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 III

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

WITNESSES:

OTP/MDU EXHIBITS:

C O N T E N T S (Continued)

C O N T E N T S (Continued)

PSC EXHIBITS

(The proceedings herein were continued, commencing at 9:02 a.m., Wednesday, April 30, 2008, as follows:)

JUDGE WAHL: The record will show that it is a little after 9:00 a.m., April 30th, 2008, continuing the supplemental hearings for the advance determination of prudence applications of 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. Mr. Guerrero.

MR. GUERRERO: Thank you, Your Honor. The applicants would call Mr. Daniel Klein by telephone. My assistant, Dawn Daniels, is currently calling him as a heads-up and then you can call in just a minute.

Mr. Klein filed rebuttal testimony, OTP/MDU Exhibit 32, along with Exhibits up through 41. In the big book it begins at tab 32.

JUDGE WAHL: Mr. Klein, this is Al Wahl with the Public Service Commission to hear your testimony in the Big Stone II cases. Are you ready to proceed?

THE WITNESS: Yes, I am.

JUDGE WAHL: Mr. Klein -- has Mr. Klein testified previously? Mr. Klein, as you're 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 five years, or both.

DALE E. KLEIN,

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. Good morning, Mr. Klein.

A. Good morning.

Q. Would you please state your name for the record and spell it?

A. My name is Daniel E. Klein, and that's spelled K-l-e-i-n.

Q. And by whom are you employed and in what

capacity?

A. I am with Twenty-First Strategies, LLC, that's spelled out and hyphenated Twenty-First. I am president and founder and sole employee.

Q. And what is your -- what do you do for Twenty-First Century?

A. Twenty-First Strategy --

Q. Excuse me. Twenty-First Strategy.

A. -- is the name of the firm. I do economic, energy and environmental consulting. I do this for government agencies, power companies, associations and nongovernmental organizations. I founded the firm back in 1995 and have been doing it since then. For the 20 years prior to that I was doing similar work with the consulting firm of ICF Resources, where I was a senior vice president and director.

Q. And what is your educational background?

A. I have a bachelor's degree from the Massachusetts Institute of Technology. That was in 1973. And then in 1975 I earned an MBA degree from the Stanford Graduate School of Business.

Q. And did you have occasion to file testimony in this matter, Mr. Klein?

A. Yes, I did.

Q. And do you have that in front of you or with you this morning?

A. I do.

Q. Okay. And that has been identified as OTP/MDU Exhibit 32?

A. On mine it says OTP/MDU Exhibit 341.

Q. Oh, excuse me. 341. Excuse me.

A. Correct.

Q. It's at tab 32. And along with Exhibits 342 through 350?

A. Yeah.

Q. Which includes also your resume?

A. Yes, it does. 350 I don't have identified as such. I understand it is an article from The Wall Street Journal, but I do have a copy of that.

Q. Okay. Thank you, Mr. Klein. And if I were to ask you the same questions that are posed to you in your prefiled supplemental rebuttal testimony, would your answers be the same?

A. Yes, they would.

Q. Do you have any corrections or additions to the testimony, Mr. Klein?

A. I have none at this time.

MR. GUERRERO: Your Honor, we would offer OTP/MDU Exhibits 341 through 350.

JUDGE WAHL: Including 341A?

MR. GUERRERO: Including 341A, which I presume is Mr. Klein's summary.

JUDGE WAHL: Right. Ms. La Seur?

MS. LA SEUR: No objection.

JUDGE WAHL: Mr. Binek?

MR. BINEK: No objection.

JUDGE WAHL: OTP/MDU Exhibits 341 through 350, inclusive, are each received.

Q. (MR. GUERRERO CONTINUING) Mr. Klein, did you prepare a short summary of your testimony?

A. Yes, I do. I have a short PowerPoint presentation and some remarks to accompany it.

Q. Okay. And, Mr. Klein, I believe the Commissioners and the judge and the parties have a copy of that exhibit. Ordinarily we would be having it on the screen, as well, but we don't have that this morning, so if you could just let the Commissioners know what page you're on as you turn the page of your PowerPoint presentation, that would be helpful.

A. I will do so.

Q. Go ahead, please.

A. Okay. Thank you for this opportunity to present to the Commission. If we start with slide

number 2, I'll introduce my testimony.

My testimony addresses the concept of risk in selecting the proper type of electric generation resources. We've heard testimony so far that warned of potential future greenhouse gas regulations, cost escalation and construction and other types of concerns that might apply to Big Stone II.

My testimony addresses the significant risk that would result if you don't construct Big Stone II station. In short, tradeoffs are involved, and if we simply don't like some potentially adverse effects of one alternative, that should never really suggest that the alternative is great. In this case the decision not to construct Big Stone II would likely lead to increased reliance on natural gas fuel generation either as a primary source or a backup fuel supply or as power purchased from the pool. However, natural gas prices are currently much higher than coal and could potentially go higher, and gas prices are also far more volatile than coal prices. Because of this, regions that have more coal-fired power in their generation mix tend to have more stable power rates.

My testimony looked at several aspects of these energy prices and price volatility with a particular focus on natural gas market. This looked at historical fuel prices, longer-term energy price forecasts, international trends and trends within the Midwest ISO. Each of these examinations confirmed the greater volatility of natural gas prices and, therefore, its greater price risk relative to coal.

With the rapid growth of liquefied natural gas, or LNG, natural gas is transitioning from what had been a regional or national commodity into a commodity that's now traded on world markets much like petroleum has long been. Oil and gas prices have been, and I suspect to remain, far more volatile than coal prices reacting dramatically to events around the world. In a world market it's important to note that a supply disruption anywhere can affect prices everywhere. On the other hand, coal prices tend to be based much more on domestic factors and are generally far less volatile than oil and natural gas prices.

If we turn to slide number 3, we can see a compilation of price forecasts for natural gas and can see how it's worsened over the last few years.

What I've done in this chart is I've used projections made by the Department of Energy's Energy Information Administration. Each year they prepare an annual energy outlook, which year is noted as AEO where they look at the outlook for 10 to 30 years into the future.

What I did here, I went back to the outlooks they began preparing back in 1998, and then for each year since then what was the Energy Information Administration projecting future natural gas prices to be in 2010, 2015, and so on out into the future.

If we look at the four lowest lines on that graph, we'll see that they represent the forecast that EIA made back in 1998 to 2001 and they're all kind of clustered together and fairly low priced. (Unintelligible)

JUDGE WAHL: I'm sorry. Mr. Klein.

THE WITNESS: Yes.

JUDGE WAHL: We're having difficulty hearing you. We're getting some kind of disturbance from your end of the phone. Are you using a speakerphone, sir?

(Discussion had off the record.)

JUDGE WAHL: Mr. Klein, this is Al Wahl

again. Let's try again.

THE WITNESS: Okay. Can you hear me more clearly now?

JUDGE WAHL: Yes, I think we -- at least at this point.

THE WITNESS: Okay. I had you on the speakerphone, which usually works fine, but the technology doesn't always behave as nicely as we would like sometimes. I apologize.

JUDGE WAHL: All right. If you might, I think, begin again with the reference to your graph on slide 3.

THE WITNESS: Okay. I will do so. Beginning with slide 3, what I've done here is I've compiled a series of projections, basically a retrospective, of what the Department of Energy Energy Information Administration had forecast over the last 10 or 11 years of doing forecasts. Each year they do an annual energy outlook that projects their long-term projections over the next 10 to 30 years.

What I did here, I showed the projected price for natural gas delivered to electric utilities, a U.S. average. Each line represents the forecast they made in a different year, so the

very bottommost line is identified as AEO 1998. It means that at the beginning in 1998 they thought that the gas price forecast would be about $3 a million Btu in 2010, increasing slightly over time. In fact, we see that for the first four years they did that, they all clustered at a fairly tight band and at a low level, and this reflected a view that natural gas was domestic, abundant and cheap.

Real world developments have forced changes to that view. And what we see is that beginning at about 2002 and every year since then, the forecast of future gas prices have become higher and -- progressively higher. Future prices now are somewhere between half again and twice what they had forecast just a few years back. It's too early to say what they will forecast when they do AEO 2009, but we know that their oil price forecast for this year had a future trend around $60 a barrel, so at hundred-dollar-plus oil, we can imagine how the gas price forecast will look next year.

The volatility of gas prices is also high. It's gotten more extreme. If we turn to slide number 4, we will see two charts, one on top of the other. What I've done here, I've charted historic

data for natural gas and coal prices delivered to electric utilities since 1990 on a monthly basis. The top chart shows the average monthly prices that were delivered, and it's got two lines. The black line represents coal prices -- delivered coal prices to utilities, and it does show a slight rise in recent years from a little over a dollar to $1.50, up closer to $2 a million Btu. There's relatively little month-to-month variation seen in that.

The natural gas prices are the ones shown in red, and they show both a much higher overall increase over time as well as some fairly wild swings in month-to-month prices. The bottom half of that slide focuses on the month-to-month variation. It just take one month's price and subtracts it from the previous month's price to get an increase or decrease over the month. And what we see are the natural gas prices showing enormous volatility, in particular since 2000. There's several months where the changes in natural gas prices on average have been more than a dollar a million Btu from the previous month.

Now, interestingly, this graph also shows the monthly changes in coal prices. Those are

shown in black, but you have to look very close because they're barely discernible from the zero line.

If we turn to slide number 5, we get a feel for how the world markets are beginning to change natural gas. In this graph we see the future sources of natural gas for the U.S. will increasingly come from overseas LNG and play an increasingly important part in our overall supply mix. Up until the 1990s, our gas supply was mostly domestic production. It accounted for more than 90 percent of what we used, and pipeline imports from Canada and Mexico comprised most of the rest. But more recently these imports from Canada and Mexico have been declining, and their outlook is for continued decline according to EIA and other sources. Instead, it's projected that LNG from overseas sources will be growing rapidly and projected decline in domestic production and pipeline imports. So from almost no share of the market at all, LNG will rapidly pass 10 percent and become more important.

So in this growing market for LNG on the world basis, who holds the cards? That's what slide 6 tries to show. It's a map of proven gas

reserves around the world. Now, if we look at natural gas reserves by country, we would see that the U.S. is actually ranked sixth in the overall world rankings on proven gas reserves. The U.S. has a little bit more than 3 percent of the planet's proven reserves. The other nine countries in the top ten list are Russia, Iran, Qatar, Saudi Arabia, Abu Dhabi, Nigeria, Algeria, Venezuela and Iraq. These other nine countries, let's just say several of whom are at best reluctant business partners with the U.S., collectively hold gas reserves that account for over 75 percent of the world's total.

Now, importantly, who's not on that list? We don't have on this list for either oil or gas China, India, Japan or western Europe. They're not among the large holders of oil and natural gas reserves. So we can begin to appreciate how global competition for these fuels between the consuming nations and this handful of oil- and gas-rich countries will continue to underlie international trade and security concerns.

This volatility in natural gas prices creates price risk for electricity generators. If we turn to slide number 7, we can see a little

example that for illustration, if instead of building coal at Big Stone II, we had 500 megawatts of natural gas combined cycle that was built and operated. If that were the alternative, each change in gas prices of only one penny per million Btu would change the annual fuel cost by about $280,000 each and every year. And if future natural gas prices were uncertain by a dollar per million Btu or more, which we've seen in the historic data frequently happens just in a single month, then total annual cost for a gas alternative could vary by tens of millions of dollars.

Higher fuel prices mean higher costs for generating power and higher rates for the customers, and for the customers, income that's diverted into paying higher power bills is no longer available to meet other household needs. For the North Dakota population that would be served by Big Stone II, two additional factors exacerbate the sensitivity to fuel prices and volatility and suggest that their potential impacts might be greater than what a national average calculation would indicate.

First, most of the counties that would be served by Big Stone II in North Dakota have a lower

average household income than national average. Lower-income families already are spending a greater percentage of their household earnings to cover energy-related expenditures and are particularly vulnerable to increased energy costs. A second factor that households in North Dakota and other states that would be served by Big Stone II have a higher than average consumption of natural gas and petroleum outside of their electricity use. This is largely related to winter heating needs that are more extreme in this region than other parts of the country.

