility would take into the account in the development of the PPA prices.
Q. In your opinion, has this project offered to sell its wrapped-up rates for less than other projects, other projects it proposed?
A. (Mr. McCluskey) Well, I've testified to the fact that PSNH received unsolicited offers from two alternative biomass projects, and PSNH's own analysis showed that

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the levelized costs of those two unsolicited projects was lower than the levelized cost for the Laidlaw project.
Q. And do you recall those percentages?
A. (Mr. McCluskey) I believe the CPD project was 8.5 percent lower than the Laidlaw levelized, and the Concord Steam project I believe was either 12 or 12.5 percent lower.
Q. Thank you.

Mr. Frantz, as a specialist in your profession, I'm sure you understand the concepts of supply and demand and micro and macro economics, and deal with these concepts on a regular basis. And with your understanding of economics, in very generic form, can you explain economy of scale?
A. (Mr. Frantz) Economy of scale occurs when costs are reduced as output increases. Average costs are reduced as output increases.
Q. So, would you agree that this 67.5-megawatt project should cost less than a smaller facility?
A. (Mr. Frantz) Well, you know, I think in general, without looking at the actual facilities -- the boiler, the actual fuel contracts -- there are a lot of variables that go into that. And so I'll fall
those two projects submitted bids that they felt they could live with and make the required returns that they need to stay in business. If the levelized prices that I referred to had been the result of a competitive bid -- which you heard we've not got one here -- but had they been the result of a competitive bid, then the Laidlaw project would not win out. Presumably, they would select, after taking into account other criteria, they would select the least cost bidder. And that's, I think, the way it should be. Regardless of the size of the project, how efficient the equipment is of the project, at the end of the day, if a particular developer wants the business, they will sharpen the pencil and attempt to undercut the prices that he feels other developers will offer. And we think that's how it should be done, and the lowest bidder should receive the contract.
Q. Thank you. When it comes to federal grant funds, I'm a little fuzzy. So you'll have to excuse me if I'm not asking these questions entirely correctly. Please feel free to correct me.

Just talking a little bit about federal grant funds. Throughout the SEC process, prior to this

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process with the PUC, it's been mentioned about grants and that grants are available that amount to 30 percent of the capital costs; is that correct?
A. (Mr. McCluskey) There are different federal grants. The ITC program -- investment tax credit, I can't believe I forgot that. The invest tax credit does provide a significant helping hand to developers. And I think it is on the order of 30 percent of the capital costs of the facility paid over the life of the facility.
Q. Is it true the eligibility requires construction by a certain point?
A. (Mr. McCluskey) I don't really know the details as to how -- what they need to do to qualify for those things. It's my understanding that the Laidlaw project does qualify for the ITC, or a version of it, which is actually a little bit more beneficial. And they also receive a grant under the new market development something. So my understanding is that they are availing themselves of those two opportunities, which I think all renewable projects would attempt to seek. So there is certainly nothing wrong with the developer getting the helping hand.
Q. So they have two choices of how they're going to get

that he's not aware of those issues. So I do think it is duplicative.

MR. EDWARDS: Thank you.
BY MR. EDWARDS:
Q. Mr. Frantz, if we could turn for a moment to talking about loggers. It's been said that many loggers have gone out of business in the state as a result of lost business and that loans will be made available for these loggers to purchase new machinery for their trade; is that correct?
A. (Mr. Frantz) My testimony doesn't address loans for loggers. If you have a particular question concerning labor force associated with it, I'd be happy to talk about that.
Q. Do you have any idea how much it would cost for a logger to set up enough equipment to be able to function as a viable business?
A. (Mr. Frantz) Are you assuming that they either start from scratch or have already sold their equipment?
Q. They've already sold their equipment.
A. (Mr. Frantz) It's a significant investment.
Q. Do you believe in the definition that biomass-grade wood is waste wood, such as tops and branches?
A. (Mr. Frantz) Normally, the wood is actually the tops

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left over from logging operations, or limbs, branches that's been used for biomass.
Q. Would you agree that roundwood or pulpwood, economically speaking, does not fall into this category?
A. (Mr. Frantz) By definition, roundwood and pulpwood are different uses.
Q. So, would you agree that the highest and best use of roundwood which can be sold to a different user for, say 48 per ton, is not to sell it to Schiller or some other biomass company for 27 per ton?
A. (Mr. Frantz) I think you have some assumptions in there that there isn't a viable alternative for those higher-valued wood products, and therefore they would find their way to a lower value option.
Q. Hasn't 1.3 million tons described as "available due to the closure of mills recently" been focusing on roundwood, pulp, which is a waste to sell it twice the amount per ton?
MR. BERSAK: Objection, Mr. Chairman. Mr. Frantz already said he didn't testify regarding wood?
CHAIRMAN GETZ: Mr. Edwards, any response?
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MR. EDWARDS: Your Honor, I'm just trying to point out that there's two different prices of two different types of wood, and there's a significant difference in price per ton. And I'm just trying to find out from an economic standpoint what Mr. Frantz's thoughts are regarding that.

CHAIRMAN GETZ: Mr. Frantz?
A. (Mr. Frantz) Well, I think that most rational people would rather sell a higher valued product than a lower valued product. And to the extent there's a market, I'm sure they'll look for that market for the higher valued product. If it's not there, I think that's going to affect their decision on what to do with that value of the product. If they can find other markets, even if it's less, they may actually go after those markets.
Q. What do you think the likelihood would be of a logger purchasing new equipment if he had no market beyond $\$ 27$ per ton, if the whole tree were to go for this reasonable purpose?
A. (Mr. Frantz) I think there's a lot that goes into deciding whether or not you're going to invest a lot of money into an operation. And obviously included in that is what kind of markets are out there and how

