Appendix V:
Informal Discovery Requests from PSCW Staff

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Table 1:

Appendix V Content Summary

Page Number in Appendix V[1]	Date	Item
1	Nov.13, 2009	Xcel responses to Udaivir Sirohi/PSCW Preliminary Questions
82	Aug. 4, 2010	PSCW Data Request to Xcel
85	Sept. 3, 2010; Transmitted on Sept. 9, 2010	Xcel responses to PSCW August 4, 2010 data request: Responses to questions 2, 4, 7, 8, 9, 11, 12, 13 and 15
91	Oct. 19, 2010	Xcel responses to PSCW August 4, 2010 data request: Responses to Questions 1, 3, 5, 6, 10, 14, 16 and 17

[1] Appendix V page number is located on upper right corner of each page

From: Rasmussen, Pamela Jo [mailto:pamela.jo.rasmussen@xcelenergy.com]
Sent: Friday, November 13, 2009 10:25 AM
To: 'udaivir.sirohi@wisconsin.gov'
Cc: 'scot.cullen@wisconsin.gov'; King, Amanda R; Hillstrom, Thomas G; Stevenson, Grant D; Donovan, David D; Chuck Thompson (cat@dairynet.com); Tim Noeldner (tnoeldner@wppisys.org); Agrimonti, Lisa; Wiechert, Eric M (Attorney); Thulien Smith, Jennifer C
Subject: CAPX Hampton-LaCrosse Project - Response to preliminary questions

Dear Udaivir:

On September 28, 2009, Amanda King, Warren Hess and I met with you to see if you had any initial responses to our *2009 Update to the 2006 Rochester/La Crosse Load Serving Study* (Update) for Docket 05-CE-136. Listed below are our responses to these inquiries.

Since that time, I expect you have had time to review the study in more detail and we would be happy to meet with you again to discuss the study in more detail. Otherwise, we are currently revising the document based on your suggestions and beginning to lay out our CPCN filing. We will be forwarding you additional information and contacting you to set up another meeting to further discuss our analyses.

If you have any questions, please contact me at 715-737-4661. If you have specific planning questions, please contact Amanda at 612-330-5931.

It was good to see you.

Pam

Clarification Questions/Applicants' Responses

1. *Bullet Point 7 indicated that "the CapX2020 Group 1 facilities were all included." However, the first line of the paragraph on page 26 states that the "CapX2020 Group facilities were also not included in the base models for this analysis." Please explain these two contradictory statements. (See 2009 Update to the 2006 Rochester/La Crosse Load Serving Study, section 4.2.2, pp. 26-26.)*

For the purpose of the Update, the term "CapX2020 Group 1 facilities" refers to the group of three 345 kV projects; Hampton – Rochester – La Crosse, Brookings County --, Hampton and Fargo– Monticello. The two excerpts referenced in this question relate to two different models. The statement on page 26 describes the content of the MRO base model for the year 2012. This model does not include any of the Group 1 facilities. The statement in bullet point 7, page 26, describes the contents of the modified MRO model used for the study analysis. This revised model includes all Group 1 facilities.

2. *Explain the reasons for turning off the generators in bullet point 5 and reducing capacity to 50% in bullet point 6. (See 2009 Update to the 2006 Rochester/La Crosse Load Serving Study, section 4.2.2, pp. 26-26.)*

The generators referred to in bullet point 5, page 25, are the French Island peaking units. The two 70 MW French Island peaking generation units are not currently must-run units—they are operated only when necessary for system support. In addition, transmission solutions are more reliable than generation, and one purpose of this project is to fix transmission issues with transmission facilities and reduce the reliance on expensive peaking generation units being run out of merit order for transmission system support.

Bullet point 6 on page 26 refers to reducing the capacity to 50% of all hydroelectric generation in Wisconsin. The Wisconsin hydroelectric generators were set to be generating at 50% of their maximum capabilities due to the fact that many of those hydroelectric plants are run-of-river in nature, so a drought could easily decrease their output to 50% of their maximum. The 50% modeling assumption is designed to recognize this fluctuation in hydroelectric generator availability and to ensure that the system can accommodate a 50% level at all times.

3. *I could not confirm reading Mr. Jeff Webb's testimony the two conclusions: 1) "[it] was Mr. Webb's finding that the 161 kV did not perform as long as the 345 kV alternative, ...redundant at that point in time," and 2) [t]he 161 kV options have the likely effect of causing the need for more rights of way...for the 345 kV option." So please provide page and line numbers in the Mr. Jeff Webb testimony that support the described two conclusions. (See 2009 Update to the 2006 Rochester/La Crosse Load Serving Study, section 4.2.3, p. 31.).*

The cites to these two conclusions are as follows:

> (1) **"[it] was Mr. Webb's finding that the 161 kV did not perform as long as the 345 kV alternative, ...redundant at that point in time."** Webb Direct at 32:1 ("This means that loadings on these same upgraded [161 kV] lines will become problematic in the future long before they would with the proposed project in place.").
>
> (2) **"[t]he 161 kV options have the likely effect of causing the need for more rights of way than would be needed for the 345 kV option."** The conclusion that a 161 kV alternative would require more rights-of-way than a 345 kV option was not a direct paragraph of Mr. Webb's testimony but was instead a deduction made by Applicants' engineers based on Mr. Webb's analysis that a 161 kV solution would require rebuilding four separate 161 kV lines and a near complete rebuild of the entire local area system. Webb Direct at 31:16-19.

Also enclosed with these responses is a copy of the transcript of Mr. Webb's cross-examination testimony during the contested case Certificate of Need proceeding in Minnesota.

4. *The bullet point 2 indicates that "[t] System Alternative studied in this study...did not include other line work." Explain the reasons for excluding "the other line work." (See 2009 Update to the 2006 Rochester/La Crosse Load Serving Study, section 4.2.3, B.31.)*

Other line work refers to the practice of reconductoring existing transmission lines to increase capacity when capacity limits the efficacy of an alternative. It is customary to assume the impedances do not change due to re-conductor projects on transmission lines (only the ratings change). If the impedances do not change, the voltage performance of the system does not change.

The System Alternative referenced in the above paragraph did not include "other line work" because that System Alternative's effectiveness is limited by voltage concerns that cannot be remedied by reconductoring.

5. *Provide bus numbers for the substations listed in Figures 1.1-5 and 1.2-3. (see 2009 Update to the 2006 Rochester/La Crosse Load Serving Study, pp. 12 to 14 and p. 20.)*

The attached MS Excel files attached to this response have the substation names and bus numbers as requested.

6. *The project lives of 345 kV and 161 kV options are different. For comparing these options of unequal lives, I suggest use of the Equivalent Real Annual Cost Evaluation Method. (See Equivalent Real Annual Costs: Evaluating Investment Alternatives with Unequal Lives Under Inflation, The Engineering Economist, Volume 31, No. 4, 1986.)*

Thank for your suggestion, we will review this method and use it for our comparison.

Pam Rasmussen
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EVIDENTIARY HEARING - VOLUME 4 - JULY 17, 2008

BEFORE THE OFFICE OF ADMINISTRATIVE HEARINGS

OF THE STATE OF MINNESOTA

In the Matter of the Application of Great River Energy, Northern States Power Company (d/b/a Xcel Energy) and others for Certificates of Need for the CapX 345 kV Transmission Projects

OAH DOCKET NO. 15-2500-19350-2
PUC DOCKET NO. CN-06-1115

Minnesota Public Utilities Commission
121 Seventh Place East
Suite 350
St. Paul, Minnesota

Met, pursuant to Notice, at 9:30 in the morning on July 17, 2008.

BEFORE: Judge Beverly Jones Heydinger

REPORTER: Janet Shaddix Elling, RPR

APPEARANCES:

MICHAEL C. KRIKAVA and LISA M. AGRIMONTI, Attorneys at Law, Briggs and Morgan, 80 South Eighth Street, 2200 IDS Center, Minneapolis, Minnesota 55402, and PRITI R. PATEL, Assistant General Counsel, Northern States Power Company, 414 Nicollet Mall, Minneapolis, Minnesota 55401, appeared for and on behalf of the Applicants.

GEORGE CROCKER, Executive Director, P.O. Box 174, Lake Elmo, Minnesota 55042, appeared for and on behalf of the North American Water Office and Institute for Local Self Reliance.

PETER R. MAHOWALD, General Counsel, and PETER JONES, Assistant General Counsel, Prairie Island Indian Community, 5636 Sturgeon Lake Road, Welch, Minnesota 55089, for and on behalf of the Prairie Island Indian Community, not present.

CAROL OVERLAND, Attorney at Law, Overland Law Office, P.O. Box 176, Red Wing, Minnesota 55066, appeared for and on behalf of No CapX.

MARY W. MARROW, Staff Attorney, Minnesota Center for Environmental Advocacy, 26 East Exchange Street, Suite 206, St. Paul, Minnesota 55101, appeared for and on behalf of the Minnesota Center for Environmental Advocacy, Wind on the Wires, Izaak Walton League and Fresh Energy.

PAULA GOODMAN MACCABEE, Attorney at Law, Just Change Consulting, 1961 Selby Avenue, St. Paul, Minnesota 55104, appeared for and on behalf of Citizens Energy Task Force.

CHRISTOPHER K. SANDBERG, Attorney at Law, Lockridge, Grindal, Nauen, Suite 2200, 100 Washington Avenue South, Minneapolis, Minnesota 55401, KEITH L. BEALL, Senior Attorney, P.O. Box 4202, Carmel, Indiana 46082-4202, appeared for and on behalf of Midwest ISO.

JOYCE OSBORN and ROGER TUPY, c/o RUSSELL MARTIN, 11600 East 270th Street, Elko, Minnesota 55020, for and on behalf of United Citizens Action Network, not present.

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JUDGE HEYDINGER: Good morning, everyone.
My name is Beverly Jones Heydinger, I'm an Administrative Law Judge.
And we're here for the continuation of the evidentiary hearing In the Matter of the Application of Great River Energy, Northern States Power Company, doing business as Xcel Energy, and Others for Certificates of Need for the CapX 345 Kilovolt Transmission Projects. And today is the 17th of July.
Let's have the representatives of the parties please state their appearances for the record. We'll begin with the Applicants.
MS. AGRIMONTI: Good morning, Your Honor. Lisa Agrimonti and Mike Krikava on behalf of the Applicants. Also seated at the table is Laureen Ross McCalib from Great River Energy, and behind me is Jim Alders from Xcel Energy.
JUDGE HEYDINGER: Thank you.
For the Midwest ISO.
MR. SANDBERG: Good morning, Your Honor. Lockridge, Grindal, Nauen; Christopher Sandberg. Also with me today is Keith Beall, Assistant General Counsel for the Midwest ISO.
JUDGE HEYDINGER: All right. Is there

anyone here today for United Citizens Action Network?
All right. North American Water Office and Institute for Local Self-Reliance.
MR. CROCKER: Good morning, Your Honor. George Crocker for the North American Water Office and Institute for Local Self-Reliance.
JUDGE HEYDINGER: Thank you. Prairie Island Indian Community?
The MCEA and the Joint Intervenors.
MS. MARROW: Yes. My name is Mary Marrow, and I'm here representing four organizations, Wind on the Wires, Fresh Energy, the Izaak Walton League of America, the Midwest office, and the Minnesota Center for Environmental Advocacy. Beth Soholt with Wind on the Wires will be joining me later today.
JUDGE HEYDINGER: Thank you.
For No CapX.
MS. OVERLAND: Carol Overland for No CapX.
JUDGE HEYDINGER: And the Citizens Energy Task Force?
MS. MACCABEE: Paula Maccabee for Citizens Energy Task Force.

JUDGE HEYDINGER: Thank you.
And the Department of Energy Security?
MS. ANDERSON: Julia Anderson, for the Office of Energy Security. With me at the table is Mr. Hwikwon Ham and Christopher Shaw.
JUDGE HEYDINGER: And for the Commission staff today.
MR. JACOBSON: David Jacobson, Bob Cupit, and Andrew Mensing.
JUDGE HEYDINGER: Thank you.
All right. Before we go back to the examination of the witness, Mr. Sandberg, did you wish to address the availability and timing for the MISO witness?
MR. SANDBERG: If I might, Your Honor, thank you. At your suggestion yesterday, I have had discussions with Counsel. I very much appreciate their cooperation and assistance in that. I think in the interest of helping the out-of-town witness, we would greatly appreciate starting Mr. Webb after the lunch break today and then continue until he's done. That also may avoid some scheduling issues that some of the other Counsel have.
JUDGE HEYDINGER: All right. Any comments, objections, to proceeding in that way?

All right. And as I understand it, the Applicants understand that may require a break in the testimony of Mr. Lacey if we haven't completed his testimony at that time. Is that all right, Ms. Agrimonti?
MS. AGRIMONTI: Yes, that's correct, Your Honor.
JUDGE HEYDINGER: All right. Thank you all for your cooperation with the scheduling.
MR. SANDBERG: Thank you, Your Honor.
JUDGE HEYDINGER: Anything additional before the cross-examination continues?
Mr. Crocker, you may proceed with the witness.
MR. CROCKER: Thank you, Your Honor.

MATTHEW LACEY,

after having been previously sworn, was examined and testified further on his oath as follows:

CONTINUED CROSS-EXAMINATION

BY MR. CROCKER:

Q Good morning, Mr. Lacey.
A Good morning.
Q If I could please direct you to where we left off yesterday, which is page 10 of your rebuttal

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testimony that's marked as Exhibit 53, page 12, lines 2 through 4, the last sentence in that paragraph.
A Yes, I'm there.
Q Does this conclusion not consider the availability of harvestable wind throughout the western half and southern third of Minnesota?
A Would you say that again, please?
Q Does this conclusion not consider the harvestable wind resource that exists in the western half and southern third of Minnesota?
A As I alluded to yesterday, I think that what it is saying is that if the Brookings project were put into place, that wind projects that are in the MISO queue are dependent upon that and would use the capacity that's available from that line.
Q Would you agree that there is a harvestable wind resource in more places in Minnesota than along the Buffalo Ridge?
MS. AGRIMONTI: Your Honor, I object. I don't know what Mr. Crocker means by harvestable.
MR. CROCKER: Well, Your Honor --
JUDGE HEYDINGER: It's probably a good idea for you to explain the term in this context, Mr. Crocker.

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BY MR. CROCKER:
Q If I were to say to you, Mr. Lacey, that harvestable wind resource means a wind resource that is sufficient to generate enough revenue from the harvest of that wind resource, such that the project harvesting that resource would be economically viable in that it would provide economic or competitive power to the purchaser, along with enough revenue to make it worth the investment for the project developer, would that be a reasonable definition of harvestable wind?
A Yes.
Q Thank you.
JUDGE HEYDINGER: And, actually, I do think it's important, because not all harvest is economically viable and so I think you are making that assumption in this question. Is that correct, Mr. Crocker? Economically viable in the sense that the producer is getting paid a price that he can afford to produce and the purchaser is buying at a price he can afford to pay? Is that implicit in your definition?
MR. CROCKER: Your Honor, from my experience and my observation, why, it is implicit in the market within which we operate that

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investment will not be made, cannot be made, the financing will not be available.
JUDGE HEYDINGER: Yeah, I understand that, I don't want to argue about that, but you used the term harvestable, and then you said in your definition that it was implicitly marketable and I want to make sure that's clear.
MR. CROCKER: That is correct, Your Honor.
JUDGE HEYDINGER: Okay.
BY MR. CROCKER:
Q Would you agree, Mr. Lacey, that there is -- wind resources are sufficient to support utility-scale, economically-viable wind development in more places in Minnesota than just along Buffalo Ridge?
A I think that's true. There are wind projects that are located in other areas of the state and of the Upper Midwest region.
Q And that would include a significant portion of the western half of Minnesota, the southern third of Minnesota and elsewhere at specific locations around the state, would you agree?
A Generally speaking, yes.
Q Thank you. Now, I note that your Exhibit 53 was filed on June 16th; is that correct? Of this year?

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A That is true.
Q And, therefore, you did not have available to you at the time of preparing this testimony the results of the Dispersed Renewable Generation Transmission Study; is that correct?
A I'm not exactly sure what day that that report was released.
Q Did you rely on that report for the preparation of this testimony?
A No, I did not.
Q Were you aware of the findings of that study when you prepared this testimony?
A No, I was not.
Q Are you aware of the primary finding of that report as you sit here today?
A I guess I would say that I'm aware of the intent of the report.
Q If I were to report to you that the primary conclusion was that 600 megawatts of dispersed generation capacity could be strategically located throughout Minnesota without new transmission infrastructure requirements, would you have reason to disagree with that?
MS. AGRIMONTI: Your Honor, objection, no foundation, and also the document speaks for itself.

JUDGE HEYDINGER: Well, two things. You'll have to remind me whether we have that document in the record yet, but --

MS. AGRIMONTI: The document came in with the first witness.

JUDGE HEYDINGER: All right. I think that this is for the purpose of a hypothetical question, is it not? You're asking based on that premise, Mr. Crocker, and then apparently some question for the witness?

MR. CROCKER: That's correct.

MS. AGRIMONTI: Your Honor, I misspoke. That document isn't in the record, I thought that --

JUDGE HEYDINGER: It's not?

MS. AGRIMONTI: No, it's not. I misspoke.

JUDGE HEYDINGER: All right. Let's -- for the moment let's treat it as a hypothetical question, if the findings were such and such. You can go ahead and ask him his opinion if that's what you're seeking to do.

MR. CROCKER: Thank you, Your Honor.

BY MR. CROCKER:

Q In the hypothetical, Mr. Lacey, that the DIG Study concluded that 600 megawatts of dispersed generation

could be strategically located throughout the state with no new transmission, would that -- would that -- well, let me ask it this way.

How does that square with your conclusion that more outlet capacity from Buffalo Ridge is needed to meet RES milestones?

A The 600 megawatts that you're referring to would not be enough renewable generation to meet the needs identified for Minnesota utilities for purposes of meeting the Renewable Energy Standard.

Q Okay. But that's not what your statement says. Your statement says RES milestones, does it not, on line 3?

A Yes, it does say that.

Q Okay. So it's not like it has to all happen at once, is it?

A That's true, there's a series of milestones, yes.

Q And so it's conceivable, isn't it, that milestones could be reached without new outlet capacity from Buffalo Ridge; would you agree?

A I -- it would depend on what those milestones were and the timing of the additions of generation that did not rely upon this particular line.

Q Well, the milestones -- it's my understanding the milestones are what they are. So you would agree

that it's possible, wouldn't you?

JUDGE HEYDINGER: Well, Mr. Crocker, if I'm not mistaken -- are you assuming in your hypothetical -- well, I guess you're not assuming that, the milestones are hypothetical, and those are company by company; are they not?

MR. CROCKER: That's correct.

JUDGE HEYDINGER: So it seems to me that has to be factored into the question that you're asking here.

MR. CROCKER: Thank you, Your Honor.

BY MR. CROCKER:

Q Is it possible for any utility system in Minnesota that has an RES obligation with milestones, to meet some of those milestones without relying on additional transmission power capacity from Buffalo Ridge?

MS. AGRIMONTI: Your Honor, objection. Utility systems do not have RES obligations.

MR. CROCKER: Pardon my unartful question, Your Honor. Utility companies.

JUDGE HEYDINGER: Go ahead. You can answer if you can, Mr. Lacey.

THE WITNESS: I guess you could do without relying on the Buffalo Ridge, but you would

need to rely on other areas within our region.

BY MR. CROCKER:

Q Thank you. Mr. Lacey, if I could please refer you back to page 10 of your rebuttal testimony?

A Yes.

Q And I'm looking at lines 8 through 13, which includes the response to the North American Water Office Information Request Number 7; do you see that?

A Yes, I do.

JUDGE HEYDINGER: I'm sorry, Mr. Crocker. I lost track of the page you said.

MR. CROCKER: I'm sorry, Your Honor. Page 10, line 8.

JUDGE HEYDINGER: Thank you.

BY MR. CROCKER:

Q Would you agree that the response to NAWO 10, shown in your rebuttal on page 8, represents the Applicants' most recent effort at creating a reasonable forecast offered in this record?

A Yes.

Q Is this the forecast scenario that utility resource planners are using to determine future needs?

A There's two forecasts here.

Q Okay. Are these the forecasts? I'm sorry.

