STATE OF NORTH DAKOTA

PUBLIC SERVICE COMMISSION

Otter Tail Corporation	:	
Advance Determination of	:	Case No. PU-06-481
Prudence Application	:	
Montana-Dakota Utilities	:	
Co., a Division of MDU	:	
Resources Group, Inc.,	:	
Advance Determination of	:	Case No. PU-06-482
Prudence Application	:	

TRANSCRIPT OF

SUPPLEMENTAL HEARING

(VOLUME II)

Taken At
State Capitol
Bismarck, North Dakota
April 28, 29 & 30, 2008

BEFORE THE HON. AL WAHL
-- ADMINISTRATIVE LAW JUDGE --

310 PU-06-481 Filed 05/06/2008 Pages: 838
Transcript of Supplemental Hearing (April 28, 2008) + CD
Emineth & Associates Court Reporters

C O N T E N T S

C O N T E N T S (Continued)

C O N T E N T S (Continued)

C O N T E N T S (Continued)

(The proceedings continued, commencing at 9:01 a.m., Tuesday, April 29, 2008, as follows:)

JUDGE WAHL: The record will show that it is approximately 9:00 a.m., April 29, 2008, continuing the supplemental hearings of the advance determination of prudence applications for Otter Tail Corporation and Montana-Dakota Utilities Co. for their respective participation and ownership interest in the Big Stone II Generating Plant, Public Service Commission Case Nos. PU-06-481 and PU-06-482, respectively.

Counsel, as a preliminary matter, and specifically Mr. Guerrero and Mr. Kuntz, I have Commissioner Wefald's request for a late-filed exhibit, which would be identified as OTP -- well, Mr. Kuntz, following your suggestion yesterday, I suspect separate exhibits.

COMMISSIONER WEFALD: Separate is good.

JUDGE WAHL: Well, unless somebody can give me a number, I'm suggesting OTP 351 and MDU --

MR. KUNTZ: 219.

JUDGE WAHL: -- 219. Thank you, Mr. Kuntz. So MDU 219. 351, does that work for Otter Tail?

MS. DANIELS: Yes.

JUDGE WAHL: So it's OTP 351, MDU 219, an exhibit described as data for the demand-side management programs implemented in North Dakota at present and for the past 10 years, including the annual number of kilowatt-hours saved in North Dakota and the annual kilowatt-hours saved in North Dakota for each of the past 10 years.

COMMISSIONER WEFALD: It should be kilowatt and then kilowatt-hours. There's two different.

JUDGE WAHL: All right. I'm sorry, Commissioner. So it's the annual number of kilowatt-hours saved in North Dakota and the annual kilowatts --

COMMISSIONER WEFALD: Saved.

JUDGE WAHL: -- saved in North Dakota for each of the past 10 years.

MS. DANIELS: Actually, Judge Wahl, it would be 123 for Otter Tail, if it's just an Otter Tail number.

JUDGE WAHL: All right. Thank you. So the record will show it's Otter Tail Power's late-filed Exhibit 123. Is that acceptable, Mr. Guerrero?

MR. GUERRERO: It is.

JUDGE WAHL: And Mr. Kuntz?

MR. KUNTZ: Yes, I believe we've got that down.

JUDGE WAHL: And, of course, Ms. La Seur and Mr. Binek, you'll see that exhibit in due course, and I'm not sure it's ever been done, but I would expect if there's an objection, you would promptly file the objections to the exhibit.

MR. GUERRERO: Seven days okay?

JUDGE WEFALD: That's good.

COMMISSIONER WEFALD: All right.

MR. KUNTZ: Seven days from today?

JUDGE WAHL: Yes. And, you know, if there's a problem, obviously simply a filing with the Commission to advise should be sufficient.

Anything further preliminarily, counsel? Mr. Guerrero?

MR. GUERRERO: Nothing here, Your Honor.

JUDGE WAHL: Mr. Kuntz?

MR. KUNTZ: No, Your Honor. I understand we've got a couple witnesses with some schedule problems, and, with the Commission's indulgence, Montana-Dakota is agreeable to taking those witnesses out of order to accommodate those schedules.

JUDGE WAHL: Of course. Ms. La Seur?

MS. LA SEUR: Nothing.

JUDGE WAHL: Mr. Binek?

MR. BINEK: Nothing.

JUDGE WAHL: All right. Mr. Guerrero, when you're ready.

MR. GUERRERO: Thank you, Your Honor. The applicants would call Mr. Thomas Crowley.

JUDGE WAHL: You may be seated, Mr. Crowley. I recall your testimony from a -- not? You have not previously testified?

THE WITNESS: No, sir.

JUDGE WAHL: I'm sorry. I'm mistaken. Accordingly, Mr. Crowley, as you are no doubt aware, your testimony is required to be under oath and I'm required by law to advise you regarding perjury before administering the oath. Perjury is a false statement of material fact which you do not believe to be true; in other words, generally speaking, of course, a lie. In North Dakota perjury is a Class C felony, punishable by a fine up to $5,000, imprisonment for a period of up to five years, or both. Will you raise your right hand, please.

THOMAS CROWLEY,

being first duly sworn, was examined and testified as follows:

JUDGE WAHL: Mr. Guerrero.

MR. GUERRERO: Thank you, Your Honor.

DIRECT EXAMINATION

BY MR. GUERRERO:

Q. Please state your name for the record.

A. Thomas Crowley.

Q. And by whom are you employed?

A. I'm employed by L.E. Peabody & Associates, an economic consulting firm.

Q. And what do you do for L.E. Peabody?

A. I'm an economist and I'm president of that firm.

Q. And what are your primary responsibilities as a consultant, an economist and president of the firm?

A. My responsibilities are to oversee our staff of approximately 30 individuals located in two different offices, one in Alexandria, Virginia, and one in Tucson, Arizona. I'm responsible for the quality of the products that leave our office and head up a number of assignments personally. Our clients include electric utilities, who I'm representing today. We work for railroads. We work for manufacturing companies. We work for generally companies that have transportation and/or fuel supply problems. As a matter of fact, we did a study for this Commission in 2005 advising on a transportation issue related to the rates -- transportation rates charged for the movement of grain.

Q. Thank you. Do you have a particular expertise?

A. I'm an economist and for the last 30-plus years have been dealing with transportation and fuel supply issues.

Q. Thank you. Did you have occasion to prepare or cause to be prepared, Mr. Crowley, some prefiled testimony in this matter?

A. Yes, I did.

Q. Okay. And do you have that in front of you?

A. I do.

Q. And could you identify those exhibits, please?

A. Exhibit 328 is the prefiled testimony.

Exhibit 329 is a summary of the results of the forecast of delivered Powder River Basin coal, which includes both the price of the product and the price to transport that product.

Exhibit No. 330 is a breakdown of the transportation portion of the delivered cost of fuel into the various component parts.

Exhibit 331 is a breakdown of the Powder River Basin, Wyoming, coal price forecast on a base case, a low case and a high case.

Exhibit No. 332 is a historical look at spot prices of Powder River Basin coal for both an 8,800 Btu coal and 8,400 Btu coal.

Exhibit 333 is a comparison of the delivered cost of -- cost forecast that I did compared to the two that Otter Tail did, one in 2006 and one in 2007.

Exhibit 334 is a numeric comparison of those same three forecasts.

Q. Thank you, Mr. Crowley. If I asked you the same questions today that are set forth in your testimonies that you just identified, would your answers be the same?

A. Yes, they would.

Q. Do you have any corrections or additions, subtractions?

A. I do not.

MR. GUERRERO: Okay. Your Honor, we would offer OTP/MDU Exhibits 328, 329, 330, 331, 332, 333, 334 and 328A, which is his summary.

JUDGE WAHL: Ms. La Seur?

MS. LA SEUR: I have no questions for this witness.

JUDGE WAHL: Mr. Binek?

MR. BINEK: No objection.

JUDGE WAHL: Exhibits 328 through 334, inclusive, and 328A are each received.

Q. (MR. GUERRERO CONTINUING) Thank you. Could you provide a brief summary of your testimony, Mr. Crowley, to the Commission?

A. Certainly. I was requested to perform an economic forecast of both the price of fuel and the price to transport that fuel from the origin to the Big Stone II plant. The sum of those two components resulted in what I call the delivered coal price forecast for the Big Stone II station. The forecast covered the time period from 2012 through 2038.

The delivered cost of transportation is broken into a number of component parts, including the rail rate, itself, the fuel surcharge, which is clearly a major factor today in evaluating transportation, as well as the cost of acquiring and maintaining railcars. On the coal price side of the forecast, I did three different forecasts, a base case, which is the case that we anticipate is most likely to occur, and from the base case we did a low-case forecast and a high-case forecast.

The results of the forecast were presented on both a dollar-per-ton and dollar-per-million-Btu bases. At 2012 levels we were forecasting a delivered cost of $29.67 a ton that would escalate in 2025 to $43.56 a ton, and at the end of the forecast period in 2038 the price was estimated to be $56.36 a ton.

The last thing that I did in my testimony was to compare the results of the forecasts that we conducted to the forecasts that were previously conducted by Otter Tail. We had very similar results over the forecast period. There was a slight divergence beginning in 2019 through the end of the forecast model, but overall the results were very, very close.

Q. Is that your --

A. Yes.

Q. Thank you. Just one quick question on your summary there. You refer to "more conservative." Could you define what you mean by "more conservative"?

A. The forecasts that Otter Tail did resulted in a higher number, so it worked against their interest than my numbers, and, therefore, a number that works against you when you present it would be considered a conservative number.

MR. GUERRERO: Thank you. We tender Mr. Crowley for examination.

JUDGE WAHL: Ms. La Seur.

CROSS-EXAMINATION

BY MS. LA SEUR:

Q. Something Mr. Crowley just said. I did not expect to have questions for this witness, but I want to ask about just one thing that was mentioned in the summary. When you say that an estimate works against the applicant, is it not in the applicants' best interest to have the most accurate possible price forecasts?

A. Yes.

Q. So in assuming a price forecast that allows an applicant to prepare for a potential worst-case scenario, how exactly is that working against the applicant?

A. Well, it's working against the applicants from the standpoint of what we feel the correct answer is. When we developed our forecasts, we developed it assuming, based on all of the different inputs into our model, what the likely scenario, the likely outcome would be, and when we compare that result to what applicants produced, they produced a higher trend line towards the end of the model -- their model. From the perspective of what we did, that would be a conservative estimate of what the costs are, and that's why I labeled it as a conservative estimate. It was conservative versus what we developed.

Q. So a high estimate might work against the specific alternative that the applicants have already identified?

A. Yes.

Q. But it could also have the effect, could it not, of allowing applicants to identify a more prudent course?

A. I don't think the differences between our numbers would rise to that level.

MS. LA SEUR: That's all I have.

JUDGE WAHL: Mr. Binek.

CROSS-EXAMINATION

BY MR. BINEK:

Q. Basically, if I'm understanding your

testimony, you -- your forecast is for lower prices toward the end of this time period; is that correct?

A. It's lower. They are lower than what Otter Tail produced in their second forecast.

Q. Okay. But is the primary difference -- and maybe I read this wrong, but is it toward the end of the time period that you were looking at that there's more divergence --

A. Yes.

Q. -- between your forecast and Otter Tail's?

A. Yes. Beginning in 2019, there's a slight divergence in one of Otter Tail's forecasts from the forecasts that we developed.

Q. And do you know why that occurs? What are they looking at differently than what you're looking at?

A. In their forecast, when they got to 2019, they developed a factor that they used on an annual basis going forward from 2019 to the end of the study period. It was a factor of a little over 4 percent and they used that year over year, and that was based on information that they had from previous years. By contrast, what we did is, we let our model continue to evaluate the market in each one of those years and estimate all of the different components that would vary in purchasing this product, and that created the difference, affixed factor versus a varying series of variables.

MR. BINEK: I have no further questions.

JUDGE WAHL: Questions from the Commissioners?

COMMISSIONER WEFALD: I have no questions for this witness.

JUDGE WAHL: Commissioner Clark.

EXAMINATION

BY COMMISSIONER CLARK:

Q. I do have a few, Mr. Crowley. Good morning.

A. Good morning.

Q. Good to see you again. First, thank you for your submitted testimony. This was a part of the case that I probably had as much, if not more, concern with than any other, was the delivered price of fuel, especially coming out of the first hearing specifically because it would appear especially in the initial application it looked like the tariffed rate was taken and then just sort of a generic inflation factor was put onto it and that was contrasted with testimony from the Burlington Northern Santa Fe executive who seemed almost giddy at the prospects of the difference between the price of coal and natural gas, and there was even some testimony in the record that discussed potential 11 percent increases out of the PRB, the fact that there had been, I think, $600 million a year for each of the last two years invested in upgrading PRB facilities that you would expect at some point the railroad will recover through rates and something didn't seem to match up, so the questions that I have are trying to shore up the questions that I had from that original testimony.

Is there -- one of the concerns that I had was with regard to simply taking the existing tariff and then putting a factor on that, especially coming out of litigation, because intuitively I thought, well, maybe the BN lowballed a little bit the tariffed rate knowing that it was going to be subject to a challenge before the STB. To what degree is that a legitimate concern that the Commission should take into consideration, and are we -- should we expect to see a higher tariffed rate now that the litigation is basically done?

A. Well, it's very difficult to predict with any degree of certainty what the BNSF is going to do. I think you can take a fair amount of comfort in the litigation. Even though Otter Tail did lose the litigation, they won the litigation and they lost the litigation. When I say that, they won the litigation because they proved that this stand-alone railroad that they built actually -- the revenues generated actually were greater than the stand-alone costs, which suggest relief, which suggest that the tariffed rates were too high. They lost on a cross-subsidy issue. And I don't want to get very technical with you unless you really want to. And the cross-subsidy issue that they lost is now characterized in the industry as the Otter Tail cross-subsidy issue because it was never before even suggested that such a thing existed. So, in my opinion, they lost on a technicality.

And the reason I tell you this is that Burlington knows that -- or BNSF knows that better than anybody. They know how close they came to losing it -- losing that case. Now, that's important circling back to this tariff rate because the tariff rate is right there on the cusp, and they know if they stray too far from that rate, they are going to be subject to another potential action from Otter Tail if Otter Tail chooses to pursue that. So they can't stray very far, in my opinion, from where they are. I think they are kind of boxed in to that level.

Now, what happens into the future, which is the second part of your question. BNSF, like every other monopolist, has an incentive to maximize rates and revenues, and they always keep their eye on that ball and they always want to do that. I don't think that over the foreseeable future that that's going to happen in this market, and this market being the Otter Tail market, for the reasons that I've just stated. I think they are boxed into a corner and they're going to stay at that level keeping an eye on fuel and keeping an eye on just general inflation.

Q. To what degree do you see the investments that they've had to make over the last few years in the PRB facilities potentially impacting rates above the baseline?

A. Well, the investment that they're making in that facility, they're big numbers. You know, when you're talking 600 million or a billion dollars a year, you're talking about a lot of money, but when you compare that to the amount of product that's coming out of the Basin, on a unit basis it's not a lot of investment. Easy for me to say, it's not my $500 million. But they're clearly doing that because they see a future for this product, they see growth in this product. I think anybody that forecasts or knows anything about that Basin would agree that there's growth coming. I don't think this country is ready to turn its back on coal. I think coal is still a coveted product, it's going to generate electricity for a long time, and BN is making this investment because it sees a very handsome return coming from that investment, and they're going to continue to make that investment. And the Union Pacific Railroad, their partner in the Basin, is making a similar amount of investment, so they have a very rosy picture of the future of coal and the future of Powder River Basin in particular.

Q. CO2 regulation, you had mentioned in your submitted testimony that you took that into consideration. To what degree should the Commission be concerned that to the degree that there is carbon regulation of some kind, that it then drives the entire market up and the railroad is able to capture more?

A. Well, CO2 is the big unknown, and has been for a while, and it's an unknown because no one can seem to put their hands around what it means from an economic perspective. It's going to have an impact of some sort, and as much as I and my staff have looked into this issue -- it's something that we're asked about almost at every stop that we go to -- we cannot figure out what it's going to be. It's very much a political issue, as you might imagine, and rhetoric is very high these days, particularly in Washington, for obvious reasons, but I think next year, as things settle in a little bit, we'll get a better feel for what it means and how to quantify it.

And our position is that from a coal perspective, it's going to be a uniform impact, and I don't believe it's going to be to such a magnitude that it places coal at a disadvantage versus other fuels. In other words, I don't think it's going to take it anywheres near the price of where natural gas is today or where natural gas is projected to go, as an example. That seems to me to be the comparison most folks make about fuels to generate electricity, the comparison between coal and gas. And while coal prices are up -- delivered coal prices are up, delivered gas prices are up more.

Q. And then just one final question. I had read into the record at our previous hearing a snippet from -- I can't remember the magazine, it was either a utility sort of specific magazine or Traffic World or something like that, but it discussed the potential that coal out of the PRB could be -- last year did see and could be seeing double-digit rate increases, I think it talked about 11 percent, and I asked that of the BN witness, Mr. Brautovich. I said would you deny that that's a likely scenario, and he said no. I mean, he basically confirmed that that could be a possibility. How do I reconcile that statement, line of questioning with the Otter Tail case -- Otter Tail/MDU case?

A. I think there are some utilities in this country that would be happy with 11 percent increase. What they are seeing is as their contracts expire --

Q. And Basin would be an example?

A. Basin is an example. That the next

generation of either contracts or tariffs effectively doubles the price of the product, and you're seeing that more and more. To that extent a captive utility has an advantage. At least it has a backstop, and the backstop is the Surface Transportation Board. No matter what you think about the Surface Transportation Board, they are there and they are there to protect the captive shipper, and there are guidelines in place that have been in place now for -- since 1985, which is coming on a long time, recently been modified. They're continually being adjusted and theoretically being made more user friendly.

COMMISSIONER WEFALD: Theoretically.

THE WITNESS: Theoretically. And they are a backstop for the greedy monopolist, if you will. So I would be more concerned if Otter Tail were a competitive shipper today than if they were a captive shipper. A captive shipper has at least the STB backstop. A competitive shipper has the marketplace, and the marketplace is ugly. Even for competitive shippers it's very, very ugly.

Q. (COMMISSIONER CLARK CONTINUING) But there's no question that Otter Tail is a captive shipper?

A. There's no doubt that Otter Tail is a captive shipper.

COMMISSIONER CLARK: Thank you. That's all I have.

JUDGE WAHL: Commissioner Cramer.

EXAMINATION

BY COMMISSIONER CRAMER:

Q. I just have one. If I was to accept your counsel that I ought to find comfort in the fact that Otter Tail almost won an STB case and, therefore, BNSF will behave itself better and if they don't, the STB is always there, which I'm not quite prepared to accept, but, you know, you're the second person to suggest that. How does your forecast -- how do you forecast the fuel surcharge issue, because there seems to be almost nobody that's predicted what's happened to this point with regard to, well, oil prices and, therefore, liquid fuels, and no one seems to -- you know, they're talking about $200-a-barrel oil or more. How do you take that into account and how do you forecast for that?

A. Well, we're one of the people that didn't forecast that properly, either, so I'll do a mea culpa on that one. Fuel is always a wild card. I think if you look at the cost of fuel, and if you look at it and put it in perspective in a transportation rate, let's assume that -- let's assume that we have a transportation rate of $15 a ton, and let's assume that half of that rate is cost. Okay. So $7.50 or 50 percent is cost and 50 percent is profit. Now, what we're talking about is a component of that $7.50 going up. Now, what component of that $7.50 is fuel? In today's high prices fuel would account for 30 to 35 percent of that 7.50. So you're looking at a 2, 2.50 a ton as fuel. So if you double -- and let's say fuel is at a hundred dollars a barrel today. It's a little higher, but for purposes of the example. If you double the cost of fuel and it goes to $200 a barrel, that $2.50 goes up to $5, so you're adding another 2.50 on to a $15 rate to account for that jump in fuel. Now, 2.50 is a lot of money, but it's not astronomical by any stretch of the imagination.

Q. And clearly if that happens, natural gas prices will --

A. That seems to be the trend, yes. There seems to be a link between those two fuels.

COMMISSIONER CRAMER: I have nothing

further. Thank you.

JUDGE WAHL: Anything further from the Commission?

COMMISSIONER WEFALD: I have one question.

JUDGE WAHL: Commissioner Wefald.

EXAMINATION

BY COMMISSIONER WEFALD:

Q. And so this relates to -- go back to your testimony on page 7, and it's my understanding now, and you just need to confirm this, it says that as Big Stone is captive -- this is line 6 -- is captive to Burlington Northern Santa Fe, the only pricing constraint on Burlington Northern Santa Fe is the maximum rate guidelines promulgated by the STB and the current tariff rates reflect this level of maximum rate. So is Otter Tail presently paying the maximum rate?

A. Yes, in my opinion, that would be correct.

Q. And so then you go on to say that they -- that BNSF had -- this is under 12, "Yes, Otter Tail did lose its maximum rate challenge before the STB. Since the issuance of its January 2006 decision, the STB has altered its regulation of maximum reasonable rail rates for moving coal, which would affect the rate level BNSF could charge for the shipment of coal from the PRB to Big Stone II." So at present is still Otter Tail paying the top rate that is in these -- in the tariff?

A. Yes.

Q. And before did they pay the top rate that was in the tariff?

A. Yes.

Q. And so Burlington Northern Santa Fe was actually successful in raising the top rate that was in the tariff, is that correct, in that rate case?

A. I'm not following that.

Q. Okay. When I said "before did," that meant before the rate case.

A. Oh, before. I'm sorry.

Q. When I said before, was Otter Tail paying the top rate in the maximum rate in the tariff?

A. Okay. I guess I'm confused by the timing.

Q. All right. Let's go back here to 6.

A. Yes.

Q. Line 6. "As Big Stone is captive to Burlington Northern Santa Fe, the only pricing constraint on Burlington Northern Santa Fe is the maximum rate guidelines promulgated by the STB. The current tariff rates reflect this level of maximum rate." So my first question is, prior to the rate case was Otter Tail paying the maximum rate that was in the tariff?

A. Yes.

Q. All right. After the rate case is Otter Tail paying the maximum rate that is in the tariff?

A. Yes.

Q. Was there a change in the maximum rate during the rate case?

A. Only for inflation. There was not a -- there was not a markup for -- to express additional market power or try to get additional profits. It was just a tariff escalator, if you will, tariff adjustment.

Q. Is that an every-year thing?

A. It can be every year, it can be every quarter, depending on how the tariff -- I think in this particular tariff they adjust it annually. They fix the tariff and then once a year they'll change it. I think Otter Tail just recently had a change in their rate.

Q. So the maximum rate before and after the rate case only increased by an inflation adder?

A. Yes.

COMMISSIONER WEFALD: Okay. All right.

Thank you.

THE WITNESS: And the fuel surcharge.

COMMISSIONER WEFALD: And a fuel surcharge. All right. Thank you.

JUDGE WAHL: Any further questions from the Commission? Mr. Guerrero?

MR. GUERRERO: One moment. No further questions.

JUDGE WAHL: Ms. La Seur?

RECROSS-EXAMINATION

BY MS. LA SEUR:

Q. Mr. Crowley, I'm curious about your testimony that it should be a source of optimism that a complainant can prove that tariff rates are too high and still lose to the railroads before the Surface Transport Board. Couldn't BNSF reasonably interpret this result to mean that it has nothing to fear from the STB even when all the facts are against it and/or when OTP is the opposition?

A. Well, I would suggest BNSF is very arrogant, but I don't think they're quite that arrogant. The decision of the STB in the Otter Tail case was a reasoned decision. They went through component parts and issued a 300-page decision. Burlington has to read that decision as something that was very, very close to losing. If their objective and if they -- and probably as they talk behind closed doors, they say -- they would probably say they were very lucky to win that case. That's my mindset.

With that backdrop, I don't think that they would risk doing something economically foolish that's going to allow Otter Tail to go back at them. I think what Otter Tail proved to BNSF is that they're going to stand up for what they believe is correct, and I think BNSF respects Otter Tail and doesn't look at them as someone they can run over with rate increases. So I think the litigation had a lot of residual benefits to Otter Tail that are going to be realized in the future.

Q. And, Mr. Crowley, do you base any of this speculation on any evidence?

A. It's just based on my experience. I've been doing this sort of thing, I've been dealing with the Burlington Northern, I worked for the Burlington Northern in prior years, I understand how these people think. That's what I get hired to do. Do I have hard evidence to give you to demonstrate that fact? No, I do not. But my experience suggests that what I was telling you is dead-on correct.

Q. And you did acknowledge earlier in your testimony having made a mistake on a similar forecasting issue not too long ago?

A. I made a mistake on forecasting the price of a barrel of diesel fuel, yes.

Q. Another question. If federal carbon regulation fails to have any impact on the consumption of coal, as I believe you're testifying, which is the largest industrial source of carbon dioxide, then what would be the point of carbon regulation?

MR. GUERRERO: I guess I'm going to object. I don't believe that's what he testified to.

MS. LA SEUR: Well, perhaps the witness could clarify his testimony as to what the --

JUDGE WAHL: It's a bit of a summary, but the witness is well able to defend himself, I think. Overruled.

THE WITNESS: I'm sorry. The question again?

Q. (MS. LA SEUR CONTINUING) First to summarize, is it your testimony that federal carbon regulation is unlikely to have any significant impact on consumption of coal for electrical generation?

A. Yes, that would be my testimony.

Q. Okay. And if that is in fact the case, then what would be the point of carbon regulation?

A. Well, carbon regulation is designed to remove carbon from the air, and that's a good thing. But don't confuse that with a fuel source to generate electricity. We as a country cannot ignore coal as a source of generation. Over 50 percent of the electricity generated in this country, most of the baseload units are coal units.

Q. So in speculating that there won't be a significant impact on consumption of coal, are you assuming that capture-and-storage technologies will be implemented around the same time as carbon regulation?

A. I think my testimony was I'm not sure how all that's going to play out. There's a lot of different suggestions and offers floating around, and it hasn't come to a final resolution and probably won't for a while. I think a lot of different folks are studying the issue and we'll see how it plays out, but my point is that it's not going to impact the amount of coal consumed in this country.

Q. Well, I understand that's your testimony. I'm just trying to get to the assumptions behind it. If we're going to continue consuming about the same amount of coal or the same rate of consumption and we're going to remove greenhouse gas emissions from the air at the same time, don't you have to be assuming some kind of capture-and-storage technology?

A. I'm sure there will be something. What I'm telling you is I don't know what that is.

Q. Okay. And if you're assuming capture and storage, have you incorporated the costs of that technology being implemented into coal-fired electrical generation facilities as part of your coal demand forecast?

A. No.

MS. LA SEUR: Okay. Thank you. That's all.

JUDGE WAHL: Mr. Binek?

MR. BINEK: I have no further questions.

JUDGE WAHL: Any followup from the Commissioners? Mr. Guerrero?

COMMISSIONER WEFALD: I just have one.

JUDGE WAHL: Commissioner Wefald.

FURTHER EXAMINATION

BY COMMISSIONER WEFALD:

Q. So on the total delivered coal forecast sheet on page 4, you're basically anticipating a 3 percent increase in the price of coal each year?

A. I don't --

Q. Well, the reason I'm asking that is because it says total delivered cost forecast.

A. Yes.

Q. All right. And the way I do math is I take -- it's from 2012 to 2038, so that's approximately 25 years?

A. Yes.

Q. All right. And then I see that the price is almost doubled -- almost doubled, all right, so then I know that to make a number double, you divide the number of years into the year 72 -- the percent -- to get the percent, you take the number of years and you divide that into the number 72 to get the doubling and you come up with then 3 percent.

A. The delivered cost?

Q. Yeah.

A. An average over time, yes, it would be in that neighborhood.

Q. 3 percent?
A. Yes.
Q. Very low. I mean, that's not a large increase at all in the cost of anything, 3 percent per year. You're okay with that?
A. I think inflation in our country has been running at 2 percent, 2.1 percent. It's just this last quarter I think as people are talking about recessions, it's jumped up to about 4 percent.
Q. Isn't that because of the cost of energy these days -- that people are anticipating the higher costs of energy and fuels that we're going to see greater inflation?
A. Yes, fuel, food, all of those things.
Q. And I would think that fuel would be an impact on this. That's why I was wondering.
A. Yes.
Q. You're okay with that?
A. Yes. You have to take into account not only the change in prices, but the changes in productivity, as well. Over time what we see is not only do prices go up, but costs moderate or come down, and that's how you use the resources. As the cost of fuel goes up, we're seeing that the railroads are using it more efficiently, so from a

cost perspective it's not going up as fast as the price of -- the cost of the gallon.

COMMISSIONER WEFALD: Okay. Thank you.

JUDGE WAHL: Any further questions from the Commission? Followup, Mr. Guerrero?

MR. GUERRERO: No, thank you.

JUDGE WAHL: Followup, Ms. La Seur? Mr. Binek, followup?

MR. BINEK: No.

JUDGE WAHL: Thank you very much, Mr. Crowley.

THE WITNESS: Thank you, sir.

JUDGE WAHL: Mr. Guerrero.

MR. GUERRERO: Your Honor, I think we're going to take a witness out of order. I think Ms. La Seur is going to call Mr. Schlissel. I was wondering if we could take just a five-minute break before that.

JUDGE WAHL: We may. We'll be in recess until 9:50.

(Recess taken at 9:46 a.m. to 9:57 a.m.)

JUDGE WAHL: Let's be in order. Ms. La Seur.

MS. LA SEUR: The intervenors call David A. Schlissel.

JUDGE WAHL: Good morning, Mr. Schlissel.

THE WITNESS: Good morning.

JUDGE WAHL: I recall your testimony at the previous hearings of this matter and have personal knowledge, of course, that you have been advised and informed regarding perjury, and you understand, of course, that your testimony continues under oath and subject to the penalties of perjury?

THE WITNESS: Yes, sir.

JUDGE WAHL: Ms. La Seur.

MS. LA SEUR: The intervenors are distributing Mr. Schlissel's summary statement.

COMMISSIONER CRAMER: Thank you.

COMMISSIONER WEFALD: Is this witness in order or out of order?

JUDGE WAHL: Out of order.

COMMISSIONER WEFALD: Thank you.

MS. LA SEUR: And we would like to offer Intervenors' Exhibits 10, 10A -- or sorry -- yeah, this is I 10, I 10A, I 11, I 12, I 13, I 14, I 15 and I 16.

JUDGE WAHL: Is the summary included in that?

MS. LA SEUR: The summary is I 10A.

JUDGE WAHL: I see it. I'm sorry. I should read. I'm sorry. Mr. Guerrero.

MR. GUERRERO: What is his actual supplemental direct testimony from April 9th? What number is that?

MS. LA SEUR: The supplemental direct is I 10.

MR. GUERRERO: And is that the testimony that was corrected after our motion that's being introduced into the record?

MS. LA SEUR: Yes, we're offering the testimony subject to the portions stricken after the applicants' motion.