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| :---: | :---: |
| the 14 to 15,000 BTUs per-kilowatt-hour basis. <br> Q. So is that a percentage efficiency in the low 20 s range, 20, 22, 23 percent? <br> A. (Mr. Frantz) Those are what most people would consider fairly inefficient heat rates for an operation. <br> Q. What would you consider to be an average? <br> A. (Mr. Frantz) Well, it depends on the fuel you're talking about. <br> Q. For a plant like this. <br> A. (Mr. Frantz) For burning biomass? <br> Q. Hmm-hmm. <br> A. (Mr. Frantz) You can get down to $13-, 14,000$ BTU per kilowatt hour. That's a pretty good heat rate for a biomass facility. <br> Q. What percentage would you say that is? Twenty-five-percent efficiency? <br> A. (Mr. Frantz) I'll have to calculate it. I'd have to check and get back to you. <br> Q. I guess what I'm getting at is, from an economic perspective, does it make any economic sense to use a whole tree at a 25 -percent efficiency rating? <br> A. (Mr. Frantz) Well, I think I answered that when I said it would depend a lot on if you didn't have any | the Laidlaw plant can have for New Hampshire, the North Country, and Berlin, how much weight is given to the economic impact such a project can have? <br> A. (Mr. Frantz) Well, I mentioned in my answers to Attorney Hatfield that it's one factor, if you look at the statute, the economic benefits. There's a number of criteria, and this is one of those. <br> Q. Would you say that the economic benefit could outweigh the economic sensibility of a substantially higher rate to the ratepayer? <br> A. (Mr. Frantz) I believe I answered that, stating that cost-effectiveness, in my opinion, certainly should always be the key aspect of these criteria. I think that when all else is close to equal, then obviously you want to go with the economic benefits. <br> Q. Are you aware that Brookfield/Noble are beginning their wind project next month? <br> A. Which project? <br> Q. Well, I'm referring to it as the Brookfield/Noble Project. That's the 100-megawatt project in the North Country. <br> A. (Mr. Frantz) I'm aware of the Noble project. I thought it was 99-megawatts. I'm not aware of what stage of completion it's at. |
| 1 other better or higher value reasons to sell that <br> 2 wood. If you have sawlogs, much rather sell sawlogs <br> 3 and then just work your way down. <br> 4 Q. Thank you. <br> 5 Mr. McCluskey, just a hypothetical. If <br> 6 Noble/Brookfield was to fill capacity in the Coos <br> 7 Loop, what would Laidlaw need to do? <br> 8 A. (Mr. McCluskey) Could you give me that again? <br> 9 Q. If the Noble/Brookfield 100-megawatt project filled the capacity in the Coos loop, what would Laidlaw need to do? <br> A. (Mr. McCluskey) Well, I assume the transmission line would have to be expanded in order to send the output to the low centers in New Hampshire and elsewhere. <br> Q. What if the loop wasn't expanded? What would Laidlaw need to do? <br> A. (Mr. McCluskey) If it wasn't expanded? <br> Q. Yes. <br> A. (Mr. McCluskey) Well, I can't see how, in that hypothetical, how the project would proceed. <br> Q. Is that expansion a requirement of this PPA? <br> A. (Mr. McCluskey) Not to my knowledge. <br> Q. Thank you. <br> 24 <br> Mr. Frantz, in weighing out the economic benefit | Q. I've been contacted by this company to find housing for approximately 140 workers from outside of New Hampshire, as well as 70 jobs from inside this area. What immediate impact do you think that can have for Berlin over the entire year economically? <br> MR. BERSAK: Objection. Facts not in the record. <br> CHAIRMAN GETZ: What's the relevance? <br> MR. EDWARDS: I am trying to find out from Mr. Frantz, by some very definite projects that are in the works in Berlin, what kind of economic impact those projects can have in comparison to this one. <br> CHAIRMAN GETZ: And how would that affect our decision in this case? <br> MR. EDWARDS: I understand that the economic leg of your decision here is very important, and I also understand that there are some very viable projects coming to Berlin that are -- that could be very important to that decision. <br> CHAIRMAN GETZ: Well, first of all, I mean, you are testifying to what you know about facts that aren't in evidence in this case. And I'm not sure what the relevance of this line of inquiry is. |


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So let's move along to your next set of questions. BY MR. EDWARDS:
Q. Mr. Frantz, are you familiar with the federal prison project coming to Berlin?

MR. BERSAK: Objection. Same objection, Mr. Chairman.

CHAIRMAN GETZ: Relevance, Mr. Edwards?

MR. EDWARDS: Well, Your Honor, between those two projects, there is 50 million in payroll coming to the area, which I would think would be a very valid argument as to some economic stability coming into Berlin. That's very important to Berlin.

CHAIRMAN GETZ: Well, let me stop you there.

Mr. Frantz, is there any -- is your opinion with respect to this PPA affected by other economic developments and employment that would occur in Berlin or the Berlin vicinity?

WITNESS FRANTZ: Only to the extent that the multiplier effects mentioned by Dr. Shapiro assume in all I/O models that there's an unlimited supply of local labor for those multiplier effects to

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be realized, to the extent there are leakages in labor, because you can't get that supply of labor from the local economy, it reduces the effects on whatever project you happen to be analyzing.

CHAIRMAN GETZ: Is that something you can quantify?

WITNESS FRANTZ: No.
CHAIRMAN GETZ: Mr. Edwards.
MR. EDWARDS: Your Honor, I have four more questions on this that I would like to ask Mr. Frantz, if I could.

CHAIRMAN GETZ: Well, let's see where they go.
BY MR. EDWARDS:
Q. Hypothetically speaking, if these two projects were to go online as projected for this spring and summer, what kind of impact can a $\$ 50$ million payroll have on the City of Berlin?

CHAIRMAN GETZ: When you say "these two projects," you're talking about the --

MR. EDWARDS: I'm talking about the windmill project and the prison.
A. (Mr. Frantz) I think for the size of the city of Berlin, that would be a significant economic impact

1 for the city.
2 Q. Would you agree that, statistically, 90 percent of
that payroll stands to go back into the community in Berlin?
A. (Mr. Frantz) I have no knowledge of whether -- how much of that goes back, actually, in the city of Berlin and how much is actually sent back to wherever those construction workers actually live. That's one of the concerns in all models, is what -- where does that savings go? Does it stay in the local community and recirculate and therefore drive the multipliers, or does it actually leak out of the economy?
Q. Turning to the value that the Laidlaw project can provide to Berlin to increase its assessed value, Mr. Frantz, we've been told by the City of Berlin's expert that the finished product could save the ratepayer in Berlin 17 percent. Are you familiar with whether or not that's over 20 years?
A. (Mr. Frantz) Are you talking about the taxpayer in Berlin or the electric ratepayer in Berlin?
Q. I'm talking about the taxpayer. In other words, that the impact that the assessed value can have on the total value of Berlin, the City's expert has stated that that figure is 17 percent. Are you aware that's

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A. (Mr. Frantz) I'm not aware of what period of time that was for.
Q. Okay. When it comes to economic development and assessing in a city, are you familiar with neighborhood codes?
A. (Mr. Frantz) No, I don't assess for tax purposes. I'm not an assessor.
Q. Would it surprise you that in close proximity to this mill there is a neighborhood code, called a Neighborhood Code C, that has a 20-percent decreased rating as a result of all of the properties within close proximity to this mill?

MR. BERSAK: Mr. Chairman, objection.
CHAIRMAN GETZ: I'm going to permit this question. Let's move along.
BY MR. EDWARDS:
Q. I'm curious, from an economic standpoint, if this mill is impacting a 17 -percent decrease from what the City's expert tells us, but it's having a 20-percent decrease impact on a substantial number of properties in close proximity to the mill, would you agree that that 17 percent is not necessarily accurate?