A These, in aggregate, are the utility forecasts that the utilities are using.
Q And you would agree, wouldn't you, Mr. Lacey, that one of the factors that will determine the ultimate accuracy of a forecast over time has to do with the performance of the overall economy?
A To the extent, yes, that forecasts take into account incomes of customers, yes. And those incomes will be dependent upon the overall economy.
Q And recognizing that it's not a straightforward or necessarily a linear process, but by and large the less money consumers have, the less energy they're likely to consume; is that correct?
A Yeah, I would say it's generally accepted that there's a negative correlation between a person's income and their energy consumption.
Q And by a negative correlation, you mean that the less money they have, the less they consume?
A Oh, excuse me. But you're right.
Q Thank you. Just so the record is clear, could I have the question, the original question about this, repeated by the court reporter with your response?
(Whereupon, the question and answer were read back by the court reporter.)
BY MR. CROCKER:

Q And so, Mr. Lacey, the missed word there is negative correlation, right?
A You're correct. I misspoke.
Q Okay. So as a positive correlation, the less money, the less consumption; is that correct?
A Correct.
MR. CROCKER: Okay. No further questions, Your Honor.
JUDGE HEYDINGER: Ms. Marrow.
CROSS-EXAMINATION
BY MS. MARROW:
Q Good morning.
A Good morning.
Q I just have a few questions. First of all, I want to direct you to page 10 of your direct testimony. And starting on line, I guess, 12 or 13, maybe it's 12, you include a discussion of the Gap Analysis?
A Correct.
Q And I was just wondering if you can just describe generally what was included in this Gap Analysis and what the report that was filed ultimately said?
A Okay. The Gap Analysis that was provided by the Minnesota Transmission Owners described the amount of energy needed -- renewable energy needed by Minnesota utilities to meet --

MS. MACCABEE: Your Honor, I just have a question for clarification. Is this document in the record, the report by the Minnesota Transmission Owners?
JUDGE HEYDINGER: We'll have to go back and check. Perhaps one of the parties can tell me whether it is a schedule or attachment to any of the witness's prefiled testimony?
MR. KRIKAVA: Judge, Mike Krikava, for the record. It is not. It is, I believe, however, part of the 2007 Biennial Transmission Plan, which Mr. Cupit talked yesterday about including in the record as an exhibit in this proceeding. And so I think once that occurs procedurally, then the Gap Analysis portion will then be in the record.
JUDGE HEYDINGER: Ms. Marrow, we had anticipated placing that in the record at any appropriate moment, actually. And Mr. Cupit has made arrangements for it and I think he explained that on the record yesterday. It's up to you whether you wish to offer it into the proceeding at this time or not. I mean, I don't want to -- I don't know to what extent you're relying upon it with this witness and would ask him to evaluate it.
MS. MARROW: Your Honor, I'm flexible on

that. If it would facilitate people following along with Mr. Lacey's general kind of explanation of the report, I'm happy to have it entered into the record. Right now I wasn't going to go into it in specific detail and I wasn't sure if Ms. Maccabee had an objection to us referencing the report without it being in the record and, if so, we should put it in at this time.
MS. MACCABEE: I would ask that it be produced at this time because it's becoming clear that this witness is relying on a report that was conducted by others and it's difficult for those of us who don't have the report to evaluate what the foundation is for it.
MR. JACOBSON: Your Honor?
JUDGE HEYDINGER: Yes, Mr. Jacobson.
MR. JACOBSON: Your Honor, we've checked the report and the MTO report, and there is a section that discusses it, but we do not believe that the report itself is in there. There's a fairly extensive discussion of the Gap Analysis, but we don't think -- if there was a separate report, we don't think that's it.
JUDGE HEYDINGER: Let's go off the record for just a minute to talk some more about where we

might find this and then we can determine if we need it in the record at this time or if we can come back to it.

(Discussion held off the record.)

JUDGE HEYDINGER: Back on the record.

After some discussion, I believe that the witness has located the -- or verified that the Gap Analysis that he was relying upon was an attachment to the transmission report.

Mr. Cupit, do you want to identify that report for the record and we'll have it marked and offered.

MR. CUPIT: Thank you, Judge.

Yes, the report is the 2007 Minnesota Biennial Transmission Progress Report filed with the Public Utilities Commission on November 1st, 2007 in docket number 07-1028. It includes both the required biennial filing, as well as a part two entitled Renewable Energy Standards Report, which was required by 2007 legislation. And we have, as well, the final order of the Commission in that docket dated -- entitled Order Accepting Reports, Granting Variance, Requiring Further Filings and Future Filing Requirements in docket 07-1028 dated May 30th, 2008.

JUDGE HEYDINGER: All right. But those are two separate documents?

MR. CUPIT: They are.

JUDGE HEYDINGER: All right. Then let's have the first marked by the court reporter, please.

(Whereupon, Exhibit 54 was marked for identification by the court reporter.)

JUDGE HEYDINGER: All right. We've marked for identification the 2007 Minnesota Biennial Transmission Projects Report, dated November 1st, 2007. And I believe we discussed yesterday that the parties prefer to have that added to the record and so at this time it will be received.

(Exhibit 54 offered and received.)

JUDGE HEYDINGER: And the Commission's order in the same docket, dated May 30th, 2008, we'll have marked for identification as Exhibit 55.

(Whereupon, Exhibit 55 was marked for identification by the court reporter.)

MR. CUPIT: Judge, if I can inquire how many copies of the CD that might be requested by the parties?

JUDGE HEYDINGER: Show of hands, please, for Mr. Cupit?

MR. CUPIT: Okay. Seven. We'll have those shortly and we'll distribute those to the parties.

JUDGE HEYDINGER: All right. Any objection, then, to the receipt of what's been marked for identification as Exhibit 55? Exhibit 55 is also received.

(Exhibit 55 offered and received.)

JUDGE HEYDINGER: Now, I realize we had a little break in the action here. At this time perhaps you want to ask the witness just to verify that the Gap Analysis he was speaking of is that which has now been added to the record as Exhibit 54.

BY MS. MARROW:

Q Mr. Lacey, do you have before you what's been marked as Exhibit 55 (sic), the 2007 Biennial Transmission Report?

A Yes. That's 54, I believe.

Q And you have -- in your direct testimony you reference a Gap Analysis and discuss that; is that correct?

A Correct.

Q Is this same analysis contained in Exhibit 55 -- I'm sorry, 54?

A That is correct.

Q And could you please indicate where in this report it is, just for ease of reference?

A Beginning on page 259.

Q Thank you. I think before we got a little sidetracked I had asked you if you could please briefly describe what's contained in this analysis and what the report that was filed actually said?

A Right. The Gap Analysis takes a look at what renewable energy production the Minnesota utilities currently have. Then it takes into account the milestones that are laid out in Minnesota statute. And what it does is create a -- calculates the difference between what the utilities have today and what will be needed to meet each of these specific milestones at that period in time.

Q And, Mr. Lacey, when you're talking about milestones, you're referencing the milestones in the Minnesota Renewable Energy Standard as part of that?

A Correct. And, then, so given a deficit, in that we don't have enough renewable energy at this time to meet future requirements, the Gap Analysis calculated how much energy is required, and then how much wind capacity -- wind nameplate capacity would be required as well using various assumptions about

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future energy forecasts of the utilities, as well as assumptions about the capacity factor of the wind that would be used to meet it. So, given that, there's, I believe, six different values, depending on combinations of those assumptions.

Q Thank you. And since the CapX application was filed, have the renewable requirements for Minnesota increased or decreased?

A Since the filing of the application?

Q Yes.

A I guess I don't totally understand the question.

Q Since the original studies for the CapX transmission lines were conducted, have the renewable energy requirements for Minnesota utilities increased?

A Since the Vision study was created, the Renewable Energy Standards have been increased for Minnesota utilities, yes.

Q And when you're testifying about the forecasts of load growth moving towards 2020, correct, the time frame that you're considering?

A My testimony includes forecasts up to 2020, yes.

Q Okay. And as your testimony indicates, you're anticipating there will be significant load growth?

A That's correct.

Q And in your opinion, do you believe that additional

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new generators will need to come on line to serve that load growth?

A Yes.

Q And so do you think it's fair to say that, given the Renewable Energy Standard requirements and the anticipated load growth, that additional renewable generators will need to come on line by 2020?

A Yes.

Q And so do you agree that these three new proposed transmission lines will facilitate the ability of the Minnesota utilities to meet the Renewable Energy Standards?

A Yes.

Q And by serving that load -- by serving that load growth?

A Again, please.

Q I'm sorry. And so in addition to helping them -- the CapX transmission lines are going to facilitate meeting the Renewable Energy Standard by helping utilities meet that projected load growth?

A Yes. The projects in this proceeding will be used to meet generation outlet to serve load growth of the utilities in this region, yes.

MS. MARROW: Okay. No further questions.

MR. KRIKAVA: Your Honor?

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JUDGE HEYDINGER: Mr. Krikava.

MR. KRIKAVA: Could I inquire of Counsel to revisit the scheduling question from this morning? If I could inquire as to the expected potential duration of remaining cross of Mr. Lacey, I'm going to need to let Ms. McCarten know to get over here if it turns out that Mr. Lacey gets done more quickly than we thought, or possibly, I have made inquiries with Mr. Sandberg about the possibility of the MISO witness going on even earlier. But before I go too far with this I wanted to inquire and ask the parties kind of where they think they're at.

JUDGE HEYDINGER: All right. I think we still have questioning on cross from No CapX, Citizens Energy Task Force, the Department, any redirect, recross, and questions from the staff and from me.

So let's start with No CapX. Do you have an estimate of the --

MS. OVERLAND: It's nominal for this witness.

JUDGE HEYDINGER: Pardon me?

MS. OVERLAND: It's nominal.

JUDGE HEYDINGER: Ms. Maccabee?

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MS. MACCABEE: Your Honor, not a great deal of cross-examination. I'm quite likely to get it done before noon.

JUDGE HEYDINGER: Is Mr. Webb here?

MR. SANDBERG: Your Honor, I allowed Mr. Webb to sleep in this morning after his trip in. But I did say he should be here by mid-morning and we're just trying to call his hotel right now.

JUDGE HEYDINGER: Okay.

MR. SANDBERG: He's six blocks away, but he may be still horizontal.

JUDGE HEYDINGER: Well, I can't imagine that we're going to call him in less than an hour for certain, so I would say let's not worry about Ms. McCarten. If it turns out we need to take an early lunch break or something, we'll do that.

MR. KRIKAVA: Thank you, Your Honor.

JUDGE HEYDINGER: Because I think it's uncertain whether we would have her on the stand and for what period of time before we get to Mr. Webb.

MR. KRIKAVA: That's a good point.

JUDGE HEYDINGER: Mr. Crocker.

MR. CROCKER: Your Honor, I am expecting to deal with Mr. Webb this afternoon. I would very much appreciate the opportunity to have my team in

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place for that, and Mike Michaud will be here this afternoon, but he won't be here before it.

JUDGE HEYDINGER: I understand. And we're juggling a little bit here, and so, like I say, we may adjust the length of the lunch break or the timing of it. I understand that everyone is trying their best to make arrangements for their teams to be available, so we'll take that into account as well. But I would suggest for now that we continue with Mr. Lacey, and if we've got a little extra break, well, so be it.

MR. KRIKAVA: This is very helpful feedback, Judge, thank you very much.

JUDGE HEYDINGER: Okay. Is everyone comfortable with that? I think we've been moving along as best we can, but I hate to drag her over here for a half hour of testimony and then she takes a break for, what, two days or something? That's hard to say.

All right. Let's continue.

Ms. Overland.

CROSS-EXAMINATION

BY MS. OVERLAND:

Q Good morning, Mr. Lacey.

A Good morning.

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Q I had a question of Mr. Rogelstad and he referred it to you so I will start with you on this.

In your rebuttal testimony, page 8, on your Updated Figure 6-6?

A Yes.

Q Okay. When you compare the CapX Vision plan, which has expected and slow growth of 6,287 megawatts and 4,500 megawatts, respectfully, with the integrated resource plans, which is high and medium, not high and slow growth, but that ranges from 4,904 to 4,095, what's missing there is essentially 1,400 to 2,200 megawatts. And so what I'd like to know is what makes up the difference between the CapX Vision plan and the integrated resource plans that are listed here?

A There's nothing that makes up the difference. The difference comes from the timing of different forecasts that you see here. The forecasts -- the high and medium forecasts that are under the integrated resource plan, or the Forecast Source column, those numbers are more recent than the values used in the Vision study, because in the Vision study, that was created in 2004, so I believe the most recent date they would have had would be 2003.

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Q So what you're saying is that the older dates are in the CapX Vision plan and so that that's higher because of that? Because they're not up-to-date numbers?

MS. AGRIMONTI: Objection, mischaracterizes his testimony.

JUDGE HEYDINGER: Sustained. He said it based on different data.

BY MS. OVERLAND:

Q Was your testimony that they were based on different dates of data?

A Well, they're based on different dates of data and the data themselves will be different as well.

Q And the CapX Vision plan was circa 2003, correct?

A The CapX Vision study data, the last year of historical data in there would be 2003.

Q And then the integrated resource plans, that range was what?

A Well, that's going to depend on the timing of each individual utility's resource plan. So if we take the case of Xcel Energy, Xcel Energy filed their most recent resource plan in December of 2007.

Q Now, is it correct, though, that that plan doesn't have a result yet? That plan is not completed, it's not gone through the Public Utilities Commission

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process at this point?

A I don't know of an order in that proceeding.

Q And so, then, with the most recent Xcel order that could have been used was the 2005 or '04 resource plan?

A I'm not sure of the day of that resource plan, but, I mean, there's definitely a prior Xcel resource plan. That data from the prior Xcel resource plan would be included in my direct testimony.

Q And that would have been the resource plan where 375 megawatts that went in the RFP, would that be the resource plan?

MS. AGRIMONTI: Objection, foundation.

JUDGE HEYDINGER: Sustained.

MS. OVERLAND: I'll say it another way.

BY MS. OVERLAND:

Q The last Xcel resource plan, are you familiar with the result of that, the order in that?

A No, I'm not.

Q Yet this data was used. What portion of this 4,900 to 4,095 represents the Xcel resource plan?

A Which resource plan are you talking about?

Q The last Xcel resource plan that doesn't have an order with it. Not the 2007 one, which has not been resolved yet.

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A This 4,900 number in this Figure 6.6 does not have Xcel's forecast from, I think it's the 2005 IRP.
JUDGE HEYDINGER: Does not?
THE WITNESS: Does not.
BY MS. OVERLAND:
Q So that is not -- Xcel's latest IRP is not included in this resource plan, these resource plans that are listed here?
MS. AGRIMONTI: Objection, mischaracterizes the testimony.
JUDGE HEYDINGER: I think we need to go back and get this clarified as to which resource plan you're asking about and which one Mr. Lacey is responding to, just so we're clear. For the sake of description, are you talking about the '05 resource plan as opposed to the '07 resource plan?
MS. OVERLAND: Right. Because as he's testified, there is no order for 2007.
JUDGE HEYDINGER: That doesn't mean they didn't include forecasts in that submission, so I think we need to be clear.
MS. OVERLAND: Okay. Let's go there.
BY MS. OVERLAND:
Q The forecasts that you used, were they from the 2007 plan for Xcel? Were those the forecasts used,

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Mr. Lacey?
A Yeah. In the integrated resource plan here, the 4,904 and the 4,095 numbers include forecast values from Xcel's most recently approved resource plan.
Q And the date of that approved resource plan would be?
A Again, I think it's their 2005 IRP, or 2004.
Q So the 2007 that has not been approved yet was not used in this data?
A That is correct.
Q And are you familiar with the result of that? The approval determination by the PUC of that resource plan? Or 2005 resource plan?
A Am I aware with respect to what?
Q Of the conclusions?
A No, not all of the conclusions.
Q Are you aware of the order to go out for an IRP for 375 megawatts?
A No, I'm not.
Q In that amount, what amount have you used as Xcel's portion of this 4,095 to 4,904 based upon -- first, what have you used as the number representing Xcel's load?
MS. AGRIMONTI: Objection, vague.
JUDGE HEYDINGER: Try again,

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Ms. Overland.
BY MS. OVERLAND:
Q In that 4,095 to 4,904 load growth by 2020 that you are attributing to integrated resource plans, what number do you attribute to Xcel based on their 2005 integrated resource plan?
A It's in the application. What I'm looking right now is to see if it's in any of my schedules. I don't know off the top of my head, though.
Q Could you point to it in the application?
JUDGE HEYDINGER: The application is beside you, Mr. Lacey, if that helps. Both volumes.
THE WITNESS: I'm looking in the Application, Volume 1. Page 6.10 includes Figure 6-4 --
BY MS. OVERLAND:
Q Just start again. Volume 1?
A Page 6.10.
Q Okay. And that would be the Northern States Power?
A Yeah. I would just clarify for all of us here that Figure 6-4 on that page is entitled Medium Resource Plan Forecast, and if you look on page 6.11, the total equals 4,095, which corresponds to what's included under integrated resource plans in my rebuttal testimony.

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Q Now, are you aware of Xcel filing for a Notice of Changed Circumstances in this docket, this 04-0752 docket?
A No, I'm not.
Q And so that filing has not been taken into account for this analysis?
A This -- well, again, refer to 6-4 in the application. For Northern States Power there's a forecast there and, as I indicated, I didn't use just the forecast that NSP provided in their resource plan. I was more conservative and I used the forecast that the Office of Energy Security had modified to take into account issues they had identified with Xcel's forecast. And that forecast that's shown in this Figure 6-4, modified by the OES, is lower than what was in Xcel's forecast.
Q And then you did not rely, then, on the Commission order in that docket for this number?
A I have looked at that order. If I recollect correctly, there is not a -- there is not a forecast in that order.
Q Do you recall any findings regarding need in that order?
A No.
Q And then you did not rely, then, on findings of need

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in that order for this number, correct?
A Again, this number was -- these numbers for Northern States Power, in this particular figure, are taken from the comments produced by the Office of Energy Security in their review of Xcel's resource plan.
Q And that is all?
A That is all.
Q Now, would you agree that Xcel's the largest utility in the state?
A Yes.
Q And would you agree that they have the largest load growth of any of these listed in Figure 6.4 -- 6-4?
A That's true, yes.
MS. OVERLAND: I think I'll just leave it there. No further questions.
JUDGE HEYDINGER: Thank you. Ms. Maccabee.
MS. MACCABEE: Your Honor, would it be appropriate to take a five-minute break?
JUDGE HEYDINGER: We can.
MS. MACCABEE: Thank you.
JUDGE HEYDINGER: All right. Let's give the court reporter 15 minutes, rather than five minutes. That would be a much more appropriate break. Thank you.

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(Break taken from 10:28 to 10:41.)
JUDGE HEYDINGER: Ms. Maccabee, you may cross-examine the witness.
MS. MACCABEE: Thank you, Your Honor.
CROSS-EXAMINATION
BY MS. MACCABEE:
Q Good morning, Mr. Lacey.
A Good morning.
Q Do you remember this morning when you were talking to Mr. Crocker that you talked about the Brookings transmission line and whether that project would support load growth and new generation needed to meet the Renewable Energy Standard? Do you recall that testimony?
A Yes.
Q Would you agree that the Brookings transmission line is the only one of the three projects proposed in this proceeding that is needed to support new sources of generation for load growth and to meet the RES?
A I think all three lines are designed to help support load growth throughout the region, and generation outlet.
Q Okay. I appreciate the clarification. Mr. Lacey, I understand that you currently work for Great River

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Energy as a regulatory policy specialist?
A Correct.
Q And previously that you worked for GRE as a resource planner supporting development of generation resources to meet energy and demand needs?
A Correct.
Q And before that you worked for the Minnesota Department of Commerce as an electric rates analyst?
A Correct.
Q And in that capacity you were responsible for analyses and recommendations regarding certificate of need applications and conservation, among other issues?
A Correct.
Q So would it be fair to say that you're familiar both with the requirements for certificate of need and also with Minnesota requirements for conservation?
A Yes.
Q I believe you testified in your direct testimony on page 2, line 14, that the CapX 2020 member utilities expect significant demand growth necessitating significant electronic transmission improvements. Have you found that testimony, sir?
A Yes, that is correctly quoted.
Q Would you agree that in a certificate of need

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process, the applicant is required to demonstrate the need for the specific facilities proposed, not generally that transmission improvements are needed?
A I'd agree that when you come in for a certificate of need application you have a specific -- you're identifying a specific need.
Q And that in order for a project to receive a certificate of need there has to be a need for that specific proposal?
A There are a number of -- there are a number of issues -- there are a number of criteria in Minnesota statute and rule that identify what you need to show in order to demonstrate that need.
Q And is one of the criteria that you'd need to show coming forward with a transmission project or another large energy facility, that the demand for electricity cannot be met more cost-effectively through energy conservation and load measurement measures -- I'm sorry, load management measures?
MS. AGRIMONTI: Your Honor, I'm going to object. We had a series of questions and objections yesterday about whether this calls for a legal conclusion, and while she's asked it in a very general sense I think it's aimed to ask for a specific legal opinion from Mr. Lacey as to whether

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it applies here.
JUDGE HEYDINGER: Ms. Maccabee.
MS. MACCABEE: Your Honor, the witness just testified that he's aware of a number of criteria in Minnesota statutes and rules that you need to show in a certificate of need proceeding. So I'm just inquiring which ones he's familiar with, since he's already stated that.
JUDGE HEYDINGER: I think that's within the scope of this witness's prior testimony so I'll allow the answer.
MS. MACCABEE: Should I ask it again? Particularly since I spilled over a word?
JUDGE HEYDINGER: That's fine. Ms. Agrimonti will have another chance to object, though.
BY MS. MACCABEE:
Q Are you aware that the Minnesota certificate of need process, among the criteria, requires an applicant to show that the demand for electricity cannot be met more cost-effectively through energy conservation and load management measures?
A Yes, I believe there's such criteria.
Q Can you explain the difference between conservation and load management?

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A Well, load management would be either reducing your -- the amount of energy consumed in any particular period of time and shifting it to a different period of time, and conservation would be the efficiency of new products of more efficient lighting, an Energy Star refrigerator, things along those lines.
Q So if I understand correctly, conservation reduces overall demand?
A The way I think of conservation is conservation is generally an energy term so you would be reducing your energy consumption. Now, to the extent that that energy consumption takes -- takes place over the time of your peak, to the extent you have a more efficient motor in place over the system peak, then by definition you would reduce demand by some amount.
Q And if I understand, what you're explaining is that load management reduces consumption at a particular time, so it might reduce peak demand and it may or may not reduce overall consumption? Is that fair enough?
A Yeah, I would agree with that.
Q Based on your experience, how would you include conservation and load management and planning

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efforts for generation and transmission?
A Well, for generation resource planning, the way -- I can only speak for GRE, but the way we've done it while I was in a resource planning position there was we went through a process with a consulting agency, and what they did was help us identify what -- what the potential energy conservation on our system would be given what we already had done for energy conservation efforts in the past. And with some knowledge of what our future demand would be, what our future customer base would be, what the future customer base's energy consumption would be. And to determine what the potential is between what people have already done for energy conservation and what may be possible in the future given more consumers, for example. And look at, so now you have a basket of energy. From there you have to -- all these energy conservation measures you can take, they'll have different costs associated with them. Some are more expensive than others. And they also have -- they also have some ability to reduce demand again, depending on when that energy efficiency measure is used.
But in this case we had a basket of potential energy savings and corresponding demand

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savings, and we had costs associated with that. So what would be the cost of implementing those. And then we were able to put them in a capacity expansion model, which looks at different types of generation resources and allows for those resources to be put in at a different time. And in this case we looked at what was the -- what was the potential for these particular conservation resources to be used as a resource alongside traditional supply-side resources.
Q And if I understand your testimony, that was, Mr. Lacey, when you were looking at whether or not generation needed to be built and, if so, what size?
A That's correct.
Q And so looking at the basket of alternatives for conservation and the costs associated, one could determine not only if generation had to be built, but what would be the appropriate size, balancing out against the cost of effective conservation?
A In the example I gave, yes.
Q Now, are you familiar with a similar kind of analysis being done when transmission improvements are being proposed?
A I'm not aware of a similar -- of a similar-type analysis. To my understanding of the way the

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transmission planners plan, is that they are provided a load forecast and they design the system around that.