So if natural gas is also used instead of coal at Big Stone II, then the overall fuel supply diversity is reduced from a household perspective. If natural gas supplies are constrained or see price spikes, households would then be hit twice, once in the direct consumption of fuel and, again, in their use of natural gas-fueled electricity. Hence, coal use would not only be less volatile as a power generation source, but would help to moderate price spikes in other part of a family's energy budget.

That's my prepared slides. Thank you for this opportunity to address the Commission. I

would be happy to take any questions.

MR. GUERRERO: Thank you, Mr. Klein. Your Honor, we would tender him for examination.

JUDGE WAHL: Ms. La Seur.

MS. LA SEUR: Thank you.

CROSS-EXAMINATION

BY MS. LA SEUR:

Q. Mr. Klein, can you hear me?

A. I can hear you fine. Can you hear me?

Q. Yes. I'm Carrie La Seur. I'm the attorney for the intervenors, Dakota Resource Council and Mark Trechock. And I would like to begin with a few questions about your resume.

Your degrees are in urban studies and business administration; is that correct?

A. That's correct.

Q. No degrees in economics; correct?

A. Economics is a large part of the business administration course. I am not an economist by degree, no.

Q. No degrees in power engineering?

A. No. I took engineering courses at MIT, but my degree was in urban studies and with a focus in systems analysis.

Q. Any direct employment history in the

electric power industry?

A. No. When I finished business school, I entered a consulting firm and have been doing consulting the last 30-something years.

Q. Do you have any peer-reviewed publications?

A. I'm sure there's several that are on my resume that are peer reviewed.

Q. Could you name just one?

A. Give me a moment here. A couple that deal with carbon capture and storage were peer reviewed. I apologize for taking a moment here. I have not been asked that question in a long time. I believe the one -- let's see, it's on page 36, Global Climate Change: The Road to Kyoto, starting at line 20, that was published in EM Magazine, I recall that as being peer reviewed.

Q. Okay. Are you familiar with the Center for Energy and Economic Development?

A. Yes, I am. I believe they've changed their name recently.

Q. And what is the new name?

A. ACCCE. I think it's something like American Coalition for Clean Coal Energy.

Q. Clean Coal Electricity, I believe.

A. Okay.

Q. And is that a coal industry lobbying group?

A. It's coal, electric power and railroads are their primary funders.

Q. And are they a client of yours?

A. They have been in the past.

Q. You say that you are currently working with electric utilities and others to identify and implement voluntary programs to reduce greenhouse gas emissions; correct?

A. Correct.

Q. And you say that you led the U.S. portion of a multinational team to create a climate change strategy for the City of Donetsk, Ukraine, including identifying potential greenhouse gas mitigation activities and the associated cost and effectiveness; correct?

A. Yes. That project was led with an environmental think tank, the Center for Clean Air Policy.

Q. And do these greenhouse gas reduction activities in which you are currently involved include advocating for coal plants that don't capture or store greenhouse gases?

A. No, I don't advocate. I'm not an advocate myself. I consider myself an analyst here.

Q. And do you acknowledge that Big Stone II will increase regional greenhouse gas emissions by millions of tons annually?

A. Yes.

Q. Can you point to any evidence in the record that supports your assertion that North Dakota's participation in the Midwest Independent System Operator, MISO, exposes it to a natural gas price volatility risk much larger than its actual percentage of generation?

MR. GUERRERO: Excuse me. Objection. Other than his own testimony?

MS. LA SEUR: That's right.

THE WITNESS: Some of my testimony built off of testimony that was submitted in Minnesota by Dr. Raquel and I used one of his exhibits as part of mine.

Q. (MS. LA SEUR CONTINUING) And so on which exhibit do you base that testimony?

A. In my testimony that shows up as -- one moment here. No. I apologize. That did not make it into my final testimony here. That was part of my Minnesota testimony.

Q. Your testimony is also that North Dakota has higher than average natural gas consumption in nonelectric residential energy uses; correct?

A. Correct.

Q. I direct your attention to your Exhibit OTP/MDU 347 --

A. Yes.

Q. -- and the North Dakota-specific statistics on nonelectric energy, the column labeled natural gas. What is the North Dakota average per household, according to this chart for natural gas?

A. On that chart it shows 37.3.

Q. And what does it show the national average to be?

A. 41.6.

Q. Okay. On what evidence do you base your statement that North Dakota has higher than average natural gas consumption in nonelectric residential energy uses then?

A. Can you point to the line in my testimony on that? What page are we looking at?

Q. First of all, at page 4, lines 21 and 22 you say, "Nonelectric residential energy uses in North Dakota indicate higher than average natural

gas and petroleum consumption."

A. Yes. Okay. That was referencing the sum of natural gas and petroleum, which if you then turn back to page 347 -- I'm sorry -- Exhibit 347, North Dakota had the none -- the natural gas and petroleum, the sum of those two would have been 71.9 in contrast to a U.S. of 64.7.

Q. So every place in your testimony where you say that North Dakota residential consumers have higher than average natural gas and petroleum consumption, and I can point you to several places, we should read that as petroleum consumption only, correct, or the two together, not natural gas?

A. I was referring to the two together in that case.

Q. Okay. And everywhere you refer to impacts from natural gas price volatility alone, we should understand those impacts as being lower than average for North Dakota residential consumers; correct?

A. Could you repeat that question?

Q. Everywhere you refer to impacts from natural gas price volatility, we should understand those impacts as being lower than average for North Dakota residential consumers?

A. Not necessarily. There's a strong correlation between natural gas prices and petroleum prices, so there is a substantive reason for grouping those together for this purpose.

Q. In spite of the fact that the natural gas figure is lower than average?

A. For 2001, which is the last year that particular data was there, it was approximately 10 percent lower than average. It may have changed since then. The data is not available.

Q. Wouldn't North Dakota consumers be better off protected from the price volatility of both coal and natural gas for home heating?

A. I'm sorry. I'm not sure I understood that question.

Q. The question is, wouldn't North Dakota consumers be better off protected from the price volatility of both coal and natural gas for home heating?

A. Better protected how?

Q. Be better off protected.

A. I'm still not --

Q. That they would not be economically better off if they were insulated from the price volatility of coal and natural gas.

A. I think as a general statement lower volatility provides a greater sense of protection, and so if you want to then take that to North Dakota consumers, I think that would generally be a better thing to have less price volatility.

Q. Did you consider in your comments the potential for expanded use of any currently available technologies such as ground source heat pumps that would have that protective effect?

A. No, I did not.

Q. At page 5 of your testimony you refer to Big Stone II adding diversity for the participants. In what way does Big Stone II add diversity?

MR. GUERRERO: Tell us where that's at, please.

MS. LA SEUR: At page 9 -- sorry. At page 5, line 9.

THE WITNESS: That came from some Big Stone II materials. I believe I'd seen those on the descriptive materials on the plant.

Q. (MS. LA SEUR CONTINUING) So you're accepting the applicants' statement that Big Stone II adds diversity?

A. In that case, yes.

Q. And if I told you that Big Stone II will

increase coal dependence on the MDU system from 72 to 78 percent, would you consider that an increase in diversity?

A. For that system, itself, that would be an increase in coal dependence. As I said elsewhere in my testimony, when you look at the energy use of the population to be served, it would be viewed as a decrease -- or an increase in diversity.

Q. An increase in diversity?

A. For the population as a whole, yes.

Q. And to what population do you refer there?

A. The household consumers.

Q. How do you define "diversity," Mr. Klein?

A. Diversity is having alternatives and a mix of different resources such that in this case if you have changes in one thing, you have alternatives that you can shift to.

Q. Turning to page 6, the paragraph beginning at line 4, you conclude, I believe, that demand-side management savings are less applicable to Big Stone II than they would be for reducing peak loads. Does this mean that the energy efficiency gains that you reference in this same paragraph would be relevant substitutes for the claimed generation need?

A. I think it's silent on that. I think it is correct that most of the DSM is most cost effective when peak loads are reduced because the data supports that that's where most of the efforts have been levied nationally. Energy efficiency measures, it would depend on what types the measures were. Some energy efficiency measures are aimed at peak loads, others are aimed at loads more dispersed throughout the day.

Q. And moving down to lines 21 and 22 on page 6 where you say that regions with more coal-fired power in their generation mix usually have more stable electric power rates. Is it your testimony then that decreases in fuel diversity in favor of coal are economically desirable?

A. There are two steps in your argument. I would say that having more coal in the mix leads to more stable power rates. To say that more -- and then the second part would be in your statement, I think, more stable power rates are economically desirable, and that would have to reflect other types of tradeoffs and considerations.

Q. Mr. Klein, in your opinion, is there a point at which dependence on coal becomes an economic risk rather than a desirable increase in

diversity?

A. Oh, I'm certain there must be, but I don't think there's a single point that's applicable to all regions at all times.

Q. Would you say that 94 percent dependence on coal constitutes an economic risk?

A. I've not done any studies on that. Again, if I were, I would want to know what alternatives they might have in terms of access through power pools and other arrangements.

Q. You testify about coal price risks at the top of page 7, lines 2 through 6. In commenting on risk associated with coal pricing, do you consider coal delivery costs?

A. All of my numbers here have referred to coal delivered price -- delivered cost basis.

Q. Delivered cost. Page 12 then, lines 12 and 13, referring to your statement that "energy conservation can slow the growth in electric power demand, but such energy conservation is unlikely to fully offset the need for new baseload power generation." Is there evidence included with your testimony to support this statement or provide any nuance to it?

A. In my Minnesota testimony on one of those

we looked at that and my own experience. I began doing work in energy and environmental around the time of the first Arab oil embargo in the 1970s when there was a call to energy conservation and the easy way, and since then we've seen probably half again the demand for electricity as there was at that time. For the Minnesota testimony we looked at -- at the government data, some of it supplemented by the ACCCE, that looked at the effectiveness of energy conservation programs and utilities state by state. And it found that in some states there was as much as 8 percent of the load had been saved cumulatively through DSM measures, but for most of them it was 4 percent or less and cumulative after 10 or 20 years of effort. I don't want to belittle that. I think it's significant and there's probably opportunities to do more, but in the population and the economy that's growing load at 1 percent or more a year, the evidence has been that that has not been enough to offset overall growth in demand.

Q. And, again, you're just speaking from memory and your own impressions as opposed to evidence you've entered into the record?

A. For the North Dakota case that evidence

has not been in the record. It was entered into Minnesota.

Q. On page 14 you list the other top 10 countries along with the United States in gas reserves and raised, again, the issue of what foreign sources of LNG imports might be. Doesn't your own exhibit --

MR. GUERRERO: What page are we on? I'm sorry.

MS. LA SEUR: I'm referring first to page 14, lines 9 and 10, the list of other major LNG sources worldwide.

MR. GUERRERO: Thanks.

MS. LA SEUR: And then referring to Mr. Klein's Exhibit OTP/MDU 350, at page 3.

Q. (MS. LA SEUR CONTINUING) Doesn't your own exhibit, Mr. Klein, say that production is expected to grow by 30 percent worldwide in the next two years and the United States is likely to avoid the need to increase imports?

A. Exhibit 350 is what, The Wall Street Journal article?

Q. Right.

MR. GUERRERO: Could you point him to that particular --

Q. (MS. LA SEUR CONTINUING) I'm referring to the last paragraph on page 3 of your exhibit, running over on to page 4.

A. Is that the one where it says, Michael Stoppard, a senior director at CERA, predicts world LNG supply will grow by 30 percent in the next two years --

Q. That's the one?

A. -- making more chilled gas available for the U.S.?

Q. Correct.

A. What was your question on that?

Q. My question is if your testimony that we will experience increased risk from LNG import increases from unstable parts of the world isn't contradicted by your own exhibit.

A. I don't see a contradiction there at all.

Q. What about the part where Chesapeake Chief Executive Aubrey K. McClendon says that U.S. gas prices will be between 7 to $10 per million BTUs and avoid the need to increase imports?

A. Okay. That part seems to be a shorter -- well, it's unclear from that what time period he's referring to. He's referring to higher gas prices than we've historically had up until recently, and

that has stimulated some drilling inactivity. Those facts I think were taken into account when the Energy Information Administration did its forecast that show U.S. production at best holding steady over the longer term and LNG continuing to fill a bigger role in our supply mix. As for the following statement that the consultant at CERA, he predicts world LNG supplies will grow by 30 percent in the next two years, I think that's a reasonable estimate. I have no reason to think that it's not a well-founded estimate. And what it shows is that the world is in fact moving from a natural gas market that had once been regional or national in scope to one that is becoming increasingly international.