MR. BERSAK: Objection, Mr. Chairman.

|  |  | CHAIRMAN GETZ: Well, I'm going to |  |
| :---: | :---: | :---: | :---: |
|  |  |  | his because it's a similar line of |
|  |  | questioning we've heard from other witnesses, and I'd |  |
|  |  | like to get an answer from Mr. Frantz, if he has one. WITNESS FRANTZ: Could you repeat the |  |
|  |  |  |  |
|  |  |  |  |
|  |  | CHAIRMAN GETZ: 'Cause I think |  |
|  |  | ly where we were with the previous witness |  |
|  |  | was that you were raising the issues of whether there could be positive or negative effects on residences |  |
|  |  |  |  |
|  |  | or business near to the plant, depending on certain |  |
|  |  | assumptions. Is that -- |  |
|  |  | MR. EDWARDS: Correct. |  |
|  |  | (Mr. Frantz) Well, if that's the question, then I think the answer is yes. |  |
|  |  |  |  |
|  | Thank you. I have no other questions. CHAIRMAN GETZ: Okay. I think it's |  |  |
|  |  |  |  |  |  |
|  |  | about time for recess. But let me try to get an understanding of where we may be going. |  |
|  |  |  |  |
| 20 |  | Next to Mr. Boldt. Do you have an estimate of how much cross you have? |  |
|  |  |  |  |
|  |  | Honor. |  |
| 23 |  |  |  |
| 24 |  | CHAIRMAN GETZ: Okay. And Mr. Bersak? |  |
|  | ga 74 |  |  |
|  | MR. BERSAK: Two-plus. |  |  |
| 2 | CHAIRMAN GETZ: Okay. |  |  |
| 3 |  | (Chairman and Commissioners conferring.) |  |
|  |  | CHAIRMAN GETZ: All right. Well, |  |
|  |  | let's take a brief recess now. What we intend to do |  |
| 6 |  | is take 15 or 20 minutes, come back, go for another |  |
|  |  | 90 or so, take the lunch hour in the 1:00 to 2:00 |  |
| 8 |  | range, and then come back and see how far we can get. |  |
|  |  | So we'll recess until about 11:15, 11:20. <br> (Whereupon a recess was taken at 11:00 |  |
| 10 |  |  |  |
|  |  | a.m. and the hearing resumed at 11:25 a.m.) |  |
|  |  | CHAIRMAN GETZ: Mr. Boldt. |  |
|  |  | MR. BOLDT: Thank you, Mr. Chairman. |  |
|  |  | CROSS-EXAMINATION |  |
|  | BY MR. BOLDT: |  |  |
|  | Q. Mr. McCluskey, before we started this morning, I |  |  |
|  | wanted to make sure you had the Ventyx 2010 fall |  |  |
|  | reports, which I believe is Staff 12 and Staff |  |  |
|  | Exhibit 14. Do you have those two exhibits in front |  |  |
| 20 |  | of you? |  |
|  | (Mr. McCluskey) I have Staff Exhibit 14 and the 2010 |  |  |
| 22 | report. |  |  |
| 24 |  | Okay. Now prepared | ow, just for the record, confirm for me: You Staff Exhibit 14, that analysis? |

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1 the energy prices in the PPA.
Q. Okay. Thank you for that clarification.

CMSR. BELOW: Excuse me. I just need to interrupt because I don't understand where we're at. If we're looking at Staff Exhibit 14 --

MR. BOLDT: Yes, sir.
CMSR. BELOW: -- to get to the overall number, don't you compare the total in the first block with the total in the second block?

WITNESS McCLUSKEY: That's correct. That's correct.

CMSR. BELOW: And can't you look at the second page and look at the total for energy in the first block, which is 965 million, versus energy in the second block, which is $1,274,000,000$ ?

WITNESS McCLUSKEY: That's correct. That would be one way of doing it. So the issue is whether the Ventyx market energy prices with carbon is a reasonable proxy for market energy prices going forward.

CMSR. BELOW: But if you use those numbers, wouldn't that indicate whether you're over or under market over the term, using these assumptions?

WITNESS McCLUSKEY: If you assumed that the -- with carbon, Ventyx energy prices were a reasonable proxy of future market energy prices, then these numbers would indicate that there would be no above-market energy costs.

CMSR. BELOW: Okay. Thank you. MS. AMIDON: Mr. Chairman, I
apologize. Would Mr. McCluskey please speak into the mic for the benefit of the stenographer? Thank you.
BY MR. BOLTON:
Q. Mr. McCluskey, also on that same line, I believe you testified this morning that you were concerned with the CRF that would create a violation of the use and useful principle.
A. (Mr. McCluskey) Used and useful.
Q. Used and useful. Thank you.

Now, if we are assuming there is no dollar amount in the CRF, there is, I assume, no violation of the used and useful principle; correct?
A. (Mr. McCluskey) That's correct. If in every hour customers were not asked to pay above-market costs, then there would be no additional payment to finance the future purchase of a power plant. That's correct.

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Q. Now, to be fair to your position, your Exhibit 14 does support your contention that there is a 300 million to 400 million overpayment to the ratepayers over the life of the PPA, depending upon certain variables that you've selected; correct?
A. (Mr. McCluskey) Correct. The 333,000,000
above-market figure assumes a 63 -megawatt power plant with 87.5 -percent capacity factor. And it assumes the products, the market prices of the products are as detailed in the Ventyx 2010 study.
Q. So, isn't it safe to say that, depending upon which variables change over the life of this PPA, there could be different swings in whether it's an overpayment by the ratepayers or a savings to the ratepayers; correct?
A. (Mr. McCluskey) Correct. If you're talking about actual prices as opposed to forecasts? Yes.
Depending on how the actual prices turn out, that would determine whether the PPA at any point in time is above or below market.
Q. Now, I believe you testified during your additional direct back last Tuesday, on February 1st, that you had two major variable changes that you were suggesting should take place. My notes reflect the

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first was that you wanted to replace the Ventyx 2009 market energy projections with carbon legislation; as used by Mr. Sansoucy, with the Ventyx 2010 market energy projections without carbon legislation. Correct? That's the first one.
A. (Mr. McCluskey) That's correct.
Q. And the second one, my notes reflect that you wanted to replace the Ventyx 2010 REC pricing -- use the 2010 REC pricing projections instead of the REC prices set by this PPA; correct?
A. (Mr. McCluskey) That's correct.
Q. Okay. Now, if you would, concerning that first variable change, the "with" versus "without" carbon, are you saying that your crystal ball projections, you're confident that we're never going to have carbon legislation?
A. (Mr. McCluskey) No, I'm not saying that.
Q. Okay.
A. (Mr. McCluskey) What I'm saying is that the base case assumed by the Ventyx modelers, they apparently have determined that there is not a sufficient probability that carbon legislation or climate-change legislation will pass at the federal government level; and, as a result, they've determined that it should not be in

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## their base case projection.

Q. That's your assumption based on your read of the Ventyx report?
A. (Mr. McCluskey) That's right.
Q. Now, in reading the Ventyx report, did you review its executive summary?
A. (Mr. McCluskey) I did, yes.
Q. Okay. You have it in front of you; correct?
A. (Mr. McCluskey) I do.
Q. And I believe the Commission has that document as well. If you turn to Page ES1, first page of the executive summary, do you see at the beginning of the second paragraph -- are you all there?
A. (Mr. McCluskey) Yup.
Q. -- where it reads, This Fall 2010 reference case assumes no federal climate legislation. Throughout 2010, the likelihood of federal GHG legislation -Greenhouse gas -- is that your understanding of that acronym?
A. (Mr. McCluskey) That's correct.
Q. The likelihood of federal GHG legislation passing continually decreased as of November 2010, with no current active legislative. The act -- flipped my page too quick. The likelihood of a climate bill
passing in the next two years is low as a result of the current political climate. The Fall 2010 North American Power Reference Case does not assume the implementation of GHG legislation during our forecast period. Did I read that correctly?
A. (Mr. McCluskey) That's correct.
Q. Okay. Now, you'd agree with me that, just as wind blows on a turbine, winds blow in the political arena back and forth, without any real ability to predict; correct?
A. (Mr. McCluskey) Policy issues can change. I agree with that.
Q. Now, staying on ES1, let's continue on. You see where it states, Similarly -- that same paragraph. Similarly, Ventyx does not assume the implementation of a federal renewable energy standard as well and that the Fall 2010 reference case meets individual state RPS -- renewable portfolio standard -- through the study horizon. Did I state that correctly?
A. (Mr. McCluskey) You did.
Q. Okay. And then the conclusion of that paragraph, you see where it states, The Fall 2010 Federal Environmental Legislation Case assumes the implementation of Federal Greenhouse Gas legislation