MR. GUERRERO: Okay. And for the record, we have included for purposes of convenience in the books that were passed out earlier a copy of the I 10 with the stricken material actually red-lined out or blackened out of the testimony, and we would ask that that be the official version of the testimony following the judge's order. So subject to that, we don't have any objection.

JUDGE WAHL: I don't think that's a request. I mean, that's a fact --

MR. GUERRERO: Yeah.

JUDGE WAHL: -- Mr. Guerrero.

MR. GUERRERO: Just a clarification, I guess.

JUDGE WAHL: All right. What has been redacted from -- in the book? Is that the trade secret material? There's two things -- there's two things in the document which is Exhibit -- must be 10 I notice. Some is redacted and some is blacked out. I take it the redacted is the trade secret material.

MR. GUERRERO: That's correct.

JUDGE WAHL: Mr. Binek?

MR. BINEK: I have no objection.

JUDGE WAHL: Mr. Kuntz?

MR. KUNTZ: Your Honor, as you can see, this is a four-page single-typed. I'm assuming it really is a summary of his testimony, and on that basis I would have no objection. To the extent there's new material in here, of course, then we may have a -- you know, we might raise an objection later on, but at this point I have no objection.

JUDGE WAHL: Well, I guess you would have a motion to strike, Mr. Kuntz, in that case.

MR. KUNTZ: Yeah, but at this point, without having read it --

JUDGE WAHL: Understood. Exhibits -- you

might keep track of me here, Ms. La Seur. Exhibits 10, 10A, 11, 12, 13, 14, 15 and 16 are each received.

MS. LA SEUR: Thank you.

JUDGE WAHL: All right.

DAVID A. SCHLISSEL,

having been previously duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. LA SEUR:

Q. Mr. Schlissel, do you have any corrections or additions to your prefiled supplemental direct testimony?

A. I have three typos to my supplemental direct testimony, Exhibit I 10, I'd like to correct. The first is on page 3, line 12. The second to the last word on that line is a date 2008, it should be 2006, referring to the fact that the Big Stone II applicants, including OTP and MDU, have not prepared a new construction cost estimate for the Big Stone II project since July of 2006.

The second typo is on page 17, line 14. Again, the second to the last word on that line, the word is "last," l-a-s-t, should be stricken and the word -- or the year 2006 should be inserted after December. So instead of the phrase being, "Since last December," it should be "Since December 2006."

And then, finally, page 74, line 15.

COMMISSIONER WEFALD: What page, please?

THE WITNESS: 74, line 15. Again, the next to the last word on the page -- I must have something psychological about that. The next to the last word on the line, the word is "flaw." It should be "flawed," f-l-a-w-e-d. And those are the typos.

MS. LA SEUR: And Mr. Schlissel has a summary statement to present to the Commission.

JUDGE WAHL: You may proceed.

THE WITNESS: Thank you. In the past 18 months, more than 20 proposed coal-fired power plants have been canceled, more than three dozen more plants have been delayed and a number have been rejected by state regulatory commissions or boards like yours because of, at least in part, the uncertainties and risks regarding future power plant construction costs and the likelihood for federal regulation of power plant greenhouse gas emissions.

Developments since I last testified here in June 2007 confirm the conclusion in my earlier testimony that the potential for future increases in the cost of building Big Stone II and the likelihood of federal restrictions on CO2 emissions are very significant uncertainties and risks to the Big Stone II project. However, OTP and MDU still have not adequately considered these uncertainties and risks in their new analyses and testimony before this Commission.

Coal plant construction costs have increased dramatically in recent years as a result of the domestic and international competition for design and construction resources, manufacturing capacity and commodities like steel, copper, piping and concrete. Words like "skyrocketing," "soaring" and "staggering" have been used to describe these increases. It is imprudent to not allow that the same factors that have led to these skyrocketing of power plant construction costs in recent years will continue to raise project costs during the five or more years it would take to design and build Big Stone II. However, OTP has prepared only a single economic modeling scenario that considered only a 10 percent increase in the construction cost to Big Stone II. MDU has not evaluated the economics of the project assuming any additional increases in the cost of Big Stone II.

This worldwide competition for power plant design and construction resources come from -- comes from other plants in the U.S. and from other countries, most significantly China and India. The competition also comes from other industries. Resources are needed to design and build LNG terminals and oil refineries, for example. And there is no evidence that this international and domestic competition will diminish at any point in the foreseeable future. The coming renaissance of the nuclear industry also will compete for limited power plant design and construction resources. In this environment, the cancellation of even 20 or 40 power plants in the U.S. is very unlikely to markedly reduce in the short term the upward trajectories of power plant costs.

It would have been prudent for OTP and MDU to prepare a new construction cost estimate and schedule for the Big Stone II project at some point since work on the project was suspended in September 2006. The existing cost estimate will soon be two years old. However, the companies made a conscious decision not to prepare a new estimate until after they have received the regulatory approvals from this Commission and the Minnesota PUC. Instead, even without presenting a construction cost estimate for the project, both companies want a blank check from this Commission that will put all of the risk of higher plant construction and operating costs on ratepayers.

Rather than to grant such a blank check, I believe this Commission should follow the recent example of another commission and reject the proposed project because the existing cost estimate is too old and out of date, or, at a minimum, the Commission should cap the amount of the cost of building Big Stone II that OTP and MDU can recover in rates as prudent investments.

I would note in passing that although OTP and MDU have not developed a new Big Stone II cost estimate, the plant capital costs that they've used in their new analyses -- and by those I mean those in this proceeding -- reflects a new 2.5 percent reduction in the cost of building the plant that is based on unspecified and apparently unknown factors. This illustrates a difference between OTP, MDU and many other utilities, both public and investor owned. Other companies have confronted the threat of higher plant costs and canceled or delayed their projects when costs and risks became too high. In the same situation, OTP and MDU more than optimistically assume that they will be able to achieve additional, but currently unspecified and unknown, cost savings in building their proposed coal-fired power plant. However, OTP and MDU want ratepayers, not the companies, to bear the risk that they are wrong.

Both companies also want ratepayers to bear all of the risks of CO2 costs. At various times the companies have argued that there will be no federal regulation of CO2 costs in the near future or that any costs associated with federal regulation of greenhouse gas emissions will be very low or that each company will receive large numbers of free CO2 emissions allowances under any federal cap-and-trade scheme. If they truly believe any of these claims, both companies should be willing to bear the risks associated with CO2 costs; in other words, to put their money where their mouth is, to use a common idiom. But they are clearly unwilling to do so.

OTP and MDU and their witnesses repeatedly use natural gas in this case as a scare tactic to frighten the Commission into finding their involvement in Big Stone II is prudent. In doing so, they ignore their already heavy dependence on coal-fired generation, a dependence which represents a real economic and financial threat given the likelihood of federal regulation of greenhouse gas emissions in the near future. For example, MDU has testified that with Big Stone II, it would increase its dependence on coal-fired generation from 77 percent of its installed capacity to 82 percent. OTP and MDU also ignore that this region is much less dependent on natural gas than on coal. As I explain in my testimony, overdependence on natural gas may be a problem in some regions of the U.S., the South, for example, but not here.

However, I must be clear on one point. We have never in any of the five regulatory proceedings in which I've testified about Big Stone II or in any of the ten pieces of testimony I've now written advocated natural gas as the sole alternative to Big Stone II. Instead, we have argued that OTP and MDU should explore a portfolio of alternatives that includes energy efficiency, renewable resources like wind power and, to the minimum extent possible -- necessary -- excuse me -- the minimum extent necessary, gas-fired generation. North Dakota has some of the best, if not the best, wind resources in the nation. The state's utilities should be taking all reasonable steps to take advantage of these renewable, noncarbon-emitting resources to the maximum extent possible. Energy efficiency is another valuable noncarbon-emitting resource that OTP and MDU should exploit more completely before they lock their ratepayers into paying for an expensive coal-fired power plant for the next 60 years.

I use the following example when I've talked to investors, which I've done a number of times in recent months, assume you want to build a new house. You go to the builder and he or she says, Sure, I'll build you a fine house, but I can't tell you what it will cost because of rising labor and material costs. Then you go to the town in which you want to build the house and you're told, We can't tell you what the property taxes will be. We know they will be higher, but we can't tell you how high they will be. Finally, you go to the bank and can only get a variable rate mortgage. Would any prudent person risk their own money on such a venture? I believe the answer is no. No prudent person would risk their own money this way. Yet OTP and MDU want you to approve risking their ratepayers' money on such an uncertain project.

Based on my 34 years-plus of experience on energy and utility issues, I believe that prudent utilities confront, rather than deny, risks and then consider those risks in their resource planning processes, A, by considering ranges of assumed values for the most important assumptions, which would be here project construction costs, CO2 costs, coal costs, including rail transportation costs, plant operating performance, costs of alternatives, and the cost of natural gas; and, B, by considering a wide range of non- and low-carbon emitting alternatives in their studies.

OTP has not and cannot present such a prudent risk analysis because it is still using a slow and obsolete planning model that no other utility in the country uses according to OTP, itself. I remember Mr. Morlock explaining to us back in 2006 that OTP's planning model would have taken four to seven days just to make such a simple change as moving the Big Stone II project's commercial operation date by six months. Clearly, competing -- completing the large number of model runs needed to fully evaluate the risks of the Big Stone II project was beyond the capability of OTP's model. Also, OTP cannot show you how much of an economic benefit Big Stone II would provide for its ratepayers. Quite simply, its argument is that Big Stone II is a prudent investment because IRP-Manager model picked it as such. In my opinion, this is imprudent.

To its credit, MDU has used a more state-of-the-art model. However, it has not conducted any sensitivity analyses reflecting higher Big Stone II construction costs or CO2 costs. Moreover, MDU has so heavily burdened the alternatives to Big Stone II in its new analyses that it's really no surprise that in its new runs the Strategist model picked Big Stone II. However, as I discuss in my testimony, when we reran the Strategist model for MDU last December in the Minnesota certificate of need proceeding, we found that Strategist did not pick any Big Stone II when you made such minor changes as including an extremely low CO2 price or to increase the construction cost of Big Stone II by just 10 percent. MDU's response to our Minnesota testimony was to again change the assumptions in its Strategist modeling to even further burden the alternatives to Big Stone II such as by assuming that the federal wind production tax credit will no longer be available after January 1, 2009. I would note that the U.S. Senate by a vote of 88 to 8 already has passed a bill that would extend the PTC through the end of 2009.

In conclusion, I have seen no evidence that the currently increasing power plant construction costs, the likelihood of federal regulation of greenhouse gas emissions and the cancellation and delay of proposed power plants are normal parts of the power industry's building cycle. The staggering construction cost increases that are currently being experienced by proposed projects are unprecedented for nonnuclear plants. The threats posed by global climate change also are unprecedented and will require decades of serious and concerted actions to address. In this environment, building and being locked into a new coal-fired power plant that can be expected to operate for another 60 years is not and cannot be a prudent management decision unless rigorous analyses fully reflecting all of the risks and uncertainties and fairly considering the alternatives have been considered. OTP and MDU have failed to provide those rigorous analyses to this Commission.

JUDGE WAHL: Ms. La Seur.

MS. LA SEUR: We offer this witness for cross-examination.

JUDGE WAHL: Mr. Guerrero.

MR. GUERRERO: Thank you, Your Honor.

CROSS-EXAMINATION

BY MR. GUERRERO:

Q. Good morning, Mr. Schlissel.

A. Good morning.

Q. Good to see you.

A. Yes, good to -- always good to see you.

Q. I'm going to start with some clarifying questions that you've probably heard me ask before.

A. Okay.

Q. But it's been a while since we've been back in front of this Commission.

It goes to the question of need with respect to Montana-Dakota's need for resources and Otter Tail's need for resources. You're not challenging Otter Tail's forecast of need for resources; that's correct?

A. That's correct.

Q. And you're not challenging Montana-Dakota's need for resources; that's correct?

A. That's correct. We're not challenging the need to do something.

Q. And that's both with respect to their need for energy?

A. Correct.

Q. And for capacity?

A. Correct. I mean, as you're aware, we've disputed that they've shown a need for baseload capacity, but we certainly believe they need to take some action on peak.

Q. And you haven't challenged the need in many of the last -- past several hearings to which you referred to earlier; that's correct?

A. That's correct.

Q. You may have seen this, Mr. Schlissel, but I'll just give it to you for your benefit. It's just the notice of the Commission's hearing in this case, and it's a public record and filed in this docket, so it's something that the Commission is certainly familiar with. This is the January 10th notice of hearing of this Commission. Have you seen this document before?

A. I believe I have, yes.

Q. Okay. And at the bottom there it references issues to be considered in this matter include?

A. Yes.

Q. First issue is whether the resource addition is reasonable and prudent, second issue is whether the applicants have need for additional generating resources, and the third issue is what alternatives exist for meeting additional generation needs; correct?

A. That's what this says.

Q. And you're not challenging the need for additional resources; correct?

A. We're not challenging the fact that they need to do something. Demand-side resources are resources, as well.

Q. Right.

A. So we're not challenging the need to do something. We may be challenging in part the need for new generating resources.

Q. If we could go to page 7 of your April 9th testimony, Mr. Schlissel.

A. By the time this case is over, you're going to be able to pronounce my name. Schlissel.

Q. Schlissel.

A. Close. It's close enough. I'm the only one in the room to -- I know.

Q. I must not be picking that up because it sounds like I'm pronouncing it correctly.

Down at the bottom of that page 7, Mr. Schlissel, you -- essentially that's where you provide your recommendation to the Commission; correct?

A. Correct.

Q. And I'm recommending -- I'm quoting from line 23, I'm recommending that OTP and MDU investigate and implement portfolios of alternatives. Do you see that?

A. Yes.

Q. And so your recommendation is that Otter Tail simply investigate and implement additional -- Otter Tail and Montana-Dakota additional energy and efficiency, more renewable resources, and, to a limited extent necessary, natural gas; correct?

A. Most limited extent.

Q. Most limited extent necessary, the addition of natural gas; correct?

A. Yes.

Q. What renewables are you referring to there?

A. Generally wind.

Q. Anything else?

A. Well, biomass is a potential renewable resource in this part of the country, but given the wind regime, North Dakota being -- if not the best in the country, it's one of the top three or four, I would expect it would be wind.

Q. So all of it wind?

A. Excuse me?

Q. All of it wind primarily?

A. Maybe some biomass, too.

Q. And what percentage of biomass would you --

A. I don't know. I have not looked at a specific percentage.

Q. So you're not proposing any specific biomass alternatives here?

A. That's correct.

Q. And you're not suggesting, Mr. Schlissel, are you, that these applicants could meet their resource needs solely using wind?

A. That's correct, I would not expect that they could only meet them with wind. They may need some peaking gas capacity that would be operated a little bit.

Q. You referenced in your statement -- summary statement earlier that you attempted to replicate or did replicate in the past Montana-Dakota's Strategist integrated resource planning modeling.

A. That's correct.

Q. And you have not replicated in any case Otter Tail's resource planning; correct?

A. That's correct. You can't get the model. There's no support for the model, so it's not possible for anybody but I believe Mr. Morlock to probably run the model, so that's true. We --

Q. You're not proposing --

A. Excuse me.

Q. I think you've answered my question.

A. Not fully.

Q. I believe so.

JUDGE WAHL: Let him proceed.

Q. (MR. GUERRERO CONTINUING) Sure. Go ahead.

A. We attempted to get the database for OTP's IRP-Manager and have it changed into a Strategist database, but first it looked like it was a long --

it would take a long time to do that, and then we were told by the company that handles Strategist that they would not help us because they had spoken to OTP and they considered OTP a client, so we had no opportunity to do that.

Q. Thank you. And you're not proposing a specific amount -- in your testimony here a specific amount of additional wind that Otter Tail should be pursuing; is that correct?

A. That's correct.

Q. Do you know how much wind Otter Tail has currently planned between now and 2020?

A. I think it's several hundred megawatts, but I don't recall a number exactly.

Q. You've suggested in your testimony, Mr. Schlissel, that Montana-Dakota and Otter Tail have shown biases in their modeling. Is that a fair portrayal of your statements?

A. Yes.

Q. Are you suggesting that Otter Tail's modeling -- or that Otter Tail is biased against doing wind resources?

A. No. They're doing some wind.

Q. Some.

A. Some wind.

Q. You don't know how much, though?

A. Well, I don't recall exactly. As you can tell, I've undergone surgery in the last three weeks, my life's been topsy-turvy. I don't remember all the Big Stone II numbers. I'm sorry. If you give me a number, I'll accept it subject to check.

Q. You don't have any reason to disagree with Mr. Morlock's testimony in this case, but also in past cases, that for planning purposes Otter Tail has assumed compliance with the North Dakota renewable energy objective?

A. I believe -- I recall it with regards to Minnesota, but I'll accept it.

Q. Okay. So you'll accept it for purposes of his planning purposes that he's assumed compliance with the renewable energy objective in the state?

A. Sure. Yes.

Q. And also in Minnesota? North Dakota is at 10 percent renewable energy objective?

A. Again, I don't recall the exact number. If that's what it is, I'll accept it subject to check.

Q. Are you familiar with the renewable energy objective at all?

A. Yes, I recall reviewing it.
Q. And in Minnesota it's 25 percent by 2025; correct?
A. Yes.
Q. Do you know what percentage of load Otter Tail has in North Dakota and Minnesota?
A. Again, I'm embarrassed, I can't recall a number. I know we've discussed it in several cases, but I don't recall exact breakdown of their load in the different states.
Q. If I told you it's about 92 percent, would that be --
A. 92 percent.
COMMISSIONER WEFALD: Where?
Q. (MR. GUERRERO CONTINUING) North Dakota and Minnesota as Otter Tail's retail load constitute.
A. Together?
Q. Together.
A. I believe that's the number, yes.
Q. And so when you are suggesting to this Commission that Otter Tail should implement more wind, it's more than the 25 percent in Minnesota and more than the 10 percent in North Dakota?
A. Well, yes, it may be more economic in fact

to do more than the renewable requirements, but, too, there's a matter of when the wind is added and whether it's economic to add it sooner rather than later, so we might agree on the 25 percent, for example, but it may be that adding it earlier changes the relative economics of Big Stone II, so it's not only just reaching a target by a certain year, it's when the wind is added.

Q. So are you assuming that Otter Tail will find no problems whatsoever in meeting those compliance targets? So -- you had said that we could agree with Otter Tail that it may be that we would get past 25 percent or past the 10 percent? Do you understand my question?

A. Not at all.

Q. It wasn't a very good question. Do you have any doubt as you sit here today, Mr. Schlissel, that Otter Tail will have any problem reaching the 25 percent renewable energy mandate in Minnesota?

A. My expectation -- I don't have any doubt -- it's hard because we're speculating, but I think that given the wind possibilities in South Dakota and North Dakota, that it should be fairly easy for them to come up with that amount of wind.

There will be adjustments in running the system. There will be wind integration costs, of course. But I think that the wind potential is there when you look at the estimates of thousands of megawatts of wind in both states.

Q. Let me ask you a few questions about the production tax credit. You're familiar with the production tax credit; correct?

A. Yes.

Q. It would be fair to say that the federal production tax credit is the primary economic driver in wind development today?

A. I don't know whether the primary, but it is a primary.

Q. What would be potentially more primary than the federal production tax credit in your mind?

A. Well, a CO_2 tax or cap-and-trade regime which applied CO_2 cost to power plants like Big Stone II.

Q. But currently.

A. Okay. I'm sorry. When we talk about currently, you're talking about a prediction of costs in the future, so that's how I interpreted your use of the word "currently."

Q. Do you provide advice, Mr. Schlissel, to clients outside the electric power industry?
A. Synapse has, yes.
Q. Do you?
A. No.
Q. Do you know whether Synapse has ever been involved in situations where they're advising clients who rely on federal or state subsidies for purposes of the economics of their project?
A. I recall that Synapse does do that. I'm not familiar with the work beyond you asked me a question about in Minnesota.
Q. Mm-hmm. So you're generally not aware what Synapse --
A. It's not part of my field of practice.
Q. Well, let me ask you this just as a general question then, Mr. Schlissel. Would it -- given the significance of the federal production tax credit when you're evaluating resources, is it not prudent to both consider the extension and nonextension of that credit, notwithstanding the likelihood of its --
A. Sure. I think it's prudent to look at both scenarios where it is in existence and scenarios where it isn't. I think it becomes a

little dicey when you've got a witness talking about it not being in existence after 2009 or 2010 when his own client is assuming it's in existence through 2013. That, I think, is inconsistency within a case presentation.

Q. In any of your scenarios, Mr. Schlissel, did you assume the nonextension of the federal production tax credit?

A. No. I assumed that it would be in effect, as OTP does, through 2013.

Q. And you've certainly criticized, if that's a fair term, the biases inherent in the models and analysis of these applicants. Would it be fair to say that an analysis that only looks at the extension of the federal production tax credit would also be considered a bias?

A. No, no. We were assuming -- you're talking about Mr. Greig's levelized analysis.

Q. No, I'm not.

A. You're not?

Q. I'm simply just asking a general question.

A. It sounded to me like you were asking about that.

Q. No.

A. And I was going to explain the reason why in that scenario I assumed the continuation of the PTC.

Q. No. I'm just simply asking you, did -- in any of your analysis did you assume the nonextension of the PTC?

A. I don't recall in all of our modeling analyses. In each of the -- other than our response to Mr. Greig, we made the same assumption as to the existence or nonexistence of the wind PTC as each utility did. And by each utility I'll mean MDU, AMRES, CMMPA, so whatever they assumed, we assumed. And with regards to Mr. Greig, I'm willing to explain why I did what I did.

Q. I think you prefaced the question and said you don't recall.

A. I did as I spoke.

Q. Okay. So in any scenario in your analysis, did you assume the nonextension of the PTC?

A. And that I don't recall because we did exactly what the companies did in the modeling analyses. Some of them may have assumed it, some may have not. But in those cases we attempted to change as little as possible.

Q. Let's talk a little bit about

conservation, Mr. Schlissel. You mentioned renewables, and you're not suggesting to this Commission that these utilities should be able to fill their resource needs on renewables alone; that's correct?

A. That's correct.

Q. And you're not suggesting to this Commission that these utilities can fill their resource needs on conservation alone; correct?

A. That's correct.

Q. And so facilities will need to be built; correct?

A. Yes, or purchased.

Q. Are you familiar with what Otter Tail's -- Mr. Morlock's testimony most recently showed as part of his updated resource planning analysis, how much coal he has identified in his analysis?

A. I don't know -- the rebuttal testimony or the original testimony?

Q. The original testimony.

A. I don't recall a number. I don't recall that he mentioned that in the testimony. If he did, I just don't remember.

Q. Sure. 170 megawatts of coal?

A. Of new coal?

Q. Subject to check.

A. Oh, yes, at Big Stone.

Q. Yes.

A. Yes. I didn't know whether you meant existing and new.

Q. And so you're not suggesting, are you, that if Otter Tail's identified a need for up to 170 megawatts of new coal facilities represented in baseload need, that they're going to conserve their way out of that?

A. No, not in the short term. It takes a while to ramp up and to achieve energy efficiency savings.

Q. You did not in this case rerun the Montana-Dakota Strategist model; is that correct?

A. That is correct.

Q. And the reason you did that is because you don't have the license from the Strategist software vendor anymore; correct?

A. Well, no, not exactly. The reason why was the time was so short, we didn't have time. There would not have been time to get the new database and to rerun the model before we had to file testimony on April 9th. And for that reason we did not purchase the license. We always could have purchased the license from the vendor.

Q. So Montana-Dakota's testimony was filed on March 9th. Your testimony was filed 30 days later. You're saying you didn't have enough time to do any of that?

A. We asked for discovery on probably -- perhaps on or about March 9th. Part of the discovery was for the data -- the input and output data bases in what is it, the dot FAV format, which is the format you need to run it. We did not receive those files for weeks. I'm not being critical. I know you answered within the time that you were allowed to answer. But given -- we knew that it was not -- we were not going to get these files soon enough, we did not -- we would have had no time to rerun the model. It takes several weeks to a month or more to be able to rerun the model and to be sure of your results.

Q. Do you have a license for Strategist software anymore -- Synapse?

A. No. We purchase it on a per-project basis. It's no need to pay the money if we're not going to use it for several months.

Q. So you're not conducting resource planning on a regular basis?

A. Yes, we are. We use different models. Right now we're involved with a couple of cases with AEGIS where our clients actually are learning the model with our assistance. We use -- I forget what the company is called now because they've merged so many times. It may be Global Energy Decisions, may be their model, they use Multi SIM or Market SIM. The model name has changed more frequently than the models changed.

Q. There are different models to do this?

A. Yes. And we use different models depending on what models the companies in the cases in which we're involved use or the state uses.

Q. Could you turn to page 77, Mr. Schlissel, of your testimony, please --

A. Yes.

Q. -- April 9th testimony. And, sir, that's the alternative resource scenario that you ran not in this case, but in the Minnesota case; is that correct?

A. That's correct.

Q. And some of that has now been redacted as a result of the motion, but there are two columns that remain. Do you see some columns for DSM?

A. Yes.

Q. Can you explain what those are?

A. DSM programs, demand-side management programs.

Q. Whose are they?

A. My recollection is those were the programs that the company was using.

Q. And in your remodeling of their model, it's essentially the same conservation in the Montana-Dakota model; correct?

A. I believe that's true, yes.

Q. So your remodeling didn't produce more DSM; correct?

A. No, we didn't assume additional DSM. Again, as you're aware, there was a very short time frame in the Minnesota certificate of need docket. I think between the time the companies filed and the time we filed there was a period of five weeks and we could not change everything we thought should be changed.

COMMISSIONER WEFALD: Excuse me. What page is that on?

MR. GUERRERO: Page 77.

JUDGE WAHL: 77.

COMMISSIONER WEFALD: Thank you.

Q. (MR. GUERRERO CONTINUING) So, again, time was working against you then?

A. On -- I wouldn't say working against us. It just limited our ability. I mean, as you know, as well as I, I mean, there were five Big Stone II co-owners in Minnesota. With five weeks to do analyses and file testimony, we had to focus on what we felt we could achieve that would be supportable. And with regards to the modeling analyses, what we attempt to do is to look at what we think are probably the most significant changes and to try to change what the applicants do the smallest amount. And the DSM was not something we could get to in the time frame.

Q. And you're not working on this case by yourself; that's correct?

A. That's correct. At that time there was -- there was six or seven of us working on the case.

Q. Let's talk about some alternative resources. You indicated earlier that biomass really isn't in play here; is that correct?

A. I think there is a potential for biomass in the region, but I've not studied how extensive of a potential there is.

Q. What about hydro, hydroelectric power?

A. Well, when we started the case, there was a potential for hydro from Manitoba, but according to OTP, that became unavailable. I know that one of the Wisconsin utilities has just signed a contract with Manitoba Hydro for extensive hydro capacity starting, I think, in 2016 or 18 or something like that.

Q. We talked about the hydro opportunity last time -- last summer. Do you recall that? The opportunity that you just referred to, is it the Manitoba Hydro opportunity that Otter Tail was discussing?

A. Yes. And at some point during 2007 Otter Tail indicated that it was no longer available.

Q. And is it your position that Otter Tail just sort of missed the opportunity?

A. No. I don't know how aggressively they pursued it because of Big Stone II, but it's in the past now, I understand from Otter Tail.

Q. Are you familiar with the fact that that was -- what they were discussing with Manitoba Hydro was the Conawapa, C-o-n-a-w-a-p-a, facility? Do you recall that at all?

A. No. I thought there were two of them, one in the short term -- one facility in the short term, one in the long term, that both had Native

American names.

Q. The Conawapa facility was a 1,250-megawatt project?

A. Yes.

Q. $5 billion?

A. Something like that.

Q. About 2021 in-service date?

A. I think something like that.

Q. Had a 500-mile transmission line associated with it proposed?

A. I know it had a transmission line, but I don't recall that Otter Tail modeled hydro as only being available in 2021. My recollection is that Mr. Morlock's IRP-Manager modeling showed it in -- hydro from Manitoba in service well before 2021. But, again, that's like a year and a half old.

Q. Other than the Manitoba Hydro discussion, any other hydro that we're potentially talking about here?

A. No, not that I know of.

Q. What about nuclear power? Are you recommending that nuclear power is a potential alternative for these applicants?

A. It's an alternative that should be examined. I think there's serious risks with nuclear power, and I don't mean nuclear risks, financial risks. The cost of nuclear power plants are going up perhaps even faster -- the estimated costs are going up perhaps even faster than the estimated costs of coal plants.

Q. So you're not suggesting, are you, Mr. Schlissel, seriously that for Otter Tail and Montana-Dakota that nuclear power is currently an option for them in the planning horizon?

A. Again, I think it's something they should study, but I would think that it would not be a realistic option, that maybe they could be part of a consortium that could build a nuclear power plant by the year 2020 -- the early 2020s. It's likely to be very expensive.

JUDGE WAHL: Mr. Guerrero, let me interrupt you momentarily.

MR. GUERRERO: Sure.

(Discussion had off the record.)

JUDGE WAHL: Mr. Guerrero, you may proceed.

Q. (MR. GUERRERO CONTINUING) Mr. Schlissel, you've made some presentations recently with respect to nuclear power, have you not?

A. Yes, to investors, rating agencies, I've been invited to present -- make presentations to them.

Q. And generally you've warned about the risks associated with --

A. Yes, absolutely. I think investors should know the full risks of any investment they make.

Q. So renewables alone isn't going to do it. Conservation alone is not going to do it. Hydro is not an option; is that correct?

A. Well, I don't know whether it's an option now. I don't have direct communication with Manitoba Hydro. As I indicated in a previous answer, a Wisconsin utility -- was it WPL, I think, just signed a long-term contract for hydro. Hydro is certainly an option. There are positives and negatives of hydro, though.

Q. And you haven't identified a hydro option?

A. That's correct.

Q. Nuclear, I think you said, is not a realistic option?

A. It's unlikely to be a realistic option.

Q. And biomass, you haven't identified any option?

A. That's correct.

Q. Let's talk about coal as an option. Mr.

Schlissel, could you go to page 60 of your testimony, please?

A. 60. Okay.

Q. I'm going to direct your attention to line 9 of page 60, where in an answer to a question you say, "No. I have seen estimates that carbon capture and sequestration technology may be proven and commercially viable from as early as 2015 to 2030 or later, if, indeed, it is ever proven to be technically and commercially viable." Did I read that correctly?

A. Yes.

Q. Drop back to page 57, Mr. Schlissel.

A. Okay.

Q. And in the middle of that page you're referring to some Dominion Virginia Power testimony; is that correct?

A. Yes.

Q. Carbon capture -- on line 16 it begins, "carbon capture technology is not commercially viable or available at the present time." Did I read that correctly?

A. You did.

Q. Toward the end there on line 19, "As a result, it is not currently feasible to construct a power plant with technology that can capture and store carbon emissions."

A. That's correct.

Q. So I take it from the testimony on page 57 and on page 60, you agree that carbon capture and sequestration is not currently economic?

A. For a pulverized coal plant, which we're discussing here, it's different from an IGCC plant; but I would agree for a pulverized coal plant, yes.