Q. At page 16, lines 17 and 18 of your testimony, you seem to be testifying -- in the question you say, "How will the region's increasing dependence on natural gas for power generation affect customers of Big Stone II?" What evidence is there in the record that this region is indeed increasing its dependence on natural gas for power generation?

A. I base this on material I read from Xcel Energy and their plans to increase gas use and

others in the MISO area. It was entered into the Minnesota testimony. It's not specifically referenced here.

Q. And based on statements by one utility, you said?

A. Xcel Energy in particular, and then there's also a review of MISO data.

Q. At pages 4, 5 and 17, for example, you refer repeatedly to a scenario in which the proposed 500 megawatts of Big Stone II are replaced by 500 megawatts of natural gas with all the attendant price and rate consequences. Can you point to any testimony offered by any party in this docket that suggests that this would or should be the case?

MR. GUERRERO: I'm sorry. I guess -- do you understand the question, Mr. Klein?

JUDGE WAHL: He can answer that he doesn't understand it.

THE WITNESS: I think she's asking me if someone else has specifically said that there would be 500 megawatts of natural gas combined cycle. As I tried to phrase it here, I was saying there is a specific proposal on the table to have 500 megawatts of coal-fired power represented by Big

Stone II, and it might look at what happens if you don't build Big Stone II, you need something. For calculation purposes I said if it were the case that all of this were natural gas combined cycle at various heat rates and capacity factors, this would be the impact. Clearly, if you can find other ways to replace that need for capacity that Big Stone II would have provided, less of that would remain to be filled by natural gas.

Q. (MS. LA SEUR CONTINUING) Would an energy efficiency, conservation, DSM, wind and natural gas alternative to Big Stone II be less risky than the 100 percent natural gas alternative you've considered here?

A. I'm not sure I understand what you mean by "less risky."

Q. Less economic risk.

A. Well, that would entail calculations of both economics and feasibility. I have not done those calculations and I'm not sure others have.

Q. You're not able to give a general impression of the relative risk of a pure natural gas generation alternative as compared to a combination of energy efficiency, conservation, demand-side management, wind and natural gas in a

portfolio?

A. It depends on how much could be done. I mean, I know that on a national basis wind and solar currently account for 2, maybe 3 percent -- a few percent at most of our national energy mix, and energy efficiency and DSM programs are reported another couple percent. So to assume that they can fill a large gap, again, it may be possible, but there's not a lot of evidence that that's been done on that scale before, so that to me would be a risk.

Q. Did you consider in your comments the fact that North Dakota produces approximately 1 percent of the United States' annual natural gas?

A. No, I did not.

Q. Did you consider in your comments the fact that North Dakota is one of only two states that produce synthetic gas?

A. No, I did not.

Q. Is there any genuine risk that North Dakota will be importing LNG from Saudi Arabia or Qatar any time soon?

A. I think they will be affected by it, certainly. There's a -- as I said, in a world market, activities that affect supply anywhere

affect prices everywhere. To see that, the U.S. imports approximately none of its petroleum from Iran, and has not for quite a long time, but events that happen there very much affect the price at the pump in North Dakota.

Q. Mr. Klein, aren't you just setting up a bogeyman with this scary idea of a 500-megawatt natural gas plant powered by LNG direct from Iran? Is that in any way realistic?

MR. GUERRERO: Objection, argumentative.

MS. LA SEUR: That's withdrawn.

JUDGE WAHL: I don't think so. Overruled.

THE WITNESS: Can you point to where I said there would be a 500-megawatt plant supplied by LNG from Iran? I don't think North Dakota really offers good ports for LNG tankers to come into, but it is very much the case that activities that affect LNG, our gas markets around the world will increasingly affect the price of natural gas everywhere.

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

JUDGE WAHL: Mr. Binek.

MR. BINEK: Thank you.

CROSS-EXAMINATION

BY MR. BINEK:

Q. Mr. Klein, my name is William Binek. I'm counsel for the Public Service Commission advocacy staff. And I seem to be losing my voice here.

COMMISSIONER CLARK: You asked a lot of questions yesterday.

Q. (MR. BINEK CONTINUING) What, in your opinion, is the more efficient use of natural gas, use for home, commercial and industrial heating or use as a fuel for electric power generation?

A. I think the former, home heating and cooking purposes. We've seen an evolution in this thinking over time, and if you've been in this business long enough, you see old wisdom and truisms come in and out of favor. Back in the 1970s when I began consulting, there were shortages of natural gas and the federal government passed acts making it basically illegal to burn natural gas in much of our generating capacity mix. The statement was that at this time for combined cycles, natural gas is too valuable to use to boil water to spin turbines. And then gas supply increased and improved and prices became low during the '80s and '90s to the point where it became a

very attractive fuel for power generation and was seen as the answer to coal and the problems that were perceived to go with that fuel. And that worked up until it didn't. And in the early part of this decade we fell back into the problem of natural gas price spikes, fuel shortages and terrible instability in the markets which brought about a wave of proposed coal plants. And which way it will go again I can't say, but it is clear that during this period the evolution in the supply part of the natural gas has made it more into a world market, and that won't change. So overall what that says is that as an electric power fuel, natural gas can be thought of more and more like petroleum in terms of its price instability and supply vulnerability. Does that make that a good use for power plant fuel? My current thinking is not as much as it used to be.

Q. In your rebuttal testimony, and, I'm sorry, I didn't note where it was, but you stated that natural gas and petroleum prices have increased sharply in recent years and now the incremental cost relative to coal is far higher than levels seen in the 1990s. Would you please explain what you mean by that statement?

A. Okay. I apologize if that phrasing was a bit obtuse. And you might be able to see it on the oil presentation I gave if you look at slide number 4, the top part of that. What I mean by "incremental cost" is the relative cost of gas above and beyond what coal is. And we can see from the top graph that during most of the 1990s, that was usually somewhere between 50 cents and $1.50 a million Btu, a fairly low margin. What we see now is that the difference -- the spread of prices between coal and oil is now 2 to $4 a million Btu. And so that was my reference as to what the incremental cost meant.

Q. Okay. I thought that was what you were talking about, and it's the spread, the spread is increasing?

A. The spread is increased. That's a better phrasing.

Q. In your answers -- questions from Ms. La Seur and your answers, you talked about Big Stone II, if it's not built, and then talked about alternatives. What -- what, in your opinion -- and maybe you've already answered this. What, in your opinion, would be the alternatives that would be available to MDU and Otter Tail?

A. Well, I think that in theory there are a lot of alternatives. In practicality, it will largely boil down to natural gas as being a large part of the answer. I have a certain sympathy for any electric company trying to make the resource decisions now because these are very turbulent times both in terms of cost and fuel supply. But, you know, time doesn't stand still and decisions need to be made. If you don't build coal, traditionally the sources have been nuclear, large hydro and natural gas. Energy efficiency, that saved a couple of percent of our total load, and I would hope there could be more. Wind and solar saved perhaps a few percent of our load. I hope there could be more. But it's largely been coal, gas, hydro and nuclear. And I don't think hydro and nuclear offer much near-term potential for a company that needs resources, which brings it down to coal and gas as the proven alternatives.

Q. Did you listen in to Mr. Schlissel's testimony yesterday?

A. I heard some of it. There was sometimes problems on the Internet connection, but I heard much of it.

Q. Did you hear Mr. Schlissel's responses to

my questions regarding imports of natural gas?

A. I'm trying --

Q. I'm sorry.

A. I'm not -- I may have.

Q. Okay. Basically my recollection is with regard to the imports from Canada and Mexico, I wasn't clear from Mr. Schlissel whether he was indicating that the imports are projected to decline or whether they're currently declining. Can you tell me what the situation is? Are imports currently on the decline from Canada and Mexico?

A. If we look at my presentation, slide number 5, and focus on Canada because that's where more the net imports are coming from, they peaked early this decade and have started falling and they continue to fall, and the projections are that they will continue to fall.

Q. Okay. And Mexico --

A. Mexico, slight decreases over time, but, no, the sum of the two -- and it's important to look at the sum because those are pipeline imports. Those are not as vulnerable to being rerouted as LNG. With LNG, once it's on the water, you know, if your vessel is coming up the Atlantic Ocean, it can just as easily hang a right and go to Europe as

it can turn to the left and come to the U.S., and that's what creates the world market.

Q. Did you also hear the discussion between me and Mr. Schlissel concerning LNG imports and where they were coming from? My recollection is he listed a number of countries that export LNG, but I don't believe that he answered specifically where the imports into the United States are coming from. Can you clarify that?

A. Most of our imports of LNG today -- and, again, we're still in the early years of this -- has been from Trinidad in the Caribbean, smaller amounts from Egypt, and there are projects underway to take from some other countries. However, as the market develops, which specific countries it comes from becomes increasingly less important, much as it would in the oil market. You would expect over time in a well-functioning market that the sources of LNG with the lowest transportation costs would be the ones that would serve the U.S. and the others would serve other markets, but prices will change and markets will rapidly adjust to changes, and we've already seen evidence in a fairly significant decline in LNG imports into the U.S. as some of the suppliers find higher prices in other

countries.

Q. When I asked Mr. Schlissel about uncertainties and risks for higher fuel prices and supply disruptions with natural gas-fired generation versus coal-fired generation, my recollection of his response to supply disruptions was that there were risks of supply disruptions for both fuels. What, in your opinion, is the most likely cause of disruptions to coal supply and, also, what is the most likely cause of disruptions to natural gas supply, and which poses the greatest risk?

A. Well, coal supply, the disruptions are more -- almost entirely domestic and not so much market related. We have a very abundant supply of coal in this country. The reference is often made that the U.S. is the Saudi Arabia of coal. Mining costs over time, not necessarily on a year-to-year basis, tend to revert in a competitive market to production -- or prices tend to track production costs. We do get short-term changes in that, up or down, as market demands change. You can have transportation interruptions, but those are usually fixable. So to me coal supply disruptions are a short term, and by "short term" I mean weeks to

months, in a couple of cases to a couple years.

The natural gas supply disruptions are several types and stretch over different periods of time. As we've seen in the case of oil, you can have actual embargoes where countries withhold supply or you can have turmoil in countries where production gets shut down. You can have natural disasters that affect production much like what we saw in the Gulf after Katrina hit. You can have disruptions in shipping such as a large part of the world's oil passes through four strategic straits, such as the Straits of Hormuz in the Middle East. Those are all vulnerable. You've got longer-term disruptions that tie in more with economic and political power. Western Europe, which is far more dependent upon imported gas than we are at present, has already been seeing in recent years political pressures being applied by Russia and others who control the supply. In the very long term you have economic problems just from the massive outflows of the money to pay for all this stuff. If you look at the amount of oil and gas being purchased from the OPEC countries and the forecast of what that is, the prices, we're looking at somewhere between 500 billion dollars a year and over a trillion

dollars a year going from the developed countries to the oil and gas owners. You have to think that that poses some sort of long-term instability with that kind of massive wealth transfer.

Q. Thank you. You provide in your Exhibit 346 a map that depicts the location of world oil and natural gas reserves. It suggests that all of North America has 264 trillion cubic feet of the world's proven gas reserves out of 6,044 trillion cubic feet worldwide. If my math is right, that represents about 4 percent of the world's supply. Do you agree?

A. Those are the -- yes, with your calculation, yes.

Q. Do you know what share of the world's coal supply is in North America?

A. I know it's a large amount. I think the U.S. has more proven coal reserves than any other country, but I don't have those statistics at my fingertips.

Q. Would you be willing to provide a map similar to the oil and gas reserves that would show worldwide coal reserves?

A. I can do that. I can certainly provide a table that shows by country and continent those

amounts. I would be happy to do so.

Q. Do you have any idea what --

JUDGE WAHL: Mr. Binek, I'm sorry. That's going to be a late-filed exhibit?

MR. BINEK: Yes.

JUDGE WAHL: And, Mr. Guerrero, help me. Let me see.

MS. DANIELS: PSC 7.

JUDGE WAHL: Say again.

MS. DANIELS: PSC 7.

JUDGE WAHL: No. It will be --

MS. DANIELS: Okay. Well, that's how we numbered from yesterday.

COMMISSIONER CRAMER: Yeah, I wondered about that.