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and nationwide renewable energy standard beginning in 2015. See that?
A. (Mr. McCluskey) Yes, I do.
Q. So wouldn't you agree with me that this Ventyx report both does and does not use carbon in its 2010 forecasting, just as Mr. Sansoucy did in his Exhibit 9?
A. (Mr. McCluskey) No. With regard to the forecast energy prices, it's clear that there is no assumption of carbon in those energy prices. Now, that does not mean to say that Ventyx might have other scenarios that it's developed. But in terms of the energy prices which run through the term of this PPA, it's my understanding that there is no assumption of carbon regulations that would increase cost and increase prices.
Q. Okay. But again, that's one of the variables, with or without. And the Ventyx executive summary reflects that their report uses both. Gives a scenario with and gives a scenario without; correct?
A. (Mr. McCluskey) They may well have some other scenarios. But in terms of the energy prices that we are using in this particular proceeding, they -- it's my understanding that they do not include carbon.

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| :---: | :---: |
| Q. That was one of the assumptions you selected in making your model, Exhibit 14; correct? <br> A. (Mr. McCluskey) It's -- you say "one of the assumptions." I used the projection in the 2010 Ventyx report. I'm not sure whether that's an assumption. I actually used the numbers that were reflected on Exhibit 10 to Mr. Sansoucy's testimony, which came from the 2010 report. <br> Q. So you didn't use -- just for clarity, you didn't use the portion of the Ventyx report that included carbon; correct? <br> A. (Mr. McCluskey) I did not. That's correct. <br> Q. Okay. Now, before we leave this page, let's go down to the paragraph that begins, Under-market Overview. Do you see where they define the Northeast Region as including New York ISO, ISO-New England, Ontario, Quebec, and the Canadian Maritime Provinces? <br> A. (Mr. McCluskey) That's correct. <br> Q. Okay. Now, concerning your second change of variables, whether or not to use the Ventyx 2010 REC pricing projections, let's turn in Ventyx to Page 5-14, which includes -- it shows Table 5-1. <br> CHAIRMAN GETZ: Sorry. Say that again? What page? | represents a marginal regional renewable energy resource. I read that correctly, didn't I? <br> A. (Mr. McCluskey) That's correct. <br> Q. And they assumed the extension of the production tax credit per the American Recovery and Reinvestment Act of 2009. <br> A. (Mr. McCluskey) That's correct. <br> Q. Reading that? <br> A. (Mr. McCluskey) Yeah. <br> Q. Now, they state the PTC is 21 cents per kilowatt hour. Is that correct? Or do you think there's a typo there, that it should be 2.1 ? <br> A. (Mr. McCluskey) No, I think it's 21 cents. I need to check that. The PTC for wind is different from biomass. I need to double-check with regard to whether that's 2.1 or 21 cents. <br> Q. Well, if it's 21 cents, then the PTC for a megawatt is $\$ 210$. If it's 2.1, it's $\$ 21$. <br> A. (Mr. McCluskey) That's correct. <br> Q. Doesn't it make more sense that it's -- I mean, subject to check, obviously. But isn't -- your understanding is it's $\$ 21$, not $\$ 210$ ? <br> A. (Mr. McCluskey) That's correct. I think that's correct. But as I said, I need to check on it. |
| MR. BOLDT: Page 5-14 has a Table 5-1 that looks like this (indicating). <br> BY MR. BOLDT: <br> Q. Now, I'm correct, aren't I, that you used in your modeling for the REC prices the column that is entitled "Northeast"? <br> A. (Mr. McCluskey) That's correct. <br> Q. Okay. And you see at the top of that table that these numbers are in 2010 dollars per megawatt hour; correct? <br> A. (Mr. McCluskey) That's correct. <br> Q. That means there's no factor built in for inflation in these numbers; correct? <br> A. (Mr. McCluskey) That's correct. <br> Q. Now, turn back to Page 5-12. That's two pages before. Do you see that final sentence of that first paragraph where it states, In preparing the forecast REC values, Ventyx made the following assumptions in real 2010 dollars for marginal wind generators? So these are REC prices, wind REC prices; correct? <br> A. (Mr. McCluskey) That's what it says. <br> Q. Okay. Now let's continue on with their assumptions, the bullets that are right there. <br> The first one is they calculated the REC value, | Q. We can check that. <br> MS. HATFIELD: Mr. Chairman, this is the City's exhibit. So perhaps they could just clarify that that is a typo rather than asking Mr. McCluskey? <br> MR. BOLDT: I'm asking for his understanding. It's our understanding it's a typo. CHAIRMAN GETZ: Okay. <br> MS. AMIDON: Pardon me. So does that mean that Mr. McCluskey doesn't have to go back and do the calculation? <br> MR. BOLDT: I believe he's answered my questions, Mr. Chairman. <br> CHAIRMAN GETZ: I'm taking that he's accepted it, subject to check. <br> BY MR. BOLDT: <br> Q. Now, as we just discussed, that equates to a source of revenue for the REC producer of $\$ 21$ per REC, because a REC is 1 megawatt hour; correct? <br> A. (Mr. McCluskey) That's correct. <br> Q. Now, am I correct that your Exhibit 14 does not include the $\$ 21$ per REC in your calculations? <br> A. (Mr. McCluskey) Actually, the $\$ 21$ is reflected in the 24 REC prices that's shown on the Table 5-1. |