Q. So any new pulverized coal plant built today, Mr. Schlissel, it's going to be built without carbon capture and sequestration; would that be a fair statement?

A. Yes. Some of them allow space to put in unknown -- currently unknown equipment, but I think that's about as good as you can get.

Q. Capture carbon-ready?

A. Yes. Well, it's called carbon capture-ready, but really what it is is more space.

Q. So, true then, any new pulverized plant between now and when CCS becomes commercially viable, they're going to be built without CCS, or carbon capture sequestration; correct?

A. Yes.

Q. And because there's no CCS, those plants will be subject to future greenhouse gas regulation; correct?

A. Correct.

Q. Go to page 4 of your testimony, Mr. --

A. 4 or 40?

Q. 4.

A. Okay.

Q. Line -- beginning at line 17, "The Commission should not be panicked into granting an advance determination of prudence for an uneconomic coal-fired power plant." Did I read that correctly?

A. I'm sorry. I was on page 3. I apologize.

Q. Page 4, line 18 and 19.

A. Yes.

Q. So your testimony today is that the proposed Big Stone II unit is an uneconomic unit?

A. Yes, as our analyses in a number of proceedings have demonstrated.

Q. Do you know that Big Stone II is a supercritical plant -- proposed?

A. It's proposed to be, yes.

Q. And they have not ruled out ultra-supercritical?

A. That's correct.

Q. It's true that this plant will be one of the most efficient plants in the country?

A. Well, it's said that it will be one of the most efficient plants in the country. Again, it's proposed.

Q. As proposed, it would be one of the most efficient plants in the country?

A. That's true.

Q. Given the fact, Mr. Schlissel, that carbon capture sequestration is not commercially viable perhaps as long as not until 2030 and, in your words, if ever, and the fact that you consider Big Stone II uneconomic, in your opinion as you sit here today, Mr. Schlissel, is there any coal plant being planned -- pulverized coal plant being planned today that you would consider economic?

A. I've not -- I've looked at the economics of about eight or ten, and those have not been economic. I can't say every one. I've not seen the economic analyses of every one. I would expect, given the large numbers of plants that are being canceled or delayed, that the owners are finding they're not economic, so --

Q. We're going to talk about some of those plants.

A. Great.

Q. You've mentioned eight to ten that you've looked at. Is that the reference to your consulting work that you've done similar to your work in this matter, on the Big Stone matter?

A. Yes, I guess I've looked at eight to ten power plants in detail over the past two and a half years. Do you want me to list them?

Q. No.

A. Okay.

Q. Thanks. Did that include a review of American Municipal Power's proposed 960-megawatt coal-fired plant?

A. Yes.

Q. And your client there was the Natural Resources Defense Council and the Sierra Club --

A. Yes.

Q. -- among others?

COMMISSIONER WEFALD: Where is that plant located?

MR. GUERRERO: Ohio.

THE WITNESS: Proposed to be built along the Ohio River, which divides Ohio from West Virginia.

COMMISSIONER WEFALD: If you can tell us

where they're each located, that would be helpful.

MR. GUERRERO: I'll try. Sure.

THE WITNESS: I'll help.

Q. (MR. GUERRERO CONTINUING) IGCC plant that was proposed by Duke Indiana, you testified in that case -- or you consulted in that case?

A. I consulted. I presented CO -- estimate of CO_2 costs.

Q. And your client was Citizens Action Coalition of Indiana, Save the Valley, Valley Watch and Sierra Club; correct?

A. I don't remember all of them, but it sounds good.

Q. And the proposed Duke Cliffside project, North Carolina, the Carolinas?

A. Correct.

Q. Your client was Southern Environmental Law Center and the Environmental Defense Group?

A. Correct. I think also Southern Alliance For Clean Energy.

Q. Thank you. And you've testified in this -- in the Big Stone matter both in South Dakota and Minnesota, your client was Minnesota Center For Environmental Advocacy, Fresh Energy, among other groups; correct?

A. Izaak Walton League, Dakota Resource Center.

Q. The proposed Glades project in Florida, 2,000-megawatt coal project?

A. Right. That was rejected by the Commission.

Q. Sierra Club is your client?

A. They were one of the clients. There was a coalition.

Q. And Citizens -- which one is this? This is the Longview Power matter. Did you participate in that one?

A. No.

Q. Synapse Energy presented in that one?

A. Synapse Energy participated. The Longview plant is proposed for West Virginia. Synapse presented testimony on a very, very limited issue. I think the question was whether the plant would qualify for county tax relief and a clean coal facility, and Synapse presented testimony.

Q. Excuse me. Thank you.

MS. LA SEUR: Objection. Are we getting to a question that's relevant to this proceeding?

MR. GUERRERO: We are, Your Honor. At least I believe we are.

JUDGE WAHL: The objection is overruled.

Q. (MR. GUERRERO CONTINUING) In any of these cases, Mr. Schlissel, did you find any of these projects economic?

A. Well, again, I wasn't involved in Longview. And in the IGCC project I did not look at the economics of the project. Synapse did, and in that one we found that energy efficiency and renewables were a more economic investment. With regards to the other projects in which I was involved, no, I did not find that they were economic.

Q. Were you involved in the Little Gypsy case in Louisiana?

A. Yes, that's in Louisiana.

Q. That was a gas-to-coal?

A. That's a gas-to-coal conversion, yes.

Q. About 538 megawatts?

A. I think that's the correct number. It might be a little higher actually.

COMMISSIONER CLARK: Coal-to-gas?

THE WITNESS: No, gas-to-coal.

MR. GUERRERO: Gas-to-coal.

THE WITNESS: If I might, Louisiana, where we talked about overdependence on gas, they're very heavily dependent on gas down there. So this is a project by Entergy Louisiana that would burn petcoke and some other derivatives, I guess is the right word, from refineries so that it actually would be a gas-to-coal conversion.

Q. (MR. GUERRERO CONTINUING) That's an Energy project -- or was an --

A. Entergy.

Q. Entergy?

A. Yes.

Q. E-n-t --

A. -- e-r-g-y.

Q. E-n-t-e-r-g-y. You just mentioned that they're heavily dependent on gas. Do you know how heavily they're dependent on gas?

A. I think they're 80 percent or more dependent on gas -- Entergy Louisiana.

Q. With respect to the Florida matter, the Glades project that you testified against, do you know what Florida Power & Light has indicated that their alternative is in that case?

A. Well, I know that they're planning to build a number of nuclear power plants, but the State of Florida is also, under the governor's direction, pushing very heavily into energy conservation, so it's a -- I think it's a combination of the two. I don't know -- I have not been involved in the project. I don't know to what extent renewables are a piece of the puzzle.

Q. What about natural gas?

A. I'm not sure that they want to build any more natural gas down in Florida at this time. It may be that it is gas.

Q. You don't know?

A. I just don't recall again. My involvement in the Florida project ended about 14 months ago.

Q. You don't know whether or not they have just completed construction of a 1,150-megawatt natural gas combined cycle plant?

A. Oh, I do know that. The question was what -- I thought your point was what were the alternatives to the Glades project, and I'm not sure that natural gas is being considered as an alternative to the Glades project because they already have built and are building a lot of natural gas in Florida. That's why I said that. So I'm somewhat aware of what they're doing now. It's just what alternatives they're considering.

Q. Do you know that they're considering bringing on line in 2009 and 2010 about 3,700 megawatts of additional natural gas?

A. Yes, that was in the case I did -- the Glades case.

Q. And they're uprating their nuclear power, they're not building new nuclear facilities?

A. Well, they're doing both. I mean, they're proposing to build new and they're doing power uprates -- I thought they've actually already done them -- at their five nuclear power plants in the state.

Q. Do you know what percentage of natural gas Florida Power & Light is -- their portfolio?

A. I knew it a year and three months ago, but I don't recall.

Q. Would you consider -- you mentioned earlier in your statement -- your opening statement that the South is overreliant on natural gas.

A. No. There may be a concern about over-reliance in the South because it's heavily dependent on gas.

Q. And do you know what percentage of natural gas FP&L is?

A. No. I mean, I can't remember all these numbers. If you give me a number subject to check, I'll see whether it makes sense.

Q. A 50 percent going to 70 percent.
A. I don't know about going to 70, but I do recall it is roughly 50 percent.
Q. Do you know how much coal Florida Power & Light uses?
A. There are some coal plants in the state, but not much.
Q. Would you disagree if I told you that it was -- their portfolio was about 5 percent coal?
A. That's not much, yeah.
Q. And you testified against the Glades project?
A. Correct, and the Commission adopted that position. They basically cut and paste my testimony into their order based on the same kind of issues I raised here, that CO_2 costs and construction costs were very, very risky.
Q. Page 8 of your testimony.
A. 8?
Q. Yeah. And this is your similar statement toward the -- with respect to we don't need to be concerned about natural gas reliance up here. The -- line 19 to 20.
A. No. My position isn't you shouldn't be concerned about it. You don't have to worry about

an overreliance on natural gas. As I've explained a couple of times in response to your questions and said it in my summary statement, I believe you may have to build gas to the most limited extent necessary, that it may be a necessary evil, so to speak, in order to address climate change issues.

Q. Did you -- have you reviewed Mr. Klein's testimony in this case -- Daniel Klein on behalf of the applicants? He filed rebuttal testimony on April 23rd.

A. I read it last week after I got it.

Q. Did you see the Wall Street Journal article that he attached to his testimony?

A. I don't recall.

Q. Do you recall seeing the Wall Street Journal article from a week or two ago?

A. If you give me a topic. I mean, I've looked at a lot of Wall Street Journal articles.

Q. That's fair. It would be the article from April 18th, 2008.

A. Dates don't help. The topic would be good.

Q. I'm going to get you a copy in a minute.

MS. LA SEUR: May I hand the witness a copy?

MR. GUERRERO: It's in the -- yeah, I will in a second. It's Exhibit OTP/MDU 350.

COMMISSIONER WEFALD: What section is it included in in the Commissioners' papers?

MR. GUERRERO: It's Exhibit No. 350 -- OTP/MDU Exhibit No. 350. It's attached to Mr. Klein's testimony.

COMMISSIONER WEFALD: Is it in the supplemental?

MR. GUERRERO: The April 23rd testimony.

THE WITNESS: I don't -- should I wait?

JUDGE WAHL: It's tab 41, Commissioner.

COMMISSIONER WEFALD: I found it under tab 8.

COMMISSIONER CRAMER: He's looking at the big book.

JUDGE WAHL: Oh, you're not using --

COMMISSIONER WEFALD: I don't have the big book. Sorry.

MR. DILLER: Last few pages of tab 8.

COMMISSIONER CRAMER: Tab 8.

MR. DILLER: Last few pages.

COMMISSIONER WEFALD: Thank you.

Q. (MR. GUERRERO CONTINUING) Did you see this article when it came out?

A. No, but I've seen articles similar to it.

Q. And it references in that article 93 percent increase in natural gas cost since August?

A. Correct. I've not confirmed that number.

Q. You don't have any reason to disagree with it, though?

A. I have no reason to agree or disagree.

Q. And the article references that it's a 33 percent from an all-time record on the NYMEX, New York Mercantile Exchange?

A. Excuse me. Are you talking about the second paragraph from the bottom?

Q. Correct.

A. I'm sorry. What's the question?

Q. I just want to know if you had seen that.

A. I see it now.

Q. And you don't have any reason to disagree with that?

A. Yeah. It's unclear whether it's a short-term, long-term, what the price is.

Q. You -- I'm sorry. Are you finished?

A. Yes.

Q. Do you know what gas prices the applicants used in their modeling forecast?

A. I don't remember all -- if you show them to me, yes, I mean, we've looked at them.

Q. Well, I'm just asking you, do you recall what they were?

A. Yes. Not every number, but yes.

Q. Generally what was it?

A. I don't know. We would have to look at a specific exhibit and a specific applicant.

Q. Do you know what the cost of natural gas is trading on at NYMEX right now?

A. For what delivery?

Q. May delivery.

A. No. I haven't looked -- as I've been out of circulation because of my surgery, I haven't looked at it recently, but the May delivery price -- May 2009 -- 8 delivery price may mean nothing regarding long-term price of natural gas.

Q. Go to page 13, Mr. Schlissel, of your testimony.

A. Okay. We're done with this article?

Q. Yes.

A. Okay. Page 13. Okay.

Q. Towards the top you reference an Idaho Power Company in your discussion of cancellation of plants.

A. Yes.

Q. And on line 9 it says, "IPC has shifted its focus to the development of a natural gas-fired combined cycle combustion turbine," et cetera; correct?

A. Correct.

Q. So its alternative to the cancellation of the coal project was natural gas; is that a fair statement?

A. I think that's part of -- if you read their IRP, their integrated resource plan, they've come up with a different plan. I don't recall that it's a one-for-one -- megawatt-for-megawatt replacement.

Q. And on page 16 --

A. Page 16?

Q. Page 16. You reference the Orlando Utilities Commission, line 24 --

A. Yes.

Q. -- the cancellation of their IGCC project and they will continue with their natural gas-fired combined cycle generating unit?

A. Correct.

Q. I'm going to ask you a few questions about biases, Mr. Schlissel. Do you know that both Otter Tail and Montana-Dakota are investor-owned

utilities?
A. Yes.
Q. And their rates are regulated by this Commission?
A. Yes.
Q. And their profits are regulated by this Commission?
A. I don't know that the profits are. I'm sure in a rate case they look at a return on equity.
Q. Isn't that the purpose of looking at return on equity?
A. I'm sure, but with -- between rate cases companies sometimes over -- companies have deregulated investments.
Q. I'm talking about their utility companies, not their unregulated investments.
A. Right, but they're all part of the same holding company generally. Some parts are regulated, some aren't.
Q. Are you saying that that's the case for these two utilities?
A. No. Talking generally.
Q. And you're not alleging when you talk about biases, Mr. Schlissel, that these two

utilities believe that they can make more money building a coal plant than building a natural gas plant or wind plants or any other plant?

A. I -- well, of course, having more investment in rate base helps the companies' earnings, but I have not seen any evidence in their documents to show that they've decided to load up on their rate base at the expense of ratepayers.

Q. You're not alleging that?

A. I've seen no evidence of it.

Q. Have you reviewed Mr. Rolfes' testimony in this case?

A. Yes.

Q. Okay. If you could go to page 5 of your testimony.

A. Okay.

Q. And line 7, your comment, "The flawed and biased new modeling analyses presented by OTP and MDU are the only evidence that has been presented to show that adding new baseload generating capacity is the most economic option." Did I read that correctly?

A. Yes.

Q. So it's basically flawed and biased analyses that got us here; is that correct?

A. I believe that they are flawed and biased. I mean, the statement, I think, speaks for itself. I don't know what else to add.

Q. You're not disagreeing that the MAPP -- do you know -- the Midcontinent Area Power Pool, M-A-P-P -- region is predicting capacity deficits as soon as 2011? You're not disagreeing with that, are you?

A. That's correct. But as I discussed, they don't mention -- they don't address a number of new developments.

Q. Do you know what the purpose of reserve sharing is in a power pool such as MAPP?

A. Sure, so that you can lower the overall reserve margin so that a utility in South Dakota, for example, gets the benefit of capacity owned by a utility in northern Ohio or western Wisconsin.

Q. Do you agree with that philosophy?

A. Oh, absolutely.

Q. Is it surprising, given the nature of the pool, Mr. Schlissel, that we find the industry needing to build at about the same time?

A. I'm sorry. Could you repeat the question?

Q. Is it surprising, given the nature of the pool, that you find utilities needing to build resources at about the same time?

A. No. I mean, I think that goes in waves.

Q. Page 26, Mr. Schlissel, please, line 22. You say -- or you're referencing --

A. I'm sorry. I wasn't --

Q. I'm sorry. Page 26.

A. 26, line 22?

Q. Correct.

A. Yes.

Q. You're referencing an Edison Foundation report -- line 22 -- "Construction costs for electric utility investments have risen sharply over the past several years, due to factors beyond the industry's control."

A. Correct.

Q. Do you agree with that statement?

A. Yes.

Q. And what are those factors beyond the industry's control?

A. I mentioned it before in my summary statement, international competition for design and construction resources, competition for manufacturing capacity. There are only a certain number of companies that have the foundry capabilities of building large boilers, for example, labor resource, construction labor competition, and then competition for the basic commodities, the steel, the piping, the copper that you use in building a power plant.

Q. Page 30, Mr. Schlissel, please, line 11. I think there you're referencing some statements --

A. From Black & Veatch.

MR. BINEK: This is -- is this trade secret?

MR. GUERRERO: Oh, it's not stricken. It's trade secret. But I'm certainly -- well, given the fact that it would be difficult to recuse people.

JUDGE WAHL: Well, we can take a brief recess, we have to change the card, and continue with the testimony.

MR. GUERRERO: Your Honor, one alternative would be to simply waive the trade secret protection for purposes of this one line that I would like to ask him a question about.

JUDGE WAHL: Sure. That's optional with you.

MR. KUNTZ: That's fine.

Q. (MR. GUERRERO CONTINUING) Do you have a copy of your testimony, Mr. Schlissel, where you actually have a line 11?

A. Yes.

Q. On line 11 it just simply references U.S. and world electricity industry in the early stages of a large build cycle; correct?

A. Yes.

Q. And that's consistent then with the comments that you've just indicated; correct?

A. Correct. China.

Q. Consistent with the comments of the Edison Foundation report; correct?

A. Yes. All of the evidence I've seen is -- well, not all the evidence. Just about all the evidence, except that filed by the Big Stone II co-owners in Minnesota in November, is consistent about that it's likely to be a long-term process for the competition for resources.

Q. And yet where there's a need, these utilities, with an obligation to serve, might actually have to build something given those circumstances, nonetheless; correct?

A. Yes, that is -- that is a possibility, but you would look to alternatives that had lower costs or expectation of lower costs over time.

Q. Mr. Schlissel, I'm handing you a copy --

I'm not going to introduce it into the record, but I wanted you to have it as I ask you questions from it. This is a copy of the applicants' brief from last summer. Would you have any reason to disagree with that?

A. No.

Q. You're a lawyer in addition to being an economist; is that correct?

A. I'm not an economist. I'm an engineer and a lawyer, yes.

Q. An engineer and a lawyer. Are you familiar with definitions of "prudence standard" given your long involvement in the electric utility industry?

A. Yes.

MS. LA SEUR: Objection. The witness is not testifying as an attorney and it would be inappropriate to testify about legal conclusions.

JUDGE WAHL: Oh, can you give me some authority for that? I don't think so. He's qualified to testify on the subject matter.

MS. LA SEUR: He's not being offered as a legal witness.

JUDGE WAHL: It doesn't make any difference, unless you can show me otherwise. The objection is overruled.

THE WITNESS: Yes, I've testified a number of times on prudence standards, I've written briefs, I've helped clients write briefs about prudence, yes.

Q. (MR. GUERRERO CONTINUING) Thank you. I'm going to direct your attention to the middle of that page where there's a quote from a Federal Energy Regulatory Commission case. Are you familiar with the Federal Energy Regulatory Commission?

A. Yes.

Q. Done work before them before?

A. I filed testimony in a couple of FERC cases.

Q. I'm going to read this standard to you, Mr. Schlissel. "Managers of a utility have broad discretion in conducting their business affairs and in incurring costs necessary to provide services to their customers. In performing our duty to determine the prudence of specific costs, the appropriate test to be used is whether they are costs which a reasonable utility management (or that of another jurisdictional entity) would have made, in good faith, under the same circumstances, and at the relevant point in time." Did I read that correctly?

A. Yes.

Q. Do you find any fault with that particular standard, Mr. Schlissel?

A. No. As you're aware, the prudence standard changes from state to state a bit at times. I think that this is a reasonable enunciation of the general standard. The only thing I would add is that the utility management is held to the standard and knowledge of other utility managements. There's a big -- as I'm sure you're aware in prudence standard, it's is it a reasonable person or reasonable utility management with the knowledge of utility management. No, I think this is a reasonable -- reasonable enunciation of it.

Q. Thank you, Mr. Schlissel. I'm going to direct your attention to the footnote 21 on that page, where it states, "Good faith is presumed on the part of managers of a business. In the absence of a showing of inefficiency or improvidence, a court will not substitute its judgment for theirs as to the measure of a prudent outlay." Do you agree with that or have any reason to disagree with that particular statement?

A. No. That one I think would depend on whether you're in the federal courts or in the state court as to what a court looks at in terms of when it reviews a Commission decision, and that's not something I followed in my practice, so I don't know what would -- the federal courts would do now and I don't know what the State of North Dakota would do in reviewing a decision of this Commission.

Q. But just as a general proposition, given your legal background and your background in the electric utility industry, do you have any reason to disagree with that particular enunciation?

A. Yeah. I mean, I've seen it -- I guess it's not disagree with it. I just put it in the context I've seen instances where courts, even though there is a showing of inefficiency, will not review a decision, and I've seen instances where the court is upset about the outcome and it does review a decision, so I think that --

MS. LA SEUR: I'd like to renew my objection and refer the tribunal to Federal Rule of Evidence No. 704, barring legal conclusions by an expert witness as usurping the jurisdiction of the tribunal or the jury.

JUDGE WAHL: I'll take a look at that. Let's take a recess. Ten minutes, is that sufficient? Let's be in recess until 11:30.

(Recess taken at 11:21 a.m. to 11:32 a.m.)

JUDGE WAHL: I have reconsidered intervenors' objection to the continuing interrogation of cross-examination of Mr. Schlissel with regard to legal questions. I've reviewed Rule 701 through 706 of the North Dakota Rules of Evidence. I don't see those rules exclude this examination. I think the examination is appropriate as cross-examination and I think that Mr. Schlissel as a lawyer -- and, quite frankly, whether or not regardless of whether he's a lawyer, as an expert witness can testify even as to the application of law as to the subject matter in which he's qualified to testify. The objection is overruled. You may proceed, Mr. Guerrero.

MR. GUERRERO: Thank you, Your Honor. And you'll be glad to know we don't have any further questions at this time of Mr. --

JUDGE WAHL: I'm very glad to know that, indeed.

MR. GUERRERO: -- Mr. Schlissel. So we will pass the mike.

JUDGE WAHL: Mr. Binek.

MR. BINEK: Thank you.

CROSS-EXAMINATION

BY MR. BINEK:

Q. I hope to try to avoid duplication of issues that have already been covered, but it's been kind of difficult to keep track, so there probably will be some.

First of all, you criticize MDU and Otter Tail for not considering CO2 prices in their analysis, but you're aware of North Dakota law, aren't you, that specifically prohibits the Commission from considering these costs -- alleged costs of complying with future environmental laws or regulations that have not been enacted? I'm referring to North Dakota Century Code 49-02-23.

A. I am familiar with the North Dakota law, but I'm also familiar with what prudent utilities consider in their analyses and, in fact, what companies have responsibility to their investors to consider, so I think it's a really complicated issue as to what MDU can or cannot include in their analyses.

Q. But you -- you're not suggesting that this Commission should ignore North Dakota law in its decision in this -- in this proceeding, are you?

A. Well, I guess what -- I'm certainly not counseling anybody to violate a law, if the Commission got arrested on the basis of my advice. But in all seriousness, I think the Commission has to decide whether ignoring CO2 -- how you can show -- make an advance determination of prudence without considering the 800-pound gorilla in the room.

Q. But when North Dakota law specifically says the Commission cannot consider these things, are you suggesting that the Commission should consider them in their decision and ignore the North Dakota law?

A. Well, if the Commission were asking me for my opinion on how they should work their way out of this contradiction --

Q. I'm just asking a question of whether they should ignore the law and consider these costs. That's the only question I'm asking.

A. No, I don't think they should ignore the law, but I don't think that the law -- that determining prudence and saying there's an extraneous factor that we can't consider that means that this investment is imprudent is violating the law necessarily.

Q. So they should consider the costs of --

A. You don't have to consider the costs to know that there is a problem. You don't have to do an analytic analysis, a quantification, so to speak, to know that there's a serious problem and that that serious problem is likely to lead to increased costs that have not been considered by the applicants.

Q. The law says that they can't consider the alleged costs of complying with future environmental laws or regulations that have not yet been enacted.

A. Correct.

Q. And do you agree that they cannot consider those?

A. I'm not aware of any North Dakota court decision that defines "alleged costs." You're interpreting it to mean anything related to CO2 and an impact that that might have. That may be what a North Dakota court ultimately decides. You may be correct. I could also see an interpretation of that law meaning you can't talk about that the cost will be $9 a ton versus $10 a ton, but that perhaps you can consider that in fact there will be generic costs that affect a project that have not been considered. Again, with the absence of a court decision of which I'm aware, it's hard to answer your question with more specificity.

JUDGE WAHL: I'm sorry, Mr. Schlissel. You have your microphone turned away from you.

THE WITNESS: I apologize.

JUDGE WAHL: There you go.

THE WITNESS: We don't have to start over, do I?

JUDGE WAHL: No.

THE WITNESS: Okay. Sorry about.

Q. (MR. BINEK CONTINUING) I'm not sure I have an answer yet, but I don't know where else to go with this.

In your testimony you talk about companies that have decided not to undertake new coal-fired power plants and there has been considerable discussion between you and Otter Tail counsel concerning this, and you say it's because of concerns over increasing construction cost and/or potential for federal regulations of greenhouse gases. There have been companies that have gone forward with plans for construction of coal-fired power plants, too, haven't there?

A. Yes, there have been some investor-owned companies that have gone ahead, yes.

Q. The fact that one company decides against building a coal-fired plant doesn't necessarily mean that a coal-fired plant isn't a correct resource selection for another company, is it?

A. It's evidence of it, but, of course, it's not conclusive. The analyses done by each company is what should be conclusive.

Q. Each company has to make its decision based on the facts and circumstances of their situation; isn't that correct?

A. Correct.

Q. Do you believe that a company should rely solely on what modeling results show in selecting a generation resource, or should they also use the knowledge, expertise and experience of their management employees and consultants in making a determination?

A. Of course, they should look at -- they have to consider their expertise and experience and experience of other companies.

Q. In your testimony on page 19 you identify risks associated with building natural gas alternatives, as well as renewable alternatives and energy efficiency, and you say those are potential CO2 emission costs, possible capital costs, escalations, and fuel price uncertainty and volatility. Are those the only risks associated with a natural gas alternative?

A. Well, I mean, I suppose you could include a question of availability of supply, although I think there always -- I think within our lifetime there will be supply of natural gas. It's a question of price.

Q. With the CO2 emissions, I believe that we have testimony in this case that natural gas-fired generation emits roughly 50 percent of the CO2 -- the amount of CO2 as a coal plant. Do you agree with that?

A. It's roughly 50 to 60 percent.

Q. Okay. So if CO2 costs are imposed, they're going to be imposed on gas-fired generators, as well; right?

A. That's correct, and should be considered in the analysis.

Q. The applicants' rebuttal witness, Thomas Hewson, talked about possible CO2 legislation. Do you agree that if Congress enacts future legislation, that it will likely -- that it will more likely be a cap-and-trade program?

A. Yes.

Q. Do you also agree that under the proposed legislative programs that a portion of the emission allowances would likely be allocated at no cost to affected parties to reduce their compliance cost impact?

A. I think that's great -- that's highly uncertain. My opinion is I think that initially some portion will be allocated free, but --

Q. In your analysis did you factor in any no-cost allocations?

A. No. Would you like me to explain why?

Q. No. I needed to know.

A. Okay.

Q. Your counsel can explore further if that's necessary.

A. Fine.

Q. Do you agree with Mr. Hewson that overall costs of wind generation facilities are more capital intensive on-a-dollar-per-kilowatt-hour basis than conventional fossil fuel costs?

A. On a kilowatt --

Q. Kilowatt-per-hour basis.

A. Not necessarily.

Q. Kilowatt-hour basis.

A. Wind capital costs now at the high end of the estimated range is roughly $2,000 a kW, 2,100. Coal plant costs are now 2,500 to $3,000 per kW. Doing a levelized cost analysis with CO2 costs we find wind to be less expensive than coal.

Q. So wind generation facilities are not more capital intensive?

A. Well, if you look at a dollar per kW, they're not.

Q. Okay. What do you believe is a realistic capacity factor for wind generation?

A. Depends on where you are.

Q. In North Dakota.

A. I think you're probably talking a 40 percent. I've seen some studies that have assumed 45. Again, it depends on where you are and how diverse. If you're talking one wind farm, are you talking about, you know, geographically dispersed wind facilities, you can probably have as a group a higher capacity factor. I think as an estimate you would look -- 40 to 45 percent would be the top.

Q. Do you know if that's what the experience has been in North Dakota?

A. I don't recall all of the wind facilities.

Q. What about Minnesota, do you know what the capacity factor is for wind generation in Minnesota?

A. We've looked at it. Sitting here today, I'm sorry, I don't remember all of the results. One thing you have to factor in, too, is that the new wind facilities are projected to be more efficient in terms of operation than the older, so you're likely to get better capacity factors, but, again, I don't remember the exact operating performance statistics.

Q. Well, would you agree with Mr. Hewson that the EIA, DOE wind production data shows 2005 average output capacity for Minnesota wind projects was close to 32 percent?

A. No. I would have to verify his numbers before I would agree with Mr. Hewson.

Q. Because of the volatility of fuel prices, would coal-fired generation likely result in more stable electric power rates?

A. Than what? Than just --

Q. Well, than natural gas.

A. Perhaps. I mean, if natural gas prices are fluctuating up and down, then the answer is yes.

Q. Does the United States rely on imports of natural gas to satisfy its demand?

A. Increasingly it's relying on LNG imports, yes.

Q. And where do LNG imports come from?

A. There's LNG off Australia, there's LNG in the western part of Russia, just north of Japan, there's LNG in Iran. I forget the list. There's LNG, I believe, in Venezuela, other places in the Caribbean. I have to look at a list. Those are the ones I recall offhand.

Q. And do you know primarily where U.S. imports come from?

A. I've seen the data. I don't recall. If you have something subject to check.

Q. No, I'm just asking.

A. Those countries I mentioned are, I believe, some sources. Oh, some other countries in the Persian Gulf, Qatar, Abu Dhabi -- I know Qatar. Q-a-t-a-r, I think, is how you spell that one.

Q. How about Saudi Arabia?

A. I was about to say Saudi Arabia.

Q. As far as imports of natural gas, does the United States import from Canada and Mexico, also?

A. I think so.

Q. Okay. I don't recall whose testimony it was, but there was indication -- or a statement that imports from Canada and Mexico are declining. Would you agree with that?

A. I think it's expected to decline over time, certainly. There's actually going to be an LNG terminal or two in Baja, California, so I don't know whether that counts as imports through Mexico, but there will be additional LNG through Mexico coming into southern California.