MR. GUERRERO: 350 --

MS. DANIELS: 351.

MR. GUERRERO: No, I think we've got -- we've got some late-filed exhibits.

MS. DANIELS: They're not OTP/MDU. 351 is next -- OTP/MDU.

MR. GUERRERO: Subject to check, Your Honor, I believe it would be OTP/MDU 351.

JUDGE WAHL: All right. OTP -- for the record, OTP/MDU Exhibit 351, a table of North

American Coal reserves -- no, no, of world coal reserves.

MR. BINEK: Right.

JUDGE WAHL: Right. All right. You may proceed, Mr. Binek.

Q. (MR. BINEK CONTINUING) Do you have any idea what share of North America's coal reserves are in North Dakota?

A. The lignite reserves are expansive. For many years, not in the last few years, much of my work dealt with modeling coal supply and transportation in a national context, and North Dakota is one of the very largest.

Q. Can you provide an exhibit that would show what North Dakota's share of coal reserves is?

A. I can do a similar table to what I did before, but showing it state by state.

MR. BINEK: Thank you.

COMMISSIONER WEFALD: Doesn't that vary, though, by the BTUs that's produced by the coal?

MR. BINEK: I'm just talking about coal reserves.

COMMISSIONER WEFALD: Coal reserves. All right.

JUDGE WAHL: OTP -- that's OTP/MDU 352.

You may proceed, Mr. Binek.

MR. BINEK: I have no further questions.

JUDGE WAHL: All right. Questions by the Commission. Any Commissioners have any question?

COMMISSIONER WEFALD: I have no questions for this witness.

JUDGE WAHL: Commissioner Cramer.

EXAMINATION

BY COMMISSIONER CRAMER:

Q. Mr. Klein, this is Kevin Cramer. I'm on the Commission. And I have actually quite a few questions for you, and I'll try to make sure they relate to this case, although I have to tell you that I'm always fascinated by this topic of the tight supply/demand balance in the world's natural gas supply. I was especially amused by your chart 3 -- or slide 3, the chart where you overlay the various gas price forecasts by annual energy outlooks. I'm a regular reader of the EIA's annual energy outlooks and I've always been amused by the many disclaimers they now have to use every year to explain why they were wrong last year.

Do you have any idea -- well, let me first go to slide 6, the proven world gas reserves. Mr. Binek just asked about it. You show 264 trillion

cubic feet of natural gas reserves on the North American continent. Are those -- I know you call them provable. How recoverable are those 264 million -- or trillion? I'm sorry.

A. I was going to say, these are defined somewhat differently at different sources. This particular one is the Oil & Gas Journal which compiles it. I know the groups like the Energy Information Administration and International Energy Administration also do compilations, although they do try and coordinate.

Proven relates to a level of geologic certainty that it is actually there and can be recovered with certain -- within certain ranges of what existing technologies will allow. Those are definitions that change over time. And if we are to look at a similar map of where the proven oil reserves are, we would see that just in the last few years Canada went from almost nowhere to second or third in the world because the definitions and the economics of their tar sand recovery has elevated them into the top tier of reserve owners for oil.

Q. Well, in North Dakota we're becoming very familiar with that, as well, with regard to a large

play of oil embedded in shale. Well, if we can't categorize it by how recoverable or how economically recoverable it is, are you familiar with -- I'm thinking now of specifically continental U.S. natural gas supplies, proven reserves and public policies that relates to its recoverability. In other words, we have a lot of sensitive areas, I believe, where there is natural gas reserves. Are you familiar with any of that?

A. I've not done specific studies. I know that there are a number of areas in national parks and protected areas and offshore areas that are believed to hold substantial amounts that are off limits to production.

Q. Let me ask you this. Do you know how much natural gas is consumed in the United States annually, roughly?

A. I don't have those at my fingertips now.

Q. Does 22 or 23 trillion cubic feet sound roughly right?

A. Sounds roughly right.

Q. Well, if 23 trillion cubic feet is consumed in the United States and you show proven reserves of 264 trillion cubic feet on the North American continent, if my math is right, that tells

me, with just no growth in demand, that we're probably not much beyond ten years' supply in the continental U.S. Does that sound feasible?

A. That's often the case with oil and gas. And, again, it gets back a little bit to the way in which we define "proven." It's frequently the case that as development of a reservoir progresses, additional resources which were not either known or accessible before become accessible, and so I would not take that as ten years and the tank is dry.

Q. Okay.

A. But it does suggest in broad terms a much less, much shorter-lived asset base than we would find for coal.

Q. Since we're on the issue of supply, how familiar are you with the process of converting coal to natural gas or, for that matter, liquid fuels?

A. There are technologies that have long been the case. Gasification is part of the IGCC process, itself. Liquid fuels from coal are also a question -- are also doable. Issues deal with cost and the environmental impacts, and if we are thinking about a future carbon-constrained world, the CO2 impacts of those processes have to be taken

into consideration.

Q. Does it stand to reason that if natural gas continues to be consumed at greater -- higher levels for things like generating electricity, that we'll need to look at more gasification of coal while the proven reserves continue to decline?

A. I think if you're thinking of gas as somewhat of a supply-constrained commodity, which is perhaps okay --

Q. Sure.

A. -- and certainly if we think it used petroleum -- well, let me first take petroleum as just a hypothetical. If instead of burning coal at Big Stone II, you constructed a petroleum plant, it would be unlikely to increase the production of petroleum around the world.

Q. Mm-hmm.

A. Instead, the petroleum that's burned at Big Stone II would ripple through the world markets and then somewhere some other application is not going to burn petroleum, which may in turn just burn coal or natural gas or do without. So if we then apply that to a natural gas situation -- instead of burning coal at Big Stone II, you construct a natural gas unit, you ask the same

question, are natural gas supplies around the world going to increase to meet this demand, and, if not, are you merely just shifting the emissions around in the use?

Q. Good question. Do you have any data or at least an educated sense of what impact the growing demand on natural gas for the generation of electricity in the last decade or so has had on the price?

A. It's a good question. It's a harder answer to tease out of the data. Clearly, a lot of the demand growth in the 1990s and the early part of this decade came from the electric power sector. In fact, some of the industrial uses of natural gas have actually declined over this time.

Q. Has some of that industrial use decline been the result of industry moving out of the United States because of rising natural gas prices?

A. There's several factors that play, of which that would be one of them. I think we're seeing broad trends of sort of the deindustrialization of much of our economy. As some of the energy-intensive industries move overseas, you know, iron and steel, aluminum, several others, are increasingly moving overseas,

that's due to a lot of factors, not necessarily natural gas prices except in those cases where some countries have local supplies of natural gas that are very inexpensive for them to use and very costly for them to make available to the world market.

Q. In other words, it's easier and less expensive to move an industry to some place that has -- that has cheap, easy natural gas than it is to move cheap natural gas to the United States?

A. That's true, but there's more to it, I believe.

Q. I'm sure there is.

A. There's also labor cost, other environmental considerations. There are a lot of factors that go into that.

Q. Getting back to this issue of diversity of fuel for generating electricity, electricity seems to have the luxury of being able to be generated by a number of ways, and in this case here we're down to a couple that are truly economical it seems. Are there processes or products that utilize natural gas either in the manufacturing process or literally as a part of the product that don't have a diverse alternative? I'm thinking of, for

example, in North Dakota fertilizer.

A. Well, a lot of natural gas is used in process. You've got fertilizer. You also have the petrochemical industry, broadly speaking, as a major user of natural gas as a feedstock. Those industries have had a very hard time lately dealing with the higher cost of their inputs.

Q. And so I guess I'm then thinking about an earlier statement you made and I guess there's been other testimony that references the preciousness of this finite resource and how we utilize it, and that's probably more of my own editorial comment than it is a question.

I was going to ask you about LNG ships changing direction in the middle of the Atlantic, but you got around to that. Have you heard literally of situations where that has occurred?

A. There were a couple of articles just in the last couple of weeks making reference to that, you know, the suppliers where allowed will seek out the highest price. A lot of the early LNG activities here, as this industry begins to develop on a world market, have a lot of long-term fixed contracts because --

Q. Sure.

A. -- the cost of building the facilities at either end are so substantial that they don't want to leave much to chance. But as the market grows and there becomes a little bit of excess capacity on production and consumption side that can seek out the higher market, you very rapidly begin to move into a world market where there's value in playing the spot market.

Q. I'll just close with this question, and since the EIA has such a hard time forecasting much beyond next month, it's probably hard for you to answer this, but do you have any sense of what the new -- I call it the new floor for gas prices might be?

A. No, I don't. And I have a lot of sympathy for EIA. There's actually quite -- there are quite a number of good and competent people there and they do a lot of their forecasts in terms of quantities are good. Prices are inherently volatile and they entail more than just hard numbers. They entail political things, weather, accidents. They haven't done a particularly good job, but no one else has, either.

COMMISSIONER CRAMER: Yeah, I don't mean to -- my characterization of EIA is not to

criticize them. I think they do fine work. It's just more of an illustration of the situation we find ourselves in today. That's all I have. Thank you.

JUDGE WAHL: Commissioner Clark.

COMMISSIONER CLARK: Thank you.

EXAMINATION

BY COMMISSIONER CLARK:

Q. Good morning, Mr. Klein.

A. Good morning.

Q. My name is Tony Clark. I'm one of the three members of the Commission. I would like to turn to Exhibit 347, which is the average per-household energy consumption chart.

A. Yes, I'm there.

Q. Okay. There were a number of questions about this, and previously in our hearing we had some data related to household use of electricity for heat versus natural gas for heat, and my questions are going to relate to this general topic. First, just specifically on the chart, do you know, does petroleum -- does that column include propane?

A. I believe it does.

Q. Okay. It would also include gasoline?

A. Yes. This would be petroleum of all forms.

Q. Okay. Would -- let me state it this way. It would seem to me that the most relevant point that we could get to would be not total statewide average usage of different commodities, but the more relevant point would be actually the customers of the two companies that we have before us today. Would you agree?

A. I think in general I would agree. It might depend upon the specific question we're trying to solve.

Q. Okay. Here's why I ask. My guess is -- and I don't know that this has been in any chart at all, and you can tell me if my thinking is off here or not. But my guess is that for customers of Otter Tail Power and for MDU, who are the customers that we're here today dealing with, that they are probably much more dependent on natural gas as a heating source than any of the charts that we've seen so far, and here's why I make that statement. And, again, correct me if you think I'm wrong. The customers of Otter Tail and MDU are primarily people who live in cities or small towns. These are not companies that serve primarily rural

populations, and yet North Dakota is a fairly rural state. We have a lot of customers who do live in the countryside and they tend to be people who are customers of rural electric cooperatives and they tend to not have natural gas service, and we don't build distribution lines to farms. They tend to use electricity for heat or propane. Is it probably likely that if we were to just focus in on customers of MDU and Otter Tail, that their dependency on natural gas and their usage of natural gas would be far, far higher than the statewide average?

A. Your reasoning sounds perfectly fine to me. If that data were available, that would be, I guess, my hypothesis of what I would expect to see.

Q. Okay. And have you seen any of that data that would allow us to get to that specific question of the usage of natural gas by customers of Otter Tail and MDU, or I guess the other data that we saw which didn't -- which would be useful to be updated perhaps is the percentage of customers of those two companies that use natural gas to heat versus electricity to heat?

A. No, I have not seen that.

Q. Okay.

A. In fact, in this particular exhibit we've been looking at, the data is from 2001, and unlike some of EIS's data which is sort of a comprehensive U.S.-wide bottom-up tabulation, this is done from a residential survey that they do every five years --

Q. Okay.

A. -- and they extrapolate from that.

COMMISSIONER CLARK: Okay. That's all I've got. Thank you.

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

MR. GUERRERO: Thank you, Judge.

REDIRECT EXAMINATION

BY MR. GUERRERO:

Q. Mr. Klein, this is Todd Guerrero. I just have a couple of follow-up questions. Would you turn to page 12 of your testimony.

A. Okay.

Q. Ms. La Seur asked you a question about the statements you make on lines 11 through 13, and she asked you whether or not there was anything else in the record that you relied on to make the assertion with respect to energy conservation. Do you recall that question?

A. I do.

Q. Have you done work in the field of energy conservation?

A. I've done work broadly in the area of energy and climate for over 30 years. In our work on the Minnesota hearings a year or two ago, we looked more carefully at a lot of the DSM data that had been reported.