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| :---: | :---: |
| 1 Q. Okay. Let me collar you on that, Mr. McCluskey. | 1 they do. |
| 2 These numbers are the Ventyx numbers. And it clearly | 2 On this same page, you see right below the first |
| 3 is stating that - | two bullets where it states, Ventyx has based its |
| 4 CHAIRMAN GETZ: Well, I'm losing | 4 forecast of REC values on the premise that renewable |
| 5 track. When you say "these numbers," are y | 5 energy generators rely on RECs to complement energy |
| 6 referring to -- | and capacity revenues to meet their production costs |
| 7 MR. BOLDT: In 5 | 7 and levelized capital requirements. Another source |
| 8 BY MR. BOLDT | 8 of revenue is the PTC. |
| 9 Q. So let me ask the ques | Now, would you agree with me that levelized |
| 10 You're assuming that the column labeled | 10 capital requirements is a financing concept that |
| 11 "Northeast" includes the \$21? | 11 basically extends a level payment over a certain |
| 12 A. (Mr. McCluskey) | 12 period of years? |
| 13 Q. And you have a negative number of \$21 for 20 | 13 A. (Mr. McCluskey) That's the idea of a -- that's what |
| 14 A. (Mr. McCluskey) No. If I could just explain? My | 14 levelized means. But this paragraph is supportive of |
| 15 understanding of these REC prices, these are the | 15 what I said |
| 16 results of a modeling exercise by the Ventyx people. | 16 For renewable developers, there's three sources |
| 17 It's my understanding that they have a supply and | 17 of revenue: Energy revenue, capacity revenue and |
| 18 demand model, and they model what renewable resources | 18 RECs. These developers require a certain stream of |
| 19 will be at the margin and will establish the REC | 19 RECs. Those that can bid into any competitive market |
| 20 prices in this market - | 20 at a low REC price are the ones that win these |
| 21 Q. So your -- | 21 requests for proposals. And so this paragraph is |
| 22 A. (Mr. McCluskey) If I could finish? | 22 supporting my statement that, for renewable |
| 23 CHAIRMAN GETZ: Let him finish. | 23 developers, the capacity in energy revenues are not |
| 24 MR. BOLDT: So | 24 sufficient to provide the total return that they're |
| Page 90 | Page 92 |
| 1 A. (Mr. McCluskey) And when they do -- in doing -- in | 1 looking for. They need this third revenue stream. |
| 2 implementing that supply and demand model, they | 2 And it's these prices that the modelers determine |
| 3 determined what the costs are, what is required for a | 3 that these wind generators -- why wind? Because the |
| 4 renewable resource in order to make that resource | 4 wind generators are generally the most cost-effective |
| 5 cost-effective. And you take into account in | 5 renewable resource. They are the ones that are going |
| 6 determining the required REC price that it just makes | 6 to establish the model price for RECs. Everyone |
| 7 that resource competitive, and take into account all | 7 else, biomass, solar facilities, will have to take |
| 8 of the subsidies that are received from the federal | 8 the REC price that the most competitive renewal |
| 9 government. The greater the subsidy -- in this case, | 9 generators produced. And that is life in the |
| 10 the PTC subsidy -- the less they need in REC revenues | 10 competitive market. |
| 11 to make them competitive. | 11 Q. But aren't you |
| 12 So the result of the modeling of these REC | 12 A. If you can't compete with the most cost-effective |
| 13 prices reflect the fact that they are receiving | 13 renewable generators, you're not going to be in |
| 14 incentives from the federal government. If they did | 14 busin |
| 15 not receive those incentives, they would -- the | 15 Q. So you said that there are only three sources of |
| 16 developers would demand higher REC prices, which | 16 revenue: Energy, capacity and RECs; correct? |
| 17 would increase the prices that we see in Table 5-1. | 17 A. (Mr. McCluskey) Well, there may be some plants that |
| 18 So in that sense, these REC prices reflect any grants | 18 biomass may have a fourth stream, if they can sell |
| 19 or loans that they receive from the federal | 19 some heat to some project. But typically, there are |
| 20 government | 20 three sources of revenues for renewable generators. |
| 21 Q. That's your understanding of what Ventyx does; 22 correct? | 21 Q. But aren't you ignoring the sentence that Ventyx 22 states, "Another source of revenue is the PTC"? |
| 23 A. (Mr. McCluskey) That's my understanding, yes. | 23 A. (Mr. McCluskey) No. The three major sources of |
| 24 Q. Okay. Now, let's look, actually, at what Ventyx says | 24 revenue from the products sold. You can treat the |

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PTC as another revenue stream if you wish. But, really, it's just subsidy that the federal government has in order to promote these kinds of resources. So if you want to treat it as a fourth source, fine.
The effect of it is to reduce the REC revenues that the developers need.
Q. So if the PTC was not there, the REC price would be correspondingly higher; correct?
A. (Mr. McCluskey) That's correct.
Q. Now look at the methodology that is listed at the bottom of Page 512 to the top of Page 513. The first step of Ventyx methodology is to estimate the average levelized capital requirement in dollars per megawatt hour by renewable type. Now, again, per the references above, this means we're talking about marginal wind; correct?
A. (Mr. McCluskey) It says "by renewable type." So they are referring to different types of resources.
Q. Well, the only one they're referring to in that page is marginal wind.
A. (Mr. McCluskey) No. I think you're misunderstanding their calculation. I think their calculations are showing that the wind generators are the generators that establish the market price. This clearly states

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that they will -- that they've estimated the capital requirements by renewable type, not just wind.
Q. Well, they don't use anything in its text other than marginal wind. You'd agree with me there?
A. (Mr. McCluskey) As I've said, their supply/demand modeling will include supply from various types of resources. Those resources that are at the margin in this supply/demand analysis are the ones that establish the price.
Q. Mr. --
A. (Mr. McCluskey) So if we have a significant amount of wind resources, which are generally considered to be the lowest-cost renewable resources, we may have wind forcing out any other renewable projects, and their analysis may indicate that those wind generators are the ones that are going to establish the market price.
Q. Mr. McCluskey, isn't it true that you stated in prior testimony that you've never seen the Ventyx report before; correct?

MS. AMIDON: Mr. --
CHAIRMAN GETZ: I think that's a fair question. Let's hear the question.
BY MR. BOLDT:
Q. You've never seen the Ventyx report before; correct?
A. (Mr. McCluskey) That is correct.
Q. So your testimony over the last couple minutes of what you believe Ventyx means in its report is pure speculation; isn't, sir?
A. (Mr. McCluskey) No. I've been in this business for 30 years. I think I know how to read these reports. It's standard practice for modelers to create a supply and demand model and stack up each type of resource based upon their incremental costs. Those resources that happen to be at the margin when the demand is met are the ones that establish the price. I'm reading this to say that those resources are wind resources that are going to determine what the REC prices are. And any other resource, whether it be biomass or solar, that wants to sell in this
Northeast market is going to have to accept the price established by the wind resources or they don't play in that market.
Q. So you'd agree with me, then, that wind has a lower capital cost than wood, in part because it doesn't have fuel costs; right?
A. (Mr. McCluskey) Well, they don't have fuel costs. They are very, obviously, very capital-intensive.

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The -- what's your question?
Q. That wind has a lower capital cost requirement than wood, in part because it has no fuel costs.
A. They have no fuel costs. I'm not saying that they have lower capital costs.
Q. So the industry standard of it's roughly $\$ 2.5$ million per megawatt for wind and $\$ 3.5$ million per megawatt for wood is something that you're familiar with and you would agree with?
A. (Mr. McCluskey) I'm not familiar with those numbers.
Q. Okay. Now, similarly, there's not usually a large residual job creation from a wind project as there is in the wood basket for a wood project; correct?
A. (Mr. McCluskey) I haven't studied the job creation of these resources, but I've heard that's the case.
Q. Let's turn back to the methodology, the text that Ventyx actually says they use.