Q. From Mexico or through Mexico?

A. Through Mexico.

Q. Does an increasing dependence on foreign supplies of natural gas present any supply and security risks?

A. Yes.

Q. Will requirements to reduce CO_2 emissions affect natural gas demand and price volatility?

A. I don't know. That's a really complicated question. You would expect that it will affect natural gas demand depending on a number of other factors. How much energy efficiency we do, how much renewable resources we build, how much nuclear is added, those will affect how much CO_2 regulation affects natural gas demand. As to volatility, I don't -- people interchange price increases with volatility. Volatility to me means it's going up and going up, changing month by month or over a couple months. I don't know that CO2 prices will affect volatility, per se. There have been various studies of the impact of regulation, the current bills before Congress -- adoption of the current bills before Congress on natural gas prices, and it looks like it will have -- well, actually the results of many of these scenarios are that it will end up leading to lower natural gas prices because eventually CO2 regulation, as you, yourself, pointed out, will be applied to natural gas plants, and that will end up pushing companies away from building and operating natural gas plants to more energy efficiency and renewables and maybe nuclear. So it's really a complicated issue that I can go into more detail if you want.

Q. No. I accept your statement it's a complicated issue. I think that's pretty obvious.

Is wind generation competitive with Big Stone II without production tax credits?

A. Wind on itself without a production tax credit, I don't think it is on a levelized basis.

Q. When do you project that the production tax credits will expire?

A. It's a political issue so it's hard to come up with a projection. I think that Otter Tail Power's estimate that the wind production tax credit will continue through the end of 2013 is reasonable. Xcel Energy does 2015. I think that's kind of a reasonable ballpark. What I think will happen is that when we eventually get some form of CO_2 cap-and-trade regime in this country and CO_2 prices get high enough, then the production tax credit will not be renewed because it will be duplicative, that the wind industry will not need it, the solar industry won't need it because carbon-emitting sources will be paying CO_2 prices. So I think the actual date of when it goes away is tied in to when we get meaningful greenhouse gas regulation in the U.S.

Q. Do you think the cost of wind generation will increase because of demand for wind generation resources if there's a significant CO_2 tax or other cost imposed by the states or federal government for CO_2 emissions?

A. I think it's a factor to consider, but I think counterbalancing that is we're seeing companies expanding production facilities for wind facilities -- wind power dramatically. Just go down to Iowa as an example. In Iowa there are any number of factories for wind turbine blades, other components of wind turbines. So the industry estimates that the production capability will quadruple by 2012 in terms of how much wind -- how much wind capacity they can produce -- build that can then be installed.

Q. Are there more uncertainties and more risks for higher fuel prices and fuel supply disruptions with natural gas-fired generation than with coal-fired generation?

A. I think that in general you would think there's more -- you lumped a number of things together. I think the evidence is that coal prices are going up. If you look at the spot markets now, the spot market prices for coal have doubled, tripled, even more, within the last year. We're now exporting more coal to foreign countries. That's going to affect the price of domestic coal. You'd think in general that, yes, supply disruptions are a bigger concern with natural gas, but then you look at the actual history. There have not been natural gas supply disruptions -- significant ones -- other than during the cold spell, and at the same time Powder River Basin coal, because their railroad track problems, led to major cost increases by coal-fired utilities all around the Midwest. So, yes, there's an expectation -- and you should be concerned about natural gas supply stability. That's why we propose you only build and operate gas to the minimum extent necessary.

Q. Getting to that, when you're talking about building natural gas and talking about an alternative to Big Stone II, the testimony from an Otter Tail witness was that to replace Big Stone II, you need 500 megawatts of natural gas.

A. Yeah, that's -- that's old-time thinking. That's old-time thinking that gives no -- Mr. -- you're talking about Mr. Greig. Mr. Greig's analysis gives no capacity credit to wind at all, even though these companies -- two companies in their modeling analyses give capacity credit to wind, and have done so in the past.

Q. Well, if capacity credit is given, how much natural gas would have to be built to replace Big Stone II?

A. Again, you look at the economics, you balance off how much wind do you have to build, what capacity factor do you get from wind, and what capacity factor do you then -- how much gas do you have to build and how much do you have to operate that gas, so it's a complicated analysis, but generally if you build 400 -- let's assume wind got a 20 percent capacity credit. Okay?

Q. Okay.

A. And you build 500 megawatts of wind, so that for reliability purposes that equals 100 megawatts of wind for capacity, just for reliability purposes, you then have to build 400 megawatts of gas.

Q. Okay. So a minimum 400, maximum 500, depending on whether capacity credits are factored in?

A. Well, yeah, but it's not a simple matter.

Q. No, I realize. And my question was fairly simple, but you've answered the question that I've asked.

A. I kind of feel like I've given half of it, but you get the say. I would go on to explain that you also have now the economics of how much electricity is produced by the wind, which has a zero fuel cost, versus the natural gas capacity.

Q. Well --

A. So you might want to build more wind and less gas or operate gas less, have some of your gas be peaker and some be baseload.

Q. I realize that there are all of those alternatives, but I was trying to address the situation --

A. Okay.

Q. -- of Otter Tail's testimony, the 500 megawatts and yours about the lack of recognition of capacity credits.

A. Okay.

Q. Your counsel may want to inquire further on this. That's fine.

A. Okay.

Q. Have you reviewed Daniel Klein's rebuttal testimony?

A. I went through it very quickly.

Q. Mr. Klein -- in his testimony Mr. Klein states that if Big Stone II is not built -- I think -- wait a minute. Maybe we've covered that already.

Okay. Mr. Klein in his testimony states that natural gas prices are much more volatile than coal prices. And my question is -- this kind of goes back to what we talked about a little bit before -- whether you agree with that.

A. I agree that gas prices are volatile, but you've got to put it in the context of an analysis that looks at the potential increases in capital costs, CO2 costs and then gas volatility, and you evaluate whether Big Stone II makes economic sense even if you consider volatility, and by which I'm not talking about month-to-month variations. I'm talking about differences between what a low long-term forecast and a high long-term forecast would be. So it's one factor that needs to go into a rigorous analysis of risk.

Q. Mr. Klein -- we talked about the stability of rates, and Mr. Klein in his testimony makes a statement that regions with more coal-fired power in their generation tend to have more stable power rates, and regionwide now, would you agree with that statement?

A. No. I mean, I have to see the numbers behind it. I think stability of rates changes over time. I mean, there have been some companies in this region that don't have stable rates even though they have a lot of coal. There are companies with coal that have very stable rates. For example, Kansas City Power & Light, which building Iatan II, I-a-t-a-n II, a coal plant, is having severe financial problems and rate issues due to their increased cost of their coal-fired power plant. So I think you can't just make a blanket statement like Mr. Klein attempts to do.

Q. Mr. Klein also states that natural gas markets are becoming more international and increasingly are subject to the same type of price spikes as seen with petroleum. Do you agree with that statement?

A. No. I've not seen the evidence about it becoming increasingly susceptible to price spikes as with petroleum, but certainly with the increased market for LNG around the world, there is developing an international market for natural gas.

Q. Do you agree with Mr. Klein's statement that while CO2 requirements would affect the cost of using coal at Big Stone II, it would also affect costs of using natural gas by the direct effect of CO2 pricing on natural gas emissions and also by the potential rise in market price and volatility of fuel?

A. Well, there's a lot in there. I would agree that it would affect the price of natural gas generation, because, as you and I spoke before, gas-fired power plants emit CO_2. As to the impact on natural gas prices, I think you and I discussed this before, it's really complicated.

Q. Yeah. We don't need to go over that.

A. Well, I'm not going to go over it, but I'll just say that the studies we've seen, and we've looked at all of the analyses done by the EIA, the Department of Energy, the EPA, the National Gas Council, show that when CO_2 prices get high enough, there is an impact on natural gas prices in some scenarios. But if you're going to assume an increase in natural gas prices, then you have to assume fairly substantial CO_2 costs, as well. You can't assume a low CO_2 price -- really low CO_2 price and then a really high impact on natural gas. That doesn't work. That's not the way the studies are showing -- the results of what the studies are showing.

Q. Would you agree with Mr. Klein's statement that North Dakota's participation in MISO exposes it to a natural gas price volatility risk that is much larger than its actual percentage of generation?

A. I don't know about that one. I think that it also offers access to cheaper power, so that I think that those are two balancing factors.

MR. BINEK: I think that covers all my questions.

JUDGE WAHL: I think it may be time for lunch.

COMMISSIONER CRAMER: Might be.

JUDGE WAHL: Let's be in recess until one o'clock.

(Recess taken at 12:03 p.m. to 1:01 p.m.)

JUDGE WAHL: All right. Let's be in order. It appears everyone's ready. As a preliminary matter and as a matter of information for anyone who is listening via the Internet, Commissioners, I'm advised that it appears that -- that Otter Tail and MDU expect to finish with their witnesses today with perhaps some adjustment yet, and then that we will complete the supplemental hearings with Mr. Deason's testimony tomorrow morning. That appears to be our agenda.

All right. Questions for Mr. Schlissel from the Commission. Commissioner Wefald.

EXAMINATION

BY COMMISSIONER WEFALD:

Q. On page 62 of your testimony -- page 62, line 21.

A. Yes.

Q. It states: "For example, the National Commission on Energy Policy has recently recommended that new coal plants built without carbon capture and sequestration not be grandfathered." Can you tell me when they made that determination?

A. They made the recommendation, I think, in December of 2007.

Q. Okay. Thank you. And then on page 61 --

A. Yes, ma'am.

Q. -- line 11, it reads, Synapse believes it is important for the Minnesota PUC to rely on the most current information. Should it read "North Dakota"?

A. It should be "North Dakota." I'm sorry. I missed that typo. I apologize.

MR. GUERRERO: Just for clarification, Your Honor.

JUDGE WAHL: Go ahead, Mr. Guerrero.

MR. GUERRERO: The clarification is that lines 8 through 29 on page 61 were actually stricken.

JUDGE WAHL: They were, Commissioner.

COMMISSIONER WEFALD: I don't have a

redacted copy --

JUDGE WAHL: Yeah. I'm sorry.

COMMISSIONER WEFALD: -- and I don't have any copy that has indicated what should be stricken. You'll just have to tell me as I go along.

JUDGE WAHL: Do you not have the large volume, Commissioner?

COMMISSIONER WEFALD: No. I've never been given that.

MR. BINEK: You were given a copy.

COMMISSIONER WEFALD: Is that what this is? Okay. Thank you.

JUDGE WAHL: If you would -- tab 42 is Mr. Schlissel's testimony.

COMMISSIONER WEFALD: Actually, all my questions are written in my old one, so just tell me as I go along.

JUDGE WAHL: Oh, all right. All right.

COMMISSIONER WEFALD: All right. Thank you. Okay. Then my next question is page 81. Is that also stricken? Let's see here. I think --

COMMISSIONER CLARK: It depends where.

COMMISSIONER WEFALD: I actually would like to go to page 77 next. Is the chart able to be discussed?

JUDGE WAHL: Only the -- portions of Table 6 are stricken except for the first, third and fourth columns -- I'm sorry. First, fourth and fifth columns.

COMMISSIONER WEFALD: The first column is the year?

JUDGE WAHL: Yes.

COMMISSIONER WEFALD: That's okay?

JUDGE WAHL: That's all right. And the fourth and fifth columns are with regard to capital cost.

Q. (COMMISSIONER WEFALD CONTINUING) All right. Would you please just still go over with me what this shows even between the first column and the fourth and the fifth?

A. Sure.

Q. Thank you.

A. When we -- "we" meaning Synapse -- re-ran the Strategist model for MDU in the Minnesota certificate of need case this past December, the only change -- the modeling change we made was to increase the cost of Big Stone II by ten percent.

Q. Okay.

A. And this is the plan that the model picked out. So if you look at the fourth column, that was their case with a 500 megawatt size Big Stone II Plant. It picked these two DSM programs that Mr. Guerrero and I discussed this morning, which were the same as the company picked. It then picked 30.6 megawatts of wind in 2011 -- 2010, excuse me, 61.2 megawatts of wind in 2011, and 87 megawatts of combustion turbine. It then added some more wind in 2012. It added combustion turbines then in 2017 and 2024. That was the plan that the model picked as its lowest cost plan.

Q. All right. Thank you. And then the next column, is that the same explanation only that relates to -- these both relate to MDU; is that correct?

A. Correct.

Q. So what's different? Tell me what's different between the next column.

A. The fourth column, the one I just described, is with regards to MDU's share of a 500 megawatt sized Big Stone II.

Q. And the other one is 580?

A. Yes, ma'am. Those were the two sizes that the companies indicated in Minnesota that they were considering for Big Stone II. So MDU ran two sets of computer runs.

Q. All right. How much demand side management was projected then in 2008 and 2009; do you know that?

A. I don't recall -- I don't have the numbers with me. Mr. Heidell can probably, when he gets on the witness stand, talk about it because it was his modeling assumption that we used, Mr. Heidell from the company. He did the Strategist modeling for MDU.

COMMISSIONER WEFALD: Is Mr. Heidell going to be a witness?

MR. KUNTZ: (Nods head.)

COMMISSIONER WEFALD: All right. Thank you. Then page 81 is the chart, Table 7. Are we able to discuss that?

JUDGE WAHL: Page 81?

COMMISSIONER WEFALD: Mm-hmm.

MR. GUERRERO: (Shakes head.)

COMMISSIONER WEFALD: No. And the charts on page 82, are we able to discuss those?

JUDGE WAHL: No.

Q. (COMMISSIONER WEFALD CONTINUING) All right. And then I had a question on -- I'm going to ask you a rather general question, and I understand if you can't answer it. If you want to refer me to another witness, that's just fine.

A. Okay. Thank you.

Q. All right. Let's say that MDU serves about 500 megawatts of load. These days, given the environment that we're in, what percentage of load do you think a company should be trying to meet with demand side management-type programs?

A. Wow, that is a complicated question. Do you mean -- well, clearly as much -- I mean, if you're talking about general energy efficiency, you want to reduce the demand as much as you can. So if you're just talking about -- I mean, let's assume you had -- the company came to you and said we have programs that can reduce our demand from 500 to 400 megawatts. That's good. There's nothing negative. You want to get that down as low as possible.

Q. But what I'm wondering, though, is like is it one percent? See, that would be probably a 20 percent reduction in their load. Sometimes companies come to us and they say we want to start demand side management programs and then they present us with one percent of their load. I suppose that's a good place to start, but I'm asking what is a reasonable number these days for demand side management?

A. Well, companies are and commissions are raising the amounts. I mean, generally now one to two percent is believed to be achievable by many companies and many commissions.

Q. And that would be -- in that case if a company served 500 megawatts, it would be approximately ten megawatts; right?

A. But that's year -- each year --

Q. Each year.

A. -- and it's cumulative.

Q. Cumulative?

A. Yes. So let's forget about growth. Let's assume the company's not growing. With your example it would be ten megawatts the first year, and then again two percent would be -- then it would be 49 -- it would be --

Q. So it's ten percent. Another one percent would be another five megawatts.

A. So it would be either ten megawatts a year or five megawatts --

Q. Five megawatts a year --

A. Yes.

Q. -- on top of each other.

A. On top of each other. They're cumulative. The northwest -- the Midwestern Governors Association in November adopted a goal of a two percent of load served by energy efficiency by 2015 and two percent additional every year thereafter.

COMMISSIONER CRAMER: So in 50 years you wouldn't need the plant anymore.

THE WITNESS: Well, yeah. The problem is you've got to -- I mean, you've got to do something in the interim to be able to meet it, and you also -- in a real world situation you do have growth. So it's more complicated than this example, but it's basically -- one to two percent is certainly achievable, we believe, and it's cumulative.

Q. (COMMISSIONER WEFALD CONTINUING) And so the 1.5 that Minnesota has set is cumulative --

A. Yes.

Q. -- from year to year?

A. Yes.

Q. So it's one-and-a-half percent of the load the first year and then three percent the second year and four-and-a-half the second year, something like that?

A. No. It's -- the increment increases.

It's not three percent. It's one-and-a-half percent the first year and then the same number of megawatts the second year or -- I mean, and so on, so that it does build up. Over time you would have significant savings.

COMMISSIONER WEFALD: Okay. Thank you.

JUDGE WAHL: Any further questions from the Commission? Commissioner Clark.

COMMISSIONER CLARK: Just a few, and I think they're mainly based off some responses.

EXAMINATION

BY COMMISSIONER CLARK:

Q. Good afternoon, Mr. Schlissel.

A. Yes. Good afternoon. I'm glad I'm not sitting next to you. I think my green cast and your tie would make us look like a pumpkin.

Q. My questions, I think, were raised primarily by some responses that you gave, and I just want to clarify them. You had talked about the -- I think the installed cost of wind being something like 2,000 to 2100 kilowatts -- per kilowatt. Now, is that the all-in price of wind, or is that just kind of the tower installed itself? The reason I ask is because any wind, of course, has to be backed up by something else. Is that including that back-up cost or not?

A. No. It's the cost of building a wind turbine. Just the all-in cost.

Q. For comparative purposes, though, the Commission would need to consider the total cost of the resource, both wind and --

A. Well, sure, you'd want to -- I mean, firstly, wind can be backed up by the general system. The system has a lot of dispatchable capacity. So it isn't -- I mean --

Q. When you say the system, buying from the market?

A. The grid. The grid has a lot of dispatchable power plants already existing. Now, if you're going to look one-on-one, Big Stone II versus wind and energy efficiency and gas alternative, then you would want to have some backup. Yes. You want to factor in the maximum amount of energy efficiency you think you can achieve, the amount of wind, and the amount of gas you need.

Q. Sure. What's installed combined cycle gas plan --

A. Costing nowadays?

Q. Yeah.

A. Somewhere in the -- I think OTP assumes 8 to $900 per kw, and I think that's a pretty fair number, maybe a thousand, somewhere in that range for an overnight cost.

Q. And when you were talking about backing up by the system, that's essentially buying off the market; is that correct?

A. Yes. I mean they -- right, that's correct. Either buying off the market or having a contract.

Q. Do you have an idea what typical spot market prices are right now in the MISO?

A. No. That's why I think the kind of analysis where you would compare -- you know, assume everything's new is probably a better type of analysis to try to do without a computer model.

Q. You'd made a statement that under some models that you had read, if you factored in new carbon regulations, that potentially natural gas prices could decline because the -- there's less demand on the resource. Would that also be true for coal under those scenarios then, as well?

A. I would expect, yes, that under CO_2 regulation, excluding CO_2 cost, that the cost of coal probably would go down if there's less being used.

Q. But either way the delivered cost to the consumer is going to be more under -- for either commodity; is that right?

A. Well, the -- not necessarily. The delivered cost of the coal would depend on the -- all the factors that you were talking about with the previous --

Q. Right. And I may have used the wrong word when I said "delivered." The end cost to the consumer for either commodity is -- under any carbon regulation plan is going to be more than it is today; is that correct?

A. Not necessarily. I mean, not if -- I don't know that the price of natural gas going to heat my home is going to have a CO_2 adder. I think that the CO_2 adder will be applied to certain sectors of the economy.

Q. But to the degree that carbon regulation encompasses coal and coal for electric utilities, doesn't that place pressure on natural gas -- I mean, even if you didn't have a CO_2 adder on your residential home heating, it would still place quite a bit of pressure on the commodity itself, wouldn't it, as utilities move towards that?

A. What we see in the studies that have been done by -- again, it's the Energy Information Administration, the DOE, the U.S. EPA, the National Gas Council, the researchers at MIT and now at Duke, we have a range of studies, and what they do is they take -- they're basically focused on three bills in Congress -- this Congress. The McCain Lieberman greenhouse gas bill, Lieberman-Warner, and Bingaman-Specter, and they put it in their model and try to figure out -- these are the reductions they want to achieve in CO_2 emissions -- what CO_2 prices do they need in order to get those reductions?

They then also produce as output: What natural gas prices do they predict under each of their scenarios year by year? So we can take the CO_2 prices and the natural gas prices year by year for each scenario, and what it shows is that for many of the scenarios that when the CO_2 prices get high enough, companies will not build natural gas. They'll turn away from it. Because as you add a CO_2 price to the cost of generating power at a fossil plant, gas or coal, it makes energy efficiency and renewables more economic.

Q. Right. But if that's the scenario,

wouldn't the same then be true for coal?

A. It is. That's what happens. It pushes coal --

Q. But the end cost to the consumer in either case is dramatically more than it is now.

A. That's correct. I'm sorry. I didn't understand you. If that's what you're asking, yes. When there is ultimately federal regulation, the price of electricity will cost more. I don't think there's any way around that. Whether you assume carbon capture and sequestration or some kind of cap and trade, it will cost more.

Now, what some of the bills talk about doing -- I mean, it's not like -- it's not like we're sending money to Saudi Arabia for oil. The money would go into the Federal Government and then be either fed back to people in terms of a tax decrease or in terms of some payment back to ratepayers who are also taxpayers. So it's not like the money gets sucked out of the economy.

That's why when you read these studies that show carbon regulation will cost the economy 800 billion dollars each year, they're assuming that this money is sucked out of the economy and going to Saudi Arabia. It's not.

Q. Well, it's less efficient than the market, though. I mean, it's still the government -- sort of the same way that tax dollars are sucked out and then some people view that as being reinvested, isn't it?

A. Right. But here there's more direct -- here it's relying on the market to set the price. It's just that when the government gets the revenues from auctioning off the CO_2 allowances, they then have this pot of money and the question is what do they do with it.

Q. It's a different definition of market than I have.

A. Well, no, no. The price is set by the marketplace.

Q. But cap and trade, itself, is an artificial invention to raise the price of something that's free now by imposing something out there.

A. Well, true. But I think -- I mean, I think the difference is you're opposing a cap on the amount. That if we did that for anything else, we'd probably end up in the same kind of situation, so you're right.

COMMISSIONER CLARK: That's all I have.

Thanks.

JUDGE WAHL: Commissioner Cramer.

EXAMINATION

BY COMMISSIONER CRAMER:

Q. Well, I'd like to continue with a clarification, and it's very possible that I just wasn't understanding right, but with regard to the cost of wind -- the capital costs of wind, and I think Mr. Binek's question was -- he asked you what were the capital costs per kilowatt-hour, and you said $2,000 per kilowatt, and is that -- so am I understanding that means $2,000 per nameplate kilowatt capacity?

A. Right.

Q. What would be the cost then for the energy per kilowatt-hour? And isn't that a more -- isn't that a more important number for me to consider?

A. Well, they're both important, but I didn't understand the question when -- with all respect -- from Mr. Binek.

Q. Well, it's possible I didn't --

A. As you've asked it now I think I understand what he's talking about. I would guess that because you're assuming the wind operates at a 45 percent capacity factor and that a coal plant would operate at 85 percent capacity factor, that the wind capital cost per megawatt-hour is probably higher than the coal plant capital cost per megawatt-hour.

The reason I was confused is you usually talk about capital intensity in terms of dollars per kilowatt. When you get to dollars per megawatt-hour you have to factor in the cost of fuel, the cost of variable O&M, and things like that. So when you talk dollars per megawatt-hour, capital cost per megawatt-hour really doesn't -- it's meaningless because wind has a zero energy cost. You don't pay for the wind.

Q. Sure. I understand.

A. And coal or nuclear or gas has a fuel cost.

Q. You also -- along those same lines you talked about the fact that the newer technologies being implemented in the new turbines and other, I guess, technologies related to wind development were more productive or more efficient, perhaps is what you said. Is it also true that as newer sites for wind farms are discovered and developed, that those sites aren't as probably productive as the first sites. Is that a fair statement?

A. It's a fair question. I don't think the answer is necessarily -- the answer is -- I wouldn't agree with that necessarily. I think that the science of siting wind turbines is growing by leaps and bounds. That now the wind turbine experts are talking about the ability to actually predict the wind, so that wind could bid into a day-ahead market so that they do analyses of weather conditions, I guess, hundreds of miles west of here and that they would then be able to tell what hours -- what's the wind -- the range of wind.

So I think that advances in how they incorporate wind into the -- into the system and advances in the physical -- the technology of the wind turbines tell me that it's likely to be -- that wind turbine capacity factors will increase. I've seen nobody kind of reach the conclusion you're suggesting, to be honest. I think everyone assumes that the new wind will do better than the old, and it's not a situation of the best sites are taken.

I think -- just to finish it, I think in the last five to ten years the benefits of your state, of South Dakota, and of Kansas as places to put wind turbines has grown astronomically --

that's a bad metaphor -- meteorologically. So that really now companies think about, well, let's build a big wind farm in North Dakota, South Dakota, Kansas, and build a transmission line and take the power into Minneapolis, Chicago, or to other areas. So I think the best sites are far from taken.

Q. Sure. Okay. There's been a lot of discussion about greater dependency on coal in this region. You had testified earlier in talking about Entergy, I guess, down in Louisiana as having a high dependency on natural gas, and I'm not being flippant when I ask this, but why would a Louisiana utility be more dependent on natural gas than other fuels for --

A. Because it's right there.

Q. Okay. That's what I thought. So is it then -- well, then let me ask you this: In your analysis of the -- or comparison of Big Stone II to wind/gas, wind/gas, did you do any analysis of the economics of a mine-mouth lignite plant in North Dakota?

A. No.

Q. Why not?

A. That just wasn't an alternative we looked at. I know that MDU over the years had done -- I think it was MDU, it might be OTP -- over the years has looked at some of those alternatives.

COMMISSIONER CRAMER: I have nothing further.

JUDGE WAHL: Any further questions from the Commission? Ms. La Seur, followup?

REDIRECT EXAMINATION

BY MS. LA SEUR:

Q. Following up initially on some of Mr. Guerrero's questions, Mr. Schlissel, in your recent coal plant consulting, what have some other representative clients been that you didn't mention in response to Mr. Guerrero's questions?

A. Yes. Basically in response to Mr. Guerrero's direct questions, I listed some of the environmental groups for whom we've worked on coal plant issues. My clients on coal plant issues also included the Office of Consumer Advocate of the State of Iowa, the office of -- the Division of Consumer Advocate of the West Virginia Public Service Commission.

Q. Turning back to the Wall Street Journal article that is at tab 41 in the black binders and I think tab eight in some of them. It's an exhibit to, I think, the Klein testimony referenced by Mr.

Guerrero. Would you please turn to page three?

A. I can't. You took my copy.

Q. I took your copy. I'll give it back. And, Mr. Schlissel, would you please read into the record the last paragraph -- last paragraph beginning on that page?

MR. BINEK: What page?

MS. LA SEUR: It's page three of The Wall Street Journal article we all looked at before lunch. It's Exhibit --

THE WITNESS: Well, the context of this paragraph is that not everyone agrees U.S. natural gas prices are certain to rise. And then it cites the Chesapeake Chief Executive Aubrey, A-u-b-r-e-y, K. McClendon, M-c-C-l-e-n-d-o-n, sees production continuing to grow holding U.S. gas prices between seven dollars to ten dollars per million Btus and avoiding the need to increase imports, and Michael Stoppard, S-t-o-p-p-a-r-d, a senior director of Energy Consultants Cera, predicts world -- sorry -- world LNG supply will grow by 30 percent in the next two years making more chilled gas available for the U.S.

Q. Thank you. Please turn to page five of your supplemental direct testimony. This is

Intervenor's Exhibit I 10 at page five, referencing the lines that Mr. Guerrero asked about, 9 to 11. When you referred to the modeling analyses presented by OTP and MDU as flawed and biased, to what were you referring?

A. I was referring to the fact that the company -- MDU and OTP, at least my understanding, have presented two pieces of evidence to show that there's need for new capacity. One is general data from NERC, North American Electric Reliability Corporation, showing capacity -- actual capacity versus demand, the peak demands, and then the second piece of evidence is a table of the need of the current Big Stone II applicants and the need for each company from -- shown in that table, I believe, is drawn from their modeling analyses. So that's what I meant in this sentence.

Q. So it's the lack of external reference?

A. There's no other reference other than the modeling analysis. It's not even referenced, but that's, to my knowledge, the source of the numbers. I mean, let's assume OTP showed 150 megawatts. I forget exactly what number they showed. That 150 megawatts would be the result of Mr. Morlock's modeling analysis.

Q. As opposed to --

A. As opposed to an analysis of capacity requirements and needs that you can do independent of modeling. You can look at what are our peak loads. Then you apply a reasonable reserve margin and you get a total capacity required. You look at what your actual capacity is expected to be and you compare them and you figure out how much you need. I've seen those kinds of assessments all the time.

So what OTP and MDU do is they kind of mix the economics and actual need, which is okay as long as you lay it out that way, but they don't. It's not a strict need -- they don't -- there's no need for 150 megawatts of baseload other than through the modeling analyses that we've critiqued.

Q. Following up on some of Mr. Binek's questions, why didn't you include low cost or free allocation of carbon allowances in your analysis?

A. When we developed our Synapse CO2 prices, we assumed in the scenarios that there would be some free allocation. So it's already embedded in our prices -- our CO2 prices. To have then in our analyses have assumed again free allocation of some allowances is basically double counting.

So that when we came up with the Synapse

CO_2 prices that I understand have been stricken, so I won't mention them, they reflect our belief that there may -- that initially there will be some allocation of free allowances and that will decline over time. I hope that's clear.

Q. Returning to a question by Mr. Guerrero about your other recent coal plant work. Have other PSCs chosen to reject coal plants in favor of likely LNG or nuclear options?

A. I've not seen it set off in terms of other -- they haven't chosen between a coal plant and another option. The instances in which I've testified and the commissions have rejected proposed coal plants, in Florida the company came in and had done a significant number of modeling analyses using the same Strategist model that MDU looks at, and they varied -- they changed three significant variables, the capital -- estimated capital cost of the plant, CO_2 cost, and natural gas prices.

So they came up with a matrix that had these three changes, and the Commission -- this is their decision that they basically cut and pasted from my testimony, was that based on this -- the numbers in this table, yes, there were some scenarios where the plan was economic, but you had to assume high gas prices and low construction cost and low CO_2 prices. That if you then went to other scenarios with higher construction costs, lower gas prices, the plant was -- the proposed 2,000 megawatt plants were noneconomic, and that's what the Florida decision was.

The Duke -- North Carolina Commission in the Duke Cliffside case ruled on the basis of need; that the company hadn't shown a need for one of the two 800 megawatt units. And recently the Virginia State Corporation Commission rejected a proposed plant by AEP, American Electric Power. The plant would be built in West Virginia, had been certified by the West Virginia Commission, but I think it's roughly half of AEP's -- the subsidiary's load is in Virginia, so the Virginia Commission has to rule, as well.

The Virginia Commission rejected the proposed plant on the basis that the cost estimate was too old. It was from November of 2006. And that the company had refused to -- had decided not to provide a new cost estimate until after the Virginia Commission ruled, which made the Virginia Commission very angry. So they rejected the proposed coal plant.

And a number of other commissions around the country have rejected proposed coal plants, as well, as I discussed in my testimony.

Q. Do you consider any of these other proposals comparable to the Big Stone II proposal?

A. Generally, some of them are a lot larger, but some of them were pulverized coal plants. Yes. I think they're comparable.

Q. Are you able to draw parallels between the Florida proposal and Big Stone II?

MR. GUERRERO: I guess I'm going to object on the basis the question is vague.

JUDGE WAHL: Overruled.