Q. Based on your experience in the industry, do you need additional information from which to make that statement?

A. I do not. I'm comfortable with the statement as a general principle. And I say that with a heavy heart. I am at best a reluctant supporter of coal in general. I consider myself more of an environmentalist than an energy advocate. But in 30-something years of working in this area and hearing calls about energy conservation and how easy and cheap it is, that somewhat flies in the face of the historical record which shows our consumption going up year after year. So I do believe that there are more opportunities to do more, but the history has not been that satisfied, and I think to assume at this time it will be different is in some ways to have a strategy that's based more on hope than on

experience.

MR. GUERRERO: No further questions.

JUDGE WAHL: Followup, Ms. La Seur.

RECROSS-EXAMINATION

BY MS. LA SEUR:

Q. Mr. Klein, do you believe that stringent measures are necessary for the United States to deal with the challenge of global warming?

A. As a personal matter, yes, I do.

Q. And do you believe that constructing new coal plants that do not capture and store CO2 is a viable part of such stringent measures?

A. I do a lot of work with the Department of Energy on their carbon capture and storage program, and I know there are a lot of efforts underway to develop, demonstrate and hopefully implement the technology. It's not there yet. There are a lot of people that are focused very hard on doing that. And, again, as a personal view, I think if we cannot develop that, we're in serious trouble because I don't think there are enough alternatives that can get you from where we are now to where we want to be without use of coal in an environmentally acceptable way.

Q. So is it your testimony that if we can't

develop capture and storage technology, we should just carry on building the same plants we've always built?

A. It's always a question of the alternative. You know, it's not a situation of I don't like this and, therefore, if I can't have this, everything is going to be fine. It's a question of what then. And that's been the focus of my testimony here, where I think that the "what then" will largely relate to natural gas and what that implies.

Q. And so you don't believe that natural gas is an option; correct?

A. Oh, I certainly believe it's an option. I believe it's an option that has its own consequences and risks, and it may also be the case that in a world market simply substituting natural gas for what would have been coal at Big Stone II may result in shifts within the world market that means more coal elsewhere. It may not be a net savings.

Q. But you don't offer any alternatives to pulverized coal or natural gas; correct?

A. I'm not sure I know what you mean by "offer."

Q. Your testimony is merely about the

problems with natural gas; correct? You don't offer any alternative to the present proposal or a natural gas alternative?

A. I've not submitted a resource plan of any type.

MS. LA SEUR: Right. Thank you.

JUDGE WAHL: Mr. Binek, any followup?

MR. BINEK: No.

JUDGE WAHL: Any followup questions by the Commission? Mr. Kuntz.

MR. KUNTZ: Would Commissioner Clark like us to submit a late-filed exhibit, at least for MDU, showing our average residential consumption for electricity and natural gas? If you would like that, I think we can put that together.

COMMISSIONER CLARK: If that would be possible, yes. I understand that MDU's natural gas service territory significantly overlaps with Otter tail's electric service territory, so it may be -- do we get in trouble if we have more than one exhibit, MDU can provide for its own company, those towns that you serve both?

MR. KUNTZ: That's all we can do.

COMMISSIONER CLARK: Would it be accurate to then just add Otter Tail's on top of that and

would you get the apples-to-apples?

MR. KUNTZ: If I understood what the Commission was getting to, is, you know, what's an average residential customer in North Dakota, you know, use -- consumption of natural gas. I'm not sure that the difference is much -- average use in Minot versus Bismarck is a whole lot different.

COMMISSIONER CLARK: Right.

MR. KUNTZ: So in terms of comparing a chart, because I assume the chart in Mr. Klein's testimony is kind of an average household, so, you know -- which if you have a number of households that don't have natural gas, that dilutes your average consumption. So if you want to determine for those customers who have natural gas what's their averages consumption, I think our chart would show that as a comparison to the statewide average.

COMMISSIONER CLARK: Sure, I think that would be helpful. If you would be willing to submit that, that would be --

MR. KUNTZ: We can do that as MDU No. --

MS. DANIELS: 223.

MR. KUNTZ: We can probably ask Otter Tail to do a joint exhibit showing their average electric use, our average electric use and then the

average natural gas use for Montana-Dakota, and then we have all three of them.

COMMISSIONER CLARK: Sure. That would be acceptable. Thank you.

MR. KUNTZ: That would be OTP/MDU 353.

JUDGE WAHL: All right.

MR. KUNTZ: And that's for residential customers.

COMMISSIONER CLARK: Let me ask, is it possible to have that be on an MMBtu basis? Do you understand why I ask that?

MR. KUNTZ: Sure.

MR. GUERRERO: You can convert it to make it to a --

MR. KUNTZ: You should be able to make that conversion.

COMMISSIONER CLARK: Okay. So we're not comparing decatherms with kilowatt-hours. Okay. Thank you.

JUDGE WAHL: Anything further from the Commission? If not, let's be in recess until 10:50.

MR. GUERRERO: And we're done with Mr. Klein?

JUDGE WAHL: Yes. I'm sorry. Mr. Klein,

I've rather overlooked you. Thank you very much, Mr. Klein.

THE WITNESS: You're quite welcome.

(Recess taken at 10:38 a.m. to 10:53 a.m.)

JUDGE WAHL: Mr. Binek.

MR. BINEK: Thank you. Are we going to wait for Commissioner Clark?

JUDGE WAHL: No.

COMMISSIONER WEFALD: I think we can go ahead.

MR. BINEK: The Commission advocacy staff calls Terry Deason.

JUDGE WAHL: Mr. Deason, I recall you from the previous hearings for these matters, and I have personal knowledge that you are advised and informed regarding perjury. Accordingly, Mr. Deason, you understand that your testimony continues under oath and subject to penalties of perjury?

THE WITNESS: Yes, I do.

JUDGE WAHL: Mr. Binek.

TERRY DEASON,

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

DIRECT EXAMINATION

BY MR. BINEK:

Q. Please state your name for the record.

A. My name is Terry Deason.

Q. And where are you employed?

A. I am employed by the firm of Radey Thomas Yon and Clark in Tallahassee, Florida. My address is 301 South Bronough Street, Suite 200, Tallahassee, Florida 32301.

Q. And what is your position with the firm?

A. I'm a consultant with the firm -- a nonlawyer consultant with the firm.

Q. And you stated you have testified previously in this proceeding. Did you prepare the supplemental direct testimony in this case that's identified as Exhibit PSC 4?

A. Yes, I have.

Q. And are there any corrections or additions that need to be made to your testimony?

A. I am unaware of any at this time.

Q. If I ask you the questions today that are in your testimony, would your answers be the same?

A. Yes, they would.

MR. BINEK: Your Honor, I offer PSC Exhibit -- or Exhibit PSC 4.

MR. GUERRERO: No objection.

JUDGE WAHL: Mr. Guerrero? Ms. La Seur?

MS. LA SEUR: No objection.

JUDGE WAHL: Exhibit PSC 4 is received. Mr. Deason, could I ask you to maybe pull your mike forward a little bit. I've got the volume --

COMMISSIONER CLARK: It's off.

JUDGE WAHL: Oh, it's off. That's the reason.

THE WITNESS: Wow, that makes a difference.

JUDGE WAHL: It does indeed.

Q. (MR. BINEK CONTINUING) Mr. Deason, would you please give a summary of your testimony?

A. Yes. I reviewed the applicants' supplemental case for an advance determination of prudence for a downsized version of Big Stone II. I read and analyzed all of the applicants' prefiled supplemental testimony and analyzed all supporting cost information and assumptions. I submitted 62 data requests to the applicants and analyzed their responses to those data requests. I also reviewed current developments in the electric industry and recent regulatory actions which could have a bearing on the prudence of producing with Big Stone

II.

My review of the applicants' cost inputs and assumptions focused on six areas: One, wind inputs and assumptions; two, construction or capital inputs and assumptions; three, operating inputs and assumptions; four, fuel inputs and assumptions; five, financial inputs and assumptions; and, six, other matters.

My review concludes that the applicants have demonstrated that a downsized version of Big Stone II is a cost-effective means to meet their need for additional baseload generation subject to conditions and additional explanation and clarification.

I conclude that Big Stone II, like any pulverized coal unit, has certain risks, but numerous strategic advantages. The areas needing additional explanation and clarification include wind production tax credits and fixed costs associated with wind, capital cost, fuel forecast and escalations, project financing and environmental compliance costs. These are summarized on pages 26 and 27 of my prefiled supplemental testimony.

I conclude my testimony by reiterating the

five conditions I suggested in my earlier testimony and the need for the applicants to continue monitoring potential carbon dioxide regulations with an updated confirmation of Big Stone II's cost effectiveness prior to the commencement of construction. This concludes my summary.

Q. Have the applicants sufficiently addressed the areas you identified as needing additional clarification and explanation?

A. Yes, they have, but there are three areas that I think I need to expand upon at this time. First is the area of Big Stone II's capital cost and the use of EPRI scaling formulas. My concern was that there could have been an understatement of the capital cost for Big Stone II with it being downsized. Mr. Rolfes addressed this both in his testimony and in responses to data requests, but he did not have specific costs for the downsized components. He did answer questions from Mr. Binek in this regard. He indicated that there is an ongoing obligation to monitor these costs when the time comes for construction and to review the bids associated with that and, if necessary, report significant changes to the Commission. I believe with that understanding, my concern is addressed.

The second area that I wish to touch upon at this time is capital costs for a combined cycle gas turbine plant. There was an apparent disparity in the assumptions used by Mr. Heidell and Mr. Greig. Mr. Heidell assumed $1,795 per kW for a combined cycle plant. This included $545 of transmission and $128 of IDC and $1,122 per kW for the capital cost. And this was for a 120-megawatt plant. Mr. Greig in his busbar cost analysis assumed a cost of $674 per kW, and this was for a $500 -- I mean, a 500-megawatt plant.

Mr. Heidell explained this in his rebuttal testimony. It further came out in testimony at hearing that Mr. Morlock used in his IRP model numbers that were consistent with those used by Mr. Heidell, and I note that Mr. Schlissel in answer to cross-examination questions supported a number closer to that used by Mr. Heidell. I conclude that Mr. Greig's use of a low number was just a very conservative measure on his part and I think the results are justified.

The third area I wish to touch upon at this time is the assumptions used by Mr. Heidell concerning the extension or nonextension of the production tax credits for wind generation. In

scenarios 1 and 2 he assumed that the production tax credits would expire 1-1-2013, and in those scenarios he also utilized a wind capacity factor of 52 percent. In scenarios 3 and 4 he changed the capacity factor to 38 percent, which I have no objection to. I think it is a reasonable change for scenarios 3 and 4. But in scenarios 3 and 4 he also assumed the expiration of the PTCs to be 1-1-2009. Realizing that it's questionable as to when and if the PTCs will ever be renewed or what their termination may be at some future point, I just ask a question concerning the impacts of an assumption of a continuation of the PTC. It's my understanding that Mr. Heidell ran additional runs with the model to answer that question. However, that information was not allowed into the record. I did hear the proffer of Mr. Heidell when he took the stand and also heard an answer to a redirect question, which I think is in the record, which indicated that those runs resulted in no change in the results, that being that Big Stone II was still the preferred alternative. So given that situation, I believe that that concern has been adequately addressed, as well.

That concludes my discussion of the

explanations and clarifications.

MR. BINEK: Thank you. The witness is available for cross-examination.

JUDGE WAHL: Mr. Guerrero.

MR. GUERRERO: Thank you, Your Honor.

CROSS-EXAMINATION

BY MR. GUERRERO:

Q. Good morning, Mr. Deason.

A. Good morning.

Q. I just have just a very few number of questions, some of which you've already answered. If you could go to page 16 of your testimony, Mr. Deason, lines right about 10.

A. Yes.

Q. In response to the question about carbon dioxide regulation on the price of natural gas, you say at line 10, "This would certainly place upward pressure on prices," then goes on to say, "In fact, I believe this is already being manifested to some degree by the number of coal units which have been canceled and partially replaced by additional gas-fired generation." Did I read that correctly?

A. Yes, you did.

Q. Did you have any particular units in mind in that statement?

A. Well, I am aware of a number of coal units which have been canceled or deferred, but being from Florida, I'm familiar with the situation involving Florida Power & Light Company and the decision by the Florida Commission to not approve the Glades project and I'm aware of actions that FPL has taken subsequent to that decision.