The second one there at the bottom of Page 5-12, do you see where it states they estimate expected gross margins, plural, for renewable generation in the state as a combination of the following: A, energy market gross margins -- again, plural -- from the Ventyx fall reference case; and the second is the production tax credit? Did I read that correctly?

| 1 | A. | (Mr. McCluskey) Yes. |
| :--- | :--- | :--- |
| 2 | Q. | Now, the use of the plural, margins, it's safe to |
| 3 |  | assume that means both energy and capacity |
| 4 |  | projections, as included in the report? |
| 5 | A. | (Mr. McCluskey) I think that's a reasonable |
| 6 |  | assumption. |
| 7 | Q. | Okay. Going to the top of Page 5-13, the third step |
| 8 |  | in their methodology is they calculate the deficit in |
| 9 |  | meeting the levelized capital requirements, Item 1, |
| 10 |  | from the gross margins -- again, plural -- calculated |
| 11 |  | in Item 2. Did I read that correctly? |
| 12 | A. | (Mr. McCluskey) Yes. |
| 13 | Q. | And this means that these two products increase, then |
| 14 | the price of the RECs declines; correct? |  |
| 15 | A. | (Mr. McCluskey) I think what it's saying is that if |
| 16 | the -- they're looking to see how much of the capital |  |
| 17 | costs of the facility will be covered from the energy |  |
| 18 | and capacity revenues. And to the extent that they |  |
| 19 | fall short, what is often referred to as |  |
| 20 | insufficiency, it's the REC price that is designed to |  |
| 21 | make that up. |  |
| 22 | Q. | But Mr. McCluskey, we have to use No. 2. And No. 2 |
| 23 | states it's the energy and capacity margins -- we |  |
| 24 | just discussed that -- and the PTC. |  |

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A. (Mr. McCluskey) Yes.
Q. Okay. And you see there at the bottom of that document where it states that there are 20,000 vintage 2010 RECs eligible as Class I in Massachusetts, New Hampshire, Connecticut and Maine that were auctioned at an average price of $\$ 13.16$ ? Did I read that correctly?
A. (Mr. McCluskey) I see that. Yes, you did.
Q. Okay. Now, simple math. "Average" means some that were higher and some that were lower; correct?
(Witness reviews document.)
A. (Mr. McCluskey) Yes. Since they're referring to several states, this price presumably is referring to the average of different prices in different states.
Q. Okay. And it also states that there were 15,000 vintage 2011 RECs eligible for Class I in those same states that auctioned at an average of $\$ 18.90$. Did I read that correctly?
A. (Mr. McCluskey) That's correct.
Q. Now, you'd agree with me that simple math would state
A. (Mr. McCluskey) Correct.
Q. Correct?
A. (Mr. McCluskey) Correct.
Q. Okay. Now, the fourth step that they take is they calibrate the REC prices in 2010 through 2011 to reflect the currently traded REC market prices. Did I read that correctly?
A. (Mr. McCluskey) Correct.
Q. Now, you recall Mr. Traum's revised direct testimony in this case, particularly Exhibit 5 of his materials. Do you have that available in front of you?
A. (Mr. McCluskey) I have his direct testimony. Which is it?
Q. The revised Traum exhibit -- or revised direct testimony that came in right before our first day of hearing. If you'd look at Page 22 of that document.
A. (Mr. McCluskey) I have his direct testimony filed December 17 th. Is that what you're referring to?
Q. Well, there was a revised one. But that one should work. I think the exhibits are the same.
A. (Mr. McCluskey) Okay.
Q. If you see Attachment KET5, which I believe is Page 22, it's a statement from Evolution Markets.
that that's a 43.6-percent increase in the market price of Class I RECs in just one year; correct?
(Witness reviews document.)
A. It appears that the Class I average price has risen

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from one year to the next. That's correct.
Q. Now turn back to the Ventyx chart you used in your calculation, Page 5-14. Let me know when you're there.
A. (Mr. McCluskey) Just give me it to me once more.
Q. Page 5-14.

7 A. (Mr. McCluskey) Yes.
8 Q. The table you used in calculating Table 14.
9 A. (Mr. McCluskey) Okay.
Q. You'll see the first entry in the Northeast column that you used for 2011 is $\$ 13.56$.
A. (Mr. McCluskey) That's correct.
Q. So the actual price, as reflected in Mr. Traum's Exhibit 5 of $\$ 18.90$, is similarly higher by a factor of 43 percent; correct?
A. (Mr. McCluskey) That's correct.
Q. But you did not use actual market prices in your calculations in Exhibit 14; correct?
A. (Mr. McCluskey) That's correct. Nor did I use actual energy prices or actual capacity prices. I used consistently the forecasts contained in the Ventyx report.
Q. Turn back to Page 5-13, the immediately prior page. Do you have water by any chance? Are you okay?



| 1 | there is going to be less of a insufficiency; and |
| :--- | :--- |
| 2 | therefore, all developers of renewable resources |
| 3 | require lower REC prices to achieve the target |
| 4 | returns. And if those projects are decided based on |
| 5 | competitive bids, those developers are forced to cut |
| 6 | their prices to the bone just to achieve the minimum |
| 7 | target returns that they're looking for. That's how |
| 8 | this REC market works. It's very dependent on |
| 9 | revenues from the other products to determine what |
| 10 | the prices are in the REC market. |
| 11 | Q. |
| 12 | In essence, there's is a seesaw back and forth with |
| 13 | A.the market pricing. <br> 14Q.Okay. Now, you stated earlier in your testimony <br> 15$\quad$today that this PPA does fix the energy, capacity and <br> 16 |
| REC prices. Would you agree that by taking those |  |
| 17 | variables off the table, this PPA eliminates the |
| 18 | seesaw back and forth? |
| 19 | A. |
| 20 | (Mr. McCluskey) Well, I don't recall today talking |
| 21 | about fixed prices within the PPA. I think I've |
| 22 | testified that the capacity prices and the REC prices |
| 23 | are fixed. The energy price has a fuel adjustment |
| 24 | the energy price is going to decrease. That clearly |

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4 Q. Now, do you remember your testimony, when you were
is not a fixed energy price. That can vary depending on the volatility in the fuel costs incurred by Schiller. talking about some undesignated New York PPA that fixed the RECs and then used short-term energy and capacity pricing? Do you remember that testimony this morning, sir?
A. (Mr. McCluskey) The RFP establishes the price that developers will receive for RECs. The New York ISO markets, the conditions in those markets, capacity and energy, will determine the revenues that the developers receive for their energy capacity prices.
Q. So I trust the answer to my question is, yes, you do remember your prior testimony?
A. (Mr. McCluskey) I think I do, yes.
Q. And you stated at that time that that was a reason to support your basis, your opinion that this PPA did not have to have the fixed prices for each of the three elements.
A. (Mr. McCluskey) I said it does not have to have fixed prices for energy and capacity. In fact, I was particularly talking about energy. I said that you could have a market-based energy price and that would

## 1 not necessarily preclude a renewable resource from being selected and being successful. <br> Q. Let me put you a hypothetical. If the market prices for energy, capacity and RECs increase above those set by this PPA, would you agree with me that the PPA is a good deal for the ratepayers and in the public interest? <br> A. (Mr. McCluskey) So you're saying if, after the fact, we look back and determine whether the market prices were actually above or below, we can conclude that it was a good or a bad deal. Is that what you're asking me? <br> Q. Correct. If our crystal balls, which are very murky right now, are clarified by actual events to show that this PPA is below market on energy, capacity and RECs, then this PPA is a good deal for the ratepayers; correct? <br> A. (Mr. McCluskey) After the fact, that's how it would turn out. That's correct. <br> Q. And isn't it true that your calculations in Exhibit 14 do not take into account the upcoming retirements of existing power plants that are listed in Mr. Sansoucy's rebuttal Exhibits 3, 4, and 4A? A. (Mr. McCluskey) No, I don't agree with that. The <br> Page 112

 capacity and REC prices. Any retirement that the modelers for Ventyx -- they would determine when various power plants will be retired. And that will be one of the factors that determines what the future market energy price will be. So, the market energy prices that I'm using fully take into account the prospect of new power plants coming online, old power plants being retired.Q. You didn't do any independent modeling; correct?
A. (Mr. McCluskey) I did not. That's correct.
Q. And you're assuming that Ventyx did.
A. (Mr. McCluskey) I'm assuming they would use the standard techniques for creating a market price model.
Q. Now, let's look at some of your testimony concerning wind versus wood. Is it your contention that there is no difference between a wind generator and a wood generator; it's apples to apples?
A. (Mr. McCluskey) Could you point me to my testimony where I --
Q. I'm going in general and your direct on the stand last Tuesday. Put it this way -- well, let's just open the question.