Q Now, would you say that your effort in responding to the North American Water Office Interrogatory -- Information Request Number 7 was an attempt to look at how overall rates of conservation could affect a forecast? Would that be a correct statement?

A I think you'll have to be more specific because I know we have a supplement to number 7, and I believe number -- IR Number 7 was a multipart question.

Q Okay. Let me back up a little bit. If a transmission project were needed for systemic load growth over a period of years, would you look at the overall rates of conservation by the utilities involved to determine whether conservation could reduce the need for a facility?

MS. AGRIMONTI: Your Honor, lack of foundation. She's asking transmission planning questions.

JUDGE HEYDINGER: Could you reread the question, please.

(Whereupon, the question was read back by the court reporter.)

JUDGE HEYDINGER: I think that is a

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transmission planning question, but I think from a foundation point of view, Ms. Maccabee, the question is would this witness have taken that into account in the work that he does, or is that outside of the scope of his analysis?

MS. MACCABEE: Yes, Your Honor.

BY MS. MACCABEE:

Q If at any time I'm asking you a question that's outside of the scope of things you know based on your expertise, feel free to just tell me that and I'll move on.

A Yeah, I think, as I responded before, the transmission planners, as I understand it, takes a load forecast developed by the forecasters of the utility and goes from there, but beyond that I don't have any knowledge.

Q And perhaps we can turn back to the rebuttal testimony, that updated Figure 6.6 on page 8. And looking at the row that says IRP per NAWO IR Number 7?

A Yes.

Q In coming up with the load growth forecasts in this row, did you make an effort to take into account the forecasts that include conservation? And I'm looking at both the column and then the three

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asterisks below.

A Yes. For those -- in IR Number 7, we supplemented IR Number 7 to NAWO, and in there I provided forecasts, the most recent forecasts available at the time that we supplemented that IR. And as I've indicated, the updated forecasts included in there were NSP's most recent resource plan from December 2007, something from Otter Tail, Minnesota Power's most recent forecasts for their most recent resource plan and, in addition, forecasts from Dairyland Power Cooperative's most recent resource plan. So I'd say yes.

Q And your understanding is that those four utilities did appear to take into account the recent 1.5 percent overall conservation statute?

A Not entirely. I believe Minnesota Power, Otter Tail Power and Xcel Energy did. For Dairyland Power Cooperative, in examining their forecast, it was not clear that they had included anything to account for that one-and-a-half percent conservation statute. And --

Q Just to make sure I understand the record. These updated resource plan filings haven't been reviewed yet by the Minnesota Public Utilities Commission; is that correct?

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A They have not been fully reviewed, is my understanding. The point of providing those forecasts was to provide the most recent forecasts that were available, with the understanding that they have not been fully reviewed by the Commission.

Q Given how recent they are, did you have the benefit of having the OES office comment on these recent forecasts, or is that information not yet available?

A I did look at it. At the time I looked there were no OES comments on the -- on those IRPs.

Q I'm just asking because you mentioned today that in your earlier forecasts, the ones that are reflected in the application in Figure 6.4, you reduced NSP's forecast based on comments from the OES staff. And I'm not going to predict what OES staff might comment, but those comments are not yet available yet; is that correct?

A It's my understanding that OES comments for Xcel's most recent plan are not available, yes.

Q Now, the projects were needed or asserted to be needed due to peak load growth in a defined geographic area. What analysis do you think would be required to determine if there was a conservation or load measurement -- load management measure that could meet all or part of the demand for that

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project?
MS. AGRIMONTI: Your Honor, same objection with respect to switching from a forecasting subject matter to a transmission planning subject matter.
JUDGE HEYDINGER: I think it's both, Ms. Agrimonti.
Ms. Maccabee, are you asking would it change the -- would you look at those conservation and demand-side management possibilities in projecting future load growth? Is that what you're asking?
MS. MACCABEE: That would have been a much more artful way to ask the question.
JUDGE HEYDINGER: I'm not trying to put words in your mouth.
BY MS. MACCABEE:
Q If a project were needed due to -- or asserted to be needed due to peak load growth in a defined geographic area, would you look at conservation and demand-side management to verify or predict the forecasts in that area?
MS. AGRIMONTI: Your Honor, I'm sorry, same objection. She appears to be setting up a scenario where a project, a transmission project is

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needed, and then asking Mr. Lacey to give an opinion as to whether somebody would look at DSM or other measures that would be alternatives to that project. And what Mr. Lacey is testifying to is based on his understanding, as the forecasts are provided to the transmission planners, and then the transmission planners make the decisions from there.
JUDGE HEYDINGER: That's correct, that's his testimony. I guess I'm just not sure, Ms. Maccabee, and you perhaps will have to try again, whether you're asking, in making the load forecasts that goes to the transmission planners, do the forecasters take that into account, or are the transmission planners expected to take them into account, which then goes to Ms. Agrimonti's objection, I think.
MS. MACCABEE: Maybe it's better to break it down into two pieces.
BY MS. MACCABEE:
Q Let's start with in making the load forecasts to determine whether a project is needed, a transmission project is needed to address peak load growth. Is it necessary to take conservation and demand-side management into account in making those forecasts?

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A I believe that the forecasts, as they're created, do take those into account.
Q But that would be a question that you would want to inquire into and find out what, in fact, was taken into account, in terms of conservation and demand-side management?
JUDGE HEYDINGER: You being who in that case? You, the forecaster or --
BY MS. MACCABEE:
Q Yes. You, the forecaster?
A The way I understand the question is that you're asking if you had a forecast and then you had a need and now you're going to go back and try to reduce that need with conservation or load management or something. Is that correct?
Q That would be one way.
A Well, I'm just trying to understand your question. I'm sorry.
Q I just wanted to understand, in order to state that there's a need for a project based on the forecast, as I understand your testimony, what you said is that the forecast should take into account conservation and load management. Did I understand --
A That is correct, yes.

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MS. AGRIMONTI: Your Honor, I know I'm a little late for the objection, but where I'm running into trouble here is a need is determined by system planners. Mr. Lacey's job or his understanding is to identify what the demand is and the need for a new project would be determined by the transmission planners to see if there was additional facilities that are required to serve that additional load.
JUDGE HEYDINGER: Ms. Maccabee, was that implicit in your question? I'm not sure.
MS. MACCABEE: Your Honor, I'm not trying to talk about silos here. I think this witness just explained the basic principle that need is based on forecasts and forecasts have to take into account conservation and demand-side management. Anything more sophisticated about the subtleties of energy, job descriptions, is not part of my question and is not necessary for --
JUDGE HEYDINGER: But you can understand Ms. Agrimonti's point, which is the witness has already testified that the forecasters aren't predicting a need for new facilities, per se, they're just forecasting load growth, and someone else decides whether that load growth will warrant new facilities. I think that's the point she's

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trying to make and why she's concerned when you say, in determining the need for new facilities, would this witness, who isn't, arguably, at least I think that's his testimony, determining that need.

MS. MACCABEE: And I think what we've dealt with so far is just that the determination of need is based on the forecast and that forecast includes conservation and demand-side management and that's as far as I was intending to go with it.

JUDGE HEYDINGER: Okay. And I think that's been answered.

BY MS. MACCABEE:

Q Have you conducted any analysis for the forecasting for any of the specific communities involved in the southeastern Minnesota or southwestern Wisconsin study, which is Appendix A-2 to the application?

A The simple answer is no. And I know other witnesses in this proceeding are providing information on the forecasts of the specific load centers identified as needing reliability fixes.

Q Do you know which witness or witnesses are providing an analysis of the forecast pertaining to the southeastern Minnesota, southwestern Wisconsin study? I mean, I looked at the exhibit list and the word forecast didn't appear under anyone else's name

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besides yours.

A As I understand it, each of the transmission planners that are witnesses here, so I believe in the southeast it would be Amanda King.

MS. AGRIMONTI: Your Honor, I can confirm that substation demand forecasts for the area in which Ms. Maccabee is asking about was prepared by Ms. King, she'll be providing testimony with respect to the Fargo project and the communities affected by that project; Mr. Dan Kline has done the substation forecasting compilation.

BY MS. MACCABEE:

Q And with respect to the Red River TIPS studies or the communities involved in the Red River TIPS studies, would it also be the case that you haven't conducted any review of the forecasting pertaining to those communities either?

A I've only provided testimony on aggregate utility forecasts, so nothing -- no.

Q Now, I want to just turn to my favorite chart on page 8, Figure 6.6, of your rebuttal testimony.

A Yes.

Q And if I look at this chart, you projected load growth from 2009 to 2020 to be 4,789 megawatts in the high growth case and 3,919 megawatts in the

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medium growth case; is that correct? That Diet Coke looks really good right now.

A And just to clarify, those numbers are in the row entitled IRP per NAWO IR Number 7?

Q Yes, that's correct. Can you explain what data you reviewed to identify what were the high and the medium growth cases?

A Yes. In each IRP generally there is a medium forecast and then the utility will generally provide a higher forecast as well. So for Great River Energy, for example, we have a -- we use a higher forecast that we call a 90 percent probability forecast, which means that 90 percent of the time the actual forecast -- or the forecast of peak demand will be below that number. So that would be the difference between the high and the medium. The medium would just tell you that half the time you're going to be above and half the time you're going to be below whatever the forecasted number is.

Q Now, does GRE also produce a low forecast in addition to the high and the medium?

A In my time as a resource planner for GRE, we were providing five separate forecasts with different assumptions in them. I do not recall specifically if there was a low.

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Q I'm going to -- is attachment to C-6 to the application one of the documents that you looked at, in terms of a summary of resource plan information, or did you go back to the resource plans themselves?

JUDGE HEYDINGER: Do you want to direct his attention to it?

BY MS. MACCABEE:

Q Yeah, I direct your attention --

A Well, I mean, C-6 doesn't matter. Everything I've identified here I've gathered from each individual resource plan or confirmed through comments created by the OES that no modifications were made, or modifications were made and included those as appropriate.

Q The reason that I'm asking is because that's the only information in resource plans that's readily accessible to those of us who are looking at it. So if you wouldn't mind just turning to that exhibit, because that might help with our understanding. And that's C-6, it's in the second volume of the application. And if you could turn to page 5 of Appendix C-6. Let me know when you find it.

A Yes, I'm there.

Q You were talking about how GRE does -- or at least your understanding is that they do a forecast with

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various ranges of probability, including a medium and a 90 percent and also low growth forecasts. On page 5 --

MS. AGRIMONTI: Objection, Your Honor, mischaracterizes the testimony. Mr. Lacey did not testify that there was a low growth forecast.

BY MS. MACCABEE:

Q Is that correct? If my notes are incorrect, please feel free to --

A That is true, I did not say that.

Q I'm just going to -- then let's just focus on page 5.

A Sure.

Q This is Xcel Energy's forecast. Do you see on this page a forecast that includes both a probability median and then various percentages?

A Yes.

Q And the 90 percent percentage column here, would that reflect what you were discussing before it would -- that it would be a 90 percent probability that the actual forecast would be below this number and 10 percent probability it would be above?

A That is correct.

Q And the probability median is sort of a 50 percent likelihood it will be higher and a 50 percent

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likelihood it will be lower?

A That's correct.

Q At least with Xcel Energy there are also columns for 20 percent and 10 percent. Would these columns for 20 percent or 10 percent be considered to be load growth forecasts?

A I can't characterize what Xcel would consider them. Perhaps -- a low probability of occurring, perhaps -- I'm not sure how they characterize those, though.

Q Now, and what you said for GRE is that there is a -- you know there was a high growth forecast and you weren't sure whether there was a low growth forecast; is that a fair characterization of what you said before?

A Yes, that's correct.

Q Let me find GRE in this document. If you look at page 12 for Great River Energy and going forward.

JUDGE HEYDINGER: Are you on the same exhibit?

BY MS. MACCABEE:

Q Yes, in the same exhibit, in Exhibit C-6. Do you see anything in this document that you could point me to as showing either the high or medium or low growth forecast?

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A Page 12, correct?

Q Yeah. Page 12, I think, begins the data for GRE.

A So what this is is -- I think it's important to go back to, as the transmission planners, as I understand it, they're planning for a peak demand. They're attempting to meet this peak, that there's sufficient transmission capacity to meet this peak.

Along those same lines, the way Great River Energy plans for generation capacity for meeting our members' needs, is we use what's termed here the scenario five forecast. And this would be a forecast that we believe has a low probability of being surpassed on any peak number day or whatever the year may be. And so this is what we plan our generation supply to. So that's what we're looking at in this column, it's called the scenario five forecast.

Q So the scenario five forecast would be the high growth forecast?

A It's the high growth forecast that's produced by GRE. But I'd just also point out that this is the number that we -- that we plan to have capacity available to meet our members' needs.

JUDGE HEYDINGER: From a generation point of view?

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THE WITNESS: Correct.

BY MS. MACCABEE:

Q And can you show me what's the medium growth forecast for GRE? Which of these scenarios would you consider to be a medium growth forecast?

A It's not provided here, as far as I can tell.

Q And if you -- maybe we should turn to the supplement to your answer to North American Water Office Information Request Number 7 that is Exhibit 51. And the fourth page of that document is Figure 6-4, Updated Medium Resource Plan Forecast?

A Correct.

Q And looking at this column suggests that for the Great River Energy scenario one is considered to be -- you considered it to be a medium resource plan forecast?

A Correct.

Q In doing your analysis and response to North American Water Office Information Request Number 7, did you check to see which utilities had anything that could be considered a low growth or low growth forecast?

A No, I did not. I didn't think it was appropriate because, again, that would not be in my opinion what utilities would plan for because they would not want

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to arrive at their system peak and not have sufficient capacity available for meeting their needs.
Q Are you familiar with the concept of high and low confidence levels?
A Yes.
Q Can you explain what is meant by a high or low confidence level for a forecast?
A A high or low confidence level would be the -- it would be the degree of confidence you have that a given number is going to be in a given interval, if we're speaking of a confidence interval.
Q So would you look at a high growth forecast in part to provide confidence that your medium growth level is actually a likely or reasonable forecast?
A Again, please.
Q Would you look at a high growth forecast level to help give you confidence that when you're predicting medium growth that that prediction is actually reasonable?
A You know, I can't say whether or not for sure that the confidence interval is included, but by definition your higher forecast would take into account your medium forecast in this case.
Q Would you do any analysis or make any projection of

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a lower growth or slow growth forecast just to make sure that what you're predicting is reasonable?
A I don't think you would, no.
Q Now, in the Vision study that was done in this case, do you recall that in addition to making a prediction of a reasonable expectation of load growth that prediction was reduced by two-thirds to do a sensitivity analysis for the project? Do you recall that?
A Yes.
Q But is that really a transmission planning issue, rather than a forecasting issue?
A Well, I would say that the transmission planners are the ones who developed the forecast contained in the Vision study and they're also the ones who determined that they were going to provide this lower value that they did.
Q Okay. So that might be the province of transmission planning practices and not necessarily forecasting practices?
A I think it's going to depend on what exactly we're speaking about.
Q I have one other set of questions. I can't find them. Just a second.
(Given a Diet Coke.)

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MS. MACCABEE: There is a god.
BY MS. MACCABEE:
Q Now, you, in your testimony this morning, you discussed the Gap Analysis, and I believe that's page 10, lines 24 through 26 of your direct testimony; is that correct?
A (Witness nods.)
Q If you could turn to page 10 of your direct, I'd appreciate it.
A Yes, I'm there.
Q And at line 24 to 26, do you make the statement, This estimate is based on a series of assumptions and utility forecasts?
A Yes.
Q Do you know what was included in this series of assumptions and forecasts?
A Well, the utility forecasts are the forecasts we had available at that time. Those energy forecasts, which would be the determinants of the amount of renewable energy that would be needed by each of the utilities, what's referred to here on page -- or on line 25 on assumptions is really referring to, when you look at that Gap Analysis, the assumptions that we have a 30 percent wind capacity factor, we have a 35 percent wind capacity factor, we have a 40

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percent wind capacity factor. And there's also then a reduction of one and one and one half percent to account for the conservation statute. So that's what's -- that's what's meant by assumptions.
MS. MACCABEE: Thank you very much. No further questions.
JUDGE HEYDINGER: Ms. Anderson.
CROSS-EXAMINATION
BY MS. ANDERSON:
Q Good morning, Mr. Lacey. I'm Julia Anderson, representing the Office of Energy Security.
I have several questions to follow up on the relationship you testified about in questioning from Mr. Crocker concerning income and energy use; do you remember that conversation?
A Yes.
Q You testified that there's a positive correlation between income and energy use, such that if a person has less money they're expected to have lower energy use; is that right?
A Correct.
Q Is it also true, then, that the more money a person has translates to an expectation of greater energy use?
A Yes.

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Q Does energy use, in terms of your testimony, equate generally to increased load?
A Yes. As energy consumption increases, the corresponding load will increase as well.
Q Throughout your direct testimony -- I'll just point to an example on page 9, if you can go there.
A Yes.
Q Beginning at line 7, you state that available updated forecast data confirms that Minnesota must prepare to meet considerable load growth between 2009 and 2020; is that right?
A That's correct.
Q And further down the page, beginning at line 14, you state for the 2020 load in Minnesota and the region that the forecast data confirms the transmission -- excuse me, transmission system must be designed to handle several thousand megawatts of additional load, correct?
A That is correct.
Q Similarly, beginning at line 23, you say that while no excess load growth level can be guaranteed, these forecasts confirm significant growth between 2009 and 2020, correct?
A Yes.
Q Would you agree, then, that in general it is

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reasonable to expect that income in the United States will also increase over time, generally?
A Yes.
Q And you have testified that you expect essentially a utility's demand forecast to be higher in the year 2020 than it is today, right?
A Yes.
Q And essentially your testimony says a utility's demand forecast is expected generally to increase over time; is that correct?
A Yes. And all the historical data shows that as well.
Q Would it also be your expectation, then, that a utility's demand forecast is likely to be higher in 2030 than it is in 2020?
A Yes.
MS. ANDERSON: I have nothing further.
JUDGE HEYDINGER: Redirect, Ms. Agrimonti?
MS. AGRIMONTI: Your Honor, we have no redirect.
JUDGE HEYDINGER: Mr. Sandberg?
MR. SANDBERG: No, Your Honor.
JUDGE HEYDINGER: Mr. Crocker?
MR. KRIKAVA: How can there be cross if

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there was no redirect, Judge?
JUDGE HEYDINGER: I'm sorry. I'm just checking off the boxes and making sure everything is covered.
MR. CROCKER: I do have a question about 2080, Your Honor.
JUDGE HEYDINGER: We'll skip it.
All right. Then I still have a few questions for you, despite my embarrassment, Mr. Lacey.