Q. What are those actions?

A. Well, FPL has identified a number of measures that they're taking. There's a reemphasis on energy conservation. There's an emphasis on trying to bring on some renewable projects, but, in all honesty, there's not a great deal of renewables available in Florida, but there are some smaller-scale projects involving wind FPL is currently engaged in and, coincidentally, incurring a lot of siting problems with that endeavor in Florida. But the largest response to that has been a further dependence on natural gas-fired generation and a very significant development in the repowering of existing nuclear units and the planned additions of two nuclear units at existing sites within Florida.

Q. Thank you. You're aware that Florida Power & Light has an affiliate company, FPL Energy?

A. Yes, I'm aware of that.

Q. Do you know -- could you tell the Commission generally what they do?

A. Yeah. FPL Energy is an unregulated subsidiary of FPL Group. They develop energy projects throughout the country and maybe even internationally, but I'm not absolutely sure of that. But I know that they -- depending on the latest statistics and that sort of thing, they have been indicated to be the largest owner of wind production in the continental United States. Now, whether they still have that standing at this point I'm not sure, but they are also engaged in solar projects, primarily thermal solar projects.

Q. But it would be fair to say, would it not, that FPL Energy knows a little bit about renewable energy?

A. Yes, I think that they do. They have been successful both in the planning, the deployment and the management of those units, and my understanding is they have been profitable for the company.

Q. And you mentioned that Florida Power & Light's response has been primarily to look at natural gas and nuclear, correct, in response to the Glades denial?

A. Yes, that has been the -- for baseload generation to meet their needs, that has been the primary response.

Q. Turn to page 19, Mr. Deason, please. At the top of that page you say, "However, Otter Tail's assumptions are more conservative and provide a greater assurance that a capital-intensive generating unit such as Big Stone II is truly the more cost-effective alternative." There you're referencing most likely Otter Tail's 12 percent assumed for planning purposes return on equity?

A. That is correct.

Q. Could you explain why that's -- you described that as more conservative?

A. Well, first of all, let me clarify that I do not disagree with Mr. Heidell's use of the 11 percent return on equity. But it is obvious that the use of a higher return on equity for cost modeling purposes, there's a larger cushion there that you're assured that Big Stone II would be the most cost-effective alternative, and it's particularly significant for Big Stone II being such as a capital-intensive project, and if you're assuming a higher return on equity for planning

purposes, there is a larger cushion there that it is going to be the most cost-effective alternative.

If there is a rate proceeding -- if Big Stone II is built and there is a future rate proceeding to put it into rate base, the Commission would be free at that time to determine what is the appropriate return on equity. If the Commission were to select a return on equity less than 12 percent than the assumed 12 percent, well, that just enhances the cost-effectiveness assumptions for planning purposes of Big Stone II.

Q. And so the higher for planning purposes the ROE, sort of the more conservative it is for planning purposes to evaluate the cost effectiveness of that particular project?

A. That is correct.

Q. Go to page 7, Mr. Deason, please. And at line -- end of line 10 through 13 there you talk about "Mr. Heidell concludes that the potential for off-system sales is a benefit for proceeding with Big Stone II, but that Big Stone II is not dependent on off-system sales to make it the choice of their expansion plan." Did I read that correctly?

A. Yes, you did.

Q. And you agree that Montana-Dakota is not dependent on off-system sales for purposes of a least-cost expansion?

A. They're not depending upon that, but they did make the calculations, and the projected sales are substantial, in my opinion.

MR. GUERRERO: I don't have any further questions, Your Honor.

JUDGE WAHL: Ms. La Seur.

MR. GUERRERO: Thank you, Mr. Deason.

CROSS-EXAMINATION

BY MS. LA SEUR:

Q. Good morning, Mr. Deason.

A. Good morning.

Q. Are you familiar with the recent decisions by the Virginia State Corporation Commission on Dominion Virginia Power's Wise County pulverized coal plant proposal?

A. I have -- only to the extent that I have read some press accounts that have been included in a clipping service that my firm subscribes to.

Q. Are you aware that the Virginia Commission set a cap on rate-recoverable costs for the plant?

A. I seem to recall that that was included in the press accounts, but I don't have detailed

information of that.

Q. Do you have any recollection what the Virginia Commission did with regard to return on equity?

A. No, I do not.

Q. Would you consider it reasonable for this Commission to set a cap on rate-recoverable costs for Big Stone II?

A. No, I do not. I believe that it's the obligation of a utility company -- here two utilities that are working in tandem -- to put together to the Commission the most cost-effective alternative and have the Commission review that, and then it's the obligation of the utility to proceed -- if it is approved, to proceed in the most prudent way possible to minimize costs, but at the same time to meet schedules and to construct a prudent plant that will operate efficiently and hopefully in the long term. Cost recovery should be -- should be subject to a review at the conclusion of that process with no predisposition one way or the other. I know that this is a preprudence determination, but I know that there was a reference earlier in the proceeding to a blank check. I don't think that this is a blank

check. I think the obligation is squarely on the utilities to proceed in a prudent manner, and they will have to justify the actual costs that are incurred in the construction of this plant in a future base rate proceeding.

Q. So do you believe it's prudent to approve rate recovery for Big Stone II without any limits on capital costs, future carbon costs or fuel supply costs?

A. I don't believe this Commission is approving rate recovery at this point. They're just approving that they have reviewed all of the filed information and that if it is approved that the Big Stone II project is the correct course of action to take and that construction should proceed in a prudent and cost-effective manner and that there will -- before rates are increased to reflect the investment in Big Stone II, there will be an obligation on the utilities to justify the costs that they have actually incurred to that point.

Q. Whatever those costs turn out to be?

A. Whatever those costs turn out to be, and if the costs are excessive, then I would anticipate that this Commission would take the appropriate action to reduce rate base so that ratepayers are

not subject to costs which are inappropriate or imprudent.

MS. LA SEUR: That's all.

JUDGE WAHL: Questions by the Commission?

COMMISSIONER WEFALD: Yes.

JUDGE WAHL: Commissioner Wefald.

EXAMINATION

BY COMMISSIONER WEFALD:

Q. I have been interested in this proceeding that most of the testimony, both prepared before the hearing occurred and at the hearing, has centered around the comparing of alternatives between Big Stone II and whether it should be wind, gas, or whether it should be another source, and I understand that a lot of study has gone into that, and I appreciate that, but when I thought about this hearing last fall, the main question that I thought we were going to be addressing was whether this -- this is still a prudent investment to move forward with given the downsizing of the plant from 630 to 5 -- from 630 to perhaps 500 --

COMMISSIONER CLARK: Susan, I think your mike is off.

Q. (COMMISSIONER WEFALD CONTINUING) -- from 630 megawatts down to 500 megawatts and then

whether -- because of that reduction in size, whether the costs would still be reasonable for customers, and yet I get to the end of the hearing and that has barely been addressed at all to my mind, so I'm going to ask you this question. The only place I found testimony about this is in Mr. Greig's testimony, and he said on page 11 of his testimony -- and if you need to see it, I'll be glad to give it to you -- a copy.

A. Yes, I have it in my briefcase.

Q. All right. That would be fine if you want to grab that. It is the applicants' supplemental direct testimony.

A. Is it rebuttal or --

Q. It is the -- no, it's their first round of testimony they submitted on March 10th of 2008. And I don't know what it is in the new book of exhibits, but in the book of exhibits that I have, it's under tab 13 and it's page 11.

A. Okay. I believe I'm with you.

Q. All right. And so I'm going to line 13, "What were the specific results reported in your updated analysis?" And then 14, "For the investor-owned utility ownership model, the lowest cost generation alternative was the 630-megawatt

supercritical Big Stone Unit II project with an estimated levelized busbar cost of $73.98 per megawatt-hour over the 2013 to 2032 planning period. The 580-megawatt and 500-megawatt Big Stone Unit II project alternatives followed at $75.26 per megawatt-hour and $77.65 per megawatt-hour." So I'm going to compare, using the worst-case scenario then, if it went from 630 megawatts, which was they had anticipated a levelized cost of $73.98 per megawatt-hour, and it went to the 500-megawatt Big Stone Unit II project at a cost of $77.65 per megawatt-hour, do you consider that -- do you still consider that a reasonable price for customers to pay?

A. Yes. I reviewed this information, and I did review it in the context of these updated costs in comparison to other alternatives to show that even though there has been increases due to the downsizing -- increases per megawatt-hour of output, that it was still the most cost-effective alternative, and I would agree with the conclusion that even the downsized plant is still the most cost-effective alternative.

Q. So in your mind then, it isn't important for the Commission to think about, well, what if

there were more partners still available and this plant could be built at 630 megawatts, whether we should hold out for customers to say to the people involved, we want you to get this back up to 630 megawatts so that customers can get this at $4-and-some cents less per megawatt-hour?

A. I think that's an extremely good question, and, yes, I did have questions about that. I do note that there was a question asked during this hearing to Otter Tail, and apparently it was asked to the wrong witness and we did not get an answer, but the question was that -- there was an indication that up to 170 megawatts would be the most cost-effective alternative for Otter Tail, but that they're choosing to participate at a lower level and why was the decision made to participate at a lower level. I can only anticipate as to what the response would be, but we did not get a response to that. And so, yes, that crossed my mind, and I looked at the cost data with the idea that if 170 megawatts were the most cost effective for Otter Tail, that that would increase the -- and with minimal participation from others, that we would potentially be at 580, which is the preferred alternative to 500, and maybe even back up to the

630. But I don't have any detailed information. I would suggest that maybe we could get a late-filed exhibit. I couldn't provide that. Management of the company would have to provide that, what was the strategic decision that was made to limit the participation less than what the model indicated was the preferred amount.

Q. So that's still a question that you have?

A. Well, it's a question of -- well, let me put it this way. My focus was to determine if the downsized units were still cost effective, and I concluded yes.

Q. Yes. I understand.

A. This is -- another level of a question is, is there a more -- is there a preferred alternative that is even better than the downsized version of Big Stone II, that being a larger version of Big Stone II? I don't have an answer to that. I think it's a very valid question. I think it's a fair question.

Q. So would you suggest that I ask that for a late-filed exhibit?

A. I would suggest that, yes, ma'am.

Q. All right. Would you help me word it?

A. Yes, I would.

Q. All right. Thank you.

A. This would be the premise for the question, and I believe I'm correct in this premise, and if I need to be corrected, I would assume that the response would correct it. It's my understanding that Otter Tail's expansion plan indicated that up to 170 megawatts of Big Stone II would be a cost-effective alternative to meet their baseload generation needs. Given that premise, the question is, why did Otter Tail choose to participate at a lower level of the Big Stone II project given that it was cost justified to participate up to a level of 170 megawatts.

JUDGE WAHL: Gentlemen -- counsel, rather, this will be PSC -- late-filed Exhibit PSC 5. No? Didn't we just admit 4?

MS. DANIELS: We had two questions from Mr. Binek yesterday for late-filed exhibits that were marked as 5 and 6.

JUDGE WAHL: Because I already marked Mr. Deason's as 4. All right. So this is PSC Exhibit 7?

MS. DANIELS: 7.

JUDGE WAHL: Thank you.

MR. GUERRERO: Your Honor, could I ask for

a clarification?

JUDGE WAHL: Certainly.

MR. GUERRERO: Did the question also contemplate additional partners or just the increment between 120 to 170 for Otter Tail?

THE WITNESS: No, just the additional increment is the purpose of the question. But, I mean, if there's information that could be provided about the potential for new partners, I don't think that having more information is going to be a problem.

JUDGE WAHL: All right. Mr. Guerrero.

MR. GUERRERO: That's fine.

JUDGE WAHL: All right. Further questions from the Commission? Commissioner Wefald?

COMMISSIONER WEFALD: No. That's my only question at this time. Thank you.

JUDGE WAHL: Commissioner Clark?

EXAMINATION

BY COMMISSIONER CLARK:

Q. Thank you. Good morning, Mr. Deason.

A. Good morning.

Q. Welcome back to North Dakota, good to have you here.

A. Glad to be here.

Q. My question is on page 19 of your direct supplemental testimony and it has to do with the cost of debt, and I think Mr. Guerrero asked about you couldn't conclude that they were inappropriate. I was just wondering if you had any thoughts about the cost of debt given another month to think about it and you see the financial markets and the debt is getting tougher and tougher to get and banks are getting tighter in giving it out. Do you have any thoughts on this 6 and a half percent cost of debt? Is it still within the ballpark of being reasonable?