4 Q. Positively. Positively.
A. (Mr. Frantz) And so, to try to narrow that down to

24 Q. Now, the only local renewable fuels and resources we

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Q. Right. But we don't have natural gas. That's not a renewable.
A. (Mr. Frantz) Correct. Last I checked, we're a little short on coal also.
Q. Right. And we haven't figured out a way to burn granite.
A. (Mr. Frantz) We'd be a very wealthy state, indeed, if we did.
Q. And if you drop to the bottom, the last sentence, "It is, therefore, in the public interest to simulate investment in low-emission renewable generation technologies in New England and, in particular, New Hampshire, whether at new or existing facilities"; correct?
A. (Mr. Frantz) Correct.
Q. So this is a statute that puts the emphasis on the use of local resources; correct?
(Mr. Frantz) It does.
Q. And one of the criteria that this Commission is charged with in evaluating this PPA is the economic development and environmental benefits for New Hampshire; correct?
A. (Mr. Frantz) Yes.
Q. Now, let's turn, Mr. McCluskey, to your testimony concerning competitive bid process. Am I correct in saying that you believe this PPA should have been put out to competitive bid?
A. (Mr. McCluskey) First of all, could you -- where in my testimony are you referring?
Q. You spoke about it at length this morning. You spoke about it at length on Tuesday.
A. (Mr. McCluskey) Okay.
Q. Do you recall that testimony?
A. (Mr. McCluskey) So that's the testimony you're referring to.
Q. That's the testimony, yeah.

5 A. (Mr. McCluskey) And the question is what?
Q. That you believe this PPA should have been put out to competitive bid.
A. (Mr. McCluskey) That's correct.
Q. Now, you'd agree with me that nowhere in RSA 362-F is there a requirement that the PPA be submitted for competitive bid?
A. (Mr. McCluskey) That's correct.
Q. You would agree with me that, if a competitive bid -an RFP for short -- had been put out, then Laidlaw,

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|  | 43:24;44:10 | 140 (1) | 2015 (4) | 336 (1) |
| :---: | :---: | :---: | :---: | :---: |
| \$ | $\begin{array}{\|c\|} \hline \$ 70(\mathbf{1}) \\ 58: 20 \end{array}$ | 68:2 | 32:14;40:14,17;84:2 | 75:9 |
|  |  | 15 (5) | 2020 (1) | 34 (5) |
| \$13.16 (1) | \$74 (1) | $\begin{aligned} & 10: 15 ; 16: 10,14 ; 25: 24 \\ & 74: 6 \end{aligned}$ | 104:19 | 29:21;35:13,14,16; |
|  |  |  | 2023 (2) | 37:8 |
| $\$ 13.56 \text { (1) }$ |  | 15,000 (2) | 30:8,13 | 35 (2) |
| 100:11 | 0 | $65: 1 ; 99: 15$ | 2025 (3) | 29:20;37 |
| \$130 (1) | 03-166 (1) | $16.50(2)$ | 42:21;43:1;49:19 | 350 (3) |
| 18:13 |  | 44:11,12 | 2033 (1) | 115:7;116:2,6 |
| \$132 (1) | 27:17 | 17 (3) | 43:9 | 36 (4) |
|  | 1 | 17-percent (1) | 20-percent (2) | $\begin{aligned} & 24: 23 ; 29: 22 ; 36: 19 ; \\ & 37: 9 \end{aligned}$ |
| $\begin{gathered} \text { \$143-(1) } \\ 19: 1 \end{gathered}$ | 1 | 17-percent (1) $72: 19$ | 20s (1) | 362 (1) |
| \$144 (1) | 1 (6) | 17th (1) | 65:2 | 121:15 |
| 19:1 | 37:22;88:19;97:9; | 98:19 | 20-year (10) | 362-F (2) |
| \$18.90 (2) | 102:23;103:3,7 | 18 (1) | 17:2,7,16;20:9;21:8; | 13:5;123:19 |
| 99:17;100:14 | 1,274,000,000 (1) | 23:2 | 22:10;25:15,21;40:18; | 362-F1 (2) |
| \$2.5 (1) | 78:15 | 18,000 (1) | 77:3 | 121:13,16 |
| 96:6 | 1.3 (1) | 64:22 | 87:10, 13,16,17 | 378 (1) |
| \$20 (1) | 62:16 | 1b (1) |  | 39:13 |
| 106:12 | 1:00 (1) | 33:16 |  | 391 (1) |
| \$21 (8) | 74:7 | 1st (1) | 22 (4) | 75:10 |
| 87:18,22;88:18,22,23; | $\begin{aligned} & 10(\mathbf{6}) \\ & \quad 24: 8 ; 42: 4 ; 85: 7 \\ & 113: 22 ; 114: 17 ; 115: 3 \\ & \mathbf{1 0 0 ( 3 )} \end{aligned}$ | 80:22 | $22,000(1)$ | $\begin{gathered} \text { 3-megawatt (1) } \\ 115: 22 \end{gathered}$ |
| \$210 (2) |  | 2 | 227-G1 (1) | 4 |
| 87:18,22 |  | 2 (11) | 119:2 |  |
| \$211 (1) | 33:17;46:18;115:15 |  | 227-I1 (1) |  |
| 43:14 | 100-megawatt (2) 66:9;67:20 | 10:13;12:13;32:18,18; | 119:12 | 4 (5) 10:13:38:4;111:23. |
| $\begin{gathered} \$ 245-(\mathbf{1}) \\ 125: 2 \end{gathered}$ | $\begin{aligned} & \text { 66:9;67:20 } \\ & \mathbf{1 0 - 1 9 5 ( 1 )} \end{aligned}$ | $\begin{aligned} & 97: 11,22,22 ; 102: 20,23 ; \\ & 103: 3,7 \end{aligned}$ | 227-J1 (1) | $\begin{aligned} & 10: 13 ; 38: 4 ; 111: 23 ; \\ & 132: 10,11 \end{aligned}$ |
| \$26 (1) | 4:4 | 2,000 (1) | 23 (4) | 40 (1) |
| 6:9 | 10-percent (2) | 116:11 | 15:13;22:2;24:23;65:3 | 53:9 |
| \$27 (1) | 20:7;21:5 | 2.1 (3) | 24 (2) |  |
| 63:19 | 11 (1) | 87:12,16,18 | 15:13;22:14 | $\begin{aligned} & 75: 5 ; 80: 3 \\ & \mathbf{4 3 ( 1 )} \end{aligned}$ |
| \$280 (1) | 14:3 | $2.5(1)$113:13 | 25 (3) |  |
| 125:2 | 11:00 (1) |  | 22:14;23:2;49:19 | 100:15 |
| \$3.5 (1) | 74:10 | 2.95 (1) | 25-percent (1) | $\begin{aligned} & \text { 43.6-percent (1) } \\ & 99: 21 \end{aligned}$ |
| 96:7 | 11:15 (1) | $\begin{array}{\|c\|} \hline 36: 2 \\ \mathbf{2 : 0 0}(\mathbf{2}) \end{array}$ | $65: 22$ |  |
| \$3.50 (5) | 74:9 |  | 26th (1) | 45 (1) |
| 36:8,10,21;37:5,15 | 11:20 (1) | 2.00 $74: 7 ; 132: 9$ $\mathbf{2 0}(\mathbf{9})$ | 32:8 | 37:23 |
| \$30 (2) | 74:9 | 20 (9) ${ }^{\text {(8) }}$ (23;20:11;21:22,22; | $27 \text { (3) }$ | 47 (1) |
| 28:15,16 | 11:25 (1) |  | $28 \text { (1) }$ | 37:20 |
| \$300- (1) | 74:11 | $\begin{aligned} & 22: 2 ; 65: 3 ; 71: 18 ; 72: 1 \text {; } \\ & 74: 6 \end{aligned}$ | $42: 17$ | 48 (1) |
| \$32 (1) | 52:7;74:18;113:22; | 20,000 (1) | 29 (1) | 4A (1) |
| 35:24 | 114:17 | $99: 3$2004 (1)23:18 | 26:2 | 111:23 |
| \$34 (2) | $12.5(3)$ $52 \cdot 8 \cdot 54 \cdot 11.22$ |  | 3 | 32:3 |
| 35:7,10 $\mathbf{\$ 3 9 9}(\mathbf{1})$ | 52:8;54:11,22 | 23:18 |  |  |
| 43:17 | 12.47 $132: 11$ | 106:3 | 3 (3) | 5 |
| \$400 (1) | 120-megawatts (1) | 2009 (5) | 102:5,7;111:23 | 5 (7) |
| 129:24 | 49:5 | 18:24;31:3,9;81:1; | 30 (4) |  |
| \$45-(1) | 12-1/2 (1) | 87:6 | 44:14;56:3,8;95:7 | 10:14;39:24;40:3; |
| 58:20 | 54:19 | 2010 (20) | 300 (4) | 43:5,7;98:10;100:14 |
| \$5.50 (1) | 13-(1) | 74:17,21;80:10;81:3, | 75:5;80:3;116:2,6 | 50 (2) |
| 36:16 | 65:13 | 8,9;82:15,17,22;83:2,17, | 31 (3) | 69:10;115:17 |
| \$50 (3) | 14 (16) | 22;84:5;85:4,8,20;86:9, | 26:1;37:6,15 | 5-1 (6) |
| 28:14,17;70:17 | 10:11,14;15:10;16:7; | 19;98:5;99:4 | 31-percent (1) | $\begin{aligned} & 85: 22 ; 86: 1 ; 88: 24 ; \\ & \text { 80.7.00.17•101•15 } \end{aligned}$ |
| \$53 (1) | 65:1;74:19,21,24;78:5; | 2011 (5) <br> 32:8:89:13:98:5; | $\begin{aligned} & 29: 9 \\ & \mathbf{3 3}(\mathbf{3}) \end{aligned}$ | 89:7;90:17;101:15 $\mathbf{5 1 2}(\mathbf{1})$ |
| $36: 5$ $\mathbf{\$ 6}(1)$ | 80:1;85:2;88:21;100:8, $18 ; 111: 21 ; 112: 1$ | $32: 8 ; 89: 13 ; 98: 5$ 99:16;100:11 | $\begin{array}{\|l\|} \hline 33 \text { (3) } \\ 24: 12 ; 115: 22,24 \end{array}$ | $\begin{array}{r} 512(1) \\ 93: 11 \end{array}$ |
| $\begin{gathered} \$ 6(\mathbf{1}) \\ 106: 7 \end{gathered}$ | $\begin{aligned} & \text { 18;111:21;112:1 } \\ & \mathbf{1 4 , 0 0 0 ( 1 )} \end{aligned}$ | 2014 (4) | 333,000,000 (1) | 5-12 (2) |
| \$6.50 (2) | 65:13 | 35:20,23;36:4;40:9 | 80:6 | 86:15;96:18 |