EXAMINATION

BY JUDGE HEYDINGER:
Q Overall, Mr. Lacey, what would you say in your analysis guards against either overestimating or underestimating? What parameters guide your selection of forecast numbers to try to avoid either overestimating or underestimating?
A Sure. Just by the -- just by the process of forecasting. So when the forecasters begin they have some set of historical data and they have variables -- income, heating degree days, for example, price of substitutes, things like this -- that they believe help explain the observed historical data. And so then what they do is they create a -- essentially create an equation that

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describes the points they're seeing, so demand based on these other variables that they have. And so when you -- after you do that you come up with an equation or relationships that have statistically a high level of -- that you can conclude statistically that you have a high confidence level in this value or in this relationship.
So the second part of that is to take, well, what do you know about the future or what do you believe about the future for these same variables, and calculate that. And to the extent you have a good historical fit relationship between these variables and what you're trying to predict, demand, and going forward as long as you have confidence in the future predictions of these predictor variables, then you could have confidence that your forecast is reasonable going forward.
Q And so for some of those variables, you have -- you may have reason to believe that the historical trend is going to change, and if you do, I presume, then you take that into account?
A Yeah. For example, there would be some historical relationship between the price of electricity and the amount of electricity that's used. And at some point you're going to have people who, just like

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they drive less now with less gas -- or with higher priced gas, if electricity becomes so expensive they may decide to not consume as much. And so your forecast of the future price of electricity would help determine that in your model.
Q And so based on the evidence that you have in any one year in time, if you see historical trend that's going to alter, you try to take that into account?
A Yeah. Again, I think it would go to -- the historical trend is kind of going to be whatever it is, it's really a matter of what these forecast variables are going to do in the future.
Q Okay. And if you overestimate, what is the implication for your company?
A The implication, I believe, is if you overestimate it it really tends to be financial because you're spending capital to put into place supply resources or transmission resources or something else. But to that end, you know, forecasting is a continuous process. And we do integrated resource plans every two years, we provide them to the state, and utilities are constantly updating their forecasts to take into account more recent information, and so the probability or the likelihood that you're going to really, I'd say, overpredict radically would be

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very small.
Q So the break, in your -- the break, in your opinion, is the need to justify any additional capital expenditures and make sure you're not expending capital that isn't needed?
A That's true. And the forecasts -- the forecasts help guide that, but at the same time, you'd have to -- you'd have to defend those forecasts as you come to the PUC or you come to your company's board and you want to make these investment decisions.
Q And, similarly, what are the ramifications if you underestimate?
A Well, the greatest underestimation or the greatest -- the worst result of underestimation would be that you're short on capacity, generation capacity and transmission capacity, and potentially blackouts or something to that effect. That would be a worst-case.
Q And as you looked at the forecasting that had been done historically, could you determine the level of accuracy, generally speaking, of prior forecasts to actual demand?
A That's a good question. I think that -- there will always be some discrepancy. I guess I don't know what the -- I guess I don't know what the historical

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discrepancy, for example, as a percentage of total forecast would be.
Q Okay. But would you say, based on your knowledge of the industry overall, the state, apparently there hasn't been significant underforecasting?
A Yeah, I mean, we've had -- we have -- by all indications we've had sufficient capacity up to this point, generation and transmission, to meet the needs that have been identified. So we haven't had underforecasting, as far as I could tell.
Q And whatever evidence would -- is there, if any, of overestimating?
A You know, to the same degree I don't see any overestimation either.
Q And do you have any reason to believe, based on your forecasting, that if generation and, in particular in this case, transmission capacity is there, that it actually in some reflects -- in some way stimulates load growth?
A No, I don't believe that that would be the case. Because when you allocate those costs, if there's no demand growth or energy consumption growth, yet you have expended this capital, you need to allocate those costs to people, and so now people are paying more per unit than they otherwise would have, so the

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effect would be higher costs.
Q And is there any evidence of that that you're aware of, that paying for essentially underused capacity?
A I'm not aware of any, no.
Q Would you be the witness to address questions concerning voluntary curtailment to meet demand?
A I don't think so. I believe Mr. Alders has some -- has testified to some conservation-type efforts.
Q But let me just ask it this way: Do you take voluntary curtailment opportunities into account in the forecasting that you have done?
A Well, the -- it's more used -- voluntary curtailments are more precisely used as a reduction in the total demand. So you would predict based on -- that that voluntary curtailment does not exist because for some reason I, as a customer, may decide, okay, you're using this too much, so I no longer want to be on a voluntary curtailment service. And so it's just like a generation resource, except it's a demand resource. And so your demand forecast would not take that into account. It would exclude the value of that voluntary curtailment.
Q I believe you testified that as you looked at their resource plans that it appeared that to the largest

extent they took into account conservation?
A That's correct. Both -- both what's originally in the application, those forecasts would include the effects of historical conservation and assuming that conservation is continued into the future, and then what was provided in response, supplemental IR 7 to NAWO, are the forecasts that had been prepared by utilities since the passage of the one-and-a-half percent conservation statute, as I refer to it, those IRP forecasts that explicitly take achievement into account.
Q And the criteria for a certificate of need takes a look at not only conservation, but possible conservation. In your view, as you did these forecasts, was possible conservation the conservation reflected in those resource plans?
A Yes. Kind of the reason I'm hesitating is that I can tell you what GRE has stated in their most recent resource plan that was just filed, I think on July 1st. But they provided forecasts that showed compliance with that statute, but without looking at necessarily how that conservation would be achieved or what -- or what cost it would be to achieve it. And essentially that's -- that is more conservation than has been historically achieved. And so I guess

that kind of answers that it would be some probable conservation in there as well.
Q I believe in response to Mr. Michaud's testimony, in which he made a statement, I paraphrase it, that Renewable Energy Standards -- well, I don't want to mischaracterize his testimony. The issue had to do with whether or not the Renewable Energy Standards could be met without more outlet from the Buffalo Ridge area. And I believe that your response was that there are many projects in the MISO queue on the Buffalo Ridge, which didn't seem to me, as I read it at that time, responsive to the point. Which was, as I understood it, not whether there could be sufficient outlet from Buffalo Ridge, but whether you believed that the Renewable Energy Standards could be met without more outlet on Buffalo Ridge. So could you answer that question for me? Do you believe that, based on the forecasting and the looking that you have done at the available resources, that those Renewable Energy Standards could be met without more outlet on Buffalo Ridge?
A Well, I think in the Gap Analysis the transmission owners have shown under these various assumptions that the need for wind in this case, wind nameplate

capacities between 4,500 megawatts and into the 6,000 range, and so overall I think it's -- while it may be possible, I find it extremely unlikely that Minnesota utilities are going to meet their Renewable Energy Standard by having no more projects in that area of the state.
Q Okay. I received a comment from a citizens group and I'm just going to read it because I wonder if you are aware of these comments that were raised in the public hearings and if you have any response to them. This comes from the Avon Hills initiative and their comments submitted dated June 24th, 2008.
CapX was designed to meet projected new need of about 6,000 megawatts during the forecast project, revised forecast projected need for half as much generation as the abandoned forecast. That was their terms. Why hasn't the CapX 2020 proposal been revised to reflect these projections?
Would you agree that there are revised forecasts -- that any revised forecasts that you're aware of that project a need for only half as much new generation, which would be 3,000 megawatts?
A No, I would disagree with that. I think we've demonstrated in -- again, if you want to look at the most recent forecast provided to the Public

Utilities Commission, this would be NAWO IR 7 Supplement again, and with the caveat that those have not been adjudicated by the Commission, but they show significant demand growth of nearly 4,000 megawatts. That's just load growth. But, again, in order to meet the Renewable Energy Standard, it's going to require significantly more megawatts of wind nameplate capacity to do that, and that's primarily because these load growth numbers we're talking about are peak capacity numbers, so on a hot summer day. But generally speaking, when we -- when we assign a value for wind on those hot summer days it's something much smaller. And so to -- we'll need many more wind megawatts than nameplate just to help make up for the little that they put out on these peak summer days.
So, you know, the overall perhaps concept in that letter is that we have shown that demand is a little bit lower than what was originally predicted in the Vision study. There's still some significant demand, but at the same time there's very significant demand for wind resources as well.
JUDGE HEYDINGER: Okay. Thank you. I think that responds to my questions. For the staff?
MR. JACOBSON: Just briefly.

EXAMINATION

BY MR. JACOBSON:

Q Referring to your Figure 6-6 in rebuttal testimony, and I apologize if this has been covered to some extent, you've got basically five rows of forecasts that you've looked at there?

A Right.

Q Are all -- are they comparable from the standpoint that you've looked at the same utilities in each of those lines?

A The three middle ones, MAPP Load and Capability, Integrated Resource Plans and the IRP per NAWO IR Number 7, yes. The CapX Vision study is done a little bit differently, in that the values that all go in there -- well, let me just say that, yes, I think that all the same utilities are included. But just how those values are created, are provided in a model that the Vision study used is a little bit different than the way they were just aggregated for these others.

Q Setting the Vision study aside for the moment, did you just look at the 11 CapX utilities or did you go beyond that? The MAPP Load and Capability, for example, is that just for the 11 CapX utilities or were there other utilities that were looked --

included in the total?

A It includes some of the smaller ones, some of the smaller municipal utilities that may not be CapX participants. But basically everyone is included, all the CapX utilities and, of course, Interstate Power & Light is not included, they're neither a MAPP member nor are they a CapX member. But I think what we've done is captured all the load that's available.

For example, Great River Energy, we have some members who now and into the future will take power from someone else, yet although that generation supply is coming from somewhere else, it's being provided through GRE because we have a long-term transmission contract to supply that power over a transmission system to those members, despite them getting generation from somewhere else.

Q What I'm basically trying to get at is are there any utilities, is there any load in the area that is not captured in these numbers? For example, are there small municipal utilities that are not members in MAPP that would not be captured in these numbers?

A There may be. I can't say for sure. I guess I would say that, you know, with the MAPP everyone with a load-serving responsibility has to file, so

to the extent they're not filing with MAPP, that it's likely that that load is being accounted for by someone else.

Q So to the best of your knowledge, this is a fair picture of what we're seeing in the region in the way of growth?

A That's correct.

MR. JACOBSON: Thank you. That's all I have.

JUDGE HEYDINGER: Any follow-up to the questions I had or that staff had before -- Mr. Sandberg.

MR. SANDBERG: Actually, I'm feeling a little stupid. Can I ask a dumb question on staff's last inquiry?

JUDGE HEYDINGER: Certainly.

MR. SANDBERG: Which is, is Interstate in or out of those numbers? I'm not sure which way your answer ended up.

THE WITNESS: Interstate is in those numbers.

JUDGE HEYDINGER: Ms. Overland.

FURTHER CROSS-EXAMINATION

BY MS. OVERLAND:

Q I had a quick -- or maybe two based on staff's

questions.

In the MAPP load capability, does that include a reserve margin in those numbers?

A No, it does not. It's just the forecasted demand.

Q And is reserve margin included in any of these others?

A No, it is not, those would be additional.

Q In addition to the CapX 2020 Vision plan, it would be above and beyond that?

A Now you've confused me.

Q Okay.

A So I think in the MAPP Load and Capability, those are the demands -- those are peak load forecasts for those utilities. Now, those utilities will require more generation -- according to MAPP, 15 percent -- so that would be additional generation that would be needed above those load forecast numbers.

Q And that's above, then, what would be listed in the right-hand column?

A That's correct. Those right-hand column values do not include generation planning reserve numbers.

Q And that would apply also, then, to the right-hand column for the CapX 2020 Vision plan?

A You know, it's my understanding from the Vision study that the 6,300 and 4,500 number that they

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calculated are without planning reserves as well.
Q And then in the MAPP Load and Capability, does that include sales beyond local load?
A This is the actual demand for that particular load-serving entity so it would exclude sales and purchases. It's the demand that they're required to have for their customers.
MS. OVERLAND: Okay. Thank you.
JUDGE HEYDINGER: Any additional questions for this witness? Thank you, Mr. Lacey. You're excused.
(Witness excused.)
JUDGE HEYDINGER: All right. I think in the interest of sticking with the agreed-upon schedule, that we should adjourn until 1:30 in order to allow Mr. Crocker's team to assemble and prepare Mr. Webb, then we'll take Mr. Webb's testimony following the lunch break. Any comments?
MR. SANDBERG: We agree with that.
JUDGE HEYDINGER: Mr. Cupit.
MR. CUPIT: Judge, I'm prepared to distribute copies of the CD that was referred to earlier for the record. Can I do that now?
JUDGE HEYDINGER: All right. Thank you. And we will reconvene at 1:30. Thank you.

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(Lunch break from 11:53 to 1:30.)
(Whereupon, Exhibit 56 was marked for identification by the court reporter.)
JUDGE HEYDINGER: Let's get started. We'll go back on the record and at this time we're going to take the witness for the Midwest Independent Transmission System Operator. Mr. Sandberg.
MR. SANDBERG: Thank you, Your Honor. The Midwest ISO calls Jeffrey Webb.
JEFFREY WEBB,
after having been first duly sworn, was examined and testified on his oath as follows:
JUDGE HEYDINGER: Please be seated and state and spell your name for the court reporter.
THE WITNESS: My name is Jeffrey R., J-E-F-F-R-E-Y, R., last name Webb, W-E-B-B.
JUDGE HEYDINGER: Mr. Sandberg.
MR. SANDBERG: Thank you, Your Honor.
DIRECT EXAMINATION
BY MR. SANDBERG:
Q Mr. Webb, by whom are you employed?
A By the Midwest ISO.
Q And I have placed in front of you what's been marked as Exhibit Number 56 for identification. Could you

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take a moment and review that document and tell us what it is?
A This is the direct testimony that I filed on behalf of the Midwest ISO.
Q And was Exhibit 56 prepared by you and under your direct supervision?
A Yes, it was.
Q Are there any changes or corrections you need to make to your prefiled direct testimony?
A No, other than I noted a few typos here and there.
Q Okay. This exhibit consists of a series of questions and answers; is that correct?
A That's correct.
Q And if I were to ask you the questions posed therein here today under oath would your answers be the same?
A Yes, they would.
MR. SANDBERG: Your Honor, we'll offer Exhibit 56, please.
JUDGE HEYDINGER: Any objection to the receipt of the document identified for the record as Exhibit 56? Exhibit 56 is received.
(Exhibit 56 offered and received.)
BY MR. SANDBERG:
Q Mr. Webb, did you wish to make a short summary

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statement?
A Yes.
Q Please do so.
A My testimony provides an overview of the Midwest ISO process that we used to reduce periodically published Midwest ISO Transmission Expansion Plan, which we refer to as the MTEP, M-T-E-P. I think then go on to describe the specific studies that the Midwest ISO performed to establish the need for and the effectiveness of the proposed CapX projects. Specifically, we studied the ability of the system to serve the load reliably in the years 2011 and 2016. The studies were performed assuming existing and committed generation through both those time frames and using load forecasts that were provided by the Applicants.
The studies basically demonstrated that the existing transmission system would experience reliability standards violations unless additions are made to the system, and that the Fargo and La Crosse projects would provide the necessary upgrades to address those reliability needs.
And, finally, I describe the need for the Brookings line in enabling the connection of wind generation and the fact that there are some 7,500

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megawatts of new wind generators seeking to interconnect in the vicinity of the line. And that, further, this line has been assumed as part of the base system in a large number of generator interconnection studies that we performed to date.

That's basically the summary of my testimony.

Q Thank you.

MR. SANDBERG: Your Honor, the witness is available to be cross-examined.

JUDGE HEYDINGER: Thank you. We'll begin with the Applicants.

MR. KRIKAVA: No questions, Your Honor.

JUDGE HEYDINGER: Mr. Crocker.

MR. CROCKER: Thank you, Your Honor.

CROSS-EXAMINATION

BY MR. CROCKER:

Q Good afternoon, Mr. Webb.

A Good afternoon.

Q My name is George Crocker, I'm the executive director of the North American Water Office, and with me at the table, for the record, Your Honor, is Mike Michaud. Also, the North American Water Office is in partnership with the Institute for Local Self-Reliance for purposes of this proceeding.

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Mr. Webb, to begin, how about if -- just for the general background so I become more familiar with what you do and what you don't do.

The discussion you have on page 5 relative to transmission expansion planning. You use power flow models for that work, don't you?

A Yes. In part.

Q And do the power flow models that you use include any facilities under the 69 kV level?

A Yes, they do.

Q And could you tell me how far down in terms of kilovolts they go?

A I believe the models we used for these particular studies and in general go down and include below 100 kV, any networked 69 -- all 69 kV, I should say, and then below 69 kV, some 34 -- down to 34 kV class, to the extent that they are looped. We do not model radial transmission segments below 69 kV.

Q Okay. And that would have something to do with sort of the gray area of FERC jurisdictional facilities? Is there some relationship there, in terms of the facilities that are typically in your models?

A Not so much. We want to have an accurate representation of the underlying system so that we can have the best model possible.

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Q Mr. Webb, when you run your power flows do you screen for impacts on the low voltage system?

A We do monitor -- well, yes, we monitor facilities down through the 69 kV, I believe.

Q For the studies you did for the CapX facilities, did you look at anything below the 69 kV level?

A I'm not sure that we monitored facilities below 69 for that study.

Q Thank you. And then just so we're clear, when you do power flow modeling, why, that does exclude the lower voltage facilities, then there's a process, isn't there, in which the loads that are on those lower voltage facilities are sort of aggregated and put at some reasonable location on the high voltage system; is that correct?

MR. SANDBERG: Objection, Your Honor. Compound question. I don't know which part is actually being asked of the witness.

MR. CROCKER: Let me rephrase it.

JUDGE HEYDINGER: If you would, Mr. Crocker.

BY MR. CROCKER:

Q Mr. Webb, what happens to the power flows on the lower voltage system that is not in your model when you run the model?

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A I'm sorry, what happens to the -- would you restate that?

Q How do you account for it? How do you account for power flows on the lower voltage system for facilities that are not in the model?

A In general -- well, first I should say that the models are developed in coordination with our transmission owner members, and I believe what our members do in creating those models is to lump loads at particular nodes down at the lowest level of transmission modeling that is included in the model.

Q Thank you.

A I think that's what you were getting at.

Q That's exactly correct. Thank you, Mr. Webb. Directing you to page 8 of your testimony, Exhibit 56. I'm looking at line 19 where you begin a discussion about generation interconnection request process under the tariff; do you see that?

A Line 19 on page 8?

Q Yes.

A Yes.

Q Do you manage that process?

A I'm sorry, which part of the process are you referring to on line 19?

Q The generation interconnection request process.

A Oh, no, I don't manage the generator interconnect process.
Q Who does?
A The manager of interconnections at the Midwest ISO.
Q Okay. Do you have a specific name for that person?
A Yes. His name is Eric Laverty.
Q Thank you.
MR. SANDBERG: Would you spell the last name for the court reporter, please?
THE WITNESS: L-A-V-E-R-T-Y.
BY MR. CROCKER:
Q Are you familiar with how that process works?
A Generally.
Q Are you familiar with the queue reform filing made to FERC on June 26th of this year?
A I'm aware that such a filing was made. And that there were a number of stakeholder meetings over several months discussing changes to the interconnection process and that after those stakeholder deliberations the Midwest ISO made some changes and filed those.
MR. CROCKER: Your Honor, at this time I would like to present an exhibit for possible inclusion in the record. May I approach the witness?

JUDGE HEYDINGER: Yes. If you'll ask the court reporter to mark it for you, please.
(Whereupon, Exhibit 57 was marked for identification by the court reporter.)
BY MR. CROCKER:
Q Mr. Webb, do you have in front of you what has been marked as Exhibit 57?
A Yes, I do.
Q And the cover page includes the Midwest ISO logo along with the title Proposed Generation Interconnection Process Diagrams?
A Yes, it does.
Q Could I ask you to first just take a minute to look at the following -- the pages in this document and tell me if you are familiar enough with them to discuss these diagrams with us?
A No. I am not.
Q Would you -- are you familiar enough with them to say whether or not they represent the reformed filing made to FERC on June 26th?
MR. SANDBERG: Your Honor, may I pose a question for forming my objection?
JUDGE HEYDINGER: Yes.
MR. SANDBERG: Is this represented as being a complete set of the FERC filing or is this

document some subset of that, Mr. Crocker?
MR. CROCKER: It's the interconnection task force document off of the MISO web page.
MR. SANDBERG: Complete as found there?
MR. CROCKER: Yes.
MR. SANDBERG: Thank you, Your Honor.
JUDGE HEYDINGER: All right. And I believe the question was are you sufficiently familiar with the document that you could accurately say that it represents the filing made with FERC?
MR. CROCKER: That's correct.
BY MR. CROCKER:
Q As found on the MISO web page for that task force.
A No, I could not. Among other things, it doesn't have any date on it. But even if it did, I couldn't be sure that, you know, it represented exactly what was filed. As I say, I'm not involved directly with the generator interconnection process and these appear to be process step details.
Q This was the only such document on the website and it was dated 5-23-08.
MR. SANDBERG: Objection, argumentative.
JUDGE HEYDINGER: Well, I don't think that you can establish the foundation yourself, Mr. Crocker. Now, if you want to offer it through

our own witness, perhaps your witness can establish the foundation for it.
MR. CROCKER: Thank you, Your Honor. I guess I will withdraw it at this time. I would encourage parties to retain their copies, however.
(Exhibit 57 withdrawn.)
BY MR. CROCKER:
Q Mr. Webb, is there somebody at MISO who could talk about this, these diagrams?
A Well, it's hard for me to say exactly because I don't know exactly the nature of the diagram. But in all likelihood there is, it was apparently prepared by the Midwest ISO.
Q Would Eric Laverty be that person?
A I can't say that for sure. I don't know whether Eric was the author of the document or who was.
Q Okay. Can you confirm that the queue position will no longer be the driving force to determine who gets to interconnect to the transmission system?
MR. SANDBERG: Objection, Your Honor, foundation.
JUDGE HEYDINGER: Sustained.
BY MR. CROCKER:
Q You did testify, Mr. Webb, that you are aware of the June 26th filing; is that correct?

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A I'm aware that there was a filing made June 26th.
Q Is that the extent of your knowledge of that filing? Well, let me strike that.
Can you tell us -- tell us the extent of your knowledge of the filing?
MR. SANDBERG: Your Honor, objection. I'm trying to be very patient, but this is completely outside of the scope of his direct testimony, and he said he doesn't know anything about it anyway.
JUDGE HEYDINGER: I think we all have some questions about whether his testimony might be affected by what he now knows of the proposed change. And so if that's where Mr. Crocker is going, I think we do want to know that. And so perhaps that's where you need to direct your questions, Mr. Crocker. I don't think you can ask him in some broad sense what does he know about this, but the question is how does it relate to the testimony that he gave.
BY MR. CROCKER:
Q To the best of your knowledge, Mr. Webb -- thank you, Your Honor.
To the best of your knowledge, does the queue reform filing alter who gets to interconnect

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to the transmission system?
A As I said, I don't know enough about the process changes that were made in this filing to be able to know the answer to that question.
Q Do you know why the process needed to be reformed?
MR. SANDBERG: Objection, assumes facts not in evidence.
MR. CROCKER: Well, Your Honor, he testified that the reform, he knew that the reform filing was made at FERC, so that's the fact in evidence. And I am asking if he knows why that reformation was a necessary thing.
JUDGE HEYDINGER: Well, I have a feeling it's the necessary word that's being objected to here. If you want to ask him if he knows why it was filed, that's fine.
BY MR. CROCKER:
Q Why was it filed? Do you know why it was filed?
A My understanding of some of the reasons surrounding this filing have to do with the fact that the existing processes for processing generator interconnections through the queue have resulted in lengthy queue processing times. And the effort here, as I understand generally, was to address a number of sort of what might be described as

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quick-fix process step changes in some way that would help to move generators through the queue more quickly.
Q And would you agree that the reason it was taking such a long time for projects to move through the queue is because there is so many of them?
A I would think that that would be a contributing factor.
Q And would also a contributing factor be that not only were there many of them, but they were smaller in scale than the conventional type of generation that has been interconnected to the queue up until the last several years?
A I'm not sure I could establish the relationship between the number and the size.
Q Thank you. Mr. Webb, does it take analysis of the lower voltage system and its relationship to the high voltage transmission system to fully understand the opportunity to interconnect dispersed projects and deliver their power to loads?
MR. SANDBERG: Objection, Your Honor, goes beyond the scope of direct.
JUDGE HEYDINGER: Overruled. He testified previously about his study and the need to look at both low and high voltage. I think it's

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within the scope of that. You may continue.
MR. CROCKER: Thank you, Your Honor.
BY MR. CROCKER:
Q Do you need the question repeated?
A Yes, please.
(Whereupon, the question was read back by the court reporter.)
THE WITNESS: Well, again, I'm not sure I am the most qualified to answer that question for a number of reasons. I don't study generator interconnections per se, and if I did, it's not under the Midwest ISO jurisdiction to study the interconnection of generation to those lower voltage systems.
BY MR. CROCKER:
Q Are there some interconnections that are not under MISO jurisdiction?
A Interconnections that don't connect the Midwest ISO transmission system.
Q I'm not sure I understand your response. My question is are there some interconnections that are not under MISO jurisdiction?
A Within the Midwest ISO?
Q Within the Midwest ISO footprint.
A Well, I'm not sure of the exact delineation

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voltage-wise, I guess, below 100 kV. Certainly generation that's connected to the distribution system is not under our jurisdiction. Again, I'm not the interconnection manager, I'm not familiar enough with what that exact dividing line is on the lower voltage systems that may be categorized as FERC transmission, but are not under our functional control. I'm not sure where that line is for connection purposes.