A. I think it's still in the ballpark, but I would think it's probably maybe towards the low end, and I would recognize that Otter Tail assumes 7 and a half percent cost of debt in their model. So I take comfort in the fact that their model still indicated that Big Stone II was the preferred alternative and they assumed a higher cost of debt and a higher return on equity, and obviously the return on equity is much more determinative than the cost of debt because of the income tax consequences of return on equity. Income taxes have to be calculated into the models, and we did get confirmation that income taxes were calculated

into the models and in a correct manner. So even with a higher return on equity, the income taxes on the equity return and Otter Tail using a 7.5 percent cost of debt, their models indicated that it was still the cost-effective -- most cost-effective alternative.

Obviously the parties -- the applicants have the burden to go out and to acquire the debt most cost effectively as possible, and they will have the obligation to demonstrate to the Commission that they did engage in that process and the debt that they incurred was the most cost-effective alternative. And they're also assuming a 50-50 split between equity and debt, which I think is a fair assumption to make for planning purposes.

When the applicants get to the market, they may find that the most cost-effective and most efficient means of financing this project may be some deviation from the 50-50 debt-to-equity ratio. So interest rates would have an effect upon that, and the riskiness of the project would have some impact upon that, as well. And so there still are opportunities to try to go out and to minimize the cost of capital, but as I expressed in my

testimony, there's some factors out there which -- particularly with concerns about carbon dioxide regulations that are impacting financing for coal plants. I would note, too, that the Rural Utilities Service I think at this point has made the decision not to provide financing for coal plants at this time. I think that's a temporary measure, but until they get maybe some more information about the impacts of carbon dioxide regulations.

So I think your question is very valid. I think that the financing of the project is going to be a challenge, but I think -- I did ask a data request in this regard to the applicants and got assurances that they believe that the project is financeable and financeable on reasonable terms.

Q. And separate from the question of the risk that carbon -- potential carbon regulation throws into the financing, the pressures that exist because of turbulence in the financial market, that would exist on any project that a utility would seek to finance; right? I mean, that's separate from Big Stone II. If they chose an alternative, whether it be financing wind turbines or gas plants or anything else, that sort of pressure is going to

exist either way; is that correct?

A. There is pressure. I mean, there's just general financing pressures which are going to be there for any investment in any new generation, you're correct. I think there's going to be an additional challenge for the coal unit.

Q. Sure.

A. I had a thought and I think it escaped me. Maybe it will come back to me. But, yes, you're correct, that there would be -- that the challenges would continue to be there for any project. Oh, I know what it was. I was going to say this. I think I covered it in my prefiled supplemental testimony.

I think that the investment community takes a degree of comfort in recognizing that there has been a thorough, open process engaged with the applicants and their regulatory bodies when it comes to the construction of a large-scale project such as this. They take comfort in the fact that if a project is approved, that it has gone through the necessary review and screening and that there is a certain amount of -- well, there would be agreement from the regulatory bodies that this is an appropriate action to take. Here again,

reiterating it is not a blank check by any stretch, and I don't think the investment community expects it to be a blank check, but they do take comfort in the fact when there is a process such as we're engaged in now, they look at that, and I think that projects that have gone through a process like this will be in a better position to obtain financing on favorable terms than a project that has not been through such a thorough process as this.

Q. And just one final question. I can't remember if this was specifically one of your recommendations either in the first or second testimony or not, but does it make sense to have some way -- in some manner formally in the Commission order some sort of -- if the Commission does approve prudency, some requirement that the utilities keep informed and make available for Commission review the process of the financing when it becomes available so it can be reviewed right at that time as opposed to, you know, maybe years down the line when they come in for a rate case to incorporate this in?

A. I have some conditions which generally speak to an obligation on the utilities -- the applicants to advise the Commission of any

significant developments. I think that information concerning financing would fit into that, and if there should be -- to make it clear, I would suggest that there be specific language in the order. It would be consistent with one of my conditions that I testified to earlier.

COMMISSIONER CLARK: Okay. Thank you.

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

EXAMINATION

BY COMMISSIONER CRAMER:

Q. I just have one more general one that I asked Mr. Uggerud, probably should have asked Mr. Schlissel this, as well. But having been through all of this now and sat through two and a half days of testimony on top of reading all the prefiled, would there be anything to be gained by the applicants by bringing the second most prudent or third most prudent project to us as opposed to the most prudent? What should we be looking out for that's maybe not obvious?

A. That's a good question. There was some discussion either yesterday or the first day of the hearing in this regard, and it's a matter that I agree with. I think as regulators, you all

certainly -- you're in a position that I don't envy. It's kind of nice not to be on the Commission anymore making these difficult decisions.

But as a regulator, I would suggest that you take some degree and comfort -- some degree of comfort that the applicants have brought to you a project which is not the easy course of action. I would think a regulator should be skeptical of a project which seems to be the easy course of action, one that is -- would receive less scrutiny from a number of intervenors, less scrutiny -- would be less capital intensive so that it would put less pressure on their financial statements, one that perhaps would -- that they would be perhaps more assured of cost recovery because it is not so controversial and because it is not subject to a greater degree of construction risk, that being a longer construction time and perhaps the materials and labor involved in that.

I think the applicants here are exposing themselves to some degree, but I think, you know, based upon my review, their motivations are because they're doing this because they believe it is what is in the best interest of their customers.

Certainly they're doing it with an idea that it is -- in the long term it's going to be in the best interest of their stockholders, as well.

But as a regulator, I was always suspicious of projects which were -- took less time to construct, more dependent upon fuels that could fluctuate widely, and I'm talking about natural gas projects, and particularly in the State of Florida -- and I'm not so sure of the fuel adjustment process in North Dakota, but in Florida there is a fuel adjustment process, and while there is a great deal of review of those costs, generally the vast majority of all fuel costs get passed through to customers. So with utility management realizing that, the easy course or the natural inclination would be to go forward with a project that has a low capital cost, perhaps high fuel cost because they're going to get recovery, anyway, and they do not expose their stockholders to the level of risk that these applicants are coming forward and trying to get approval to proceed.

So while any project has to have a great deal of review, the fact that this project is not the easy course of action, I think as a regulator you should -- obviously you should not just approve

it because it's not the easy course of action, but I think the fact that they're willing to go forward with this project should provide some degree of comfort, because the motivation is to get savings in the long term, and those savings are going to be -- if projections go forward as planned, which we know they're going to be different to some degree, but as projected, the savings are going to be in the long term, and the savings are going to be achieved through lower fuel cost and the fact that this plant is dispatchable and there could be the opportunity for off-system sales, as I refer to them, and that the life of this plant is going to be an extremely long plant, and that once the depreciated value reaches to a point to where -- and they're still operating efficiently and effectively, there are going to be savings for the customers, but it's going to be long-term savings.

COMMISSIONER CRAMER: Thank you. I have nothing else.

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

MR. BINEK: No.

JUDGE WAHL: Followup, Mr. Guerrero?

MR. GUERRERO: No. Thank you.

JUDGE WAHL: Followup, Ms. La Seur?

MS. LA SEUR: Yes.

RECROSS-EXAMINATION

BY MS. LA SEUR:

Q. Mr. Deason, doesn't every generation project proposal of this size, especially when it's coal-fired, in this day and age pass through similar regulatory review?

A. Well, you know, I think that there is a growing trend across the country for regulatory bodies to engage in these type reviews, and I think it is a good thing. I know that it's done in Florida. Obviously, I know it's done in North Dakota. But I think what we're seeing is a necessity to do that, because the high-capital projects, particularly with some of the unknowns that we have out there today, that it is the prudent course of action to go in and to advise regulators and to have the regulators at the planning process have input. And sometimes those projects survive and sometimes they don't. But I think it's important.

And I also think it's important to engage in this process that we're engaged in because it facilitates applicants or utilities coming forward

with the course of action which is not the course of least resistance. If there was not a situation where there was an opportunity to present the case to the regulatory body and have the regulatory body agree that it is the appropriate course of action, I think that potentially cost-saving plants such as Big Stone II probably would not make it through the screening process because of the high risks that are involved. I think the process that we're involved in here is to a degree -- to a large degree risk mitigation, which is going to be beneficial to the customers in the long term.

Q. So does this regulatory review process -- this very process we're involved in create any genuine financing advantage for this specific project?

A. Well, it's not something that you can quantify, but I think theoretically and I think in reality that there will be. All you have to look is to -- I think it's in my testimony, the reference to the -- to the principles which have been adopted by a number of investment firms indicating that they believe that it is important that there be a process such as this that we're engaged in to be able to finance projects which are

potentially going to be subject to carbon regulation cost.

Q. Okay. Since you referenced the principles, are you able to summarize those, or would it be -- would you need to look at them to be reminded?

A. Well, I'm aware of some press accounts, and I think in response to a data request that the principles, themselves, or either a summary of their principles were provided by the applicants in response to that. But if you have something for me to look at, that would be fine.

Q. I would like to show the witness Applicants' Exhibit -- let's see, it was originally numbered DAS-S5 and I believe it was entered into the record as I 15.

MR. GUERRERO: Is it part of Mr. Schlissel's testimony?

MS. LA SEUR: Yes.

Q. (MS. LA SEUR CONTINUING) And having looked at this exhibit, which is The Carbon Principles established by a set of major investment banks, I believe, is your memory refreshed as to the intent on the principles, themselves?

A. Yes. And I'm looking at the specific data

request which I submitted and I'm looking at the response to it, and it appears to be consistent with that.

Q. And are you able to summarize The Carbon Principles?

A. Well, they were principles that were developed, I think -- I'm looking here at my notes, I think Citi, J.P. Morgan Chase and Morgan Stanley and they did it in consultation with some leading power companies to come up with principles to guide the financing of projects, and they have categorized several of their principles. There's a category involving energy efficiency, renewable and low carbon distributed energy technologies, and then there's a section involving conventional and advanced generation.

Q. And is it the recommendation of the authors of The Carbon Principles that carbon costs be included as part of regulatory review of new generation facilities?

A. Yes, I think it's part of the principles that there be a recognition that there is the potential for carbon cost and that they be part of the overall evaluation of new generation.

Q. Could the failure to consider carbon costs

in a full and open proceeding give a false advantage to the second or third most prudent course of action?

A. I'm sorry. Could you repeat that question, please?

Q. The question is, could the failure to consider environmental externalities such as CO2 prices in a full and open proceeding give a false advantage to the second or third most prudent course of action?

A. Well, I think the failure to consider the potential of carbon regulation would work to the disadvantage of any alternative, because it would not be -- there would not be full information available to the decisionmaker involved. If there is inadequate evaluation of potential costs, carbon or otherwise, there's less satisfaction on the investor's point of view that the project that's being selected is the most cost effective and is the project that is most likely to -- the project that is less likely to be subject to material cost disallowances at the time that the project is included in rate base.

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

JUDGE WAHL: Any followup by the Commission? Any further questions from the Commission?

COMMISSIONER WEFALD: No.

COMMISSIONER CLARK: No.

JUDGE WAHL: Mr. Guerrero, followup? Or I'm sorry. Mr. Binek, followup?

MR. BINEK: No.

JUDGE WAHL: Mr. Guerrero?

MR. GUERRERO: No. Thank you.

JUDGE WAHL: All right. Thank you very much, Mr. Deason.

THE WITNESS: Thank you.

MR. GUERRERO: Your Honor -- Todd Guerrero, for the record -- we are ready to call Mr. Rogelstad. He needs five minutes or thereabouts to get to another room where he will be taking the call, so I will call him right now.

JUDGE WAHL: Okay. We'll be in recess for -- until a quarter to, please.

COMMISSIONER WEFALD: Can I make an announcement to the group? I will need to miss the last witness that's called. I already had a luncheon speech arranged for this noon, and so I'm going to be leaving to do that. However, that does

not mean that I will not review the record to see the information that is presented apart from the testimony of Mr. Rogelstad which I have already read. Thank you.

In case I am not here at the end of the hearing, I just would like to thank all of the participants -- all of the participants for the excellent record which has been established by the Commission in order to make a decision. Thank you.