THE WITNESS: The Florida Glades proposal was for two 980 megawatt coal plants -- pulverized coal plants, so it was a lot bigger than Big Stone II, is one difference. Another difference, as I mentioned a minute ago, the company did a much more vigorous set of analyses of how -- what the economics were, the plant compared to actually natural gas alternatives, under different assumptions as to capital cost increases, CO2 costs, and natural gas prices than has been done in this case by either OTP or MDU.

Q. (MS. LA SEUR CONTINUING) Mr. Guerrero asked about carbon capture and storage and the timeline on which it might be available. Do you believe that it's reasonable to suggest that CCS will be available economically within the foreseeable future?

A. Well, it -- I know it's not polite to disagree on redirect, but it depends on how you define "foreseeable future." I don't think that it's realistic to expect that CCS will be available for a new power plant before Big Stone II would be completed, before 2015, 2020, which means it's likely to have to be retrofitted, which is believed to be more expensive than adding it on from the beginning.

Q. And how much more expensive do you expect retrofitting to be than the currently proposed CCS technology?

A. The estimates that I've seen about CCS at new plants range from the MIT future of coal study of roughly $40 per ton to a study by Black & Veatch of roughly $71 per long ton, European/English ton, which is about probably $65 per U.S. short ton to about $68 per U.S. ton from NETL, National Energy Technology Lab. That's for a new plan. The estimates I've seen for retrofit are something, I think, 10, 20 percent higher.

Q. And why didn't you consider scenarios without the production tax credit?

A. This specifically applies to Mr. Greig's levelized analysis. He was preparing what would be built in place of Big Stone II -- would go into service when Big Stone II would go into service.

If you assume that the wind production tax credit would extend past 2013, as OTP does specifically, then it would be in effect when Big Stone II went into service. So that the wind that went into service in place of Big Stone II would have the benefit of the wind production tax credit.

So it's entirely consistent to assume along with -- I'm sorry. Let me start again. If you accept that OTP is right and that it's reasonable to believe the wind production tax credit will be in effect through 2013 and that Big Stone II would go -- be built and go into service before then, then your analysis should include that wind would go into service before 2013 and would be eligible for the production tax credit. That's why I did it.

Q. I'd like to hand Mr. Schlissel

Intervenor's Exhibit 17, the NERC 2007 long-term reliability assessments.

A. Is that in the --

Q. It's a new exhibit. I'd like to direct you to page 65 of that portion of NERC excerpts. I refer you to page 65. It's a set of excerpts, so it's not in direct numerical order, and there is a quotation from the Federal Energy Regulatory Commission about halfway down the page. Would you please read that into the record?

A. The FERC --

MR. GUERRERO: I'm going to object. This has already been read into the record yesterday.

MS. LA SEUR: I will clarify that I'm responding to a question asked by Commissioner Wefald and offering evidence that may be responsive to something she's just asked Mr. Schlissel.

MR. GUERRERO: I'm just kind of wondering if she could just ask the question as opposed to --

JUDGE WAHL: Well, I agree, but let's do it.

COMMISSIONER WEFALD: What page are we on?

MS. LA SEUR: Just so we all know what we're talking about. I could just as soon make the reference.

Q. (MS. LA SEUR CONTINUING) I'm just interested in the italicized quotation from the FERC, just so we all know what we're talking about.

A. "The potential immediate reduction in peak electric demand that could be achieved from existing demand resources is between three and seven percent of peak demand in most regions."

Q. And my question is whether or not this information from the reliability assessment is responsive to Commissioner Wefald's question regarding what can be achieved by DSM.

MR. GUERRERO: Well, I guess facts speak -- I'm going to object. Facts speak for themselves. We don't know whether this is responsive to Commissioner Wefald's testimony or not. She'll be the decider of that.

JUDGE WAHL: All right. The objection is sustained. Rephrase your question, please.

Q. (MS. LA SEUR CONTINUING) Mr. Schlissel -- oh, now I'm doing it.

JUDGE WAHL: You know, let's go. Let me just change that. This is not -- this is not worth arguing about. Respond to the question, please, Mr. Schlissel, as it was stated.

THE WITNESS: Yes. I believe that

demand -- this quote about demand response, as well as the description of demand response that's given two paragraphs earlier, is information that I would believe would be responsive to her question. Again, she does have to decide whether it is, but it's what I think is responsive.

MS. LA SEUR: Nothing further.

JUDGE WAHL: Mr. Guerrero, followup?

MR. GUERRERO: Yes. Just a couple of questions, Your Honor. I'll try to be brief.

RECROSS-EXAMINATION

BY MR. GUERRERO:

Q. Just on this question, conservation and the quote from the NERC assessment, three to seven percent. You weren't Synapse's expert witness on conservation issues last January before the Minnesota Public Utilities Commission, were you?

A. That's correct. Bob Fagan testified on those issues.

Q. Do you know what Bob Fagan testified to in terms of what he thought the penetration level could be in Minnesota?

A. Penetration level for what?

Q. Energy conservation.

A. Well, this is -- demand resource is

different than energy efficiency. This is in addition to energy efficiency. Demand resources are basically getting customers to be able to change their energy usage either in response to incentive payments or cost.

Q. Okay. Fair enough. Do you know what Mr. Fagan's proposal was in Minnesota with respect to kilowatt-hours?

A. Well, it was -- I don't remember the exact number, but my recollection is that he was talking about how much energy efficiency could be achieved. You'd have to refresh me with regards to the specific number.

Q. I can't remember specifically what it was in reference to, but you -- earlier you criticized Mr. Greig's testimony in not giving a capacity credit for wind; do you recall that testimony?

A. That's correct.

Q. And in Mr. -- do you recall reading Mr. Greig's rebuttal testimony that was filed April 23rd?

A. I went through it quickly.

Q. Okay. How would you assign a -- give capacity credit to wind?

A. As we did in South Dakota, we would

assume -- and as I discussed before -- I don't know whether it was you or Mr. Binek -- I would assume -- I'd take a conservation value --

Q. Conservation value of what? I'm sorry?

A. A conservative percentage, a 15, 20 percent capacity credit. You assume that if you build 100 megawatts of wind, that -- that gets 20 megawatt credit towards meeting peak demand, so then --

Q. But my question is: Do you know how -- under what circumstance would an organization like the Midcontinent Area Power Pool or Midwest Reliability Organization actually assign credit to wind?

A. Oh, they have a set of rules whereby they look at -- I think it's the peak -- it's certain hours around the peak load over a certain number of months, is my recollection of how it was done. So first they'll project it for a year or a couple of years, and then based on actual plant output they will then modify that.

Q. Well, isn't it true that you'd actually have to assign firm transmission to the wind?

A. Sure.

Q. Yeah. And in your analysis did you ever assign firm transmission to the cost of your wind proposals?

A. No. We didn't do -- there's no "our analysis." We responded to Mr. Greig.

Q. Have you ever evaluated the cost of the wind option assigning a firm transmission capability to that option?

A. Yes. I believe in one of the pieces of testimony we did. Maybe it was South Dakota we did look at that.

Q. But not here?

A. In North Dakota, no, because, again, we were just responding to Mr. Greig, and we did not make an adjustment in the numbers that I guess have now been stricken.

Q. There's been some discussion about natural gas prices and what may happen to that, and I think that the -- probably the best answer was that it's very complicated in light of future CO2 regulation, but you've mentioned a couple of times that you paid a great deal of attention to studies performed by EIA, Department of Energy. Were there others?

A. EPA, National Gas Council, MIT and Duke.

Q. With respect to the EIA, we talked about it in Minnesota, about some of the assumptions that were behind some of those studies that would seem to conclude that natural gas prices aren't going to increase in light of federal CO_2 regulation?

A. That's right. Your cross convinced me that some of the scenarios were unrealistic because they had wildly inflated estimates of how much new nuclear power would be added or new biomass would be added, and so we went back and we looked at scenarios in which the amounts of new nuclear capacity and biomass were far more constrained and saw that even in those scenarios there's not a major impact in the near term. Over time it may get up to 10, 15 percent increase in natural gas prices, but there wasn't much of a major impact in the short-term.

Q. Some of those studies included like 300,000 megawatts of new coal with carbon capture sequestration by 2030; is that --

A. Right. And we talked -- your cross, to give you credit, taught me that, yes, it's important to focus on scenarios that don't have such wildly inflated estimates of new capacity that's added. But even if you look at other studies, other than the EIA, which don't make those same wild assumptions, they also don't show much of an increase, if at all, in natural gas prices, but then again, it is complicated.

Q. I didn't understand the question -- or excuse me, your response to Ms. La Seur's question about the no-cost allowances, and I think you said something like we included the fact that there may be no-cost allowances in our original allowance price guesstimates. Can you go through that again for me briefly?

A. Well, I wouldn't call it guesstimates. In our forecast of future prices we reduced them from what they might otherwise have been assuming that some were allocated freely. Okay. Are you with me?

Q. Yeah, I think. Go ahead.

A. Then if we had to -- I mean, if we assumed that there was no free allocation, the price would have been higher. The average price per ton of CO2 would have been higher, because when there is free allocation, you're averaging -- some you're paying for and some you're getting free, so that the average price -- no matter what proportion you have, the average price is going to be lower.

Q. Your testimony in Minnesota, was it not, Mr. Schlissel, that under no circumstance would

Congress ever allocate any no-cost allowances to a unit like Big Stone II? Wasn't that your testimony?

A. Correct. But it could have been free allocation -- or there still could be to existing power plants. So that free allocation comes into the equation even if existing plants are not grandfathered.

Q. And so you're -- excuse me.

A. So that our numbers -- if you remember the figure with all the -- the colored triangles and squares and circles that drove Mr. Glaser nuts or he had difficulty with because he's colorblind, the Synapse forecast could have and would have been higher if we had assumed no free allocation. I hope that's clear.

MR. GUERRERO: One minute, Your Honor.

Q. (MR. GUERRERO CONTINUING) You keep referring to the fact that Otter Tail has made a prediction that the PTC will be extended through the end of 2013. Do you know whether that's a prediction or whether that's just a planning assumption?

A. I'm sure it's a planning assumption.

Q. Okay. So it's not a corporate prediction.

A. I don't know that I used the word "prediction." I meant it's a planning assumption, but I assume that their planning assumptions would reflect what they expect is going to happen or could happen.

Q. In the event that we have a situation where we've canceled coal plants and utilities and their customers are forced to go to alternatives, including large amounts of natural gas, and in the event that some predictions indicate that natural gas is going to continue to increase, who's going to bear that risk, Mr. Schlissel?

A. I assume ratepayers bear that risk.

Q. So what we're talking about here obviously is a great deal of how do we allocate risk fairly, prudently.

A. Sure, yes.

Q. There are risks across the spectrum.

A. How do we study and consider risk and how are they allocated. Yes.

MR. GUERRERO: I don't have anything further at the moment, Your Honor.

JUDGE WAHL: Mr. Binek?

MR. BINEK: Just one more question on these free allocation issues.

THE WITNESS: Okay.

RECROSS-EXAMINATION

BY MR. BINEK:

Q. When you talked about free allocations being included in your analysis or your study, what level of free allocations were included?

A. We didn't have a specific number.

Q. So how do you figure them in if there isn't any specific number?

A. It was just our judgment that we reduce prices by roughly 10, 20 percent from what they would have been otherwise if there had been no allocation.

Q. Okay. Thank you.

A. The alternative would have been to assume no free allocation and use higher CO_2 prices, which probably would have gotten us back to the same place.

MR. BINEK: I have no further questions.

JUDGE WAHL: Any further questions from the Commission?

COMMISSIONER WEFALD: No.

JUDGE WAHL: Ms. La Seur?

MS. LA SEUR: Nothing further.

JUDGE WAHL: Mr. Guerrero?

MR. GUERRERO: No, thank you.

JUDGE WAHL: That's it. Thank you very much, Mr. Schlissel.

THE WITNESS: Thank you very much.

COMMISSIONER WEFALD: I do have one question, but it's for Ms. La Seur just to tell me what document she was referring to on page 65, because I found page 65, but I never found --

MS. LA SEUR: It's Intervenor's Exhibit 17, the NERC reliability.

COMMISSIONER WEFALD: It's the NERC report. Okay. Thank you. I have it. I have it.

MR. KUNTZ: Can we have five minutes?

JUDGE WAHL: We'll be in recess for five minutes.

(Recess taken.)

JUDGE WAHL: We can proceed, I think, Mr. Kuntz, when you're ready.

MR. KUNTZ: Thank you. Montana-Dakota calls Andrea Stomberg.

JUDGE WAHL: Ms. Stomberg, I do recall your previous appearance for the prior hearings in this matter, and I have personal knowledge, of course, that you have been advised and are informed concerning perjury. Accordingly, you understand, of course, that your testimony continues under oath and subject to the penalties of perjury.

MS. STOMBERG: I do.

JUDGE WAHL: Mr. Kuntz.

ANDREA STOMBERG,

having been previously duly sworn, was examined and testified further as follows:

DIRECT EXAMINATION

BY MR. KUNTZ:

Q. Please state your name?

A. Andrea Stomberg.

Q. And whom are you employed by?

A. Montana-Dakota Utilities Company.

Q. What's your position with Montana-Dakota?

A. Vice president of electric supply.

Q. Could you tell the Commission briefly what your responsibilities are in that position?

A. Certainly. I oversee power production, transmission communications.

Q. And you prepared -- you testified in this proceeding earlier at the previous hearing; is that correct?

A. I did.

Q. And have you caused to be prepared prefiled supplemental testimony and prefiled rebuttal testimony?

A. I have.

Q. I'm showing you what's been marked as Exhibit MDU 213. Is that a copy of your supplemental prefiled direct testimony?

A. It is.

Q. Do you have any changes or corrections to make to that testimony?

A. I do. On page seven, if I can find it, line 13, I realized as I reviewed this last night that some of these percentages were incorrect, and I thought we should take this opportunity to correct those. They're minor changes, but line 13, 72 percent coal. I think it was 77. 72 percent. Line 14, 24 percent dual fuel turbines, and under 4 percent wind.

Q. Four, f-o-u-r?

A. F-o-u-r, four. So 72, 24 and 4. I think that should add up, I hope. And then on line 17 then, we would need to change the 82 percent to 78 percent, and that would complete my few little changes.

Q. To Exhibit 213. What about to 216? Do you have any changes or corrections to that exhibit?

A. Not that I noted.

Q. And if I were to ask you the questions that are set out in Exhibits 213 and 216, would your answers be the same with those corrections?

A. They would.

MR. KUNTZ: We would offer Exhibits 213 and 216.

JUDGE WAHL: Ms. La Seur?

MS. LA SEUR: Yes. No objection.

JUDGE WAHL: Mr. Binek?

MR. BINEK: No objection.

JUDGE WAHL: Exhibits MDU 213 and 216 are each received.

Q. (MR. KUNTZ CONTINUING) Ms. Stomberg, also in front you, I believe, is 213A. Is that a summary of your testimony?

A. It is.

Q. At this point could you go through and provide the Commission a summary of your supplemental direct and rebuttal testimony?

A. Sure. As a result of the change in the size of the Big Stone II Plant -- proposed Big Stone II Plant and a number of other significant changes, Montana-Dakota updated a resource planning analysis, and in this update we reaffirmed our load forecast, our level of participation in the proposed plant, plant costs, as well as assumptions about the market and other generation alternatives.

This analyses supported ownership of approximately 130 megawatts of a 500 megawatt Big Stone II Plant on line in 2013. This plant would allow Montana-Dakota significant economies of scale and efficiencies related to location and boiler design, as well as participation with partners experienced in plant design and operation.

In our analysis we did not adjust the modeled natural gas price to account for likely increases in the cost of natural gas with future carbon regulations. Montana-Dakota continues to agree to the conditions recommended by the Commission expert, Mr. Deason, and is willing to update the Commission with regard to new cost estimates that the plant participants will obtain prior to financial close.

In response to concerns of Mr. Schlissel on behalf of the intervening parties, Montana-Dakota believes that Big Stone II is cost effective even with reasonable estimates of future carbon regulations.

Montana-Dakota considers that Big Stone II is a stepping stone to our future, providing better fuel efficiency and lower carbon dioxide emissions than our existing fleet, allowing us to reduce the emissions from our existing plant and provides a good location for future carbon capture.

Montana-Dakota's analysis of the project uses reasonable assumptions. Modeling by PA Consultants indicates Big Stone II is a less costly alternative than gas/wind, and Montana-Dakota believes that Big Stone II is a prudent supply source for our customers.

Q. Does that complete your summary?

A. It does.

MR. KUNTZ: We would offer Exhibit 213A.

JUDGE WAHL: Ms. La Seur?

MS. LA SEUR: Good afternoon, Ms. Stomberg.

JUDGE WAHL: No, no, no, no. Your response to Exhibit 213A.

MS. LA SEUR: No objection.

JUDGE WAHL: Mr. Binek?

MR. BINEK: No objection.

JUDGE WAHL: Exhibit 213A is received.

MR. KUNTZ: We would offer Ms. Stomberg for cross-examination.

JUDGE WAHL: Ms. La Seur.

MS. LA SEUR: Yes.

CROSS-EXAMINATION

BY MS. LA SEUR:

Q. Good afternoon, Ms. Stomberg.

A. Good afternoon.

Q. Would you please turn to page five of your supplemental testimony?

A. Supplemental prefiled direct?

Q. That's right.

A. March 10, page five. I'm there.

Q. With regard to your discussion of risk assessment and also the discussion at page seven of the decision not to perform a quantitative analysis of CO2 costs, are you concerned about the risk of future carbon regulation over the life of Big Stone II?

A. I'm certainly aware of the impacts carbon regulation could have on our entire fleet.

Q. But are you concerned?

A. Well, I'm concerned of about any costs that could impact our plans. Yes.

Q. And at page seven the decision not to perform a quantitative analysis of CO2 costs, if MDU were not prohibited by state law from considering quantified costs of environmental regulation that may happen in the future in its resource selection process, would MDU have performed a quantitative analysis of a range of CO_2 costs?

A. Well, I don't want to get into any sort of legal analysis, but it seems to me that our company can perform internal analyses that we don't necessarily provide to the Commission for their use in determining the validity of an integrated resource plan. So certainly we have considered what we might think of as reasonable carbon costs.

Q. But had you not been barred in this jurisdiction, would this have been part of your normal analysis?

A. That we've presented -- certainly we try to be as complete as possible when we present data to the commissions.

Q. Is that a yes?

A. Sure. That's a yes.

Q. As someone whose job is to do risk assessment, do you believe that North Dakota's environmental externality statute limits your ability to present this Commission with a thorough risk assessment for proposed generation projects?

A. I think that the statute prohibits us from presenting certain analysis to the Commission for their consideration, but I think that our analysis is complete and adequate.

Q. Since North Dakota law has barred MDU from performing this risk assessment, is it MDU's position that North Dakota ratepayers should shoulder the risk associated with potential carbon regulation?

A. Your question is should the ratepayers shoulder the risk of carbon regulation?

Q. Right.

A. Our customers. Yes. Our customers are subject to the costs that we are subject to.

Q. And at page six there's reference to modeling -- reference to the recent change in mercury regulations, at line 22 at the bottom of the page. What kind of modeling input changes, if any, did MDU make in response to the recent change in mercury regulations?

A. We didn't -- to my knowledge, Mr. Heidell did not make any changes specific to the mercury regulations.

Q. Do you recall testifying in the hearing in the matter last year that until problems with sulfur dioxide exceedances in the south unit of Theodore Roosevelt National Park are resolved, it would be impossible to site a power plant in the coal regions of North Dakota?

A. I don't recall saying that exactly, but I believe that to be the case. It would be very difficult to site a coal plant in the coalfields of North Dakota.

Q. But would you accept, subject to check, that that was your testimony last year?

A. Subject to check, sure.

Q. And is this still your testimony?

A. I do not believe that all of the SO2 issues have been completely resolved. I do not know for certain the status. If the SO2 increment issues with regard to the south unit or north unit of Teddy Roosevelt have not been resolved in the state, I think it would be very difficult to permit a coal-fired plant in what we consider the coal fields of North Dakota, which in my mind is the Beulah area.

Q. The -- okay. Let's see. Does the -- does the increment issue in North Dakota bear on the decision to choose -- to make the -- bear on the decision to site a power plant in South Dakota rather than North Dakota?

A. No. That wasn't -- that wasn't a significant factor in this decision for us.

Q. With -- and this is going back to page seven with regard to your testimony that Big Stone II will increase MDU's dependence on coal, and are these numbers still correct after the changes you made, 77 to 82 percent of installed generation capacity?

A. 82 changed to 78 percent. Let me make sure -- which line are you talking about? Line 17? Once Big Stone II is constructed and retaining all of our existing generation, the percentage of coal generation in our mix would increase to 78 percent.

Q. The mix increases -- so now from 72 to 78 percent?

A. I'm sorry. Mine says -- are we on line 13 or are we on line 17?

Q. Well, I think we're on both because I'm asking about --

A. Okay. Oh, I'm sorry. Now I'm tracking with you. I'm a slow study. 72 to 78, correct.

Q. Okay. And in recommending this six percent increase in coal dependence in MDU's installed generation capacity, is fuel diversity a factor in your risk assessment?

A. Fuel diversity is a good thing, so, yes.

Q. And how did fuel diversity and concern for fuel diversity factor in your decision to increase dependence on coal?

A. Well, there's a couple ways you can look at it. There can be fuel diversity within a solid fuel. So we have fuel diversity with regard to a subbituminous resource that we'd be using in one unit versus a lignite potential.

The other thing that's, I think, key to this is the statement about retaining current generation. Our existing fleet is an old fleet of our -- of the generation that we own and run. It's an old fleet, and we have to take a broad picture and look at what we're running now and what our future might look like in terms of ultimately how we move the mix of resources in our fleet.

Q. But doesn't any new generation add a new generation unit to what is an older generation fleet?

A. Yeah. Unless you retire one.

Q. Okay. Does MDU intend to comply with the North Dakota renewable energy objective?

A. Montana-Dakota certainly is aware of the interest in wind in our service area. We also are aware of the concern of our customers with regard to cost, and we'd be looking at cost-effective ways to meet the REO.

Q. So is that a yes, there is an intent to meet the objective?

A. There is an intent to look at meeting it in a cost-effective manner. Yes. If I had to go out and buy wind at a higher cost, I would have to think very hard about doing that -- higher cost than a substitute generation.

Q. Does the objective place an additional weight on the scales between wind or renewables and other forms of generation for MDU?

A. I'm not sure I understand your question.

Q. As between two generation sources that would otherwise have been weighed on a pure cost-effectiveness basis, does the objective provide any additional motivation for MDU to choose renewables over non-renewables?

A. It would be some part of additional motivation, I'm sure.

Q. Are you able to say anything about the weight of the objective in the decisionmaking process?

A. No. I couldn't quantify that.

Q. What amount of additional renewable and recycled energy would be necessary on MDU's system to comply with this objective at a utility level?

A. Well, if we were starting from zero, about 60 megawatts of some sort of renewable to meet that ten percent of energy sold at retail, which is I think what the REO calls for.

Q. There are a few questions that I've already asked Mr. Uggerud that I'd like to ask you about, as well. Would you agree that this Commission should have the most current, most up-to-date information about the Big Stone II project when it makes its decision in this proceeding?

A. The most up-to-date as possible, yes, I agree.

Q. Is it fair to say that MDU has confidence in the Big Stone II capital cost estimate presented in this proceeding?

A. We understand that it's an estimate, but we have confidence in it.

Q. And would you agree that MDU has confidence in the evidence in the rebuttal testimony presented by Mr. Rolfes in this proceeding regarding capital costs?

A. Yes.

Q. Is MDU willing to commit to limit its rate recovery from the Big Stone II project to its share of the current project capital cost estimate?

A. No.

Q. Is MDU willing to agree to limit its rate recovery to any set percentage increase above the current cost estimate?

A. No.

Q. Is MDU willing to agree to limit its rate recovery with regard to any carbon costs that may attach to Big Stone II generation in the future?

A. No.

Q. If this Commission makes a finding of prudence and financing turns out to be more expensive than anticipated, who will bear that cost? MDU shareholders or ratepayers?

A. The ratepayers, the people that use the energy.

Q. And isn't this yet another blank check that you're asking this Commission to write on behalf of ratepayers?

MR. KUNTZ: Objection. Argumentative.

JUDGE WAHL: Sustained.

Q. (MS. LA SEUR CONTINUING) Turning to your rebuttal at page seven, it's the second to the last page, and you make reference at the top of the page, lines one, two, three, to the Diamond Willow plant and overall reduction in company carbon emissions of approximately eight percent.

A. Mm-hmm.

Q. How do you calculate your estimate that Big Stone II along with Diamond Willow will reduce company carbon emissions by eight percent?

A. That was a modeled -- a ProSIM model, which looks at the dispatch of our plants based on fuel cost and variable cost and dispatches them effectively.

Q. Is that part of the record?

A. No, I do not believe it's part of the record.

Q. Diamond Willow represents less than one percent of electrical generation on the MDU system; is that right?

A. About four percent of our installed capacity.

Q. Four percent. Okay.

A. Of our installed capacity.

Q. From which less efficient plants do you anticipate that MDU will be able to displace generation when Big Stone II goes on line?

A. Well, again, that's a complicated answer, but typically Diamond Willow is a price taker. When it's generating, it is sold into the market or is used to meet our load, as it were. After that our dispatch order is -- you know, Coyote and Big Stone, of course, are our lowest cost baseload units followed by Lewis & Clark and the Heskett units, and absent the use of any kind of peaking or gas, it would likely be our Heskett Unit I, which is our least efficient unit.

Q. Do you currently use market purchases as part of your overall generating capacity?

A. Yes.

Q. Would some of those be displaced by Big Stone II?

A. Absolutely. That's one reason we need to build the plant.

Q. If your forecasts are correct and there is load growth such that your reserve margins will disappear by 2015, won't it be impossible to displace any generation less efficient or not?

A. Did I say that our reserve margins will disappear by 2015? I'm sorry? Who's reserve margins will disappear by 2015?

Q. Well, what is your testimony then with regard to reserve margins? Will there be sufficient reserve margins by 2015?

A. For our particular --

Q. For MDU, yes.

A. For MDU? Well, we make sure we will have our reserve margins. That's the way we do business. We will have our reserve margins for our load.

Q. Without the addition of Big Stone II will there be sufficient --

A. We would have to continue to buy it. Without Big Stone II we would buy it, we would build a combustion turbine, we would get it because that's our obligation.

Q. And so your testimony that Big Stone II would displace generation refers to current market purchases?

A. Yes.

Q. Okay. Referring to your rebuttal testimony at page five and the reference to the anticipated financial close in first quarter of 2009, lines 19 and 20, will a prudency determination from this Commission prior to the financial close affect the outcome of MDU's decision about whether to proceed with construction?

A. Yes.

Q. So you are in effect asking the Commission at this point to commit ratepayers to this investment that MDU, itself, is not yet willing to commit to?

A. Well, we are committed to developing this resource, but we -- if we can get Commission assurances that this is a prudent decision, it will impact our ability to -- it should improve our financing, it gives certainly our shareholders much more confidence in our ability to recover this, and I'm not sure if I've answered your question. Maybe you would want to restate it if I haven't.

Q. Well, my question is: If MDU and OTP are waiting on the Commission's commitment of -- commitment to rate recovery to make its own commitment to contracting for this plant, aren't ratepayers being asked to buy in before MDU shareholders are willing to?

A. Well, we won't make a final decision until financial close. And maybe I'm just -- I'm not sure I'm tracking with your question here. We will have a financial close after we have updated estimates.

MS. LA SEUR: I think you've answered the question. Thank you. Nothing further.

JUDGE WAHL: I'm sorry? Nothing further?

MS. LA SEUR: Nothing further.

JUDGE WAHL: Mr. Binek.

MR. BINEK: Thank you.

CROSS-EXAMINATION

BY MR. BINEK:

Q. In your rebuttal testimony you respond to Mr. Deason's request for clarification regarding the potential natural gas price impacts as a result of CO2 regulation, and in your response you state that you believe that enactment of CO2 or greenhouse gas emission regulation will increase the use of and demand for natural gas and will increase the price of natural gas, but you say that rather than speculate as to the magnitude of the impact, MDU did not reflect such impacts in its natural gas price forecast.

Does that mean that MDU's natural gas price forecasts are likely on the low side?

A. I believe they're on the low side, yes. Conservative, as it were.

Q. Well, I'm avoiding the use of the word "conservative."

A. I noticed that.

Q. Mr. Schlissel is very critical of the cost projections and risks associated with Big Stone II. Do you believe that MDU's cost estimates are accurate based on the information that's currently available?

A. I do. Well, I do, but I also see the need to refresh those quotes before financial close, which we have committed to do.

Q. Okay. And those were some followups that I had here. And that the final decision on Big Stone II, when will that be made by MDU and the other participants?

A. The final decision will be made at the time of financial close, which right now we anticipate to be sometime the first quarter -- I have it in here -- yeah, first quarter of '09, probably February of '09 based on currents.

Q. Okay. And if I understand right, there will be updated cost estimates and projections that will be evaluated at that time?

A. Absolutely.

Q. In your supplemental direct testimony you state that MDU intends to expand the Diamond Willow wind project from the current size of ten megawatts by at least another ten megawatts. What's the -- what is the maximum expansion that MDU would consider for the Diamond Willow project?

A. Well, the additional ten megawatts will allow us to comply with the Montana renewable portfolio standard. I believe our transmission -- or reservation out of that site is for 30 megawatts, so we'd have to go back into the MISO queue for additional megawatts at that location, and I don't know if we have anything else under lease there; not to say that we couldn't do both of those things.

Q. How long has Diamond Willow been operating?

A. Since the first of the year.

Q. Do you know what the average capacity factor for that facility has been?

A. About 38 percent.

MR. BINEK: Okay. I have no further questions. Thank you.

JUDGE WAHL: Questions by the Commission? Commissioner Wefald.

EXAMINATION

BY COMMISSIONER WEFALD:

Q. I want to go back to page five of your testimony. Let's see. Well, the financial close. Let's just talk a little bit more about that.

A. Which --

Q. That's on the bottom of page five of your rebuttal testimony.

A. Thank you.

Q. Will the final decision on plant construction -- is it only MDU that that's going to be the time of financial close, the first quarter of 2009?

A. No. All the participants will make the final decision at that time.

Q. Okay. And by that time you'll have received updated bids and you'll have approached financial institutions about bonding and financial costs?

A. It's anticipated everyone will bring big bags of money to the table.

Q. It'll be interesting to see what happens.

A. Yes, it will. But, yeah, that is the time when we all have to look at each other and say, I can -- I can finance this, can you? Everybody has to say I can finance my part of this plant, is at financial close. We need to have the costs and understand and believe in the financing mechanisms of all the partners -- participants.

Q. What risk -- what would prevent the company from saying let's go ahead at that time if you know that all of the risk is going to ship to the ratepayers?

A. Well, we're certainly not guaranteed complete rate recovery. We have to come to our commissions and ask for -- for reasonable cost in rates, and if you find that our costs -- we weren't able to control the costs of that plant in a reasonable manner, I assume the Commission has the right and the obligation to say you can't recover. So we would assume that if we move forward with that plant on the basis of capital costs which we believe are prudent and real and we construct the plant -- and there will be a number of people watching Otter Tail very closely to make sure this plant is constructed well -- I would expect that it would be reasonably straightforward to come to the Commission and try to make that showing, that we would expect to have rate recovery on what we would have considered to have been prudently incurred costs.