Q Thank you, Mr. Webb. Mr. Webb, does the interconnection study process include analysis of whether the power is delivered to remote distances on the grid?

A I'm sorry, did you say to remote distances?

Q Deliverable to remote distances on the grid.

A Deliverable to locations at remote distances. I believe so. On the grid within the Midwest ISO footprint, yes.

Q So the right to interconnect granted by the interconnection process does not include a right to use the system to deliver power, or does it?

A The right to interconnect, again, I can't be sure of my answer to that --

Q Okay.

A -- question. I believe that that's true.

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Q In a general sense, Mr. Webb, would you agree that to the extent that the lower voltage system is managed and developed to optimize dispersed generation development, doesn't that enable more local loads to be served by local generators?

A Can you read that one back again for me, please? To the extent that --

Q To the extent that the lower voltage system is managed and developed to optimize dispersed generation development, doesn't that enable more local loads to be served by local generation?

A I couldn't offer an opinion on that. I don't know exactly what managed and developed to optimize actually means. It's just too big.

Q Are you familiar with the recently released phase one report of the Minnesota Dispersed Renewable Generation Transmission Study?

A No. I'm not.

Q Have you heard of it?

A Only -- not specifically. I perhaps overheard it listening to these proceedings.

Q But it has not been part of any of your thinking --

A No, not at all.

Q -- in the preparation of your testimony here?

A I'm afraid not.

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Q Going back to the previous question. Your concern about the terms managed and developed, if by managed and developed we mean the ability of dispersed generators to interconnect with facilities that are capable of accepting their power and delivering that power to load, does that enable more local load to be served by local generation?

A I think that's probably true.

Q Thank you. Mr. Webb, are you familiar with a MISO study called the Regional Generation Outlet Study?

A I'm familiar that it's in progress.

Q Can you tell us what the overall scope of the study is?

A In general terms, my understanding of that study, which is managed by others at the Midwest ISO, is to attempt to identify transmission upgrade projects that may be required within the, say, five- to seven-year time frame or so that would enable more renewable generation that is indicated by the generation interconnection queue to get onto the grid.

Q Does it have to do with renewable portfolio standards?

A Yes.

Q Do you know when it will be completed?

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A Let's see. I haven't checked into that study in a few weeks, a month or so, but the last I recall we were -- well, I think we had committed to certainly providing an update and being near the end of the study in our MTEP 09 process, which would be around, well, maybe this time next year.

Q Thank you. Is one of the scenarios to be studied include siting all of the renewable portfolio generation in the states that have required renewable generation?

A I believe that early in the scoping that was one of the bookend scenarios that were expected to be looked at, but since I haven't been keeping real close tabs on that study, you know, if that changes, I'm not aware of it.

Q Thank you. Is one of the possible outcomes of this study that it is better to plan to site the renewable portfolio standard generation in each state rather than build interstate transmission to deliver renewables to distant states?

MR. SANDBERG: Objection, Your Honor, calls for the witness to speculate.

JUDGE HEYDINGER: Could you reread the question, please?

(Whereupon, the question was read back by

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the court reporter.)
JUDGE HEYDINGER: I'll sustain the objection.
MR. CROCKER: Your Honor, if I may? We're not talking -- we're not asking if this is the probable outcome, we're not asking if it's a probable outcome, we're just asking if it's one of the possible outcomes.
JUDGE HEYDINGER: But you didn't ask whether it was within the scope of the study to generate such an outcome. I mean, it seems like you've got to start with is that one of the things they're --
MR. CROCKER: Let me go to the previous question. Is one of the scenarios that all RPS generation in the states that require the generation, and the witness testified that it was a bookend.
JUDGE HEYDINGER: I'm sorry, I misunderstood that question to be were all the renewable standards going to be met, I didn't understand each one was to be --
MR. CROCKER: I'm sorry.
JUDGE HEYDINGER: So it's my mistake, then. You can follow up.

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BY MR. CROCKER:
Q Let's go back to the previous question and I'll deal with this again just to make it clear.
Is one of the scenarios to be studied include siting all of the renewable portfolio standard generation in the states that have required the renewable generation?
JUDGE HEYDINGER: I'm sorry, it was in the states that confused me, whether it was the standards within the states or siting within the states. And you assumed siting within the states?
MR. CROCKER: Yes.
JUDGE HEYDINGER: Let's make sure the witness understood as well. He may have, but I didn't.
MR. CROCKER: Thank you, Your Honor.
BY MR. CROCKER:
Q Do you understand we're talking about the siting, Mr. Webb?
A Yes.
Q And that was a bookend; is that your testimony?
A It was my understanding that that was an early suggested bookend. Whether it was continued to be part of the scope, I can't exactly say.
Q Okay. Presuming it is, is one of the possible

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outcomes of this study that it is better to plan to site renewable portfolio standard generation in each state rather than build interstate transmission to deliver renewables to distant states?
A I think that's a possible outcome.
Q Thank you. And you testified earlier that you are not familiar with the Dispersed Renewable Generation Study; is that correct?
A That's correct, I am not.
Q And so has MISO performed similar studies?
JUDGE HEYDINGER: Well, if he doesn't know what the study is, he won't know if it's similar.
THE WITNESS: That's true.
JUDGE HEYDINGER: I'm sorry.
MR. CROCKER: I take that to be a no.
MR. SANDBERG: Well, Your Honor --
JUDGE HEYDINGER: No, I don't think it's a no.
MR. SANDBERG: I'm not sure what the objection is. The witness kind of already asked and answered it.
MR. CROCKER: I don't know what the objection is either.
BY MR. CROCKER:

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Q So you do not consider low voltage dispersed generation development patterns when you do your transmission planning; is that correct?
A We do not consider -- you said dispersed generation patterns? Low voltage dispersed generation patterns is what you said?
Q Yes. When you do your transmission planning.
A Well, to the extent that there are low voltage dispersed generation patterns, we would expect that those would be represented in the load modeling that we did in the development of our models, for which we would then perform reliability studies.
Q And who would provide you with those load models?
A As I stated earlier, the load forecast that we use in our models are provided from our members.
Q Thank you. On your direct testimony, Mr. Webb, on page 15, lines 1 through 6, you state that planners collect data on forecast loads to be experienced in the future. Is this the data that is collected from your member --
A I'm sorry, what line was that, please?
Q Lines 1 through 6, planners collect data -- lines 2 and 3, planners collect data on the forecast loads. Is this the data -- is this -- are these data among those that your members supply you with?

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A Yes.
Q So you just essentially take what they give you and then run it?
A That's correct. We do not do load forecasting at Midwest ISO.
Q Do you know when the models used in the MTEP 07 report were developed?
A Let's see. Since the report was in October of '07, the study process went on throughout most of that year, so the initial models were probably put together in the very end of 2006. Or early -- probably first quarter of 2007 we were having our stakeholders review the models with us to make sure that the models were the best representation we had. So they were put together, again, I would say around roughly, say, first quarter of 2007.
Q Thank you. And so then obviously the forecasts would have been prepared prior to that date?
A Surely.
Q Now, if I could direct you a little further down on that page, page 15?
A Okay.
Q Lines 11, 12, 13 -- let's see. On line 14, the Midwest ISO then considered other potentially feasible means of meeting the need. Do you see

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where I'm reading?
A I'm sorry, line?
Q Beginning at the end of line 13, The Midwest ISO then considered other potential feasible means?
A Yes.
Q You just looked at transmission alternatives; is that correct?
A We look at generation redispatch where appropriate under the NERC standards and things like operating steps, reconfigurations of the grid, potential load shedding, depending on what's allowed under the standards, as well as alternative transmission.
Q Okay. But you don't get into the range of options, for example, that are included in an integrated resource plan?
A No, we don't.
Q Towards the bottom of page 16 of your direct testimony, on line 19, the Midwest ISO evaluated several different power flow models. Do you see where I'm referring?
A Yes.
Q Did you incorporate any lower voltage development opportunities to meet those claimed needs?
MR. SANDBERG: Objection, Your Honor. I don't see a reference to claimed needs anywhere in

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the reference materials. Maybe I'm just on the wrong page or something.
JUDGE HEYDINGER: Mr. Crocker.
MR. CROCKER: Well, it says the effectiveness of CapX projects on lines 14, 15, presume that the CapX projects are trying to meet a claimed need.
JUDGE HEYDINGER: I think the question there is has the Midwest ISO performed an analysis of the need and effectiveness of the CapX 2020 projects, so in that context would you just reask the question, Mr. Crocker?
BY MR. CROCKER:
Q In that context has the -- do the power flow models used by the Midwest ISO incorporate lower voltage development opportunities?
JUDGE HEYDINGER: In determining the need for the CapX projects or in that particular study?
MR. CROCKER: Yeah, thank you.
THE WITNESS: Lower voltage generator development, is that what you mean?
BY MR. CROCKER:
Q Lower voltage transmission development for dispersed generation opportunities.
A If the question is did we consider that, the answer

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is no.
Q Also on page 16, lines 21, 22, when were these models prepared?
A I'm not sure I can remember exactly when these were prepared. But the -- these were based off of the 2011 and '16 and were the same model years that we ran in MTEP 07, so we took those models as the basis for these studies of the CapX projects so they were essentially the same models.
Q Okay. And, again, the forecast that drove those models were developed prior to that time period?
A Yes. We did review the model in their entirety, including localized load area forecasts with the Applicants to be sure that we had the best representation that they felt was appropriate for the loads in the areas.
Q Do you know when that load forecast --
MR. CROCKER: I'm sorry, Your Honor?
JUDGE HEYDINGER: Let's go off the record for just a moment. I'm sorry. Go ahead, Mr. Crocker. I wanted to be sure we weren't having a side conversation.
MR. CROCKER: I was talking before I was looking, Your Honor, I'm sorry.
JUDGE HEYDINGER: It's all right. We're

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back on the record. Go ahead, Mr. Crocker.
MR. CROCKER: That's never happened before.
BY MR. CROCKER:
Q When did you do -- you testified that you did a little updating for this forecast. When was that done?
A The only thing -- I can't say exactly when that was done. You know, that updating was done by planning engineers working for me, under my direction, but working directly with the transmission owners involved back and forth. But, again, to make sure that the models were appropriate for the areas under study. So I think perhaps the Applicants' engineers could provide some additional insight as to precisely when.
But generally we picked up the study of these projects, I believe, throughout 2007, somewhat in parallel with the MTEP 07 effort that was going on. If I recall, we reported in the MTEP 07 on some progress on working on these projects. Our analysis wasn't done by the time MTEP 07 was published, but we referenced the projects so stakeholders were aware of them. And so, again, it would have been in a rather similar time frame.

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It's not unusual, I might add, that we -- the MTEP general reliability study has a couple of owners to it. We'll study the whole system off of the base model using the general load forecasts that we have across the entire model and then when we study -- we may study from time to time certain focused areas of the system and then we'll home in a little closer on those areas and make sure that the loads in those areas are representing the peak load potential in those particular areas. They could be different than the sort of coincident peak that we have across the eight areas in the general model.
So all I'm trying to say is there's reasons why you might look at a particular area in the system under a focus study, you know, for upgrade purposes, for establishing expansions a little bit differently than the focus you put on the models that you use for a general pass of a contingency analysis to see that the system as a whole from end to end is able to meet standards generally.
Q I see. Thank you. On your testimony, direct testimony on page 17, lines 6 through 8, it states that load models were provided by the Midwest ISO transmission owners. Does this mean that the CapX utilities supplied the data?

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A Yes. What it says is load modeled in the power flow models was provided by the transmission owners, including the CapX transmission owners for their respective parts of the model.
Q Okay. Now, earlier in that response it says generation supplies were assumed to be generators existing in 2007 plus generally any new generators that have proceeded through the MISO generation interconnection queue; do you see that?
A Yes.
Q Would that include any generation that may be part of a utility network service reservation?
A Only to the extent that the generator had completed an interconnection agreement, as it says in that sentence.
Q Would it include any nonjurisdictional interconnections?
A You mean interconnections outside of our footprint?
Q No, inside of your footprint but below your jurisdiction.
A To the extent that those were modeled by the transmission owners in providing us their portions of the model.
Q Mr. Webb, if I could direct you, please, to page 20

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of your direct testimony. And I'm looking at lines -- beginning at about line 6. Please explain what you mean by the statement that the Boswell 230 kV line took care of the problems, quote, but with not as much margin, unquote?
A This particular problem involves a stability condition that we measure in available reactive reserve margin, which is a way of measuring whether the system is able to retain stability due to adequate voltage support in the area. And so we run a reactive reserve test and find how much deficient we are in reactive reserve, which is a way of measuring how severe the problem is. And when we compared the alternative solution to the proposed solution, we didn't see nearly as much reduction in the limitation in reactive reserve. So if we had a much better margin reactive reserve, we'd be able to handle much more severe events, you might say, with the better margin than with the lesser one.
Q So does that reserved margin relate to load levels on the system at any point in time?
A Well, the margins that we were comparing for the project and the alternative were at the same load point that was studied for both.
Q So just to understand what you --

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A Which I believe was a peak load condition.
JUDGE HEYDINGER: I'm sorry?
THE WITNESS: It was a peak load.
JUDGE HEYDINGER: Peak, thank you.
THE WITNESS: Peak load condition, in which under the contingent condition you would see voltage instability, and we were comparing the margin against voltage instability that we would achieve with the two solutions.
BY MR. CROCKER:
Q So essentially you're running two flows, one was the alternative, one was the proposal, and at any point in time, why, that reserve for the alternative was below the reserve for the proposal?
A We only ran one point in time, which was the most critical peak load time for both.
Q What year was that?
A What year was that? I believe it was 2011.
Q 2011?
A I think so. It should be in my testimony somewhere. Some of these we ran at 2011, some were ran at 2016.
Q Now, in the alternative scenario, how long would that margin last before it was used up?
A We didn't calculate that. We thought to calculate that to see how long the, you know, whether the

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alternative in this area alone, resolving this particular problem area of the system, you know, relative to its costs, how long it would last before you would have to go to probably the proposed solution at the end of the day. But we didn't -- we saw that there was a difference in margin and we also knew that this was only one of multiple areas along the route of the proposed line that the line was providing solutions for.
Q So you didn't calculate it?
A We did not specifically calculate that difference for the length of time, we just knew that the solution was a lot stronger.
Q So then on page 21 of your direct, on lines 1 through 12 and the response there, the Applicants have provided information that concludes that building the Boswell 230 kV line mitigates the Alexandria issues through 2017. Do you disagree with that analysis?
MR. SANDBERG: I'm sorry, I lost that reference. I apologize.
THE WITNESS: So did I.
BY MR. CROCKER:
Q The Applicants --
JUDGE HEYDINGER: Give us the page and

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line cite, Mr. Crocker.
BY MR. CROCKER:
Q I'm looking at page 21 of your direct testimony, lines 1 through 12.
JUDGE HEYDINGER: Thank you.
THE WITNESS: 1 through 12?
BY MR. CROCKER:
Q In response to an information request that we can find if we need to.
JUDGE HEYDINGER: Was there a question pending? Maybe I missed the answer.
MR. SANDBERG: I honestly have no idea, Your Honor.
JUDGE HEYDINGER: I thought he was reviewing lines 1 through 12 on page 21. Did he respond to the question and I missed it?
MR. CROCKER: Who's on first?
THE WITNESS: I don't think there was a question.
JUDGE HEYDINGER: I'm sorry. Go ahead. I just want to be sure, 'cause I was confused about whether you had a question that you were referring him to on lines 1 through 12 on page 21.
MR. CROCKER: Thank you, Your Honor.
BY MR. CROCKER:

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Q I am referring you to page 21, lines 1 through 12. And in that information response to an information request from the North American Water Office, the Applicants provided information that concludes that building the Boswell 230 kV line mitigates the Alexandria issues through the year 2017. Do you disagree with that analysis?
MR. SANDBERG: Your Honor, if the witness is going to be asked to respond to an information request response, it would be nice to actually see it.
JUDGE HEYDINGER: Mr. Crocker, do you happen to -- well, I mean, we can ask the witness, first of all, if he knows what it is and what it says. I agree it would be helpful to know what the reference is.
MR. SANDBERG: And for me, too.
BY MR. CROCKER:
Q It's Exhibit 5 on the direct testimony of Mike Michaud.
JUDGE HEYDINGER: Okay. Do you have a copy for the witness to take a look at?
(Discussion held off the record.)
JUDGE HEYDINGER: Direct Exhibit Number 5. I have a copy.

MR. CROCKER: Do you have a copy, Your Honor?
JUDGE HEYDINGER: I'll give it to the witness.
MR. SANDBERG: Was there a particular part that you wanted him to look at, Mr. Crocker?
MR. CROCKER: Yes.
BY MR. CROCKER:
Q The second paragraph on page 2, I think.
A And any particular part of the paragraph?
Q The question is, do you disagree with that analysis, that it mitigates the Alexandria issue through 2017? Do you disagree with that analysis?
MR. SANDBERG: Your Honor, I believe that assumes a fact not in evidence or not found in this document. I don't think mitigation is the subject of this paragraph.
JUDGE HEYDINGER: I'm sorry, but I don't have the document right in front of me. Mr. Crocker, do you care to respond?
MR. CROCKER: Well, the information response assumed that this line was in service, which is the mitigation strategy --
JUDGE HEYDINGER: Okay. So what you're saying is if that line is in place?

MR. CROCKER: It mitigates the Alexandria issue through 2017.
THE WITNESS: Yeah.
JUDGE HEYDINGER: And the issue, apparently, is stated there as serving the load in Alexandria.
MR. CROCKER: Well, and southern Red River Valley.
MR. KRIKAVA: Your Honor, on behalf of Xcel, I think at this point I need to interpose an objection. I'm not sure that this witness has yet stated whether he's seen this document before, whether he knows what it is. He certainly is not listed as the responder of the information request.
JUDGE HEYDINGER: I think Mr. Crocker was just asking him whether he had an opinion whether this was an adequate mitigation. He may or may not know, regardless of whether he was the author of this or not.
BY MR. CROCKER:
Q In your professional opinion, based on the facts that you know as you sit here today, do you disagree with that analysis?
A My interpretation of this, having not seen this before, with a cursory review here, is that I

believe what this is saying is that if you put in the initial Bemidji-Grand Rapids line, you will see a subsequent problem in the 2017, '18, '19 time frame. And I believe that's consistent with our analysis because -- although I said to you a minute ago that I thought this problem was in 2011 but I wasn't sure, as I look back through the testimony, in fact, it was -- we demonstrated the problem with this line in service at the 2016 winter peak.
Q So that would be consistent?
A It is consistent, if I'm correct in interpreting this document here.
Q Thank you.
MR. CROCKER: And I'm sorry for the confusion, Your Honor.
JUDGE HEYDINGER: Mr. Webb, could you just hand me that document, please?
(Witness complies.)
BY MR. CROCKER:
Q And just for the record, that is the same -- the same problem that you discuss in your testimony on lines 1 through 12 of page 21; is that correct?
A I believe that to be the case but, honestly, I haven't had enough time to study that document and related materials, perhaps, but it seems to be

relating to the same problem.
Q Thank you. Now, at the bottom of that page, on line 21.
A Page 20?
Q Page 21, still on page 21. At the bottom of that page on line 21 there's a sentence that begins, As there is not sufficient generation (sic); do you see that?
A Yes.
Q To the extent that dispersed generation is located in this area, would that help mitigate the problem?
JUDGE HEYDINGER: That area?
BY MR. CROCKER:
Q Yeah, the area that we're talking about here, which would be the southern Red River Valley, the same area in which load shedding of up to 50 megawatts would be required.
A Yes. I think to the extent that you could either -- well, to the extent that you could provide some sort of generation there that was suitably reliable, as compared to the alternatives here, that would amount to something around the -- an effective, reliable injection of up to the load shed amount, you'd probably receive the same results.
Q Thank you. And so that would relate to

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dispatchability of the generation, wouldn't it?
A In availability and performance characteristics.
Q Yes. If I could, please, Mr. Webb, direct you to page 23 of your direct testimony. And there again, in a similar vein on line 1, it says that redispatch of generation is not an option since there's very little generation available. Do you see where I'm reading?
A Yes.
Q And if there were dispatchable generation available, why, just as you previously testified, that would help mitigate, wouldn't it?
A It's with the same caveats that I provided before.
Q Thank you. Does MISO consider adding to the generation as a planning option?
A No. We do not do integrated resource planning, we -- we do not get involved in the generation market, per se, in terms of new generation or determining where or how much, other than establishing reserve margin requirements overall. So we don't consider the addition of generation to be a usual solution, we'd rather respond to where generation is.
Q And, similarly, as I believe you did previously testify, you also wouldn't consider any demand-side

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opportunities as part of the mitigation strategies?
A We would consider them, we wouldn't predict them.
Q How would you consider them?
A To the extent that they're included in the projections of load.
Q That were provided to you --
A That are provided to us by our members' load serving entities in general.
Q Thank you. Now, a little further down on page 23, line 11, beginning on line 11. Here you found a 230 kV solution for the Alexandria area issues. You discuss a line from either Henning or Morris to Alexandria. Which of the two sources, in your opinion, is the stronger? Morris or Henning?
A I'm not sure of that answer. I'm not sure which of those two would provide the stronger source. We looked at the one that provided the -- that was closer, and to that extent could be expected to be stronger, but not necessarily. It certainly would provide the less cost to the alternative.
Q The less cost would not necessarily be the stronger?
A Not necessarily.
Q Do you have an ability to give us a reasonable cost estimate for each of these two lines? Perhaps on a per mile basis, if not in total?