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| 513 (1) | 965 (1) | acquired (2) | 23:8;130:20,21 | 14:19,23;15:1;51:23; |
| :---: | :---: | :---: | :---: | :---: |
| 93:11 | 78:14 | 16:1;21:11 | advantage (3) | 57:13;62:13;125:7 |
| 5-13 (3) | 99 (2) | acquisition (4) | 53:7;124:3,6 | although (1) |
| 97:7;100:23;101:2 | 115:15,16 | 20:16;21:1,9;44:23 | adverse (2) | 29:16 |
| 5-14 (4) | 99-megawatts (1) | acres (1) | 9:21;10:3 | always (3) |
| 85:22;86:1;100:3,6 | 67:23 | 48:16 | affect (2) | 59:10;67:13;76:5 |
| $\begin{gathered} \text { 5-percent (1) } \\ \text { 43:11 } \end{gathered}$ | A | acronym (1) | 63:13;68:15 | American (5) 57:16,17,18;83:3; |
|  |  | Act (4) | 69:18 | Amidon (22) |
| 6 | $\begin{aligned} & \text { ability (2) } \\ & 34: 14 ; 83: 9 \end{aligned}$ | $\begin{aligned} & 57: 17,18 ; 82: 23 ; 87: 5 \\ & \text { active }(\mathbf{1}) \end{aligned}$ | affecting (2)$6: 23 ; 7: 1$ | $\begin{aligned} & 5: 10,11,13 ; 9: 4,6,8 \\ & 10: 9,17,23 ; 11: 4,6,11,18 \end{aligned}$ |
|  |  |  |  |  |
| 60 (2) |  | 82:23 | Afternoon (1) | 75:12,23;79:7;88:9; |
| 58:18;59:5 | 4:17;5:1;30:5;61:16; | activity (1) | 132:12 | 94:21;107:13;113:8; |
| 60-acre (1) | 113:10 | 108:10 | again (17) | 115:8;117:18 |
| 126:10 | above (13) | actual (11) | 24:14;53:11;57:2; | among (1) |
| 63 (1) | 19:11;41:19;44:3,4; | 25:9;52:22,23;53:4; | 60:6;66:8;76:24;77:14, | 4:14 |
| 34:22 | 45:2,12;77:22,24;80:20; | 80:17,18;100:13,17,19, | 23;84:17;85:24;93:14; | amount (16) |
| 63-megawatt (2) | 93:15;102:5;111:4,10 | 20;111:14 | 96:22;97:10;102:8; | 16:20,22,24;17:3,15; |
| 35:5;80:7 | above- (2) | actually (32) | 103:2;114:14;121:15 | 18:19;44:4;50:22;56:2; |
| 65 (1) | 77:10,20 | 9:22;27:4;28:12 | against (2) | 58:19;59:2;62:19;77:20, |
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