Q. Yesterday I mentioned about a plant in Illinois that was a nuclear plant that the risk shifted to shareholders partway through because of overruns of costs. So is that still a risk for MDU in this particular case?

A. Well, I suppose there's always a risk if something completely unforeseen happens, and again, one of the -- to me the really great things about Big Stone II is we have five different entities with a combined huge amount of construction experience and power plant experience that will be working with Otter Tail in the construction of this plant. To me that mitigates that risk. So you've got an awful lot of smart people working with Otter Tail to try to make sure this is done as efficiently as possible. It's not to say something couldn't happen.

Q. That is a big concern of mine, just on the record.

A. Well, it's a concern. You know, it's always the concern that you can't completely control your destiny.

Q. On page seven, Our estimates are -- line one, Our estimates are that Big Stone II, along with the existing Diamond Willow wind plant, will allow Montana-Dakota to displace generation from its least efficient coal plants, resulting in an overall reduction of carbon -- company carbon emissions of approximately eight percent.

But another place in your testimony, which I couldn't find just now, it said that you're planning to sell the extra power that you have at the first part -- once the project is built for the first few years onto the MISO market. So which is correct? Which is correct?

A. Well --

Q. One is that you're going to be selling the extra power onto the MISO market -- that's in one part of your testimony -- and another is that you would be shutting down least efficient coal plants and so then your company would need all of that power. So which is the correct statement here?

A. Both are correct.

Q. Why? How can that be?

A. Sure. And I didn't say shutting down. I said displaced generation from.

Q. So what does that mean if it's not shutting down?

A. Within a ProSIM run, which we use in our forecasting, you dispatch your plants economically to meet your own load, and this is the problem we have now in the MISO market -- we're certainly part of the MISO market -- and MISO directs the dispatch of our plants --

Q. I understand that.

A. -- based on their needs. We still are responsible for making sure that our system -- Montana-Dakota's integrated system has adequate generation. Our ProSIM run allows us to dispatch our plants for our load, and in that modeled scenario it shows that the energy from Diamond Willow allows us to back down Heskett Unit I. So within that modeled scenario for our system Diamond Willow displaces some of the generation.

Q. I understand that Diamond Willow does because it has no energy cost, I mean, as far as -- it has no costs as far as --

A. Well, it still has some variable costs, but nonetheless --

Q. But it's very, very low, very low, so those are always the first choice resources on the market?

A. Sure. They're price takers. Right. Absolutely.

Q. But -- but Big Stone II could have a higher cost than some of your older plants.

A. Oh, it's not -- we don't expect that it will.

Q. But it does. I mean, you're telling us it's eight-and-a-half cents?

A. Sure. Fuel cost it will. It will.

Q. And your other plants are producing at, let's say, three, and so why --

A. You're correct there.

Q. So why would that be -- why would this displace any of those older resources unless you chose to shut them off; unless you decided not to use them any longer? How in the world are you going to displace, you know, carbon emissions if your choice is going to be based on price?

A. My understanding of the fuel cost and the dispatch price for Big Stone II is that it will dispatch before Heskett or Lewis & Clark.

Q. Well, what's the cost of those? I know that they go on -- get the least cost?

A. You know, quite frankly -- I do not --

Q. Pricing --

A. I do not have those costs with me right now, Commissioner, and certainly I could get them very easily, obviously. The dispatch order -- is I know the dispatch order, those dispatch last.

Q. Maybe you could -- maybe you could get that for us.

A. Sure. You want the --

Q. The dispatch order and --

A. Well, the dispatch order --

Q. -- what order it would be in with Big Stone II included in the mix. So let's say you'd say your Diamond Willow would be first probably.

A. That's a price taker.

Q. And then submit to us a list of in what other they come next under the vocational marginal price concept dispatch.

A. Okay. I can certainly do that. I mean, as I recall our modeling, our capacity factors for -- and our utilization of Big Stone II is very high, and the capacity factors utilization of our older units backs down into the 40 percent after Big Stone I comes on, and I don't want to try to get into the weeds of that will modeling because I didn't run it, but we'll certainly provide that to you.

Q. Okay. That would be great.

A. Not a problem.

Q. That would be great.

JUDGE WAHL: All right. Excuse me, Commissioner. For the record, Mr. Kuntz, that will be late-filed Exhibit MDU 220?

MR. KUNTZ: Correct.

JUDGE WAHL: And for the record, Mr. Kuntz, what is the description of this exhibit?

MR. KUNTZ: This will be the dispatch order for the MDU electric generation plants, including the anticipated Big Stone II.

JUDGE WAHL: All right. Commissioner, you may proceed.

Q. (COMMISSIONER WEFALD CONTINUING) Okay. And then if you're -- how long do you anticipate that you'd be selling -- well, let's just say this -- let's ask this question first. For the first five years that the plant is in operation, in order to meet your requirements for your own customers with the reserve margin that's then in place, how many megawatts will you need from Big Stone II for the first five years that it's actually running? So let's say it's in place by 2014, and so let's say until 2020, how will you -- what proportion of the megawatts -- of the 133 will you need for your own customers' use to meet your reliability requirements?

A. I do not know that.

Q. Okay. Can you submit that to the Commission, as well?

A. We would have to dig that out of the models. Megawatts used for MDU load -- I'm sorry. I didn't get the years.

Q. To meet your reliability requirements?

A. Right. I didn't get the dates.

Q. I had said the first five years, so let's say by 2020?

A. 2020. Sure, sure.

Q. That would be six years assuming that your schedule goes on schedule. Because I'm just curious about how much is needed by your own load versus -- I know you had said you're going to grow into this need for this plant?

A. Sure. You know, we lost the --

JUDGE WAHL: Excuse me. I'm sorry. For the record, Mr. Kuntz, this will be MDU late-filed Exhibit 221, and the description for that exhibit is?

MR. KUNTZ: Number of megawatts of the Big Stone II Plant needed to meet MDU's load requirements for reliability purposes between the years 2014 and 2020.

JUDGE WAHL: All right. You may continue.

THE WITNESS: I think it's important to remember that Big Stone II will replace the 66 megawatt baseload contract we had with Basin that expired in 2006, and since then our load grows about five megawatts a year, and so we've got that need. We're purchasing capacity -- 110 megawatts of capacity we're purchasing this year, and then we bought about 300,000 megawatt hours of energy on the market last year to meet our load. So there's -- you know, there was a big hole in our generation capability when the Basin contract expired. That said, certainly I can provide this information to you. Not a problem.

Q. (COMMISSIONER WEFALD CONTINUING) Thank you. And if you want to do it on a yearly basis, that would be fine, building up to 2020. That would be helpful so that I have a better sense of that. When I read this, I just knew I had that question and didn't know how much and when you --

A. We'll get it to you.

Q. Yes. Thank you. All right. And then my next question relates to -- relates to your future purchases for energy. Otter Tail, remember, went through with us that they're planning to purchase additional energy and capacity in the next -- up until the year -- let's say the next 15 years, and they went through and they said, all right, we're going to need to have -- Mr. Uggerud -- he said they were going to need to purchase approximately 400 megawatts of new energy in that time period, and the Big Stone is a piece of that, and so he had the amount of energy he was going to purchase from -- percentage he was going to purchase from coal, renewables, natural gas -- peaking plants or whatever -- natural gas, and demand side management. Can you give me the same breakdown for MDU of what you anticipate up to the year 2022?

A. Well, once --

Q. What are your energy needs going to be in that time, and if Big Stone is 100 percent of your energy needs during that time, you could just tell me, I'm going to be purchasing 100 percent coal and that's going to take care of it.

A. Well, when Big Stone comes on line in 2013, it will pretty much replace our capacity purchases up to that date, roughly, roughly.

Q. So that's 133 megawatts.

A. Roughly, yeah. And then within two years we would be deficit again and we would likely be building a combustion turbine at that point in time.

Q. All right. And that would be about how many megawatts?

A. Well, usually we would expect that to be a 30 to 45 megawatt unit. Kind of depends on what's available out there.

Q. And so that's natural gas?

A. That's natural gas. Now -- and then I think our resource plan shows another CT coming on line in 2018 or so.

Q. 2018. And that would be approximately --

A. About the same. About 30, 45 megawatts. Now, understand that that's based on a least-cost scenario, and we've been in here before saying sometimes least cost isn't best cost. Least cost would not select wind. We may very well want to expand our wind generation, in which case we're going to displace some of -- maybe not the capacity, but we'll displace some of that need for that combustion turbine potentially with the wind and the capacity from that.

So it's not a done deal as to exactly what our next resource will be, but in terms of having to go out and buy off the market or contract, we don't expect having to do that. We will expect to build our own.

Q. But your integrated resource plan -- and I know it's probably here on file with the Commission, but I'm just asking you to give me this information from it.

A. Sure.

Q. It's 133 megawatts of coal, approximately 90 megawatts of natural gas. Any more renewables?

A. Again, in a least-cost plan, they don't get selected.

Q. Even against what you've told us the natural gas skyrocketing?

A. Even against the -- sure. If we wanted to change those assumptions against the gas prices that were used in our most recent IRP, which were lower than I believe were in the market now, so there's no question that you could run this model every day and have a slightly different answer. So we would need to refresh -- we will refresh our IRP absolutely before we would go forward and commit to any new resource.

Q. But at the present time there's no new renewables in your IRP plan?

A. Not in the IRP based on the least-cost model results.

Q. And is there any demand side management in there of a certain percentage?

A. Yes, there certainly is. In our IRP the DSM and the efficiency programs that we have in place now have been subtracted from the forecast. If our forecast was for 100 and we had ten megawatts of DSM out there, our forecast should have read 110. It reads 100 because it's been subtracted out. In all our models it's been accounted for, so it's subtracted out, and then in our other models -- we have another four programs that we're getting ready to implement, and in the analysis that Mr. Heidell did -- and he can get into the weeds on this one. I'd rather he talked about the details because it's his model. Those programs were selected prior to Big Stone being selected. So those are also absorbed in that model.

Q. Can Mr. Heidell tell me approximately what percentage or what number of megawatts you're talking about with --

A. I believe he -- I believe he can.

Q. -- conservation programs?

A. He'll know what's in the model. Yes.
Q. You don't?
A. Well, rough numbers, but really I'd rather he pulled that out. We have about six-and-a-half megawatts of interruptible right now and about 38,000 megawatt-hours of avoided electric usage in the existing programs in place today.
Q. Six-and-a-half?
A. Megawatts of interruptible, yeah.
Q. And so do you -- can you give me a projection of what that could be by 2020?
A. I don't -- I don't remember what we have in the model.
Q. All right.
A. Or we can provide it otherwise.
Q. Thank you. Do you know the total megawatts that you need then by about 2020?
A. I know by 2013 we'll be deficit 110. Our obligation in 2013 is going to be about 650. 20 -- another 70 megawatts on top of that, so with a reserve maybe 720 megawatts. You know, I learned long ago I should never do math after lunch.
Q. That's your total megawatts for a whole year's --
A. That's what I would roughly estimate our

demand will be.

Q. All right. And so that's not new. That's --

A. No.

Q. That's the difference between what you have right now?

A. Yeah. That should be in our load forecast.

Q. So 133 and about 90 of new natural gas, and that would add up to about right, about 220 new.

A. Well, I'm not sure. I was adding up in my mind what I thought our load forecast roughly would be versus our installed capacity. Did you want our installed capacity?

Q. Actually, you know, I had the 133 of new coal and then you gave me 45 megawatts of natural gas in the next few years and 45 megawatts of natural gas in 2018.

A. Right.

Q. And so that adds up to about 223.

A. Right. I got the same number. That's good.

Q. Is that pretty good for the new?

A. Yep.

COMMISSIONER WEFALD: Okay. All right. Thank you.

JUDGE WAHL: Commissioner Clark.

COMMISSIONER CLARK: Thanks.

EXAMINATION

BY COMMISSIONER CLARK:

Q. Good afternoon.

A. Good afternoon.

Q. I'd like to ask a few questions on Diamond Willow. Refresh my memory. Are the costs for Diamond Willow -- is that a purchase power agreement that MDU has or is it being incorporated into rate base at some point?

A. It will be incorporated into rate base. That is an MDU-owned facility.

Q. It is. Okay. So right now North Dakota ratepayers haven't seen any --

A. No.

Q. -- impact from Diamond Willow other than --

A. Energy.

Q. -- whatever energy has been displaced from the FCA.

A. That's right.

COMMISSIONER CLARK: Okay. I think that's my only question right now. Thanks.

JUDGE WAHL: Commissioner Cramer.

EXAMINATION

BY COMMISSIONER CRAMER:

Q. I want to try to get to maybe a clearer answer, if I understood Ms. La Seur's line of questioning, regarding MDU and I guess the partners' expectation that -- maybe I'm characterizing her question somewhat -- but that all of the -- the burden of risk -- all of the risk is being borne by ratepayers in this proceeding as opposed to the company; that this is a risk the companies aren't willing to make without this -- or this pre-prudence determination. If I'm mischaracterizing the question, I apologize.

A. No. I think that's correct.

Q. Okay. Is it fair to expect, given the climate of things today that -- that any new, major baseload investment would probably come to us for an advance determination of prudence?

A. We would even bring a wind project before you for an advance determination of prudence.

Q. Okay. So this isn't -- although it might be new to our state and culture, this may be more the norm than unusual.

A. I think so. Given the opportunity under the rules to do this, we will ask for this. Yes.

COMMISSIONER CRAMER: I have nothing further.

JUDGE WAHL: Any further questions from the Commission?

COMMISSIONER WEFALD: I have one.

JUDGE WAHL: Commissioner Wefald.

FURTHER EXAMINATION

BY COMMISSIONER WEFALD:

Q. Then why didn't you do it with the Diamond Willow?

A. We did go to Montana with the Diamond Willow. I guess that's a fair question. It's also a fairly small project.

Q. I know. You'd just said you'd do it for any generation.

A. Well, you caught me. We probably should have. Probably should have in hindsight. Correct.

JUDGE WAHL: Ms. La Seur?

MR. KUNTZ: Oh, do I --

JUDGE WAHL: I'm sorry. I'm thinking -- I'm not in the routine. I haven't quite adjusted, Dan, to you. Mr. Kuntz.

REDIRECT EXAMINATION

BY MR. KUNTZ:

Q. Ms. Stomberg, in response to some questions Ms. La Seur asked you about the effects of price increases after this prudence determination is made, do you recall the commitments that the companies have made in terms of keeping the Commission advised of developments prior to financial close?

A. Yes.

Q. And would that include significant changes in construction costs?

A. Absolutely.

Q. And just to clarify, I believe Commissioner Wefald used the word "bids" prior to financial close. Do you know whether there will actually be bids or will there be estimates or negotiated prices or a combination thereof?

A. Probably a combination thereof.

Q. And then, finally, in addition to the resources that you discussed with Commissioner Wefald, is the company reviewing other possible generation opportunities that may come along in maybe smaller increments in addition to those that you've discussed in terms of the major projects like CT and major wind projects like that?

A. Oh, absolutely. We look for things that seem to make sense with us -- for us. In fact, I guess I could probably talk about a press release that we'll have later today for -- where we sign on with Ormat and Northern Border for a waste heat recovery unit at Glen Ullin. That's a wonderful little project.

Q. So any of those generation sources could end up supplementing and determining what the company will use for generation sources between now and the year 2020 or even 2015; is that correct?

A. I'm sorry?

Q. So any of those generation opportunities could be used in lieu of other things that we may not know about today --

A. Sure.

Q. -- for supplementing our generation requirements between 2015 and 2020, for example.

A. Mm-hmm.

MR. KUNTZ: That's all I have.

JUDGE WAHL: Now Ms. La Seur.

RECROSS-EXAMINATION

BY MS. LA SEUR:

Q. Ms. Stomberg, there seems to be a lot of reliance on this assumption of 2,009 first-quarter financial close. How confident are you of that date?

A. Well, if the project proceeds on the schedule we believe it will, we believe that that's a reasonable date, but the project has slipped a number of times, as everyone in this room is aware, and the financial close may also slip.

Q. And is that financial close date consistent with a 2013 commercial operations date?

A. At this point in time it is, yes.

Q. If the applicants keep the PSC apprised post prudency ruling of cost, what difference will that make?

A. To whom?

Q. Well, to anybody. Aside from informational purposes, will that change anything about the cost to ratepayers, about the costs to the applicant?

A. I guess in a situation where we would come forward to the Commission and say, well, the price has increased 30 percent, we would also have to bring to them, I believe, some discussion as to the entire market and why that is reasonable.

Q. Would you be required to bring any such discussion or modification of the application proposal?

A. We would -- we would -- we would accept a recommendation to do that or request to do that.

Q. Would the PSC have any authority to withdraw its prudence ruling at that time?

A. I don't know.

Q. In data requests the intervenors asked in a lot of different ways for all modeling relevant to Big Stone II. Why did we never get the ProSIM runs that you're referring to now?

A. I guess I don't know exactly when that run was done.

Q. Is that something you could submit into the record posthearing?

A. Certainly.

Q. And --

JUDGE WAHL: Well, just a minute, please. So do I understand MDU is agreeing to submit this as a late-filed exhibit? Is that it, Mr. Kuntz?

MR. KUNTZ: That's my understanding. It would be late-filed Exhibit 222, which would show the ProSIM runs for the dispatch order, including Big Stone II, which would basically kind of tie into one of the earlier requests regarding the --

MS. LA SEUR: Let me just clarify my request. We're just interested in the date when these runs were done. We're not going to be able to file any responsive testimony if this is entered into the record. We'd just like to know when this was done.

THE WITNESS: Okay. That's different than asking for the run. You want the date that the run was done?

MS. LA SEUR: Yes.

JUDGE WAHL: All right. That'll be MDU Exhibit 222.

Q. (MS. LA SEUR CONTINUING) And on this same topic, the ProSIM runs, isn't a discussion of ProSIM runs pretty theoretical in the real world context where MISO makes the decisions about which plants MDU will run and at what capacity?

A. Yes. I would say they're very theoretical.

MS. LA SEUR: Okay. That's all I have.

JUDGE WAHL: Mr. Binek.

RECROSS-EXAMINATION

BY MR. BINEK:

Q. I'd just like to follow up on a question that Ms. La Seur asked, and that is regarding the -- what would happen if the -- for instance, the costs increased substantially, unexpectedly prior to or at the time of your projected close, and, you know, what -- what could the Commission do? My recollection, and correct me if I'm wrong, in the law -- and I don't have it before me -- that the Commission can determine that a project is not prudent and that the utility is entitled to recover its costs incurred up to that point. Is that your understanding?

A. If a project is abandoned?

Q. Well, let me just take a look at the law here.

A. Yeah. I guess I don't have it in front of me, either, and I'm not a lawyer, but --

MR. KUNTZ: Perhaps, Your Honor, would it be best that we just refer to Section 49-05-16? I mean, we could have Ms. Stomberg read it into the record, but I think the statute speaks for itself in terms of the Commission's authority to reexamine -- or the effect of reexamining a prudence determination.

MR. BINEK: That would be fine, if you want to do that. I'm just looking at it right now, also.

Q. (MR. BINEK CONTINUING) Would you take a look at 49-05-16, subsection 5, and why don't you just read that.

A. The entire section?

Q. That subsection into the record.

A. "If at any time following an initial Commission order the Commission following a subsequent hearing determines that continuation of a project is no longer prudent or that its prior order should be modified, the public utility may recover in its rates, and in a timely manner consistent with the public utility's financial obligations the amounts the public utility has already expensed, incurred or obligated on a project, including interest expense and return on equity invested in the project up to the time the new order is entered, even though the project may never be fully operational or used by the public utility to serve its customers."

MR. BINEK: Thank you. That's all I have.

JUDGE WAHL: Any follow-up questions by the Commission? Commissioner Clark?

COMMISSIONER CLARK: I just did have one that I had forgotten about.

FURTHER EXAMINATION

BY COMMISSIONER CLARK:

Q. The Gascoyne option, I recall at our last hearing we discussed that a bit, and one of the reasons that it was knocked out of consideration early on was this economy-of-scale issue; that it would have to be a smaller plant. Was there any reexamination done of Gascoyne who might be potential partners in that given that this is a little bit more northwesterly project than it was before, at least the power where it will be used, and did the downsizing of Big Stone -- I mean, could it potentially put another plant like a Gascoyne into play?

A. Well, we did revisit Gascoyne at a high level at the time of the -- of the downsizing of the plant, and by that time it seems to me, as I recall, you know, we certainly still have the economies of scale issues. The other thing that we had that we didn't have at the time of -- that we had the air permit for the Gascoyne plant was a protest by the Federal Land Manager of Westmoreland's permit down there. So that it seemed like the entire regulatory issue with regard to the air permit in the Gascoyne area had gotten more complex than it had been at the time.

Q. Review that again for me.

A. Okay. The -- when Montana-Dakota and Westmoreland went forward with the first probably -- with the air permit -- we did several iterations there, but when we did the air permit, it was approved without protest by the Federal Land Manager. Now, that was a smaller plant than Westmoreland eventually went in with a permit for. Westmoreland, I think, put in for a 500 megawatt plant down there, and I understand that the Federal Land Manager has protested that plant because of the visibility impact.

So I'm not sure that the regulatory hurdles are clear even should we want to go back and work with Westmoreland, and I haven't talked to Westmoreland to know if they've identified partners or not, but certainly the issues in Minnesota with regard to coal-fired electrons going into that state complicate our ability to find viable partners for that location.

Q. Why more so than Big Stone?

A. Well, Big Stone has the same issue. I guess I was thinking about other partners that might not want to fight that battle at all.

Q. Okay. But as far as -- so you didn't get quite as far as actually penciling things out as far as cost?

A. No.

COMMISSIONER CLARK: Okay. Thank you.

JUDGE WAHL: Any further questions from the Commission? Mr. Kuntz, anything further?

MR. KUNTZ: No. Ms. La Seur, anything further?

MS. LA SEUR: No thanks.

JUDGE WAHL: Mr. Binek?

MR. BINEK: No.

JUDGE WAHL: Thank you very much, Ms. Stomberg.

MR. KUNTZ: Are we ready for our next witness?

JUDGE WAHL: Yes, I think so.

MR. KUNTZ: Okay. Montana-Dakota would call Jim Heidell, please.

JUDGE WAHL: Mr. Heidell, I'm uncertain if I recall you from previous hearings. Did you testify for the previous hearings?

MR. HEIDELL: Yes, I did.

JUDGE WAHL: Then I can safely say I have personal knowledge that you were advised and informed regarding perjury, and you understand, of course, that your testimony for the supplemental hearings continues subject to the -- under oath and subject to the penalties of perjury?

MR. HEIDELL: Yes, I do.

JUDGE WAHL: Mr. Kuntz.

MR. KUNTZ: Thank you.

JAMES HEIDELL,

having been previously duly sworn, was examined and testified further as follows:

DIRECT EXAMINATION

BY MR. KUNTZ:

Q. Mr. Heidell, please state your name.

A. James Heidell.

Q. And whom are you employed by?

A. PA Consulting Group.

Q. What's your position with PA Consulting Group?

A. I am a managing consultant there.

Q. What type of work does PA Consulting do?

A. Well, PA is a global management consulting firm, so more specifically do you want my experience?

Q. What's your role with PA?

A. My role in the firm is far more limited.

I am an expert in the electric energy sector. I advise utilities on resource planning; I advise private investors on investments related to power plants and whole companies for transactions ranging from a couple hundred million to billions of dollars; and I do a significant amount of market energy forecasting.

Q. And it was noted by the hearing officer you previously testified in this proceeding; is that correct?

A. That's correct. I testified in June of last year.

Q. And for the supplemental hearing did you cause to be prepared supplemental prefiled direct testimony with exhibits and then also supplemental rebuttal testimony -- or prefiled rebuttal testimony?

A. That is correct.

Q. And showing you first what's been marked as MDU Exhibit 214, prefiled supplemental direct testimony of James Heidell, do you have any corrections or additions to make to that testimony?

A. I have one correction to make.

Q. Could you point that out to us?

A. Yes. On page four, line 12, the answer starts with the word "no." The word "no" should be stricken.

Q. Okay. And with respect to MDU Exhibit 215, the prefiled James Heidell exhibit tables referenced in your testimony, are there any changes that need to be made to the exhibits?

A. No, there are not.

Q. And the prefiled rebuttal testimony of James Heidell marked as MDU Exhibit 217, do you have any changes to make to that?

A. No, I do not.

Q. And if I were to ask you the questions that are contained in MDU Exhibits 214 and 217, would your answers be the same today?

A. Yes, they would.

MR. KUNTZ: We would offer MDU Exhibits 214, 215, and 217 at this time.

JUDGE WAHL: Ms. La Seur?

MS. LA SEUR: No objection.

JUDGE WAHL: Mr. Binek?

MR. BINEK: No objection.

JUDGE WAHL: MDU Exhibits 214, 215, and 217, inclusive, are each received.

Q. (MR. KUNTZ CONTINUING) And do you have a summary of your testimony, Mr. Heidell, that's been marked as MDU Exhibit 214A?

A. Yes, I do.

Q. At this time could you provide the Commission that summary?

A. Yes, I will. Good afternoon Commissioners. The scope of my rebuttal testimony is essentially to reexamine the resource planning modeling that was originally presented to you in June of 2007. The changes that are reflected in the supplemental testimony, of course, reflect the changes in Big Stone that have been the subject of this hearing. They also address additional changes, you know, driven by more knowledge or changing market conditions. These additional changes I view as normal in the course of doing resource planning, and the fact that we updated them was just to not present a stale analysis to this Commission.

The results of these model runs is that the Big Stone II Plant is still identified as the most cost-effective option.

In the rebuttal -- supplemental rebuttal testimony I addressed questions by staff witness Mr. Deason and tried to answer his questions related to the wind production tax credits, the role of the PTCs on -- the role of PTCs and the role of wind in terms of the Montana-Dakota resource expansion plan; addressed the capital cost assumptions that have been the subject of concern to him; and also described how we treated income tax and cost of capital in the model.

The -- we presented runs where the production tax credit was assumed to continue actually to 2014. We present runs where the production tax credit is assumed to expire at the end of 2008. I think it is reasonable to consider reasons why the PTC might not be extended in terms of from an economic perspective, although I realize that tax credits tend to be a little sticky.

The wind fixed and variable costs do not really depend on the PTC for the most part. Essentially the way we modeled the PTC is a reduction in the total revenue requirement that would be required from Montana-Dakota's customers.

Just to be clear, because it's been in many proceedings about how much wind can be absorbed on Montana-Dakota's system, it was not my testimony that by adding more than the Diamond Willow project that there would necessarily be any operational problems. We are continuing to be concerned about that and the costs seem to be properly reflected.

Again, continuing with the issues that staff witness Mr. Deason raised, the cost of the natural gas-fired combined cycle gas turbine are actually similar to Otter Tail's, and I think that Bryan Morlock addressed that. The natural gas forecast that we have actually really differs from Otter Tail in terms of the transportation costs. I think Montana-Dakota appropriately considered the cost of delivering natural gas to where the likely generation sites would be as opposed to just generic costs to a hub.

And, finally, I believe that the capital costs that we used, essentially 11 percent return on equity as a long-term number, is a reasonable benchmark. I'm not testifying as to a specific number in the near term with what would be appropriate.

Finally, responding to DRC's witness, Mr. David Schlissel -- I'm sure I didn't pronounce that correctly either. Sorry.

MS. LA SEUR: He's gone.

THE WITNESS: I go into a fair amount of

detail as to the capital costs of the gas-fired turbines, and I just want to emphasize that these costs come from the 2006 cost assessment. So we've had a lot of discussion about, you know, potential cost increases in the industry, and so to risk using the word, the lower combined cycle costs are actually conservative; that there are many who would argue that the costs of such turbines would be more expensive to Montana-Dakota today.

There was, I would say, sort of an allegation that somehow we're biasing the results and we restricted the availability of the model to look at combined cycle turbine. In two supplemental runs referred to as scenarios three and four there's actually no restriction at all. In scenarios one and two they were -- in the model runs that were delivered to DRC they were restricted after 2013, but that restriction was a result of iterative testing.

We've also been criticized about these limits in the model and the model reaching limits in the number of scenarios that we considered. So we did extensive testing, looked at lots of permutations, and then in the final runs to try to remove those limitations, we delivered a version.

The DRC could have easily verified that for themselves.

We did raise the cost of the wind turbines since I came and talked to you last June. We raised them to $2,000. I do not consider that a bias. I'd be happy to explain why I think that is a very reasonable cost estimate.

And I think that we had some criticism regarding that if you look at a 20-year period, the Big Stone -- the net present value of costs over a 20-year period, that the Big Stone Plant may not be the lowest cost for Montana-Dakota's customers, while over the whole lifetime of the study it is. I don't -- I think it is appropriate, and for reasons I'm happy to explain, that to look at the whole time period, truncation of results would actually be inappropriate.

And, finally, I -- while there are runs and there are scenarios -- and you can basically get any results you want out of the Strategist model depending on the inputs -- we do not -- I do not believe that the scenario that has been presented by DRC is a reasonable alternative.

MR. KUNTZ: We would offer Exhibit 214A -- MDU Exhibit 214A.

JUDGE WAHL: Ms. La Seur?

MS. LA SEUR: No objection.

JUDGE WAHL: Mr. Binek?

MR. BINEK: No objection.

JUDGE WAHL: MDU 214A is received.

MR. KUNTZ: Your Honor, at this time I'd like to make an offer of proof with respect to what was marked as MDU Exhibit 218.

JUDGE WAHL: You may proceed, Mr. Kuntz.

Q. (MR. KUNTZ CONTINUING) Mr. Heidell, did you cause to be prepared supplemental rebuttal testimony marked as Exhibit MDU 218?

A. Yes, I did.

Q. If that exhibit were to be received into the evidence, could you explain what that exhibit would indicate?

A. Yes, I could.

Q. Would you do that at this time?

A. Yes. Staff witness Mr. Deason had a concern in his -- in reviewing our testimony that two of the scenarios we presented did not have the production tax cost extended, but I had also made other changes, you know, from the first two scenarios. So his question was, well -- the way I interpret his question, all else being equal, if you allow the production tax credits to be extended, would the results change? So we just -- what I did is I got permission from Montana-Dakota to renew the Strategist license. It, unfortunately, took a number of days to get that renewed, and then I did that analysis.

Q. And the result was?

A. The result is -- it's the same result. The least-cost plan is still with Big Stone II.

MR. KUNTZ: That completes our offer, Your Honor, and we would tender the witness for cross-examination.

JUDGE WAHL: All right. I note for the record and for the advice of the Commissioners that an offer of proof is not evidence and may not be considered by the Commission for its determination. Ms. La Seur.

MS. LA SEUR: Thank you.