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A I don't recall the per mile cost of those alternatives. I'm not sure I could guess at them precisely.
Q Okay. No, we won't ask you to be imprecise, Mr. Webb.
When you describe on page 24, line 8, that there's a difference of 23 years in the useful life -- from the useful load service life between the 345 line and the 230 line, for what years are you expecting each of these options to provide reliable service to Alexandria?
A For what years? That would be beginning in the year of installation of each of the projects, which, for this particular problem, I think was 2011. In service in 2011 and then the preferred project would last roughly 23 years, I think I testified, longer than the alternative.
Q And that 23-year period is simply a calculation based on a 1.6 percent growth factor; is that correct?
A Yes, it was a rough calculation based on that growth factor and based on the difference in the resulting load level -- loading level of the critically-loaded facilities with the alternative as compared to the proposed project. The proposed project provided

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loadings less than about 60 to 65 percent of the -- or perhaps less, we actually monitored a 65 percent rating and found that the loadings on the critical lines were below that, so we don't know how low they are, but with the proposal, what were critically-loaded facilities, well overloaded, were now loaded less than 65 percent of their capability, and with the alternative they were much closer to their full capability still.
Q So how long would that line reliably serve load?
MR. SANDBERG: Objection, Your Honor. Vague.
BY MR. CROCKER:
Q To the Henning line; is that right?
JUDGE HEYDINGER: Let me be sure I'm clear. Are you saying if the 230 upgrade was done as proposed, when would its capacity be exceeded?
MR. CROCKER: Yes.
JUDGE HEYDINGER: And I think he said about 2011.
THE WITNESS: 2011 is when the problem exists, so you would want to have the solution in place by then.
JUDGE HEYDINGER: Well, then, maybe I'm confused. I thought you said even if it's added

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there would be a capacity -- I mean, I think part of the question is we've got 23 years beyond when, is I think what we're trying to get at.

MR. CROCKER: How long is it good for, is what we're trying to get to.

JUDGE HEYDINGER: When the X here and then the plus 23 equals Y, I guess.

MR CROCKER: Thank you, Your Honor.

THE WITNESS: We didn't do that calculation. We compared the -- exactly what the testimony says, the -- we grew the loads in the area to see when, with each of the solutions, we would again begin to see the same problem. And the difference in that load level was 293 for the whole area, as compared to 212. We took that difference and computed that we had a load growth rate of about 1.6, the difference of about how long those two solutions would last would be about 23 years.

BY MR. CROCKER:

Q Thank you. Did you analyze a scenario for Alexandria that considered constructing the Boswell 230 kV line and one of these two 230 kV lines?

A We didn't analyze that, no.

JUDGE HEYDINGER: Mr. Crocker, it's time for a break. If you want -- if you have some

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follow-up questions on this topic, go ahead and continue, otherwise, let's take a break.

MR. CROCKER: This would be a good time. I'm going to move to the next page.

JUDGE HEYDINGER: All right, thank you. Let's take 15 minutes.

(Break taken from 2:54 to 3:11.)

JUDGE HEYDINGER: All right. Let's go back on the record.

Mr. Crocker, you may continue with the cross-examination of the witness.

MR. CROCKER: Thank you, Your Honor.

BY MR. CROCKER:

Q Mr. Webb, could I ask you, please, to turn to page 25 of your direct testimony, beginning around line -- just a minute. Okay. At the bottom of page 25 and on to page 26. Have you analyzed a 345 kV radial extension from Monticello to St. Cloud as an alternative?

A No, we didn't analyze that.

Q And now we get to jump all the way to page 29. In your first question we're now looking at the area around Rochester.

A Okay.

Q Are you familiar with the regional incremental

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generation outlet, the so-called RIGO analysis?

A I'm aware of them. For one thing, I read about them in the -- it's in the rebuttal testimony, I believe it was, or testimony, but not specifically. We haven't done any analysis of those projects one way or another.

Q Okay. So you have not analyzed the impact of the proposed RIGO lines on the Rochester reliability?

A No.

Q On page 34 of your testimony, lines 9 through 13, you're talking about the 700 megawatts of transfer capability?

A What page again, please?

Q Page 34.

A Okay. Lines?

Q Lines 9 through 13. Is there any guarantees that the 700 megawatts of transfer will be used for the Minnesota RES, Renewable Energy Standard?

A I think it's quite likely to be used for renewable generation in that area.

Q All of it?

A I would say that's a very high probability given the amount of generation that's all wind generation immediately surrounding that particular line, the amount of interconnection in the queue.

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Q If it's -- if it's used for -- your testimony is that it's a very high probability that it will all be used for renewable energy; is that correct?

A Yes.

Q Just because it's all or almost all renewable energy, does that necessarily mean it will apply to the Minnesota's RES?

A I don't have any basis to answer that question.

Q Thank you. Do you know what would be necessary in order for it -- to ensure that it applied to the RES?

MR. SANDBERG: Objection, it's already asked and answered.

MR. CROCKER: No, it's a different question.

JUDGE HEYDINGER: Yeah, the objection is overruled.

BY MR. CROCKER:

Q Do you need the question repeated?

A What would be necessary --

Q In order to ensure that it was applicable to the RES for the --

JUDGE HEYDINGER: The question was does he know what it would take?

MR. CROCKER: Yes.

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BY MR. CROCKER:
Q And if you don't know, why, then you don't know.
A I think that's probably the right answer, then.
Q Okay. On page 35, on line 4, you speak of the convictions that Applicants have. What do you mean by convictions of the Applicants?
A I'm sorry, what line was that?
Q Line 4, Mr. Webb.
A Of what?
Q Page 35, line 4.
JUDGE HEYDINGER: English is an ambiguous language, isn't it, Mr. Crocker?
MR. CROCKER: It's a fortunate thing, Your Honor.
THE WITNESS: I missed the line reference. I'm sorry.
BY MR. CROCKER:
Q Line 4.
A Line 4, convictions.
MR. CROCKER: Your Honor, I do know about convictions.
JUDGE HEYDINGER: I'm speechless.
THE WITNESS: Okay. What we meant was commitments.
BY MR. CROCKER:

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Q I see. And can you be specific about the nature of the commitments that you know about?
A Well, we presume they're committed to comply with the statutes.
Q Okay. You previously testified -- strike that.
I'm looking on page 36 of your testimony, on line 3, and I'm wondering how you can make that statement, considering that you don't know -- you testified that you didn't know whether the renewable energy on that line could be applied to the Minnesota Renewable Energy Standard?
A Which statement are you asking me to --
Q Simply stated, the Brookings County-Twin Cities 345 kV line is, in our opinion, necessary to meet -- necessary to reasonably meet the milestone targets of the Minnesota Renewable Energy Standard. That sentence.
A I think the basis for that was the fact that we estimate about in the range of five to six thousand megawatts of our renewables will be needed to meet that standard. And there are much, much less than that interconnected today. And this particular line is well suited in terms of its location and proximity to wind generation in the queue that could be used to meet that need, and we would expect that

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it would be.
Q And you would agree, wouldn't you, Mr. Webb, that there are other locations for renewable energy development to be located that could also be used to meet specific milestones?
A There are other, but the -- this area in general has a large percentage of the renewable generator requests as compared to the rest of the area.
Q And when do the first milestones become effective? Are you aware?
A I don't have those dates committed to memory.
Q Would it be possible for this line to help meet milestones, early milestones, if it wasn't in service by the time those dates were upon us?
JUDGE HEYDINGER: He just said he didn't remember the dates, so I think that's hard to answer.
THE WITNESS: Well, and I didn't say in the testimony early milestone targets, but we do know that there are milestones, we can't wait until 2025.
BY MR. CROCKER:
Q To do it all?
A To do it all, correct.
Q So the milestones that you're referring to on line

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5, they would refer more to the milestones towards the end of that time period?
A Well, as you alluded here, I think certainly milestones that would occur after the in-service date of the project.
Q Now, if I could ask you to back up just a little bit to page 27 to 28 of your testimony. And you previously testified, Mr. Webb, that to the extent that with all of the caveats that you mentioned in generation, strategically located could help mitigate some of the issues that you've raised. Isn't it true that energy coming from that generation capacity would alter the percentages listed on the bottom of page 27 and on into page 28 and other locations in your testimony where you're talking about loading percentages?
A I'm sorry, did you say generation coming from where?
Q From the strategically located dispersed generation that you previously testified could mitigate some of the issues that you've addressed in your testimony. Rochester, for example. And St. Cloud and Alexandria, for example.
A I'm not sure I made that statement, or which one you're referring to.
Q If there was local generation from Rochester that

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was able to address some of the issues raised in your testimony, wouldn't that affect the percentages listed on the bottom of page 27 in the power flow overloadings?
A I think it's true if we could replace the generation that is part of the contingent condition here. You know, then you would have mitigated that contingent condition.
Q And that would affect these percentages, in terms of overloading or --
A Sure.
Q Yes. On page 36 of your testimony, beginning on line 14 regarding the voltage support and service quality benefits you described here, are there any specific reliability limit violations that you know of at the substations where the line will connect that you expect will need mitigating before 2020?
A No, we did not analyze this particular part of the system in a detailed, focused study to determine that there were specific overloads. This was a qualitative statement of the general support that these transformations from the high voltage line would provide. And that being the case, whenever you might see loading conditions on the low voltage system, these would then mitigate those.

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MR. CROCKER: Thank you, Mr. Webb. I have no further questions.
JUDGE HEYDINGER: Ms. Marrow.
MS. MARROW: Thank you.
CROSS-EXAMINATION
BY MS. MARROW:
Q Good afternoon, Mr. Webb. My name is Mary Marrow, and I'm representing four organizations in this proceeding, the Minnesota Center for Environmental Advocacy, Fresh Energy, Wind on the Wires, and the Izaak Walton League of America, the Midwest office. And I have just a few questions for you.
First of all, do you want to refer to page 9 of your testimony? And let me know when you're there.
A Okay.
Q And on page 9, starting on line 12, you discuss different futures used in the Midwest ISO Transmission Expansion Plan. And so I had a few questions about that. I was wondering if you could just describe the different types of futures that are used in this expansion plan for long-range planning?
A Okay. I can do that in a general way, as I am not -- I don't manage that particular long-range

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study, that's done in another part of our planning organization. But, generally speaking, the futures involve projecting the -- basically, again, the types and amounts of generation that could develop on the grid over a longer-term planning horizon, say in the 15- to 20-year time frame, beyond the time frame that my group is responsible for doing reliability studies on, which is five to 10 years. So we're looking out -- we have another group that looks out in the next five to 10 years beyond that, the second decade.
And so in order to plan for that, there's a need to make projections about future potential generation on the grid. And so that effort is one that uses a combination of stakeholder inputs as well as some analytical tools -- of which I'm not particularly familiar with their use -- but that project what may be reasonable generation patterns that may develop across the system. And those, each one of those patterns, if you will, are referred to as a future. And then those -- or perhaps they're referred to as scenarios, I guess. And then the -- some of the -- the group develops, I believe, four at this stage -- has developed four different possible futures that include variations in the

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parameters that I had listed on page 9 of my testimony. Things like variations in capital costs, of resource technologies, environmental costs and initiatives, load growth, et cetera.
So there's a set of futures that are defined in that process separately, and then -- then there's kind of a siting process that goes on to anticipate more likely than less likely locations for some of this future generation, of which there's some -- again, I believe it's a combination of stakeholder discussion and input and maybe load serving entity projections about where things will go, along with information from the generation queues to help support those decisions, as well as other informational things such as where resources exist on the grid, for example.
Q Thank you. You mentioned that there were four general futures that were considered. Do you know what the specific four are?
A There is one referred to as a reference future, and I believe that is a future that is sort of status quo, in terms of growth and economic parameters. And our RES mandates, for example, existing. And then there's a high renewable, which I believe is -- well, obviously by its name has a higher projection

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of the percentage of renewable energy than may exist today in existing state mandates. And I'm not sure what the other two are exactly.
Q I have some notes. Could the other two be environmental and limited fuel supply?
A Those sound like familiar titles to me.
Q I was most interested in the renewable piece. So are you familiar with the details of the high renewables future and what that entails?
A I'm not positive.
Q Do you -- do you have any general familiarity with the number of megawatts associated with that high renewables future, by any chance?
A I am aware that the -- we've estimated that the existing mandates would amount -- which would be the reference future, would amount to about 20 gigawatts of renewable energy in the Midwest ISO. And then I believe that the high renewable is a 20 percent mandate across the entire Midwest ISO footprint, and that, from my notes, is about 40 gigawatts.
Q That sounds consistent with what I had heard. Thank you for your confirmation of that.
In the Midwest ISO transmission expansion planning models, is wind generation treated as just an energy resource or is it also assigned capacity

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value for meeting reliability needs?
A In the planning models?
Q Yes.
A I'm not sure that question really makes sense from start to finish. We don't assign values in the model or treat things as -- I mean, energy resources is an interconnection product versus a network resource.
Q Just a minute. To your knowledge, does the Midwest ISO assign -- assign wind capacity value? Are you familiar with that?
A Yes. When we model wind in power flow models, is that what you're talking about?
Q Yes.
A It depends on the type of study as to which -- what capacity value is assigned. In the MTEP models that my group is responsible for putting together, we generally are studying -- since we're focusing on reliability issues, we're looking at peak load conditions, Twin Cities peak load conditions, and so I believe we modeled the wind in those models at 20 percent of their nameplate capacity in those MTEP models. Which are used, again, for the five- to 10-year forward expansion planning models for peak reliability considerations.

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Q Okay. Let me see if I understood what you said. So it sounds like based on this type of planning that the Midwest ISO does recognize that wind can -- has some capacity to meet reliability needs and specifically for some peak loading needs?
A Some percentage of wind can be assumed to be available at peak time.
Q Okay. And you indicated you thought it was about 20 percent of nameplate value?
A I think that's a typical value.
Q Okay. Then assuming that wind can meet that type of a need, would it be correct to say that the Midwest ISO transmission expansion planning and in facility reliability analysis -- in that analysis that large amounts of wind generation can make a significant, positive contribution to the reserve margin calculation and thereby help to serve regional reliability?
A It depends completely on the amount --
Q I'm sorry, I used a vague -- a large amount.
MS. MORROW: Sorry, Janet.
MR. SANDBERG: I'm sorry, was the witness done with the answer?
THE WITNESS: I'm not sure. Could you repeat the question?

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BY MS. MARROW:
Q And I am sorry, I did speak over you, you weren't finished, so I will try to rephrase it. Basically, would you agree that since wind can meet some reliability needs, that large amounts of wind generation can make a significant positive contribution to the reserve margin calculation and thereby help to serve regional reliability? And I recognize I'm -- it's a little vague because we haven't established how high, but at a certain point, if you have enough wind, that it can help provide that regional reliability as well?
A I think that's a true statement.
Q And I'm going to shift gears now to the MISO queue form, and I know from Mr. Crocker's cross-examination that it sounds like you don't have a lot of expertise in that area, but you have a general knowledge; would that be correct?
A That's correct.
Q So I have a few questions and I hope that they're general enough for your level of experience. If they're not, just indicate that.
A All right.
Q You mentioned in a response to Mr. Crocker that one purpose of the Midwest ISO queue reform was to help

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projects move more quickly through the queue because one of the identified problems was just the number of projects that were trying to gain access; is that correct?
A I think I said that was a contributing factor.
Q Would another contributing factor be just the lack of transmission facilities for the projects that are in the lines?
A Yes. Because that would extend the amount of time it takes to evaluate any one of them.
Q And so would it be fair to say that at this time there are many more megawatts of generation outlook capacity that are in the MISO queue than there is available transmission to serve that?
A Yes, that's correct.
Q Okay. And so as a result of that, is it common for projects to stay in the MISO queue for extended periods of time?
A Yes.
Q Do you have any idea how long projects can stay in the lines, or if there's any restrictions of how much time a project can be in the queue?
A I really don't know those numbers. I don't believe there are any restrictions on how long it could be in the queue.

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Q Okay.
A I do know that the -- I recall that the interconnection process itself allows for a great number of days. I believe on the order of 600 or so, is my recollection, that could be taken for any one generator to go through all of the steps back and forth for the full amount of time that's allowed for each step under that tariff.
Q And could there possibly be some FERC mandates that limit that upper edge as far as how much time a project can be in the MISO queue? Does that sound familiar to you?
A No, I'm not aware of that.
Q And do you know if the MISO queue reform will affect all of the projects in the MISO queue, or do you know?
A I don't know.
Q And so you don't know if any projects will be grandfathered in because of how long they've been in the queue?
A I'm afraid I don't know that.
Q Okay. On pages -- I think it's 33 of your testimony. I'm sorry, page 34. 33 and 34. You discuss the wind resources in southeast Minnesota.
A Yes.

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Q I'm sorry, southwest Minnesota?
A Yeah.
Q And you indicate on page 34, at lines 9 and 10, that based on your calculations the Brookings line will help to achieve approximately 13 percent of Minnesota's Renewable Energy Standard; is that correct?
A Yes.
Q And in your transmission planning activities have you identified any other good wind resources in other areas of Minnesota that can also help, to your knowledge, to meet the Renewable Energy Standard?
A I'm not sure how to answer that one, exactly. Could you read that back?
(Whereupon, the question was read back by the court reporter.)
THE WITNESS: To my knowledge, I've seen the wind resource maps and I've seen the scattering of the queue locations. And there are -- it's spread around the state to a good degree.
BY MS. MARROW:
Q So you'd agree that there are other wind-rich areas in Minnesota in addition to this southwest Minnesota?
A Oh, yes.

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Q Okay. And then on page 36, lines 10 through 12. And you're speaking again about the Brookings line of the CapX project and you indicate that not only will the Brookings line help to provide generation outlet for renewables, but this line will also go to some of the reliability needs in that area; is that correct?
A Yes. As a general nature, supporting the lower voltage system through transformation from bulk power sources will strengthen those underlying systems.
Q So it would be fair to say that this is an indication of how a line that was serving renewables can serve a dual purpose for both renewable outlet and also reliability support?
A Absolutely.
Q Which from your earlier discussion also reflects that the extent to which wind can serve the dual function of both renewable outlet and reliability?
A Well, I think it's a slightly different characterization, in that the second one was whether the transmission that may be associated with wind generation would provide reliability, sort of ancillary reliability to the underlying system. And the other discussion was whether the wind itself

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could contribute to reserve margins.
MS. MARROW: Okay. I think I have no further questions. Thank you.
JUDGE HEYDINGER: Ms. Overland.
CROSS-EXAMINATION
BY MS. OVERLAND:
Q Good afternoon, Mr. Webb. I'm Carol Overland, representing No CapX.
Starting with your testimony on page 1, line 2, wherein you say you were director of expansion planning. Can you specifically define what you mean by expansion?
A It's just a title of, you know, of a position. I believe the original appointment was director of planning and we divided the group up into more segmented compartments, if you will. And, for example, there's a department of interconnection services, I believe it is, or interconnection planning, as opposed to my department, which is called expansion planning. But functionally what my department does is ensure that the transmission system in the Midwest ISO meets national reliability standards.
Q And so, then, do you mean physical transmission, expansion of physical transmission capability,

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capacity?
A Yeah, I think that's a -- one of the options that could come out of the functions my department performs.
Q Does it also address the market expansion, the market plans of the Midwest System Operator?
A I'm not sure I understand what that means.
Q The marketing arm of Midwest, the Midwest market, where transmission is sold.
A You mean expansion in terms of developing new membership?
Q No, in expansion in terms of developing the market.
A I'm not sure if I know what developing the market actually means. We -- our transmission owners' agreement, performing agreement as an RTO requires us to consider both reliability and market efficiency, if you will. In other words, relief of congestion, to the extent that it's appropriate to do that.
Q Referring to the very last page of your testimony, page 37, line 10, it talks about the Midwest ISO market. Would that be within that definition?
A Yes. In that context I think the Midwest ISO market consists of the loads that are under the market tariff.

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Q And looking at page 3, where, say, lines 3 and 4, where you're talking about regional expansion criteria and the benefits task force?
A Page what, again?
Q Page 3, lines 3 and 4. No, make that 4 and 5. Where you're talking about a part of your duties are participating in the Regional Expansion Criteria and Benefits Task Force?
A Yes.
Q Could you explain what regional expansion criteria means in that sense?
A The Regional Expansion Criteria and Benefits Task Force was a task force that was set up to determine both the criteria for when you should make a transmission expansion to the grid and the beneficiaries of such an expansion.
Q And the phrase here, benefits task force, can you explain what that is? What benefits means in that context?
A Yeah. Who would be the beneficiaries of a transmission expansion.
Q And in that case, does benefits also mean economic benefits?
A Could be.
Q Is that a yes?