(Recess taken at 11:41 a.m. to 11:52 a.m.)

JUDGE WAHL: We're back on the record. Mr. Guerrero, you wish to call Mr. Rogelstad?

MR. GUERRERO: We do, Your Honor, and he's awaiting your call.

JUDGE WAHL: All right. Mr. Rogelstad, this is Al Wahl at the North Dakota Public Service Commission and we are ready for your testimony. Are you ready?

THE WITNESS: Yes, I am.

JUDGE WAHL: Mr. Rogelstad, I recall your appearance and testimony for the previous hearings had for these cases and I have personal knowledge that you are advised and informed regarding perjury. Accordingly, Mr. Rogelstad, you understand, of course, that your testimony

continues for these cases under oath and subject to the penalties of perjury?

THE WITNESS: Yes, I do.

JUDGE WAHL: Mr. Guerrero.

MR. GUERRERO: Thank you.

TIMOTHY J. ROGELSTAD,

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

DIRECT EXAMINATION

BY MR. GUERRERO:

Q. Could you state your name and spell it for the record, please?

A. Sure. Timothy Rogelstad, last name R-o-g-e-l-s-t-a-d.

Q. What is your position, Mr. Rogelstad?

A. I'm the manager of delivery planning at Otter Tail Power.

Q. And what does that mean?

A. I have four primary areas of responsibility. I manage the transmission planning function of the company, the transmission contracts that we have with other utilities in the region. I also oversee the project management of the Big Stone II transmission. I'm also responsible for the development and monitoring of the capital

budget for Otter Tail Power Company.

Q. And how long have you been with Otter Tail?

A. I've been with Otter Tail for about 19 years.

Q. And what is your educational background?

A. I have a bachelor of science degree from North Dakota State University in electrical engineering.

Q. Did you have an occasion to prepare prefiled supplemental direct testimony in this case?

A. Yes, I did.

Q. Do you have that with you, Mr. Rogelstad?

A. I do.

Q. And it's been marked as OTP/MDU Exhibit 325?

A. Yes.

Q. And if I asked you the same questions that are posed in that document, would your answers be the same?

A. Yes, they would.

Q. Are there any corrections that you have?

A. I have no corrections.

MR. GUERRERO: Your Honor, we would offer

OTP/MDU 325.

JUDGE WAHL: Mr. Breen?

MR. BREEN: No objection.

JUDGE WAHL: Mr. Binek?

MR. BINEK: No objection.

JUDGE WAHL: OTP/MDU 325 is received.

Q. (MR. GUERRERO CONTINUING) Mr. Rogelstad, do you also have a summary of your testimony?

A. Yes. Yes, I do.

Q. And that's been marked as 325A?

A. Yes. Okay.

MR. GUERRERO: Mr. Rogelstad, we've marked your summary here as OTP/MDU 325A. We would offer that exhibit, as well, Judge.

JUDGE WAHL: Mr. Breen?

MR. BREEN: No objection.

JUDGE WAHL: Mr. Binek?

MR. BINEK: No objection.

JUDGE WAHL: OTP/MDU Exhibit 325A is received.

Q. (MR. GUERRERO CONTINUING) Mr. Rogelstad, could you please briefly give your summary?

A. Yes. I start on page 2 with the slide entitled transmission project. There are two high-voltage transmission lines that we proposed with

the Big Stone project, one a 230 kV line that runs between Big Stone to near -- a substation near Morris, Minnesota, a second line that would be constructed at 345 kV from Big Stone to the Granite Falls, Minnesota, area. The Big Stone-Granite Falls line will likely be initially operated at 230 kV, but depending upon the timing of the CapX projects, it's possible that it could be operated at 345 kV upon initial energization.

The transmission project that was proposed in this proceeding over a year ago has not changed. The resulting reduction in plant size has resulted in no change in the primary transmission facilities for the Big Stone project. In addition, the project continues to maintain its MISO queue position with regard to generation interconnection to the Midwest ISO.

Turning to page 3, cost estimates related to the transmission project are now estimated to be $249 million. That would be for both interconnection facilities and also the delivery service facilities. This is an $11 million increase from our December 2006 estimate, and the majority of the increase is related to the inflation as a result of delaying the project.

Turning to slide 4, both transmission facilities' in-service dates are early 2013, which would be prior to the operation of the Big Stone Unit II.

Q. Could you repeat that last statement, Mr. Rogelstad? You muted out.

A. Oh, I'm sorry. The in-service dates for the transmission facilities for the Big Stone project are -- transmission facilities are intended to be in service in early 2013, which would be prior to the operation of the Big Stone generation Unit II coming on line. And that concludes my summary.

Q. Thank you, Mr. Rogelstad. Mr. Rogelstad, did you have occasion yesterday to listen in to part of the hearing via the Internet?

A. I did listen to parts of the hearing, yes, I did.

Q. Did you hear questions in particular from Commissioner Clark with respect to a question about trying to determine or get some sense of comparative analysis or apples-to-apples comparison on transmission alternatives for the Big Stone project versus sort of a wind/gas alternative or gas/wind alternative?

A. Yes, I recall that question.

Q. Could you provide some commentary to that effect from your experience as a transmission expert?

A. Sure. The transmission that's proposed for Big Stone -- I'll give you an example. We've designed or planned a transmission system to accommodate actually up to 600 megawatts of generation at the Big Stone site. For the purposes of my example here I'll assume a 580-megawatt project. In that example we had to a build the two lines, Big Stone to Morris and Big Stone to Granite Falls, as a result of adding 580 megawatts or 600 megawatts of generation to the system. If you look at the -- from an energy standpoint what the amount of energy that that baseload coal unit would produce, it would be roughly about four and a half million megawatt-hours per year. And in order to get that same amount of energy, if you assume -- from a wind-generating facility, if you assume a 38 percent capacity factor, you'd have to install approximately 1,350 megawatts of nameplate wind. And so the transmission necessary to interconnect 1,350 megawatts of wind is substantially different than the transmission necessary to connect 580

megawatts of baseload coal. And it simply comes down to a simple factor of taking the -- or dividing the capacity factor of a baseload unit, divided by the capacity factor of the intermittent unit. And so in this example that I gave it's approximately 2.3 times the amount of -- there's 2.3 times the number of nameplate megawatts it would require, and roughly that's probably about the same amount of transmission that would be required. Now, I caveat that with transmission comes in kind of lumps, and so it's not a perfectly linear relationship, but it should give you a rough idea of kind of the comparison that would be there.

MR. GUERRERO: Thank you, Mr. Rogelstad. We tender him for questions, Your Honor.

JUDGE WAHL: Mr. Breen?

MR. BREEN: No questions.

JUDGE WAHL: Mr. Binek?

MR. BINEK: I have no questions of this witness.

JUDGE WAHL: Questions from the Commission? Commissioner Clark.

EXAMINATION

BY COMMISSIONER CLARK:

Q. Just a couple. In the previous testimony

I recall that there was one segment of line that could be operated at a lower, I think -- was it the 345 kV Big Stone to Granite Falls which could be built to 230; is that right?

A. Yes. The interconnection study that's been done through the Midwest ISO required 230 kV facilities, both Big Stone to Morris and also Big Stone to Granite Falls. And so in order to -- if you look at the needs of only Big Stone generation, 230 kV facilities would be adequate for both Big Stone to Morris and also Big Stone to Granite Falls.

Q. So given that it's downsized to 5 or 580, is the 230 now more adequate than -- I don't know if -- that's not an engineering term -- more adequate than the adequateness that it had before?

A. I guess I would characterize it as that it was adequate at 600 megawatts and we also believe it's adequate at 500. I think the difference, you know, certainly is that it frees up more room for other generators to use the additional capability that's being created. And we have -- again, continue to believe in the decision that, you know, there's a strong need for increasing the transmission capability out of that region and that

capability will be used up as soon as it's put in service.

Q. As you probably know from listening in to the Commission discussion from the previous hearings, I had some concern with that, and I continue to, and, in fact, this development probably makes it even a little bit more so, and it's -- just in the spirit of full disclosure, it's simply that I do have some concerns with using a prudency hearing for a specific project and then granting preprudency to ancillary services to that that aren't tied to any specific project within the prudency hearing, itself. And so I do continue to have some concerns with that.

JUDGE WAHL: Any further questions from the Commission?

COMMISSIONER CRAMER: No.

JUDGE WAHL: Followup, Mr. Guerrero?

MR. GUERRERO: Just one or two, Your Honor. Thank you.

REDIRECT EXAMINATION

BY MR. GUERRERO:

Q. Mr. Rogelstad, could you clarify for the Commission's purposes how far down we would have to go in terms of a thermal plant before your 230 plan

would change?

A. We projected that to be about 150 megawatts.

Q. So can you explain what that means?

A. Yes. So effectively if we reduce the plant size to below 1,250 megawatts, then that would -- we would not need to build two lines at 230 kV.

Q. So if you built -- so the next -- what would you build it at; do you know?

A. Most likely we would build it at 115 kV.

Q. So the step change is 115 kV to 230 kV?

A. Yes.

Q. And a 500- or 580-megawatt plant down to a 150-megawatt plant, there's quite a bit of room there?

A. That is correct.

MR. GUERRERO: No further questions, Your Honor.

JUDGE WAHL: Mr. Breen?

MR. BREEN: No questions.

JUDGE WAHL: Mr. Binek?

MR. BINEK: No questions.

JUDGE WAHL: Followup, Commissioner Clark?

COMMISSIONER CLARK: No. Thank you.

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

THE WITNESS: Thank you.

MR. GUERRERO: Thank you. Your Honor, that would be our last witness and --

MR. KUNTZ: Applicants rest.

MR. GUERRERO: -- I believe applicants rest.

JUDGE WAHL: Mr. Breen, anything further from intervenors?

MR. BREEN: Intervenors rest.

JUDGE WAHL: Mr. Binek, anything further from the Commission's advocacy staff?

MR. BINEK: No.

JUDGE WAHL: All right. Very good. Commissioners, closing comments.

COMMISSIONER CLARK: Just thank you for an excellent hearing, appreciated all the input.

COMMISSIONER CRAMER: Thank you, all. Safe travels back home, wherever that might. I trust that Mr. Deason can verify to FPL that there are adequate wind resources in North Dakota for further investment.

MR. DEASON: I'll deliver the message.

COMMISSIONER CRAMER: Thank you.

JUDGE WAHL: All right. The record will be closed. Counsel, we should talk about briefing, but we can do that off the record with your consent, I think.

MR. GUERRERO: For the record, we would thank the Commission and consider it fortuitous that we were able to spend Judge Wahl's last time in a hearing before his retirement, so we're thankful for that.

COMMISSIONER CLARK: We still got him for one more.

MR. GUERRERO: Oh. Second to the last.

JUDGE WAHL: The record will be closed. Thank you, counsel.

(Concluded at 12:06 p.m., Wednesday, April 30, 2008.)

CERTIFICATE OF COURT REPORTER

I, Denise M. Andahl, a Registered Professional Reporter,

DO HEREBY CERTIFY that I recorded in shorthand the foregoing proceedings had and made of record at the time and place hereinbefore indicated.

I DO HEREBY FURTHER CERTIFY that the foregoing typewritten pages (Pages 813-941, 1119-1242 and 1417-1534) contain an accurate transcript of my shorthand notes then and there taken.

Bismarck, North Dakota, this 6th day of May, 2008.

Denise M. Andahl
Registered Professional Reporter

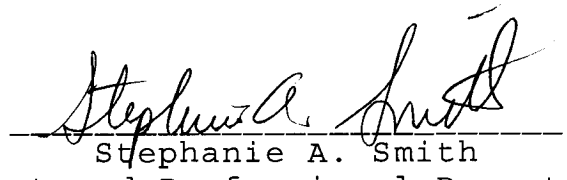
CERTIFICATE OF COURT REPORTER

I, Stephanie A. Smith, a Registered Professional Reporter,

DO HEREBY CERTIFY that I recorded in shorthand the foregoing proceedings had and made of record at the time and place hereinbefore indicated.

I DO HEREBY FURTHER CERTIFY that the foregoing typewritten pages (Pages 942-1118, 1243-1416) contain an accurate transcript of my shorthand notes then and there taken.

Bismarck, North Dakota, this 6th day of May, 2008.



Stephanie A. Smith
Registered Professional Reporter

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