CROSS-EXAMINATION

BY MS. LA SEUR:

Q. Good afternoon, Mr. Heidell. Would you please turn to page seven of MDU Exhibit 214, your supplemental, prefiled direct testimony, and I'm referring to line three of page seven in which you refer to additional demand side management projects that were incorporated into your updates. Would you be able to describe what projects?

A. Yes. Actually in the same testimony, if I can refer you to a table, it actually lists the projects that were added, and that is Table 5 on page four of exhibit --

MR. KUNTZ: 215.

THE WITNESS: 215. So the -- what was added was a --

COMMISSIONER WEFALD: Just a minute. I need to find it, if you can help me.

MR. KUNTZ: It would be under tab 15 of the big book, Commissioner. It's marked as Exhibit 215, and it's under tab 15, page four, I believe he said.

THE WITNESS: That is correct.

Q. (MS. LA SEUR CONTINUING) And at page ten you've referred to these programs, this is lines 16 and 17, the conservation programs that Montana-Dakota is already implementing, and these are the residential high efficiency air conditioning, the commercial high efficiency lighting, the interruptible load program. So are the programs described or listed in Table 5 additional programs not currently implemented?

A. There are additional programs. I guess what I -- I actually am not sure exactly on what stage of implementation that Montana-Dakota is on these programs. I know that Montana-Dakota has been planning to go ahead with them, but I don't know whether they've been filed with this Commission yet or not, but they are incremental, as Ms. Stomberg testified.

What we did is the load forecast essentially takes -- we have additional demand side management programs, we subtract that out of the load forecast, we put them into Strategist, we added additional programs, and effectively what Strategist does is it says, oh, are these programs cost effective. If they're cost effective, then they reduce the load forecast again. No double counting. They reduce it again, and then it dispatches the thermal plants and contracts to meet the remaining load after demand side management and energy conservation.

Q. And we seem to be looking at an average cost per kilowatt-hour of anywhere from 2 cents to 16 cents. Was this cost of various DSM projects incorporated into the overall modeling?

A. Yes. The cost -- essentially -- and just

I think probably way past the point of confusion, the higher cost programs on a kilowatt-hour basis are programs that are actually targeted to reduce the peak demand. They don't provide a lot of energy, but they provide a reduction to the peak demand. So on a kilowatt-hour basis they look more expensive, but having said that, yes, what the program -- we input characteristics of these programs in energy savings, demand reduction attributes, a cost. The model determines whether they're cost effective. Once the model determines that they're cost effective, they will then go through and reduce the load that needs to -- generation needs to be dispatched for.

Q. And so the model would only look at these programs listed?

A. It's just a model that only looks at the inputs we give it.

Q. Going back to page eight of this same exhibit of your testimony, looking at line 21, "Montana-Dakota is showing slightly more growth than previously forecast." On what evidence does MDU base this higher, long-term forecast?

A. Well, the -- what the testimony tries to lay out in the prior Q and A is that essentially

Montana-Dakota changed the forecast methodology, and as a result of this change of the forecast methodology, the growth rates changed a little bit.

You know, we're talking about a utility with not a very large load growth. I mean, when demand is growing at .99 or 1.07 percent, that's a relatively small amount, and ultimately it's -- you know, there's really no way to -- because a -- essentially the old forecast wasn't repeated, so I don't believe, subject to check, that Montana-Dakota could tell you how much of this change is a result of changes in assumptions versus changes in methodology. I think had the differences been much more significant, I would have expected that they would have gone back and examined that question.

Q. Okay. Would you say that the change is within the statistical margin of error for the modeling methodology?

A. Without being really sure about exactly what was done, I mean, my general sense is that they are within the margin of error. I mean, I find both these changes to be relatively small.

Q. Okay. Going to page 13, lines 14 to 17, you discuss the emergency curtailments in Texas, and your testimony is that the need for sufficient responsive thermal resources to maintain system reliability with large amounts of wind was recently demonstrated by these emergency curtailments of interruptible load as a result of wind variations; correct?

A. That is my testimony.

Q. Okay. How does management of wind variations with DSM or load management, if you will, demonstrate the need for sufficient responsive thermal resources?

A. Well, I believe that the preliminary ERCOT assessment of the events basically said that, you know, the system did respond, and essentially the system responded through a combination of load curtailment, as well as splitting reserves. So I think what it says is that at least in the case of ERCOT that both of those resources have potential to help support wind variability.

Q. But couldn't the Texas event also be cited as an example of how wind variability can be handled successfully without massive thermal backup?

A. Well, I think the results of the report actually said that, you know, we think the system worked. I do believe -- and this is just a rough number -- but I believe that Texas wind is in the range of six or seven percent of the capacity. So that sort of gets to my opening comment that there is a matter of degree of, you know, 10, 15 percent versus 25, 30 percent.

Q. Getting back to the conservation and efficiency programs that have been modeled, you may have already answered this. I wanted to know if MDU has modeled any conservation or efficiency programs other than those already implemented.

A. I'm not aware. It was my intent in doing the modeling that we captured, you know, the full range of programs that Montana-Dakota was studying, and I asked that question. So that was certainly my intent. I don't know anything more than that.

Q. Would you know anything about how MDU chooses the programs that it models?

A. In a broad sense. Probably a company witness would be better to answer this question, but in a broad sense I believe that the company has an advisory committee, looks at programs, does a cost-effectiveness test and in a process that brings in public input and economics similar to what many utilities do.

Q. Let's turn to page 20 in this same exhibit, looking at the chart with the various scenarios listing wattages for certain generation sources. You describe these various scenarios generally by wattage that can be gained from specific sources except for conservation. Why would you not assign a wattage that can be gained from or avoided from conservation?

A. And just for the record, the table is in megawatts, not in watts, but --

Q. Let's just a whole lot of watts; right?

A. That's just a whole lot of watts. So to answer your question, basically the table was designed to focus people on the decisions that were made. I think I tried to emphasis that through the testimony that the program -- that the model selected all the conservation programs, and that table that we discussed was designed to provide that information. We weren't trying -- I wasn't trying to hide anything.

Q. Okay. Would it be possible to make that kind of one-to-one comparison between potential for avoiding megawatts or for generating megawatts?

A. Well, I think we can. I mean, let's -- you know, we see 116, 93, 43, we see different levels of megawatts, and then if we turn to Table 5 of Exhibit 215, page four, you know, essentially what we have here is 13-and-a-half megawatts of conservation plus another approximately six-and-a-half megawatts that were in that process. So, I mean, the answer is that conservation is providing on the order of, you know, 20 megawatts.

Q. Okay. Turning to page 13, this is back on the same page with the Texas example, down at the bottom 21, 22, 23, you say that you're not aware of any studies related to Montana-Dakota's system with regard to the amount of wind capacity the system can absorb without incurring costs for initial additional generation resources to support the wind, and isn't it also the case that MDU hasn't determined the maximum amount of conservation, energy efficiency and DSM that could be implemented cost effectively on its system?

A. I think there are two questions, but the end question -- I think the tail question is what you're asking -- what you're trying to ask is did MDU look at the maximum potential of conservation on this system. Is that the question?

Q. Yes.

A. I don't know if they did or not. I asked for all the programs they considered, but I'm not aware of everything they did.

Q. And so it's also not possible -- you're also unable to say what's possible in terms of maximized wind capacity?

A. I could only give you general comments. I don't have anything specific to Montana-Dakota.

Q. Okay. Turning to pages 18 and 19, and looking at the top of the page, "higher cost expansion plans that incorporated smaller amounts of Big Stone Unit II in conjunction with building more combustion turbines." Did --

A. I'm sorry. I'm probably staring right at it, but I can't find that reference. Is it page 18?

Q. Sorry. I was looking at the bottom of the page, and top of page 19 is where I'm actually referring to. It would be lines one, two and three.

A. Okay. Thank you.

Q. And in modeling these options that would have expanded baseload coal in various increments, was there also modeling of the risk of diminished fuel diversity?

A. No. I mean, the model is essentially

looking at Big Stone in 25 megawatt units. I mean, the risk -- again, it's just a model. To model the risk of fuel diversity, one would have to describe some inputs for it calculate. No such calculations were done.

Q. Right. That was the follow-up question I was getting to, is have you made any assumptions with regard to fuel diversity that could inform this model or these scenarios?

A. Well, the Strategist model is just an optimization given Montana-Dakota's -- Montana-Dakota's load and resources. In terms of fuel diversity, if you want me to put my two cents worth in on the region, I'm happy to do that, but that was not modeled.

Q. Let me ask the question this way: If you were to make assumptions with regard to expanded reliance on coal as an input to the Strategist modeling, would you be able to characterize those assumptions?

A. Well, I think the way to probably look at it would be to say look at the various coal price options and gas price options, look at the difference in the net present value of those plans, and then exogenously to the model, you know, make some kind of criteria as to, you know, what that risk is.

Q. And so that's what you would do, but you have not done it at this point.

A. I have not done that.

Q. Okay. Going to page 11 of your rebuttal, you refer at question, lines 14 and 15, to Mr. Schlissel's conclusion that it is appropriate to increase the capital cost of the Big Stone II unit but not the capital cost of the alternatives. Isn't this a bit of a mischaracterization of what Mr. Schlissel says at page 76 with regard to -- let me point you then to --

A. Yeah. I'm real sorry. Can you again point me to the reference in my testimony?

Q. Okay. Your testimony is page 11 of the rebuttal. So let's just open it up to both of these so we can compare. Your question is at lines 14 and 15, page 11 of the MDU Exhibit 217.

A. Thank you. That was the --

Q. That's the number you need. Okay. I have them labeled. And I'd like to refer you for reference to Mr. Schlissel's testimony at page 76.

A. I actually do not have that in front of me.

MR. GUERRERO: I can --

MR. KUNTZ: I can get it.

MS. LA SEUR: Thank you.

THE WITNESS: Okay. I'm sorry. I'm with you now. Page 76.

Q. (MS. LA SEUR CONTINUING) Page 76 of the Schlissel testimony, and I'd refer you to lines five, six and seven where Mr. Schlissel said it was not necessary or appropriate to further increase the cost of these alternatives when we increased the cost of Big Stone II, and is it a fair characterization to say that he concludes that it is appropriate to increase the capital cost of Big Stone II but not the capital cost of the alternatives? Isn't he actually saying the capital cost of the alternatives has already been assumed as so high that there is no need to increase it further?

A. I believe that's his testimony, and I believe my testimony is that I lay out how the costs were developed and provide reasoning and where the costs come from and conclude that there's -- you know, why the costs are not unreasonably high. I see only a statement and no numbers to back up this assertion in Mr.

Schlissel's testimony.

Q. So you're, in fact, saying that you just disagree with Mr. Schlissel about the correctness of the capital costs attached to the alternatives?

A. Well, I think it goes back to my opening remarks. I mean, you can run the model with any range of assumptions and it's up to the person running the model to determine, you know, what's reasonable. You know, at least I think in terms of presenting a base case, I've explained my reasons why I do not think his options are -- you know, his conclusions are reasonable. I mean, that's all I can say.

Q. You disagree.

A. I disagree.

Q. Okay. And again in your rebuttal, this is just a couple of pages later, at 14, you say, "Mr. Schlissel implies that it is a flaw to incorporate the more speculative future in identifying the lowest cost expansion option," and I think this is a reference to Mr. Schlissel's testimony at 74. It should be just about where you already are, two pages earlier, and I refer you to Mr. Schlissel's statement at lines 13 and 15, that it was only in the more distant, and consequently the more speculative, future that the Strategist model presented Big Stone II as a lower cost option, even with all of Mr. Heidell's flawed assumptions. Wouldn't you agree that models of the distant future are more speculative than models of the near future?

A. As I get older, I'm beginning to be convinced that all models are speculative regardless of the time frame. I don't know how to answer that, you know, the degree of speculation. There's just a whole range of short-term assumptions as well as long-term assumptions. I would admit that in general, you know, uncertainty tends to increase over time. I would submit that when people come up with a cost of equity of 11 percent for utilities, that cost of equity is based upon various capital asset pricing model and other ways and essentially is a discount rate that has been designed to reflect the appropriate level of risk. So I would argue that there is risk. The discount rate is one mechanism to deal with that, and the discount rate is appropriately chosen.

Q. And so then would you agree that Mr. Schlissel is not actually arguing against projections into the distant future but speaking about the reliability of those projections?

A. Well, that may be his case. I -- I took this -- I read this as a -- sort of a -- a suggestion to the Commission that it's inappropriate to consider the whole study period and just consider the first 20 years. If that wasn't his intention, then I guess I misread it.

Q. Back to page three of your rebuttal, lines 18, 19 and 20, the sentence that reads, "In any event, it is more prudent to include scenarios in which the PTC is not extended than to assume in every instance that it will be extended indefinitely." And should we take this to mean that you would also agree that it is more prudent to anticipate that any relevant future legislation may make a project less economic rather than assuming no impact or a positive impact?

A. I mean, I would say that my -- you know, one of the big things that I do for clients is to -- is to look at these things, and sometimes legislation adds value, sometimes legislation decreases value. So it's fair to say that investors consider those risks -- regulatory risks.

Q. But you would say that it's prudent to model in both directions and to be pessimistic rather than optimistic where the case is even? Or we could break that into two questions. Is it more prudent to model in both directions considered both possibilities?

A. I think it's -- well, a lot depends on -- I mean, if you're a rating agency, you only care about downsides, so we deal with asymmetric risks with rating agencies, but I think that most people try to understand the upside and downside of their investments.

Q. Let's look at page 20 of -- I think look at your direct testimony here. Yeah. 20 of your direct, lines nine and ten, which says that in scenarios where the federal PTC is extended, the comparative costs between Big Stone Unit II and a natural gas/wind option become very close with the wind/gas option within two percent of the Big Stone Unit II scenario. Let's see. And referring to the scenarios where the PTC is extended -- let me just ask this preliminarily: Are you aware that earlier this month the U.S. Senate voted 88 to 8 to extend the PTC through 2009?

A. Yes. I am also aware that that legislation was not passed in their -- over concerns about the federal budget deficit.

Q. That which legislation has not passed?

A. That the senate committee's recommendations in the legislation did not ultimately get passed because of concern over the federal budget deficit to extend the PTC. The PTC is not extended.

Q. I'm talking about the housing bill that was recently passed in the Senate. Are you familiar with that?

A. I'm sorry. The housing -- I'm in left field. Could you please describe -- I'm not aware what you're talking about, at least not at this point.

Q. I'd like to distribute a rollcall vote printed off the senate.gov website of Senate amendment 4419 to Senate amendment 4387 to HR 3221, which was originally the Renewable Energy and Energy Conservation Tax Act of 2007. Mr. Heidell, does this appear to be a printout of a rollcall vote from the senate.gov website?

A. It does, except I would say that there is a Table 8-4A on the last page. I do not -- do not think that that would be part of the rollcall vote, but you can correct me if I'm wrong.

Q. Yeah. I'm not offering the table on the back. That was apparently a copying error.

A. With the exclusion of that page --

Q. With exclusion of the table on the back --

A. -- it does appear to be a rollcall vote. Yes.

Q. -- that is not part of the rollcall vote.

MS. LA SEUR: Okay. I would like to offer this as Intervenor's Exhibit -- are we up to 22?

JUDGE WAHL: 23.

MS. LA SEUR: 23.

JUDGE WAHL: Let's just take a minute, Steph, and mark your copy I 23. All right. I'm sorry. Ms. La Seur, did you offer it?

MS. LA SEUR: Yes, I did offer it.

JUDGE WAHL: Mr. Kuntz?

MR. KUNTZ: No objection.

JUDGE WAHL: Mr. Binek?

MR. BINEK: No objection.

JUDGE WAHL: Exhibit I 23 is received.

Q. (MS. LA SEUR CONTINUING) And, Mr. Heidell, does the purpose of this amendment appear to be -- from the statement on the first page of this exhibit to be to provide for the limited continuation of clean energy production incentives?

A. That appears to be what's described in the statement of purpose, although I'm not clear what the detailed language is associated with this particular bill.

Q. Sure. And that's the only question I wanted to ask about it, to confirm that that's your understanding of the amendment.

A. No. It's my understanding of what this -- the statement purpose.

Q. Your understanding of the exhibit as I've offered it to you. Yes. Do you agree with Mr. Schlissel that the most likely point at which the PTC would be phased out would be upon enactment of federal carbon legislation?

A. I would agree that that is a factor. I don't believe that is the only factor.

Q. Would you agree, though, that it is the most likely point for phase out of the PTC?

A. I'm struggling because, you know, I -- one is sort of a political -- politically when a politician can do whatever they want to do. I don't have any great insight to that. From an economic perspective I could argue that the fact that states have renewable portfolio standards that mandate renewable energy, essentially what -- the PTC then isn't bringing -- you know, isn't what's causing most of the new generation -- renewable generation that's causing the state mandates. So the PTC essentially from an economic perspective just becomes a transfer from between one group of taxpayers and another.

There are other factors that would -- economically I would say would also from an economic perspective mean that the PTC is not as important and there has been significant discussion about the rising cost of generation, and in fact in places like California where gas generation is very expensive, we find that from an economic perspective that, you know, it doesn't take carbon legislation to, you know -- from an economic perspective not to need the PTC.

Q. So the economic perspective would then be that the PTC might be phased out as wind becomes even more competitive as a result of market forces?

A. Market forces or alternative regulation that requires those investments to be made otherwise. I mean, you're not incenting any new behavior if you're required to put in the wind already. The PTC isn't needed. It's a wealth transfer.

Q. And so would you consider it an unlikely scenario that in interest in expanding wind generation would slack off and the PTC would be withdrawn because the wind industry was on a slide?

A. Oh, boy, at that point you're sort of getting into the nature of state mandates. You know, is it required; is it required subject to an economic test. I mean, it unfortunately becomes bogged down in a myriad of detail to answer that question.

Q. Okay. Well, getting back to your specific testimony on page 20, lines nine and ten, this comparison you make between Big Stone II and wind with the PTC, is that based on the 2006 capital cost estimate for Big Stone II?

A. No. Scenarios one through four all are based upon $2,000 a kw capital costs. The difference is between scenarios one and two and scenarios three and four with regard to wind are primarily the capacity factor assumed for the wind turbines and the production tax credit.

There is a third factor that would influence potentially how much wind is selected, and that third factor is that the delivered gas price is lower in scenarios three and four than it is in scenarios one and two. So we have multiple assumption changes.

Q. Okay. My question is just about the capital cost assumptions for Big Stone II.

A. I'm sorry. Oh, the capital cost. I'm sorry. The capital cost assumptions for Big Stone II are the same for all scenarios. I'm sorry.

Q. And is this the 2006 capital cost estimate?

A. No. I believe the origin of the estimate was September or October 2007. It was -- it is the updated estimate of the cost.

Q. So this is the one with just the time-based adder and then it was, I think, a two percent undefined savings also calculated as part of that number?

A. I'm afraid I'm going to leave it to others to describe exactly how that cost estimate was developed.

Q. Okay. So --

A. I took it as a given.

Q. And the wind/gas option comes within two percent of Big Stone II without any consideration of carbon costs; correct?

A. Given the assumptions in scenarios one and two, that is correct.

MS. LA SEUR: Okay. That's all. Thank you.

COMMISSIONER WEFALD: Could we take a break?

JUDGE WAHL: Yes, I think we should. I agree. Let's be in recess until four o'clock.

(Recess taken.)

JUDGE WAHL: All right. We're back on the record. Mr. Binek.

MR. BINEK: Thank you.

CROSS-EXAMINATION

BY MR. BINEK:

Q. In your -- the four-some scenarios that you set forth in your testimony, what was the capacity factor that was used for wind?

A. The table on page two describes that, so in scenarios one and two we used -- I used a capacity factor of 52 percent. In scenarios three and four I used a capacity factor of 38 percent.

Q. And how did you come up with those different capacity factors?

A. The 52 percent came from a South Dakota wind project that was proposed to Montana-Dakota. At the time that this project was being proposed, let's say, myself and others had a fair amount of skepticism that this capacity factor would be realized, but it was the developer's contention, so that's what we used. The 38 percent came from looking at the capacity factors actually published by a couple Minnesota utilities. Minnkota I believe was one of them and I do not recollect the second one, but they're sort of actual operating capacity factors as opposed to a capacity factor put forth by a developer trying to get a contract with Montana-Dakota.

Q. Did you hear the testimony of Andrea Stomberg earlier that the capacity factor that they're seeing at the Diamond Willow facility is approximately 38 percent, also?

A. I did hear that.

Q. Am I correct that the model -- as I read your testimony, it's my understanding that the model picked a minimum of 116 megawatts at Big Stone II as the least cost resource mix in all four of the scenarios?

A. Scenarios one and two essentially -- well, scenario one, you know, was the choice that you could take 116 megawatts at Big Stone or not. So it was a binary choice that the model had to select. Scenario two had this binary choice of taking 116 megawatts or not and if 116 megawatts were selected, then up to five -- additional five megawatt blocks could be selected, but it was conditional upon selecting the 116, and that's where we got up to 113 megawatts versus 116.

Q. Got to what?

A. I'm sorry. 131 megawatts versus 116. Scenario three and four was essentially designed to investigate one of the criticisms that I believe was offered by Mr. Schlissel that, well, gee, what if you only needed 50 megawatts at Big Stone. So I modeled Big Stone in 25 megawatt increments, and that's how it got to in scenario three selecting 75 megawatts in 2011 and 50 megawatts in 2013. I mean, we know that's not a viable scenario, but it was designed to test that function.

And, likewise, scenario four had that same -- it could select a plant in 25 megawatt increments. It ended up selecting it -- putting it all right upfront. I think -- you know, you're always trying to think about what Strategist is doing, but you never really know exactly what it's doing -- it's because of that opportunity for off-system sales, it's more economical in the model to put it all in right away versus delay 50 megawatts a couple years.

Q. I'm looking in your testimony, and maybe I'm looking at something wrong here. Your direct testimony, table ten at the back of your testimony, and I'm looking at scenario three, and I see 2013 there's 75 megawatts at Big Stone II and 2016, 25 megawatts. What am I not understanding here? It looks to me like it selected 100 megawatts of Big Stone II in that scenario.

A. You have me checking back here, also, to see what's going on here. That -- that -- I'm sorry. That is a typo. It should be 50 megawatts. So the table on scenario -- in expansion of plan summary on page two is correct. This is not correct. I apologize for that.

Q. Okay. So the 25 in 2016 should be 50?

A. It should be 50. Yes. Sorry for the confusion.

Q. I make so many errors, I like to find one that other people have made. Okay. And in these four scenarios, what was the lowest cost alternative choice?

A. Big Stone II. I mean -- you mean the resource is Big Stone II?

Q. Right.

A. Yes.

Q. You updated the capital cost of wind from 1200 per kilowatt to 2,000 per kilowatt or --

A. That's correct.

Q. Is that right?

A. That's correct.

Q. That -- in my rough math that comes to -- my calculation is 67 percent increase in the capital cost of wind, and there's been some explanations about how that came about, but I guess I still -- I guess I'd like to have a little bit -- I'd like to have an explanation from you as to why those costs jumped from 12 to 2,000 -- 1200 to 2,000?

A. Well, the 1200 was actually a fairly old estimate, I think, that sort of, you know, went back to be even before the original filing, and my recollection could be wrong, but I seem to remember sitting in this room and people asking me how I could come up with such a low number of $1200. My recollection could be wrong, but that's my recollection of what happened here last June.

I think, you know, at the time, you know, $1200 was a number using in the original numbers. It is too low. There's, you know, a strong body of evidence that, you know, it's closer to 2,000, if you can -- you know, in the short-term if you can get it, despite the expansion of blade factories and others. It's still hard to get wind turbines in a short-term.

Q. You say that the estimate includes an assumed cost to connect wind to the grid but does not assume any cost for transmission upgrades. When you're talking about assumed -- or the assumed cost to connect wind to the grid, you're talking about the transmission from the wind field to the closest interstate transmission line or something that would connect it?

A. This would be subject to check, but my understanding is that the $85 per kw that's in there is -- really has no transmission lines in it and it's basically some, you know, busbar-type work. I mean, that's not a lot of money in the world of transmission.

Q. Okay. So that doesn't even get you to the grid; is that what you're saying?

A. Well, in this case the units, I believe, are connected to the grid. So in this case it did get you to the grid.

Q. Okay. So that isn't -- the transmission that you're talking about here isn't similar -- it's not similar to the $200 per kilowatt that Bryan Morlock assigned for transmission to wind generating facilities.

A. No, I don't believe it is. I don't know exactly how Mr. Morlock came up with that estimate.

Q. Okay. We've already talked about that. On page -- in your rebuttal testimony, page seven, lines three to five, in that testimony --

A. Yes, I'm there.

Q. Okay.

A. Thank you for checking, though.

Q. You assumed the capital cost of a 120 megawatt combined cycle gas turbine plant to be $1,122 per kilowatt. Is this cost consistent with the $674 per kilowatt cost of a 500 megawatt CCGT plant used by Mr. Greig in his revised busbar cost analysis?

A. Unfortunately, I don't know the source of his assumption. I don't know whether he took it from the -- I'd say to be consistent it would mean that it came from the Otter Tail supply site study. It may well have. Unfortunately, I don't know that answer. If it came from that study, it would be consistent.

Q. Okay. And also in your rebuttal on page nine, lines nine and ten -- are you there?

A. Yes, I am.

Q. Is the fixed charge rate for the Big Stone II at 10.14 percent lower than the fixed charge rate for gas-fired turbines, which is 11.37 percent, because of the longer life of Big Stone II?

A. That is correct.

Q. Are there any other reasons for the lower fixed charge rate for Big Stone II?

A. No. I believe the -- in my model really the only change -- it's essentially I put in the capital cost and the tax assumptions, and everything stayed the same except for the asset life was changed.

MR. BINEK: Okay. I have no further questions.

JUDGE WAHL: Any questions from the Commission?

COMMISSIONER WEFALD: I have one.

JUDGE WAHL: Commissioner Wefald.

EXAMINATION

BY COMMISSIONER WEFALD:

Q. The previous witness I had asked what the energy conservation component is of needed resources until, let's say, approximately 2020. She said you could answer that question.

A. The -- the best source of information is really that Table 5 that we referred to earlier, which would then be -- I should have this exhibit memorized, but it would be Exhibit 215, page four, Table 5, and so to those numbers we add approximately three-and-a-half billion for the existing programs. So 46, 57 -- you know, on the order of 65 million kilowatt-hours would be what's in the model.

Q. Those are only -- when I look at that -- and by the way, just to let you know, today in the mail I received a notice about the residential refrigerators and freezers in my Montana-Dakota Utilities bill about the rebate program?

A. Should I modify my earlier testimony that the programs have started?

Q. Let's see. Those four programs that you have listed in table five, there's a number of other programs that are listed on page three of the exhibit -- that late-filed exhibit that Montana-Dakota Utilities filed last summer.

A. And that would probably be things like the commercial high efficiency lighting and --

Q. Yes. And that included programs from 2006 through 2009, and so there's quite a number of other programs that they had listed at that time.

A. And those programs are ongoing and those programs are reflected as a reduction in the load forecast.

Q. But there's a number of programs in that -- do you have a copy of that list?

A. I'm sorry. I do not have it in front of me.

Q. I'll just pass it to you. You'll see that the difference between the lists that I have here --

MR. KUNTZ: We have one, Commissioner.

COMMISSIONER WEFALD: Okay. Thank you.

Q. (COMMISSIONER WEFALD CONTINUING) For example, residential refrigerators and freezers, if we checked them off, that's two programs that they said the would start in 2008, and then you have residential commercial air-conditioner cycling. That's about eight down. It said they would start in 2009, and then high-efficiency commercial AC and motors. Commercial AC is right below that one and motors is like two down, high-efficiency motors, and those would be started -- that would be started in 2008. And interruptible rate demand side management four, I'm not -- interruptible rate -- they have load management programs down below starting in 2007. Okay. I think that's the same one. It would be ND 1. Do you see it? Is that the same?

A. I believe there is a -- that there is probably some overlap as that's why I went back to -- and unfortunately I'm probably not the best one on the stand to resolve that. I'm sure we can resolve that to give you the two pieces, but that's why I sort of said, well, if we take the -- you know, the roughly, you know, 60 million kilowatt-hours in the new program and add another three-and-a-half million or so, that gives you a good order of magnitude of the projected savings of the programs that are currently in the model.

Q. But I need some help with that. Does that model reflect -- the demand side management options, is that per year?

A. These kilowatt -- these kilowatt numbers here are -- in Table 5 are cumulative.

Q. Through what year?

A. I believe it's through the -- most of these programs, I believe, have a life of ten years. I'm sorry. I don't know the exact life of these programs. So, I mean, these programs would be renewed presumably. I mean, they're cost-effective ones. I mean, we always hope on these kinds of programs that the extent that the -- these are programmatic conservation, so we always hope on these kinds of programs to the extent that the customer went out and bought a high-efficiency refrigerator, and that when it came time to replace it in eight, ten years, that they would go out and buy another one without a rebate from the utility.

Q. My -- I'm just wondering whether in the -- in the plan through 2020, let's say, that's in their integrated resource plan, which I believe this is from, these only go through 2009 and then they stop, and they don't show any new programs after that.

A. Well, again, those are the available dates, and then the measures, of course, persist in the load forecast, and then you have some of these programs, but --

Q. Is this typical of programs that you see where they -- if you're supposed to -- if, as we heard from a prior witness, that you try to increase by one percent each year the amount of demand side management that's in the system, is it typical to just stop then only three years or four years into a program and then not have any new programs after that?

A. Well, I mean, I first started doing these programs in the early Eighties, and essentially what happens is that you have a list of measures and you have a cost-effectiveness test, and so you essentially keep adding these measures until you, you know, essentially either run out of measures that are cost effective or -- you know, in this case you can assume that the customers -- you'll get these savings, but you don't need a program to continue them.

I think you're right. I mean, I think that as one goes out in time and one looks at the -- you know, this DSM assessment in the least-cost plan is -- you know, happens periodically, and I would assume that, you know, there will be more programs in the future, I mean, as a result of technological changes.

Q. The reason I ask is -- one of the reasons I ask is because Otter Tail -- you know, basically they're probably looking at this similarly.

They're looking at what is -- from some conversations -- what's the avoided cost out in the market, what is the market price they'd have to pay, let's say, for gas turbine generated electricity, and then that's the high cost that they use, and then they put in programs that fall underneath that, that as being cost -- to save that avoided cost. Well, you think both companies would have to face the same costs in the MISO market, so it's hard for me to understand why Otter Tail would have a list of like 25 or more programs that would meet that avoided cost test and MDU would have far less programs that need it.

A. And that's a fair question. I'm not trying to make it overly complicated, but I think the first thing what you're talking about is what I would refer to as technical potential. So if both utilities are seeing $60 a megawatt-hour of avoided cost, you know, you think that whether it's -- you know, refrigerators are a national market, light bulbs, and all those kinds of things. You would think that their technical potential would be very similar.

The trick in all these assumptions in this modeling is coming up with feasible potentials.