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A Does it also include --
Q Economic benefits?
A Well, the task force was set up to determine what those benefits may be.
Q Am I hearing you correctly, the task force was set up to determine what the economic benefits would be?
A There could be more than just economic benefits. There could be reliability benefits, for example. Or there could be reserve margin benefits or there could be reduction in system losses or more robust system performance. There's a number of things that the task force was looking at.
Q And does that include, then, benefits of the market-based energy market that MISO is developing?
A Yes. For example, one of the benefits that the stakeholders advised was an appropriate one would be the ability of a transmission line to reduce overall production costs within the Midwest market generation fleet.
Q If you're talking about reducing overall production costs, was that one of the issues addressed in a study that was commissioned by MISO?
A Well, I presume many studies that we've done have evaluated production costs.
JUDGE HEYDINGER: Were you asking in

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Minnesota or as it related to this?
MS. OVERLAND: No, related to the entire MISO footprint.
BY MS. OVERLAND:
Q Are you familiar with studies doing that issue?
A Production costs?
Q Yes. Reduction of production costs.
A The effect on production costs, yes.
Q Would you agree that one way to reduce production costs is to substitute lower-cost generation for higher-cost generation?
A That's -- I think that's a possibility.
Q In your testimony, on page 4 you talk about the real-time and a day-ahead locational marginal price-based energy market. That would be lines 15, basically 15 through 18.
A Page again?
Q Page 4. Page 4, lines 15 through 18.
A Okay.
Q And let's start with lines 15 and 16 where you're saying that the Midwest ISO operates a real-time and a day-ahead locational marginal price-based energy market. Could you explain that a little bit? For instance, what's a real-time market?
A Yes. We -- well, I'm not an expert on day-to-day

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market operations, but the market, in general, accepts offers from generators to serve the demand, and either on a day-ahead or on a more short-term time frame. And those offers are evaluated based on their cost and the ability to be selected securely so that there aren't any reliability violations and optimizes the selection of that generation, subject to security, so it produces a security-constrained economic dispatch, and that's primarily the market operation.
Q And that's one where costs of various generation is an issue and you can reduce perhaps some costs through this market; is that correct?
A Yes, that seeks to produce the lowest production costs that security will allow.
Q And then moving to the last page of your testimony, page 37, you're talking about the other benefits that the other projects may have. Can you describe that, please, what the other benefits would be?
A Yes. In day-in and day-out operations of the generation in the market, offering in based on -- and then being selected based on price and their secure dispatch. There -- the system cannot always select the most optimal generation dispatch due to constraints on the grid. And that results in

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variations in prices on a locational basis, which is how the market operates in an LNP market.
And what I was describing here is that, in addition to the specific reliability needs that I pointed out in my testimony for the projects, in general terms, the providing transmission that is, as these three projects represent, that extends in different directions into the market, will allow flexibility to be able to take advantage of the lowest cost generation that may be available either today or as soon as the lines are in service and into the future that may exist in different areas of the grid, whether it be to the east of the lines or to the south or to the west, since the lines extend in different directions. So it provides that kind of flexibility and that's what the statement is addressing.
Q And can you briefly describe the Midwest ISO market footprint?
A It covers 14 states, I believe from North Dakota, it includes agreements we have with Manitoba, the province of Manitoba in Canada. Extends east through Michigan and parts of Pennsylvania. South to parts of Indiana and Ohio and most of Indiana, parts of Ohio. Illinois, Missouri, Iowa, Minnesota,

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of course. South Dakota, parts of it.
Q Would you agree that the CapX footprint is pretty much within the MISO market footprint?
A Yes.
Q Now, when you're talking about production cost savings and you're talking about selecting least-cost generation, would you agree that a focus is to estimate the dollar value of displacing extension generation and substituting a lower cost generation, would you believe that's part of the benefit, is to do that substitute? Should I rephrase?
A No, I'm just thinking about it. Substitution in the sense of ordering the dispatch, yes.
Q And the ordering the dispatch would be lower cost comes first, then, over higher costs, correct?
A To the extent that can be done securely, yes.
Q And would you agree that natural gas is higher cost than coal, generally?
A I'm not an expert on that, but I believe that's the case.
Q Are you familiar with the ICF international study entitled Independent Assessment of Midwest ISO Operational Benefits?
A Only that it exists. I've never read it.

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Q You've never read it, you say?
A No, I've not read that.
Q In discussing benefits, would you agree that there is significant potential -- there is potential for significant savings in this ordering a dispatch?
A There's potential for savings, I don't know if I could characterize exactly how much.
JUDGE HEYDINGER: Savings to whom, did you mean? I'm sorry, I just -- I'm not sure what savings meant in that context.
BY MS. OVERLAND:
Q Would you believe that there is a potential for significant savings to -- hmm. Would you -- would you agree that there is significant potential benefits to the participants in the market of such an order generation -- dispatch?
JUDGE HEYDINGER: Do you mean the fuel costs can be lower?
MS. OVERLAND: The market purchases them, so the people buying the power.
JUDGE HEYDINGER: Do you understand?
THE WITNESS: I believe that the -- a more economic dispatch will result in lower cost of energy.
BY MS. OVERLAND:

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Q Would you agree that the potential benefits available to these participants -- market participants in the MISO market could be measured in the hundreds of millions of dollars?
A Depends on the -- the period and the congestion that exists at the time.
Q And would you agree that now, currently, the transmission system is congested?
A In parts.
Q And would you agree that this congestion limits the potential benefits to MISO market participants?
A Potentially.
Q And in your testimony that the CapX transmission additions would provide additional benefits on page 37, would that be one of the benefits, that there would be increased participation in this market dispatch?
A Yes. That was the intent of the discussion that you referred me to on page 37.
Q And, again, the intent of that market dispatch is to substitute a lower price generation for a higher price generation, correct?
A As it exists on the grid within the market operation, yes.
Q And typically that is lower, the coal price to

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generation source than natural gas?
MR. SANDBERG: Objection, asked and answered.
JUDGE HEYDINGER: Sustained.
BY MS. OVERLAND:
Q Would you agree that some of these benefits that you allude to in page -- on page 37 are associated with improved ability to displace gas generation with coal, more efficient use of coal generation and better use of import potential?
A Could you read that back?
(Whereupon, the question was read back by the court reporter.)
THE WITNESS: Well, my statement doesn't go into any of those areas. I mean, I'm not making a claim about one fuel source over another. What my statement in my testimony is is that if you have transmission that extends in different multiple directions, it allows for flexibility to take advantage of the most cost-effective generation that may be available, whatever that may be.
BY MS. OVERLAND:
Q And, again, the question was would you agree that these benefits would include improved ability to displace gas over coal or efficient use of coal

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generation and better use of income potential?
MR. SANDBERG: Objection, asked and answered.
MS. OVERLAND: The question wasn't answered.
MR. SANDBERG: She didn't like it, Your Honor.
JUDGE HEYDINGER: Yes. He did answer, it just wasn't a yes or no answer.
BY MS. OVERLAND:
Q Okay. In a yes or no answer.
JUDGE HEYDINGER: Are you asking can he give it -- I mean --
MS. OVERLAND: I would ask if he does agree with this or not.
MR. SANDBERG: Your Honor, he can't be made to give an untrue answer.
MS. OVERLAND: He can say yes or no, if he does not agree with it.
JUDGE HEYDINGER: I'm not going to compel him in this instance to give a yes or no answer. He said that there were -- you were making different assumptions than he was when he wrote this sentence. And now you're asking him to accept your assumptions; is that right?

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MS. OVERLAND: Just to say yes or no.
JUDGE HEYDINGER: Or say he doesn't accept your assumptions?
MS. OVERLAND: I'll start over.
JUDGE HEYDINGER: Please do.
MS. OVERLAND: I'll go somewhere else.
BY MS. OVERLAND:
Q Would you agree that transmission upgrades, which could increase the geographic scope of optimization within the Midwest ISO footprint, would be a benefit and encourage this market exchange?
A Say again? Transmission upgrades that what?
Q Would increase the geographic scope of optimization within the Midwest ISO footprint, that that would be a benefit that the market would provide?
A I think that's probably true, although geographic scope of optimization is a hard-to-define term.
Q Is MISO incorporated with PJM or PJM incorporated into MISO now?
A No.
Q Okay. Were there discussions to do that, or is that off?
A No, there's been discussions of forming a joint and common market or mechanisms that act to have two markets operate more like one. But there's no

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expectation or effort to merge the two.
Q Earlier you had spoken of ancillary services. And in transmission terms, what does that mean?
A Well, ancillary services under the tariff are certain services that are provided in support of the operation of the grid. And they include things like operating a spinning reserve of generators, as well as reactive support that you might get to support voltage that you might get from generators.
Q And there was some discussion of reserve margins. Is keeping that reserve margin tally, is that also part of ancillary services?
A I think we're talking about two different reserve margins here, maybe, because ancillary services tend to deal with the very short-term operating reserves. And I think the other discussion was more towards installed capacity planning reserves, rather than are we available-type stuff.
Q And you deal more directly with the hourly available reserves, is that --
A No, on the contrary, I'm a longer term planner.
Q Do you have a clue what the MTEP transmission investments would cost? Let me take this back a step for a minute. MTEP. That's not on the record, is it?

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JUDGE HEYDINGER: There are references to ones for certain years. Is there one in particular you're referring to?
MS. OVERLAND: Well, let's see.
BY MS. OVERLAND:
Q In your testimony you refer to '07, and there's a link to it, but it's not attached to your testimony.
MS. OVERLAND: Would there be any objection to entering this into the record?
MR. SANDBERG: If someone had a copy, we could look at it.
JUDGE HEYDINGER: We're kind of back where we were yesterday, Ms. Overland. Have you got it, what is it, and what purpose is it for which you're offering it?
MS. OVERLAND: Well, the purpose -- have I got it? No.
JUDGE HEYDINGER: Okay. Then you can't offer it. So let's move on.
BY MS. OVERLAND:
Q For example, MTEP recommends transmission improvements; is that correct?
A Yes.
Q And what's your estimate of what those transmission improvements will cost?

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A I believe the rolling five-year average of new recommended transmission has been, over the last several MTEP reports, in about the three billion dollar range.
JUDGE HEYDINGER: Three billion?
THE WITNESS: Three billion.
BY MS. OVERLAND:
Q Now, I'd ask you to refer to Exhibit 12. Is that up there somewhere? Page 1, and if you squint and look at slide three, which is in the middle on the right-hand side of the document.
A Um-hum.
JUDGE HEYDINGER: There's little tiny numbers on the right-hand corner of each slide.
THE WITNESS: I see it.
BY MS. OVERLAND:
Q Okay. And do you see a figure there that says three plus billion portfolio?
A Yes.
Q Okay. And then looking next at page 2, slide six, and slide six is at the upper left corner. Do you also see the figure of approaching three billion over time, or it says estimated capital costs approaching three billion over time?
A Yes.

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Q Now, you previously testified that the MISO -- the CapX fits within the MISO footprint. Do you have a sense as to the relation of the three billion that you spoke of with MTEP and the three billion with the CapX projects, phases one, two, three, et cetera?
A Well, the CapX initial phase group one projects have not been included in MTEP yet. We expect them to be in this year's, MTEP 08. And so these projections here, as I understand them, I hadn't seen this before, I don't believe, are -- is the -- I believe that three billion is the full extent. Well, in any event, these projects have not been included in the MTEPs previously.
Q Are there facilities overlapping in the current up-until-now MTEPs and CapX? Is there other -- any of the same facilities in there now?
A But none of the CapX projects have yet been included in the recommended projects to the board of directors thus far.
Q And are they included in a not recommended but being discussed category?
A Well, they have been included in discussion --
Q Okay.
A -- in the MTEP reports, yes, for a number of years,

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as we have known about those projects and been developing them. Part of the stakeholder process that we go through in planning is to try to have an open planning process where stakeholders know early on what projects are being contemplated. And so we -- as we have known about these projects, along with many other projects across the footprint, we describe them and their status in various -- in each of the annual, now, planning reports that we put out. And we have described the CapX projects as projects that are under study, you know, for several years running, as they have been.
We have several different categories of projects, if you will, in any MTEP report, and we categorize those in terms of appendices, that they're listed in Appendix A, B and C. And Appendix A projects is the list of projects that we offer as recommended projects that should go forward to our board of directors. And Appendix B projects are projects that have achieved some level of study, have been demonstrated to meet needs. In other words, the needs have been identified and they've been identified as a potential solution to those needs, but for various reasons we're not ready to recommend them yet to the board, mainly -- usually,

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because additional study is ongoing before we recommend them.
And so the -- the three billion dollar number, I believe, includes both the Appendix A and B projects. And these CapX projects are currently in Appendix B, so they may have been listed -- well, I guess we usually -- we list in each MTEP for the board of directors and other stakeholders that sum total of the Appendix A and the Appendix B projects, and I believe the three billion number, which may be closer to four, represents both the Appendix A and B or the recommended and the still under study but moving closer type of projects.
Q And is any version of MTEP a part of Minnesota's Biennial Transmission Plan?
A I'm not certain to what extent the transmission owners may include the MTEP into the biennial plan, no.
Q Okay. Regarding the MTEPs, who puts that together? Is that strictly an in-house MISO function?
A Yes.
Q A question about your testimony, page 6, lines 6 and 7, where you're testifying that part of the purpose of MTEP is to identify expansion that is critically needed to support the competitive supply of electric

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power by the system. Can you explain that statement, please?
A Can you give me the reference again, please?
Q Sure. Page 6, lines 6 and 7. I'm particularly interested in what you mean there by the expansion that is critically needed to support competitive supply.
A Yeah. Again, that refers back to expansions that would provide for market efficiency. In other words, projects that would -- you relieve congestion that is limiting the ability of the system to provide the lowest cost energy from the generation that is constrained.
Q Also, you had mentioned stakeholders, and you mentioned it also in your testimony on page 6, line 14. And who is regarded as a stakeholder?
A Our stakeholders are organized into the specific stakeholder groups. I'm not sure I could list them all for you, but they include and they have representation, for example, on our various committees. For example, our advisory committee that advises our board of directors on all things that we do. And those stakeholder groups include representatives from, of course, the transmission owners members, large end-use customers, state

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regulators, environmental interests, marketing arms or entities and such.
Q Let me phrase this another way to you. What of the parties in this proceeding, who is regarded as a stakeholder?
A In this proceeding?
Q In this proceeding right here today, right.
JUDGE HEYDINGER: If he knows.
BY MS. OVERLAND:
Q If you know.
A You mean who -- well, this isn't a Midwest ISO proceeding.
JUDGE HEYDINGER: I think her question is as you look around the table seeing the different parties represented, which ones would be considered MISO stakeholders?
THE WITNESS: Not that guy. Yeah, I think all of them is probably the right answer.
BY MS. OVERLAND:
Q Is CapX a stakeholder?
A Yes. Because they are -- yes.
Q And is Citizens Energy Task Force a stakeholder?
A To the extent that she's impacted by what the Midwest ISO does, she has certainly opportunity to participate in our stakeholder groups.

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Q Has Citizens Energy Task Force participated up until this very moment at any time?
A I couldn't say. I don't have information to that. But there's nothing to keep her from or them from participating.
Q Is No CapX a stakeholder?
A You could be.
Q I could be?
A If you chose to be.
Q Is North American Water Office a stakeholder?
A Same answer.
Q And is Institute for Local Self-Reliance?
A I think anyone who has an interest in the Midwest ISO and is impacted is a stakeholder, effectively, and is invited to our stakeholder meetings.
Q Is Wind on the Wires and the Izaak Walton League a regular participant and stakeholder?
A Yes. They sit -- I believe have had representatives on our advisory committee, in fact.
Q Is there anyone -- any other party in this room that has regularly participated as a stakeholder other than the Wind on the Wires and the Izaak Walton League?
A I can't answer that because we have a great many stakeholder meetings and I don't participate in all

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of them.
Q Okay. But to your knowledge?
MR. SANDBERG: Your Honor, asked and answered.
JUDGE HEYDINGER: Yeah, he doesn't know.
BY MS. OVERLAND:
Q Now, on page 7, starting at the bottom of page 6 and going to page 7, you testify regarding -- and I think this will be a similar answer but I wanted to verify this. You testify about expansions that would reduce consumer costs while providing access to new low-cost resources. That's the bottom of page 6, top of page 7. And, again, would that be those market benefits you're talking about there?
JUDGE HEYDINGER: Are you asking whether low-cost resources is the same as market benefits?
BY MS. OVERLAND:
Q If he's referring to that market benefits process that has been a recurring theme thus far.
A I think the statement stands on its own, but we consider together the stakeholders' opportunities for expansions, it would reduce customers' cost by providing access to low-cost resources. That's different than -- it's not exactly the same as relieving congestion from existing resources.

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Q Looking at the testimony on page 8, and Mr. Crocker had gone over this in a different way. On lines 11 and 12 you're talking about looking at the one- to five-year horizon, the six- to 10-year horizons and the 10- to 20-year horizons and you previously testified about the 2016 scenarios in modeling?
A Um-hum.
Q Why not through 2020?
A Well, because what we were focusing on in this particular set of analysis was the five- to 10-year reliability performance of the transmission system against national standards. And '11 to '16 represented the five- to 10-year horizon at the time that we began those studies.
Q Earlier, when Mr. Crocker was questioning you regarding a lower voltage system and inclusion of that in the models, you testified that we want to have an accurate representation of the underlying system so we can have the best model possible. So then would it be your testimony that the best model possible would include those low voltage systems?
A Not always. Sometimes the underlying system is more robust than in other areas or maybe compared to the higher voltage system. And so in those types of areas your representation of flows on the 100 kV

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system, you know, could be significantly influenced by what's happening on the underlying system. In other areas where the overlying system is more robust, then the reverse is true and the underlying system is thinner, that underlying system may not -- the elimination of that modeling may have very little effect on the flows that you see on the high voltage system.

So we work with our transmission owners who know their systems well and they generally recommend whether, you know, that's a starting point, anyway, for us to determine whether we should model the lower voltage or not, whether it's substantial and whether it tends to influence the higher voltage system or not. I mean, planners don't want to -- if you include a bigger and bigger model of things that the elimination doesn't materially change the flow down the system, all you do is slow down the processing time. And so you try to find a balance where you're not modeling things that are not significant to the analysis.

Q Okay.

JUDGE HEYDINGER: Ms. Overland, I think it's time to stop for the day. Okay?

MS. OVERLAND: Crap.

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JUDGE HEYDINGER: All right. Sir, we're going to adjourn until tomorrow morning at 9:30. We understand you'll be able to return at that time.

THE WITNESS: Absolutely.

MR. SANDBERG: Your Honor, I may have said this, but to make sure I have said it. I will not be able to return tomorrow and the hearing will no doubt be greatly improved by Mr. Beall sitting in this seat.

JUDGE HEYDINGER: We will welcome your colleague, Mr. Sandberg.

Anything additional before we go off the record for today? Mr. Krikava.

MR. KRIKAVA: Yes, Your Honor. If I could inquire, I would just -- I'd like to get a sense of -- if there's an approximate amount of time -- I just want to make sure I have my next witness here promptly when we're all ready to go, and I've sort of committed to my folks that I'd give them at least two hours' notice, you know, a significant amount of time to get over here. And if it's possible for folks to give an estimate of how much they have left for Mr. Webb, it might give me a sense of how much time I need to alert my folks.

JUDGE HEYDINGER: Ms. Overland.

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MS. OVERLAND: I have a bit, but I don't think he needs to bring a tent. But I would think at least a couple hours. I can't imagine he would be done with everyone, including me, in less than two hours.

JUDGE HEYDINGER: Ms. Maccabee.

MS. MACCABEE: Your Honor, I think it's about the same amount as with Mr. Lacey. I think that was about an hour, maybe a little less.

JUDGE HEYDINGER: And for the Department?

MS. ANDERSON: I estimate about 15 minutes.

JUDGE HEYDINGER: Okay.

MR. KRIKAVA: Sounds to me like late morning or afternoon.

JUDGE HEYDINGER: Yeah. I think it's unlikely, certainly, that we would get to the next witness before 11:00, 11:30. I think you could safely rely on that.

MR. KRIKAVA: Thank you very much.

JUDGE HEYDINGER: And if it looks at the morning break that it's going to go longer, we'll let the witness know to come after lunch or whatever.

MR. KRIKAVA: That works great. Thanks,

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Judge. And thank you, parties, for letting me know.

JUDGE HEYDINGER: Ms. Maccabee.

MS. MACCABEE: I just have a question for Mr. Krikava. Is the next witness for the Applicants the only witness that is being designated to address any of the financial issues?

JUDGE HEYDINGER: Financial --

MS. MACCABEE: I mean, either the costs of the proceeding or the costs of the facilities or how they will be allocated or the relationships between the Applicants, is that all -- I mean, there was very brief testimony and very little detail and I didn't see anything else in anybody else's testimony. So I want to make sure -- is this our only opportunity to get questions about that?

JUDGE HEYDINGER: And I assume you don't mean the costs of specific projects --

MS. MACCABEE: No.

JUDGE HEYDINGER: -- overall, how is the administration, ownership cost allocation going to work; is that the question?

MS. MACCABEE: Yes.

MR. CROCKER: Business relationships, Your Honor.

MR. KRIKAVA: I can speak to that, Judge.

Our next witness, Laura McCarten's only real subject of substantive testimony, as Mr. Crocker correctly articulated it, is the commercial arrangements between and among the CapX participates. For the most part, and I think quite exclusively, other than that subject matter she was really the traffic cop witness of pointing folks to the substantive testimony of other people. And so what I would anticipate is that, and I guess my view of the world, is that Ms. McCarten is available to help people understand the business arrangements of the participants and show pretty much and be cross-referencing to other witnesses on pretty much all other topics.

MS. MACCABEE: Your Honor, that may or may not address what I'm concerned about. I know my clients have asked whether any one of these projects is certified, who pays for it and when. And it did not seem to me that, from reading the direct, that there was sufficient information there that I could explain to my clients on who is going to pay for these things and when. And that's the question that I feel I need to ask about on their behalf.

JUDGE HEYDINGER: Mr. Krikava.

MR. KRIKAVA: Ms. McCarten will not be

the right person to ask those questions of. We have sponsored the prefiled testimony of Mr. Dave Grover who, in turn, is sponsoring the cost allocation white paper, as I refer to it, attached to the application.

JUDGE HEYDINGER: And if I recall correctly, Mr. Grover is the one who explains, and I guess from my point of view, attempts to explain -- and that is a lot more to do with me than him, trust me -- how it is that the tariff allocates costs for transmission?

MR. KRIKAVA: That's essentially correct.