We're not forcing consumers to do something; we're trying to convince consumers to do things. One of the things that -- I can't give you a specific citation, but the experience of our company that does a fair amount of DSM assessment work is that the propensity to consumers to accept demand side management or the feasible potential really grows with more exposure to the programs.

So it could be that, you know, since Montana-Dakota has been doing these programs longer, that in the near term their feasible potential is higher -- their view what's feasible, what we could get the consumers to do actually is higher than a company like Montana-Dakota. I admit that's a bit of speculation.

COMMISSIONER WEFALD: Thank you.

JUDGE WAHL: Any further questions from the Commission? Commissioner Clark.

COMMISSIONER WEFALD: So --

COMMISSIONER CLARK: Go ahead, if you --

COMMISSIONER WEFALD: I just need to finish that.

Q. (COMMISSIONER WEFALD CONTINUING) So then the total megawatts that's available basically through -- to your best estimate, is about that

6-and-a-half megawatts plus 13 -- you said 13-and-a-half megawatts plus 6-and-a-half or something, 20 megawatts?

A. That's what's modeled. I mean --

COMMISSIONER WEFALD: Okay. Thank you.

JUDGE WAHL: Commissioner Clark.

COMMISSIONER CLARK: Thank you.

EXAMINATION

BY COMMISSIONER CLARK:

Q. I'd just like to explore a little bit the -- the modeling of the Strategist that you discussed in your supplemental prefiled testimony. Mr. Binek had asked about the -- whether the assumptions when you added wind included transmission cost. Do the assumptions that you had for the Big Stone Plant in that model include the known transmission cost for Big Stone?

A. Yes. The assumptions for Big Stone include transmission costs as well as the combined cycle turbine and the simple cycle turbine.

Q. But the wind to gas combo we don't know what those transmission costs would be.

A. For better, for worse, we did not speculate on a general average number to integrate transmission projects for wind.

Q. Is it likely that the transmission costs for wind would be higher than the costs for adding just straight combined cycle or Big Stone itself?

A. Well, I think there's a -- you know, it's a difficult question to answer because there's an economy of scale issue. To bring more wind onto the system, you have to build 115 kv line or a 230 kv line, and let's say you need -- MISO says to integrate a 50 megawatt project of wind on the system, you need to build 10 miles of 115 kv transmission line. Given the capacity of a 115 kv line, it's probably likely that you could put in, you know, more wind than that 50 megawatts in this hypothetical. So there's an economies of scale question. I guess it depends on how big the wind project is. I mean, quite frankly, that's why on a dollars per kw basis, Big Stone is less than the combined cycle because I think a part is economies of scale.

Q. I'm trying as much as I can to get an apples-to-apples comparison because when -- which is a little tough to do, and the reason I ask this is because of your statement on line eight and nine of that page 20 where you talk about the federal PTC being extended, which I think is -- it's just my own guess -- but is likely in the short term. We don't know if that's the case, but it seems to have been the trend in Congress at least lately. That even you state -- I mean, it gets close, within two percent, but there are other costs that aren't there, too, and what are the chances that, say, if carbon regulation comes into play and understanding that the Commission can't quantify a dollar value but can at least assess the risk of it, what impact does that have in your mind on the cost of alternative forms of generation -- alternative to coal? I mean, do they all go up commensurately? Even if they don't have as much carbon emitted as coal does, does simply the market pressure for wind turbines and blades and at least partial carbon regulation on gas, does it all just sort of equal out?

A. Well, to your comment about apples and apples, I mean, I take responsibility. It's my assumption to put in 52 percent capacity factor for the wind. For reasons I've explained I think 38 -- I explained why the 52 percent. If you're trying to do apples and apples, I would recommend you go to 38 percent. That's just my view of an apples to apples, and I don't want to run afoul here. I guess something about offered for proof or something like that, but, I mean, we have looked at -- and I guess someone will object -- we have looked at trying to put the PTC back in to give you that apples to apples, and so there is a difference.

I personally, you know -- well, I personally -- PA's view is that everything doesn't move equally. We do fundamental gas modeling, and so essentially when we look at the world, we don't assume because -- you know, if there's carbon legislation, that the demand -- you know, demand for electricity is pretty inelastic. In other words, when price goes up, people don't change their use that much.

So we do a model and we say, well, what generation is going to fill that hole, and what fills that hole is DSM, you know, renewables, gas. This is sort of at a system level, and so we see there's more demand for gas. We put that through our fundamental gas model and gas prices rise. We also see that there's less demand for coal because of some of the very marginal units, you know, what are these 50, 100 megawatt old units. It's less likely that's economical to keep them going.

So we see an easing pressure on coal FOB mine prices -- I'm not dealing with transportation. I'm not going to touch that one, and so, I mean, we don't see everything moving -- I mean, our fundamental modeling doesn't say everything moves together.

COMMISSIONER CLARK: That's all I've got. Thanks.

JUDGE WAHL: Commissioner Cramer.

EXAMINATION

BY COMMISSIONER CRAMER:

Q. As long as you're on the topic of gas, do you ever model the upward pressure, or if there is upward pressure, then on other -- other uses of gas -- in other words, we live in a cold part of the country where gas is a significant source of home heating obviously, obviously an important commodity in manufacturing processes. Have you -- do you have any either opinion or experience that tells us what we can consider the impact of more gas being burned for electricity would have on home heating costs?

A. Yeah. I mean, our -- our fundamental supply and demand model for gas is total gas in the economy. So it's -- you know, and I -- and it's a national market. I mean, we have pipeline constraints with things like the Rockies Express Pipeline, you know, essentially to the detriment that the west is going to -- we believe will essentially equilibrate -- have the difference in prices between western gas and eastern gas has come up -- you know, western gas will come up. So we view it as a national market for gas, subject to pipeline constraints, and we do factor in all uses of gas in our fundamental model. That's why I say gas demand would go up.

COMMISSIONER CRAMER: Nothing further.

JUDGE WAHL: Commissioner Wefald.

COMMISSIONER WEFALD: Yep. Just one more followup.

FURTHER EXAMINATION

BY COMMISSIONER WEFALD:

Q. And that is on the commercial lighting, it does show five megawatts of peak savings and -- a little over five megawatts, and that wasn't modeled in. So would we just assume then that Big Stone II really doesn't need 131 megawatts; it only needs 126?

A. It is my understanding that the commercial lighting program is in the forecast, in other words, is in the DSM programs. If the -- if it's not, the hypothetical --

Q. It's already happening. I know they're providing it?

A. So it's in the forecast. I'm saying it's in the forecast. So we've already reduced the load for commercial lighting. So our assessment of the need for Big Stone is occurring after all these programs are accounted for.

Q. Even though it's not on the chart?

A. Yes. Because it -- because, remember, we have two groups of programs. We have programs that we put into the model and allow the model to select, and we have programs that we subtracted from the -- "we" being -- I'll be -- it's Montana-Dakota. Montana-Dakota's load forecast said, you know, when they project load out into the future, they say, oh, gee, our load's going to be lower because of these commercial lighting programs and other programs. So I will give to Strategist the load forecast after the demand and energy savings of these commercial lighting programs. So we've already accounted for it in the analysis.

COMMISSIONER WEFALD: All right. Thank you.

THE WITNESS: Sorry to be confusing on that.

JUDGE WAHL: Any further questions from the Commission? Mr. Kuntz, followup?

MR. KUNTZ: Thank you. Yes.

REDIRECT EXAMINATION

BY MR. KUNTZ:

Q. Followup on that DSM question, in response to an issue that Commissioner Wefald raised with you regarding comparing the economics of DSM programs between utilities. Will a program of economics depend on the customer characteristics, usage characteristics of the utilities?

A. Absolutely. I mean, without trying to bore anybody, I mean, this assessment of the technical potential actually does take into account the amount of gas heating, amount of electric heating. It takes into account income of customers, the mix of residential, commercial, and industrial customers. So, actually, when I said technical potential, while both utilities might see the same price, that is the price of a gas turbine is similar to both utilities, they could start with separate technical potentials, as well.

Q. So, for example, a utility that has higher concentration of electric space and water heating might have DSM programs available to it that would be economic for that utility but not another utility that had a lower concentrate of electric space.

A. Absolutely. The role of the technical potential studies is to look at the different end uses that electricity is being used for, look at the -- make an assessment of the appliance stock, and then go from there.

Q. You were asked some questions by Ms. La Seur regarding fuel diversity, and you said that you had some opinions on fuel diversity within the region. Could you offer those to the Commission, if you recall it?

A. I guess what I was trying to say is that if you're going to rely on the market, in MISO on peak, you know, what's setting the price? The price setting unit for that clearing price in MISO on peak is gas. So it doesn't matter if you say, well, gee, you know, gas is 60 percent of the -- you know, coal is 60 percent of the market or 75 percent of the market. If you're exposing yourself to the market on peak, you're exposing yourself to gas. That's what I was trying to get at.

Q. And then also with respect to questions by Ms. La Seur, she asked you if you recall a series of questions about the wisdom of modeling with or without an assumption for the extension of the PTCs and factors that might affect the likelihood of the extensions or non-extension of the PTC. Do you recall that line of questioning?

A. Yes, I do.

Q. And in your scenarios one and two in your testimony did that assume extension of the PTC?

A. Yes, it did.

Q. And then -- and that picked Big Stone II as the least cost?

A. That's correct.

Q. And your scenarios three and four assumed expiration of the PTC at the end of 2008, along with some other assumption changes, such as lowering the capacity factor for wind; is that correct?

A. That is correct.

Q. Do you know what the result of your scenarios three and four would be if you assumed that the PTC were extended beyond 2006?

A. Yes. The result is the same. The Big Stone II is still the least cost option.

Q. And do you recall that Ms. La Seur handed you Exhibit Intervenor 23 that showed the result of a vote by the Senate on April 10th for extension of some clean energy production incentives?

A. Yes, I do.

Q. Do you know whether the Senate had previously voted for extension of the PTC?

A. My understanding is that in December of 2007 the Senate voted for the extension and the house did not.

Q. And the house did not accept that extension; is that correct?

A. The house under their -- for whatever -- for reasons of, you know, the pay-as-you-go -- the pay-as-you-go is one of the reasons that was given for not extending it.

MR. KUNTZ: That's all the questions. Thank you.

JUDGE WAHL: Followup, Ms. La Seur?

MS. LA SEUR: I have nothing.

JUDGE WAHL: Mr. Binek, anything further?

MR. BINEK: No.

JUDGE WAHL: Any follow-up questions from the Commission to Mr. Kuntz's questioning?

FURTHER EXAMINATION

BY COMMISSIONER CRAMER:

Q. If I told you Senator Dole was one of the senators that was absent and not voting, could you name the other three?

A. No.

Q. Never mind.

A. How is that for a short answer?

Q. Would it surprise you if they're all running for president?

A. No.

JUDGE WAHL: I assume, Mr. Kuntz, you have no followup?

MR. KUNTZ: We have no followup.

JUDGE WAHL: Likewise, Ms. La Seur and Mr. Binek?

MR. BINEK: No.

JUDGE WAHL: Indeed. All right. Next, counsel. Mr. Guerrero, looks like you wish to call Mr. Hewson; am I correct?

MR. GUERRERO: That is correct, Your Honor, and --

JUDGE WAHL: Okay. Let's see if I can do this. My recollection of the last time we did this was that it was very important to speak into the microphone to communicate. You really must get that microphone relatively close and you must speak directly into it. Otherwise, we're going to have trouble with the person on the telephone.

MR. GUERRERO: Your Honor, I was wondering if I could just give him a call real quick, let him know that you're going to be calling him.

JUDGE WAHL: Sure. Go ahead.

MR. GUERRERO: He might be listening. I'm not sure.

JUDGE WAHL: That's fine.

COMMISSIONER WEFALD: Who is testifying?

JUDGE WAHL: Thomas Hewson. Has he testified previously?

MR. KUNTZ: Not in this proceeding. It would be under tab 28.

(Off the record.)

JUDGE WAHL: Mr. Hewson, this is Al Wahl, the administrative law judge with the North Dakota Public Service Commission, and we're ready for your testimony. Are you ready to proceed?

MR. HEWSON: I am indeed.

JUDGE WAHL: Mr. Hewson, as you may be aware, your testimony is required to be under oath, and I'm required by law to advise you regarding perjury before administering the oath. Perjury is a false statement of material fact which you do not believe to be true, in other words, generally speaking, a lie. In North Dakota perjury is a Class C felony punishable by a fine up to $5,000, imprisonment for a period of up to 5 years, or both.

(Witness sworn.)

JUDGE WAHL: Mr. Guerrero.

MR. GUERRERO: Thank you, Your Honor.

THOMAS HEWSON,

having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. GUERRERO:

Q. Good afternoon, Mr. Hewson. Can you hear me okay?
A. I can indeed.
Q. Okay. Great.
A. Can you hear me?
Q. We can hear you just fine. State your name for the record, please, and spell it.
A. My name is Thomas A. Hewson, Jr., and Hewson is spelled H-e-w-s-o-n.
Q. And please tell us your position.

A. I'm a principal at Energy Ventures Analysis, Incorporated, in Arlington, Virginia.

Q. And what do you do as a principal for Energy Ventures Analysis?

A. I direct the environmental practice. I over -- I am responsible for the firm's environmental emission forecasts and industry environmental compliance studies. I do the -- I perform integrated electricity modeling and also have been involved in many numerous renewable project evaluations.

Q. Thank you. And what is your educational background, briefly?

A. I have a degree in civil engineering from Princeton University from 1976.

Q. And did you have occasion to prepare rebuttal testimony in this matter?

A. I did.

Q. And do you have that in front of you, Mr. Hewson?

A. I do.

Q. And it's been marked as OTP/MDU Exhibit 337?

A. Yes.

Q. And your resume is attached to that

testimony, and that's Exhibit 338?
A. That's correct.
Q. Okay. And do you have a summary of your testimony, Mr. Hewson?
A. I do.
Q. And what is that marked?
A. I do not have what exhibit that turned out to be.
JUDGE WAHL: 337A.
Q. (MR. GUERRERO CONTINUING) 337A. And do you have that in front of you, Mr. Hewson?
A. I do.
Q. And with respect to your testimony, if I asked you the same questions, would your answers be the same?
A. They would.
Q. Mr. Hewson, do you have any corrections to make to that exhibit?
A. No. The only -- no, I do not.
MR. GUERRERO: Okay. And with respect to OTP/MDU 337, 337A, and 338, the applicants would offer that into the record, Your Honor.
JUDGE WAHL: Ms. La Seur?
MS. LA SEUR: No objection.
JUDGE WAHL: Mr. Binek?

MR. BINEK: No objection.

JUDGE WAHL: OTP/MDU Exhibits 337, 338, and 337A are each received.

Q. (MR. GUERRERO CONTINUING) Mr. Hewson, could you offer your brief summary, please?

A. I will.

Q. And, Mr. Hewson, we have it here on the screen. I believe the Commissioners have a hard copy, but if you could just as you go along tell us what page you're on so that we could flip the screen here.

A. Okay. I would assume that we could skip over slides one and two, since we've pretty much covered that, and start with slide number three. I was asked by the applicants to review and evaluate the testimony of DRC witness David Schlissel. In specific I was asked to review the risk to new coal-fire power plant projects raised by Mr. Schlissel and the wind energy alternative production costs.

There are two risks in specific that I was asked to examine. One was dealing with a future carbon risk, which is now slide number four.

In North Dakota the statute specifically prohibits consideration of the carbon costs in the resource analysis; and, therefore, it should not be considered as requested by Mr. Schlissel. However, there have been jurisdictions that the Big Stone project has been -- or it states that it requires that you evaluate the carbon risk of which I have participated.

The carbon risks -- so I have examined the carbon risks as this project in other -- in the other venues. Carbon compliance risks are highly dependent upon the type, severity, and timing of the regulation adopted. That remains highly uncertain. However, it appears that under most leading congressional carbon proposals that are being debated that Big Stone II would remain the least cost baseload option, even if they were adopted.

This has a lot to do with the fact that the applicants are eligible to receive a large allocation of free allowances, that they are going to have access to be able to purchase lower cost emission offsets to further reduce their carbon liability, and then long-range prices will likely be captured -- or capped by future carbon capture and sequestration costs, and that Big Stone is likely to have much lower carbon retrofit costs than other coal-fired power plants.

And then, finally, when you deal with carbon legislation, it also affects other alternatives and other alternatives' costs, including there would be increased pressure on natural gas prices.

Mr. Schlissel in his testimony suggests that new coal-fired construction -- that there have been many delays due to concerns over carbon capture and escalating prices. It is also true that there have been many, you know, delays for other non-carbon based technology options, as well.

However, we do track new projects for the NERC and others, and currently we are tracking 130 coal plants that are still active and in various stages of development. These include 27 coal plants that are currently under construction; 9 projects are in advance permitting and financing; 15 projects that are in the earlier development stages; and 79 projects that have been announced but not yet canceled or with no recent permitting, financing, or power contracts that have been announced.

In addition, if one looks at the annual energy outlook, they forecast coal being the primary dominating new baseload power construction through the year 2030 as being the lowest cost alternative.

In addition to these coal risks I also evaluated wind power risks. Like any other project, wind projects also entail significant risks, specifically carbon -- capital cost risks dealing with the rapid cost escalations which have continued to escalate as rapidly in wind, as well; performance risk in terms of whether one is able to achieve high capacity factor utilizations to spread out those capital costs and capital cost recoveries; and dealing with the expiration of governmental subsidies risks dealing with things such as the current production tax credit.

Wind energy alternatives would also increase the applicant's natural gas use which also has additional risks associated with it in terms of natural gas prices. I do spend some time talking about the production tax credit, and that is an important element based upon the modeling that has been done to date to reduce wind power acquisition costs.

I review the production tax credit histories, the extensions, several expirations, and currently there is indeed a one-year extension that passed the Senate but not yet been adopted by the House of Representatives.

However, I believe that there's a material risk that the tax credit will expire and no longer be available to new projects being built to meet the energy requirements in the Big Stone II operating period. This has a lot to do with the fact that the original objective of the production tax credit has been met through demand created by state renewable portfolio standards, and as our wind generation expands from these renewable portfolio standards, the tax revenue losses have continued to grow, and therefore the costs needing to offset these costs become increasingly difficult.

That finishes my summary.

MR. GUERRERO: Thank you, Mr. Hewson. Your Honor, I forgot to -- or neglected to reference OTP/MDU Exhibits 339 and 340, which are attached to Mr. Hewson's testimony, as well, and we would offer those at this time.

JUDGE WAHL: Ms. La Seur?

MS. LA SEUR: No objection.

JUDGE WAHL: Mr. Binek?

MR. BINEK: No objection.

JUDGE WAHL: OTP/MDU Exhibits 339 and 340 are each received.

MR. GUERRERO: We would tender Mr. Hewson.

JUDGE WAHL: Ms. La Seur?

MS. LA SEUR: No questions.

JUDGE WAHL: Mr. Binek?

MR. BINEK: I think I have a couple that maybe weren't completely covered in the summary.

CROSS-EXAMINATION

BY MR. BINEK:

Q. When you talked about Mr. Schlissel's discussion in his testimony about the cancelation of numerous coal-fired plants, what do you believe is the future for coal-fired generating facilities?

A. I believe that when we look at our need for baseloaded power, it needs to come from a baseload power resource, which could be nuclear, and there are difficulties associated with the nuclear power option; it can come from natural gas. Of course, we have significant issues in terms of how sensitive gas prices are to the economics and how sensitive it is to the demand since natural gas is also used by other sources, and we will become increasingly dependent upon imported sources of natural gas; and it could also come from some specific renewable resources such as biomass or geothermal.

However, given the load and the increase of the load, I do agree with the Department of Energy that a large portion of this increased demand will need to come from coal-fired base sources. It will remain to be an economically attractive alternative.

Q. I was just passed a note that I should introduce myself. I'm William Binek. I'm counsel for the Commission's advocacy staff. Were you listening today when Mr. Schlissel testified?

A. I did -- you know, there were parts that I couldn't hear very well in that not all the time were the people speaking into the microphones for those of us listening online, and so I had gotten a lot of it, but I do not profess to have been able to hear all of it.

Q. Is it your understanding that Mr. Schlissel assumes the PTC will be extended indefinitely?

A. Yes. My understanding is it's his belief that it would be his underlying assumption.

Q. In your testimony you conclude that he has overstated carbon risks. Is the primary reason that you make that statement because he doesn't factor in the anticipated no-cost allowances that would be included in anticipated legislation?

A. That is indeed one element. It also deals with the type of legislation that is likely to be adopted, and it -- and a judgment in terms of where in the wide range of potential outcomes will the legislation come out, and I have a different viewpoint from Mr. Schlissel in his doing his emission allowance forecasts, which I believe have overstated what the likely cost range will be.

Q. Okay. Did you hear when he testified concerning how -- how he had incorporated low cost allowances in his study?

A. I did hear that part of his testimony. I think it runs contrary to what he states in his report. He talks about an allowance price forecast, not a cost forecast. When we talk about allowances, we're talking about the credits and the values of the credits as they trade. He bases his forecast based upon prior studies done by EIA, EPA, TELUS, MIT and others. In those forecasts they project the prices for emission allowances, not costs, and so I would say that I was very surprised with his answer to that question.

Q. You discussed the risks associated with wind power, including capital risk, output performance risk, and economic risks, and in your summary I don't think you explained all those, or else I just missed it, but would you just explain what are the capital risks, the performance risk, and the economic risk?

A. Yes, I would be glad to. The wind -- wind production costs are heavily driven by the capital cost, and so, therefore, most of the cost is based upon getting a return on your capital, the single most dominant cost.

We have observed a rapid escalation occurring over the past few years for wind turbine costs. In addition to the turbine costs themselves, wind options also often require transmission costs -- significant transmission costs in addition. While Mr. Schlissel in his testimony talks about going to the high side of $2,000 per kilowatt, I have seen a high side of more than 50 percent higher than that.

We continue to see escalation in prices. Obviously there is a large, international demand for wind turbines, and as a result the prices have continued to escalate and have escalated at a very rapid rate.

What we have observed, for example, in the last five years is that wind turbine costs have escalated by roughly 280 percent -- or have escalated 280 percent. So I guess that's almost three times, which is greater than what we observed as far as escalation rates for the coal-based alternatives in that same five-year period.

As far as the performance risk, in that you have a capital cost item, obviously the amount of megawatt-hours that you are able to spread it over is a significant -- has a significant influence on ultimately what the costs are.

When we look at the national average capacity factor for wind turbines in the United States, it's around 29 percent, which is far -- which is less than the values that are being used in the modeling by Mr. Greig and Mr. Heidell. And, therefore, if you -- as we increase the demand for wind generation in order to meet expanding renewable portfolio standards, the question is are we going to base them in increasingly less windy areas, in places where the wind is not quite as strong? Are we going to place them at first in the windiest areas and then work our way down?

And as a result, if we do that, we're going to end up with, you know, the risk that future wind projects will be in less windy areas that will not be able to achieve as high a capacity factor.

Mr. Schlissel discusses that the technology has improved, and so he would expect the new technology would be able to achieve higher capacity factors; and, in fact, the issue is that there have been improvements, however, has not been a C change for improvements.

We did a study two years ago, which we looked at the capacity factors of all plants that were built after the year 2001 and compared them to the national average. The average at that time was that the newer plants had a lower capacity factor than the older plants, which suggests that what really drives the performance is the wind resources more so than the technology that is currently in place.

So when we look at performance risk, we're looking at what the capacity factors will be. In that the 38 percent was used, you know, in some of the analyses, if you look at my Hewson Exhibit

TAH-SR-2, you can see that in 2005 the average capacity factor for those projects in Minnesota was a 32 percent capacity factor, and so by assuming much higher capacity factors what is probably happening is we're more likely underestimating the cost as opposed to overestimating the costs of that -- or that we're underestimating what the true costs may be.

MR. GUERRERO: Just for clarification, Your Honor, the exhibit he referenced is now marked as OTP/MDU Exhibit 339, and in what we're calling the big book it's tab 30.

JUDGE WAHL: Thank you.

Q. (MR. BINEK CONTINUING) I think there's one part of the question left, but before you get to that --

A. With the governmental subsidies?

Q. The economic risk.

A. Oh, the economic risk was the capital cost risk.

Q. Oh, okay.

A. There is a governmental subsidies risk.

Q. Okay.

A. Which is two-thirds of -- there was a paper a while back that suggests that roughly two-thirds of the value of a renewable project was its tax incentives. Obviously we're dealing with a source that -- in wind that has access to many subsidies such as the federal production tax credit, it has accelerated depreciation, it has many local tax breaks, it often has other incentives such as the state renewable portfolio standards and therefore able to achieve additional revenues.

These costs are -- or these subsidies are significant because it needs to overcome a significant disadvantage to conventional sources of power. There is a risk that these subsidies as we get higher and higher levels will be -- come down or reduced, and so that is also a very significant risk behind the wind option, because keep in mind, when we look at these alternatives, we're looking at the alternatives over the life cycle costs of these entire -- you know, for the Big Stone facility. So we're not just talking about near term. We're talking about also much longer term issues, as well.

Q. I've asked several witnesses this, but when do you believe the PTC will expire?

A. You know, obviously every -- this has been an issue. They tried it last year, it did not work. It has kind of leaked through the Senate this year. It always seems to have some difficulties. I assume that we're going to have increased difficulties as the amount of wind being generated increases, and so I would suspect that it will expire before we, you know, truly implement something like a carbon regulation.

So I think it's going to be well -- I think it's going to expire before Big Stone II is likely to come on line in terms of the eligibility period. Obviously the way tax production credit works is once you're eligible, you get tax credits for the first ten years of your operation, then they expire. So --

Q. What -- I'm sorry. Did you have something more you wanted to add?

A. No. I think that's it.

Q. Okay. What do you believe the appropriate capacity factor for wind turbines is today?

A. I would agree with Mr. Schlissel that it depends where you are. Obviously there in North Dakota I would assume a higher capacity factor as opposed to if I was to locate a project in the east, let's say in the mountains of Pennsylvania.

The capacity factors in terms of the projects that are there today is that, you know, we have some projects as low as 30 percent in North Dakota and we have some capacities around 40 percent or a little bit higher, and so in terms of new, it all would depend upon the timing of those and how far out into the future and what sites remain and how far away they are from the transmission lines.

MR. BINEK: Okay. Thank you. I have no further questions.

JUDGE WAHL: Questions from the Commission? Commissioner Wefald.

COMMISSIONER WEFALD: Yes.

EXAMINATION

BY COMMISSIONER WEFALD:

Q. This is Commissioner Wefald. I'm just interested in your testimony on page five, and it talks about a carbon capture demonstration project in Wisconsin this year.

A. That's correct.

Q. And I understand it just got started, and my question for you is: Is this located on a new facility or on an old plant?

A. This is -- it's on an existing plant. It's the Pleasant Prairie Plant.

Q. All right. And then my -- then I have -- that's a cost of 20 dollars per ton; right?

A. What I'm saying is that the Alstrom vendor, who is the vendor for the chilled ammonia process, which is what they're trying to demonstrate on a slip stream at the Pleasant Prairie Plant, has estimated that their process will cost roughly $20 a ton removed. I do not believe that they are suggesting that the costs of the demonstration project that they expect to have a $20 per ton removal cost.

Q. All right. What you're saying is it will be higher because this is a demonstration project?

A. Right. It's a less than two megawatt slip stream that they are demonstrating this as their first step.

Q. Oh, all right.

A. Then we do a -- next year we will be doing a larger demonstration at the Mountaineer Station also on a slip stream, and then in 2011 they have planned to do a full scale demonstration of this project on a coal-fired power plant around 250 megawatts in Oklahoma.

Q. Thank you. And then on top of that you would have the costs of sequestering the carbon;

isn't that correct? Because this just captures it from an existing plant and then you'd have the cost of still sequestering it?

A. Correct. You would have the cost of getting -- this would be the costs of capturing it and compressing the gas to liquid so that you could transport it.

Q. Yes. Thank you.

A. And then, yes, there would be additional costs associated with taking it to where you would sequester it.

COMMISSIONER WEFALD: Thank you. That's it.

JUDGE WAHL: Any further questions from the Commission? Followup, Mr. Guerrero?

MR. GUERRERO: I don't think so, Your Honor.

JUDGE WAHL: Ms. La Seur?

MS. LA SEUR: No.

JUDGE WAHL: Mr. Binek.

MR. BINEK: Just one.

RECROSS-EXAMINATION

BY MR. BINEK:

Q. Looking at -- at OTP/MDU Exhibit 339, it shows the 2005 Minnesota wind power production data. Would it be possible to get a similar exhibit for North Dakota that would show the generation and capacity factors for the projects that presently exist in North Dakota?

A. Yes. I would be glad to provide that. There are five that report their generation in capacities currently in North Dakota, and I would be more than glad to provide that data.

Q. Okay.

A. And that would be 2007 data.

JUDGE WAHL: All right. First of all, Mr. Binek, an exhibit number, please.

MR. BINEK: Well, I think we'd have --

JUDGE WAHL: It looks like PSC 5?

MR. BINEK: Right.

JUDGE WAHL: All right. That'll be late-filed exhibit PSC 5. What's the description of the exhibit?

MR. BINEK: It would be 2007 North Dakota wind power production data.

JUDGE WAHL: All right. Anything further, Mr. Binek?

MR. BINEK: I was thinking about one other --

JUDGE WAHL: Take your time.

MR. BINEK: -- clarification here.

JUDGE WAHL: Don't mean to rush you.

MR. BINEK: It escapes me right now.

COMMISSIONER CRAMER: That's it.

COMMISSIONER WEFALD: Okay.

THE WITNESS: Mr. Binek, I should note that from these reports for North Dakota facilities it suggests that there was a total of 947,000 megawatt-hours that were produced from the reporting wind projects, which would be equivalent to eight percent of the current -- of the 2007 North Dakota retail sales.

Q. (MR. BINEK CONTINUING) One other question for Mr. Hewson on exhibits. Would it be possible to update the Minnesota data to 2007?

A. It would.

JUDGE WAHL: Okay. So that's -- shall we include that -- well, no, let's not. Let's make that PSC Exhibit 6.

MR. BINEK: Right.

JUDGE WAHL: 2007 Minnesota wind power production data.

MR. BINEK: Yes.

JUDGE WAHL: Anything further, Mr. Binek?

MR. BINEK: No.

JUDGE WAHL: Any follow-up questions from the Commission? Anything -- any followup, Mr. Guerrero?

MR. GUERRERO: No, thank you.

JUDGE WAHL: Ms. La Seur?

MS. LA SEUR: (Shakes head.)

JUDGE WAHL: All right. Thank you very much, Mr. Hewson.

MR. HEWSON: Thank you.

JUDGE WAHL: Bye now.

THE WITNESS: All right. Bye-bye.

JUDGE WAHL: Well, obviously, counsel, Commissioners, we'll resume at nine o'clock tomorrow morning with the testimony of the remaining witnesses for Otter Tail Power and MDU and with Mr. Hewson.

MR. GUERRERO: Mr. Deason.

JUDGE WAHL: Deason.

(Recessed at 5:12 p.m., the same day.)

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