JUDGE HEYDINGER: Okay. And, like I say, I had a hard time and I will have some questions trying to better understand that. But I think Mr. Grover is the witness who attempts to answer those questions, Ms. Maccabee.

MS. MACCABEE: Thank you, Your Honor.

JUDGE HEYDINGER: Anything further before we adjourn for the day?

All right. We'll reconvene at 9:30 tomorrow morning. Thank you.

(Hearing adjourned at 4:38 p.m.)

STATE OF MINNESOTA)
) ss.
COUNTY OF HENNEPIN)

REPORTER'S CERTIFICATE

I, Janet Shaddix Elling, do hereby certify that the above and foregoing transcript, consisting of the preceding 175 pages is a correct transcript of my stenographic notes, and is a full, true and complete transcript of the proceedings to the best of my ability.

Dated August 15, 2008.

JANET SHADDIX ELLING
Registered Professional Reporter

EVIDENTIARY HEARING - VOLUME 5A - JULY 18, 2008

BEFORE THE OFFICE OF ADMINISTRATIVE HEARINGS

OF THE STATE OF MINNESOTA

In the Matter of the Application of Great River Energy, Northern States Power Company (d/b/a Xcel Energy) and others for Certificates of Need for the CapX 345 kV Transmission Projects

OAH DOCKET NO. 15-2500-19350-2
PUC DOCKET NO. CN-06-1115

Minnesota Public Utilities Commission
121 Seventh Place East
Suite 350
St. Paul, Minnesota

Met, pursuant to Notice, at 9:30 in the morning on July 18, 2008.

BEFORE: Judge Beverly Jones Heydinger

REPORTER: Janet Shaddix Elling, RPR

APPEARANCES:

MICHAEL C. KRIKAVA and LISA M. AGRIMONTI, Attorneys at Law, Briggs and Morgan, 80 South Eighth Street, 2200 IDS Center, Minneapolis, Minnesota 55402, and PRITI R. PATEL, Assistant General Counsel, Northern States Power Company, 414 Nicollet Mall, Minneapolis, Minnesota 55401, appeared for and on behalf of the Applicants.

MIKE MICHAUD, P.O. Box 174, Lake Elmo, Minnesota 55042, appeared for and on behalf of the North American Water Office and Institute for Local Self Reliance.

PETER R. MAHOWALD, General Counsel, and PETER JONES, Assistant General Counsel, Prairie Island Indian Community, 5636 Sturgeon Lake Road, Welch, Minnesota 55089, for and on behalf of the Prairie Island Indian Community, not present.

CAROL OVERLAND, Attorney at Law, Overland Law Office, P.O. Box 176, Red Wing, Minnesota 55066, appeared for and on behalf of No CapX.

MARY W. MARROW, Staff Attorney, Minnesota Center for Environmental Advocacy, 26 East Exchange Street, Suite 206, St. Paul, Minnesota 55101, appeared for and on behalf of the Minnesota Center for Environmental Advocacy, Wind on the Wires, Izaak Walton League and Fresh Energy.

PAULA GOODMAN MACCABEE, Attorney at Law, Just Change Consulting, 1961 Selby Avenue, St. Paul, Minnesota 55104, appeared for and on behalf of Citizens Energy Task Force.

KEITH L. BEALL, Senior Attorney, P.O. Box 4202, Carmel, Indiana 46082-4202, appeared for and on behalf of Midwest ISO.

JOYCE OSBORN and ROGER TUPY, c/o RUSSELL MARTIN, 11600 East 270th Street, Elko, Minnesota 55020, for and on behalf of United Citizens Action Network, not present.

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JUDGE HEYDINGER: All right. We might as well get started. Good morning, everyone. I'm Beverly Jones Heydinger, the Administrative Law Judge who is overseeing this proceeding In the Matter of the Application of Great River Energy, Northern States Power Company, doing business as Xcel Energy, and Others for Certificates of Need for the CapX 345 kV Transmission Projects. We are here today on Friday, July 18th, 2008.

If Counsel would please state their appearances, we'll begin with the Applicants.

MR. KRIKAVA: Good morning, Judge. Thank you very much. My name is Mike Krikava with the Briggs and Morgan Law Firm, on behalf of Applicants. With me at counsel table this morning is Laureen Ross McCalib from Great River Energy, Mr. Jim Alders from Xcel will be here shortly, and Priti Patel and Lisa Agrimonti are at the next table and we'll be up here at different parts during the day.

JUDGE HEYDINGER: Thank you. And for the Midwest Independent System Transmission Operators?

MR. BEALL: Thank you, Your Honor.

JUDGE HEYDINGER: Way at the bottom there's a little button, if it goes red, you're on.

MR. BEALL: Thank you, Your Honor. Appearing on behalf of the Midwest ISO, Keith Beall. I appreciate the Bench's indulgence, as well as parties, for allowing Mr. Sandberg and I to tag-team here on this witness. Mr. Sandberg will appear again Monday morning, God willing.

JUDGE HEYDINGER: All right. Thank you.

Is there anyone here for the United Citizens Action Network?

North American Water Office, Mr. Crocker informed us that he would not be available this morning and I see he's not here.

Prairie Island Indian Community? No one present.

MCEA and the Joint Intervenors.

MS. MARROW: Yes. My name is Mary Marrow, and I'm here representing four organizations, Fresh Energy, Wind on the Wires, Izaak Walton League of American, the Midwest office, and the Minnesota Center for Environmental Advocacy. And Beth Soholt with Wind on the Wires will be joining me this afternoon.

JUDGE HEYDINGER: Thank you. And for No CapX.

MS. OVERLAND: Carol Overland, for No

CapX.

JUDGE HEYDINGER: Citizens Energy Task Force.

MS. MACCABEE: Paula Maccabee, Citizens Energy Task Force.

JUDGE HEYDINGER: And the Department.

MS. ANDERSON: Julia Anderson, representing the Office of Energy Security. With me today is Dr. Steve Rakow and Hwikwon Ham.

JUDGE HEYDINGER: And for the Public Utilities Commission staff.

MR. KALUZNIAK: Michael Kaluzniak, for the PUC, with Bob Cupit and Andrew Mensing.

JUDGE HEYDINGER: And when we adjourned yesterday Mr. Webb was on the stand and Ms. Overland was in the process of cross-examining him.

Are there any preliminary matters before we continue with the cross-examination?

MS. OVERLAND: Perhaps.

JUDGE HEYDINGER: Ms. Overland.

MS. OVERLAND: I do have that MTEP 07, that they've referred to. So would you regard that as a preliminary matter or should we just proceed with the cross?

JUDGE HEYDINGER: And were you going to

introduce it through Mr. Webb?

MS. OVERLAND: Correct. He's relied on it.

JUDGE HEYDINGER: All right. Once you gets back on the stand with him you may proceed to have it marked and so forth.

Mr. Krikava.

MR. KRIKAVA: Just briefly, Judge. I have asked Ms. Laura McCarten, who will be our next witness, to be available here at 11:00. I would ask you or the parties to sort of let me know if it begins to appear like she's going to be needed earlier or, conversely, if it's going to take a long time and I don't need to have her come, as much flexibility as we can have, I'd appreciate it.

JUDGE HEYDINGER: All right. Well, why don't you remind me at about 10:30 and we'll check our progress at that time.

MR. KRIKAVA: Thank you, Judge.

JUDGE HEYDINGER: All right. Ms. Overland, you may continue.

JEFFREY R. WEBB,

after having been previously sworn, was examined and testified further on his oath as follows:

CONTINUED CROSS-EXAMINATION

BY MS. OVERLAND:

Q Good morning, Mr. Webb.

A Good morning.

Q You recall we've been discussing the MISO queue and wind quite a bit in this proceeding yesterday. Let me start over.

Do you recall that yesterday we were discussing wind and the MISO queue; is that correct?

A Yes, there was discussion of that.

Q And would you agree that thus far the discussions of the MISO queue have been primarily regarding the wind in the queue?

A I don't recall exactly, you know, percentages of the discussion, but there was certainly some discussion about how much wind there is in Minnesota, for example.

Q Okay. In referring to page 6 of your testimony, you referred to the MTEP 07 Plan; is that correct?

JUDGE HEYDINGER: Do you have your testimony?

THE WITNESS: Yes, I have my testimony here.

BY MS. OVERLAND:

Q Lines 1 and 2, page 6.

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A Yes. We said MTEP 07 is available and can be reviewed online.
Q Is it correct, you have referred to this MTEP Plan many times in your testimony?
A Many times? It has been --
Q Have you referred to this in your testimony?
A Yes. It's in my testimony, yes.
Q Pardon me?
A Yes, ma'am.
Q And did you rely on it in forming your testimony?
A No.
Q Would you agree that it's one of the documents that you did rely on? One of the documents?
A Well, MTEP 07 or any prior MTEP was not used as a foundational basis for establishing the specific needs or effectiveness of any of the CapX projects that are the subject of this proceeding.
Q It was addressed in your testimony, correct?
A It was referenced in testimony. I believe the reference that you pointed to merely said that we produce an annual plan. We produce several, the last one was MTEP 07, and it's available.
Q And I recall yesterday when I was crossing you you did agree that the CapX plan was incorporated into the MTEP plan. Not as Appendix A, but it was

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addressed in the MTEP 07?
A I know that we have spoken about the CapX projects in prior MTEPs. I believe that we also talked about it in MTEP 07. I believe that to be the case.
Q Thank you.
(Whereupon, Exhibit 58 was marked for identification by the court reporter.)
BY MS. OVERLAND:
Q Mr. Webb, I understand -- this is a lengthy document, but have you had a chance to take a look at it?
JUDGE HEYDINGER: Why don't you first ask him to identify it, Ms. Overland.
BY MS. OVERLAND:
Q Do you recognize this document? You're looking at what has been labeled as Exhibit 58. What is it?
A Yes. This appears to be a copy of the Midwest ISO MTEP 07 Report.
Q And the smaller document, would that be selected pages of the MTEP?
JUDGE HEYDINGER: I don't think he has that.
MS. OVERLAND: I gave two copies of each.
JUDGE HEYDINGER: I understand he doesn't have it. Just a moment, Ms. Overland. Do you want

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the smaller version also marked as an exhibit?
MS. OVERLAND: I think it should be. The other one is available publicly online, so I only have two copies, and then the selected pages, and I prefer to have both entered in.
JUDGE HEYDINGER: All right. Then ask the court reporter to mark the second one and we'll have him identify it.
(Whereupon, Exhibit 59 was marked for identification by the court reporter.)
BY MS. OVERLAND:
Q And could you compare the pages of the smaller one to the larger one, please?
A You're asking me to compare the pages in the smaller one to the large one, if I understand?
Q Correct.
A It'll take a few seconds here.
Q I understand.
A It appears to be the same.
Q Thank you. And do you recognize this document? The larger document?
A Yes. I already answered that question, I think.
Q That you did. And in MTEP, if you look at the selected pages, or the entire one, if you go to page 7 and look at pages 7 through 11, does that address

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CapX 2020 projects?
A Yes. In a summary fashion, very superficial.
Q Does it address the cost of these projects? The three lines?
A Each of the projects is listed with an estimated cost as it was thought to be at the time.
Q And does it also include a description of the project as it was thought to be at the time? The three different lines?
A Yes. In general terms again. Components.
Q And does it also include a depiction of the anticipated route as it would have been thought to be at the time?
A Yes.
Q Now, we've been talking about --
A If I could correct that statement. I'm not sure that -- I guess that you might be incorrect to say that that was the -- did you say expected or anticipated route?
Q Right. Would a better way to phrase it be the electrical one-line drawing?
A No, it's not a one-line, it's a geographical sketch showing a possible route, let's say.
Q Okay. And that is not to be interpreted as the actual planned route, correct?

A That's correct, yes.
Q And do you recall our testimony about -- or our discussions about the MISO queue over the last -- yesterday, during your testimony yesterday? Do you recall that?
A I don't know which part you're talking about.
Q Okay. Do you recall in your testimony where Mr. Crocker was asking you about preparing models when you testified regarding how projects in the queue were incorporated into models?
A Vaguely, I guess. I really don't know which specific part you're talking about, but we had some general discussion about models for sure.
Q Okay. Looking at page 11. First, would you agree that typically the projects in the queue are incorporated into the models when the interconnection agreement is executed?
MR. BEALL: Your Honor, I'll object on vagueness. I'm not sure which models she's talking about.
JUDGE HEYDINGER: Ms. Overland, can you be more specific, please?
BY MS. OVERLAND:
Q The models forming MTEP 07.
A Yes. The general rule is that when we put together

the five- to 10-year reliability models to support the reliability studies, we include in them generally generators that either are existing or have completed interconnection agreements.
Q And looking at pages -- page 11, it goes on to page 12 a little bit, would you agree that the Big Stone transmission project labeled P 973 in this document, that that was incorporated into the models?
MR. BEALL: I'll just state for the record, Your Honor, I'm not sure which document we're looking at.
MS. OVERLAND: Page 11 of either document.
JUDGE HEYDINGER: Well, just for the record, let's be clear that you're referring, I believe, to the --
MS. OVERLAND: The 59, the selected pages.
JUDGE HEYDINGER: The 59, okay.
BY MS. OVERLAND:
Q Let me rephrase. Would you agree that the Big Stone generator was included in the modeling for the MTEP 07 even though an interconnection agreement had not been signed?
MR. BEALL: Your Honor, I think I'm going

to object. I'm not sure what relevance this has to Mr. Webb's testimony.
JUDGE HEYDINGER: Ms. Overland.
MS. OVERLAND: Yesterday he was testifying about how the interconnection works and how the model -- I mean, how the modeling works. And he testified that projects were added into the modeling if they had an interconnection agreement. In this case, the Big Stone -- this document reflects that in MTEP Big Stone does not have an agreement, but it had been added into the modeling and that this coal plant was added into the modeling is relevant.
JUDGE HEYDINGER: All right. You've got to, I think -- first of all, are you asking him, one number, is that the case? And if so, what's the significance of it here, or why was it an exception, or what is it that you're aiming for?
MS. OVERLAND: That that was added into the modeling, and this coal plant is regarded as being ready to come on line.
JUDGE HEYDINGER: Well, I think you have to ask him that. I don't know if the second necessarily follows from the first.
MS. OVERLAND: Correct. And I don't need

him, that's, for the most part, that's beyond his -- but what I want is I want this in the record to reflect that.
JUDGE HEYDINGER: Well, you haven't -- okay. I'll allow you to continue briefly. But you haven't offered the document and it stands for itself, so --
MS. OVERLAND: Right.
JUDGE HEYDINGER: In any event, go ahead.
MS. OVERLAND: Then let's just offer the document. I offer Exhibits 58 and 59, MTEP 07, as referred to in his testimony, page 6, and taken offline from that site.
JUDGE HEYDINGER: Any objection to the receipt of the Exhibits 58 and 59?
MR. BEALL: Your Honor, if I could ask one preliminary question of Mr. Webb?
JUDGE HEYDINGER: Certainly.
MR. BEALL: Mr. Webb, is Exhibit Number 58, to the best of your knowledge, a full and complete copy of MTEP 07 Midwest ISO Report?
THE WITNESS: It's not -- well, let me answer that this way. Yes, with the exception that there are several other appendices that have to do with the results of detailed contingency analyses

that are not made publicly available, generally, because they are considered confidential, CEII, security-related information. And those are not printed out and copied here.

MR. BEALL: I have no objections.

JUDGE HEYDINGER: Any other objections to the receipt of Exhibits 58 and 59? Those documents are received.

(Exhibits 58 and 59 offered and received.)

BY MS. OVERLAND:

Q Okay. Moving to page -- just a minute -- 37 of the selected pages, and looking at that paragraph below the math -- well, first, would you agree that this -- this says generator interconnection queue map, and would that be a map of the generator interconnection queue at the time that this document was prepared?

A Yes.

Q And in the paragraph below, would you agree that the MTEP 07 report states that there are projects in queue that are expected to add 7,945 megawatts of additional capacity to the MISO market footprint?

A Yes, that's what the footnote says.

Q And would you agree that the MTEP 07 document on page 37 also states that the expected capacity are

dominated by 4,511 megawatts of coal projects?

A That's what the report says.

Q And moving to page 38, looking at Figure 3.2-6, the capacity and signed IAQ entries and entries by fuel types, what is the largest fuel type? What fuel type has the most megawatts in queue?

MR. BEALL: Your Honor, I think I'm going to interject an objection. I think this is cumulative. We just went through the process of entering this in the record and it's beyond the scope of Mr. Webb's testimony, he's already indicated he did not rely on this report.

JUDGE HEYDINGER: And, Ms. Overland, the document is in the record, so I don't know why we need this witness to read it to us.

MS. OVERLAND: Okay. I'll stop there.

BY MS. OVERLAND:

Q Moving to your testimony on page 13. Just one second. Okay. Referring to your testimony on page 13, line 11. And would you agree that voltage generally must be maintained between 0.92 and 1.05 of nominal; is that correct?

A That's page 13?

Q Page 13, line 11.

A That's correct.

Q I may have asked this before, but I'm not sure, so correct me on this if I'm wrong. On page 16 you refer to the 2011 and 2016 planning years?

A Page again?

Q Page 16.

A 16, okay.

Q At the very bottom, lines 21 and 22.

A Um-hum.

Q And the question I asked previously, was there a reason that 2020 was not modeled?

A Yes. My answer to that yesterday was that when we put together the models for these studies, it was in the -- I believe I testified yesterday it was in the tail end of 2006, maybe beginning of 2007, and so at that time 2011 and '16 represented approximately a five- to 10-year set of models upon which we would base five- and 10-year NERC reliability studies.

Q Okay. And referring to your testimony on 18, where -- let's see, lines 6 through 10. And you're saying that there's 565 megawatts of generation, but a load ranging between 2,200 and 2,367. Would you agree that dispersed generation would address this problem? Let me rephrase that.

Would you agree that dispersed generation is one alternative that could address this problem?

A Which problem?

Q The disparity between the generation within the area and the load?

A I have no basis upon which to make that judgment.

Q Your testimony states that the area relies on power transported into the area on the single Jamestown to Maple River line. What generation is in the Jamestown area?

A Well, the power line would deliver any generation to the west of that point north. At a point southwest the wind is fully integrated and it's very difficult to say exactly which generation generally will flow on a particular line.

Q And are there interconnection points between Jamestown and Maple River on that 345 kV line?

A Are there interconnection points?

Q Correct.

A Meaning?

Q Substations.

A I believe so.

Q Would you agree that in Jamestown, that's a center -- there are large coal plants near the Jamestown substation?

A I'd have to look at a circuit map to be sure of that.

Q Such as the MAPP map? May I approach?
JUDGE HEYDINGER: I guess so. Don't we have something else that would reflect the location of the Jamestown substation, if that's what you're asking for?
MS. OVERLAND: I was also asking if there was substations in between on that line.
JUDGE HEYDINGER: He already said he believed that there were substations between --
MS. OVERLAND: Right, and I believe that there are not.
JUDGE HEYDINGER: I just really am reluctant, as I mentioned the other day, to put that map into evidence.
MS. OVERLAND: At this point I'm not offering it into evidence, he wanted to refer to a map.
MR. KRIKAVA: Your Honor, once again, we're going to get into dealing with the provenance of the document that's in her hand and whether this witness is going to be able to lay any foundation about that piece of paper. I believe that the document that ultimately was settled on, was it not, was Exhibit 13, that had the data that might be helpful.

JUDGE HEYDINGER: Could we at least take a look at 13?
MS. OVERLAND: It is not and that is not the type of map that he asked for.
JUDGE HEYDINGER: I beg your pardon?
MS. OVERLAND: It's not, because it's so vague, that's why I have an issue with this, is it's so vague that it doesn't show substations, but this map does.
JUDGE HEYDINGER: All right. Why don't you go back to your microphone for just a moment, and if you would make an offer of proof so we know where we are going with this, that would be helpful.
BY MS. OVERLAND:
Q Mr. Webb, we were just discussing substations on the Jamestown-Maple River line, and you had -- is it correct you stated it would be useful to look at what you call the circuit map?
A Correct.
Q And would that be similar to the MAPP map?
MR. BEALL: Your Honor, I'm not sure what she means by MAPP map, so if she could clarify.
MS. OVERLAND: Let me clarify.
BY MS. OVERLAND:
Q Mr. Webb, what type of documents do you have that

you would regard as circuit maps?
A What type of documents? A one-line diagram of some type.
MS. OVERLAND: Your Honor, we don't have a one-line diagram in the record.
JUDGE HEYDINGER: Well, if that's what he relies upon, that's what he's going to have to have in order to ask him questions about it, Ms. Overland.
MR. BEALL: Well, Your Honor, at this point I'm going to interject an objection as to the relevance of substations to Mr. Webb's testimony. I'm not sure what connection there is with this section she's cited on page 18.
JUDGE HEYDINGER: Ms. Overland, as I mentioned, can you make an offer of proof here? Where are we attempting to go?
MS. OVERLAND: Well, the relevance is that there are -- that Jamestown is the center of coal production and that what is on that line is coal. And that --
JUDGE HEYDINGER: That wasn't his testimony. If you have a witness --
MS. OVERLAND: Right.
JUDGE HEYDINGER: Well, but you aren't a

witness. If you want to ask him if he'd agree with your statement X, then you certainly can do that.
MS. OVERLAND: Right. And he did say that there were -- that the lines, whatever is out there is on the lines. And the interconnection to that 345 has a -- is a factor in that because other things other than the coal in Jamestown could get on the line if there were other interconnection points. But...
JUDGE HEYDINGER: But that's your argument, right?
MS. OVERLAND: Right.
JUDGE HEYDINGER: All right. And when the time comes you can make your argument, but --
MS. OVERLAND: But he did ask to just look at a map, so I was offering to let him look at a map.
JUDGE HEYDINGER: But he asked for a circuit map and apparently the map you have isn't what he is referring to.
MR. BEALL: If I may interject, Your Honor? I think the witness said he didn't recall in response to one of her questions and would have to look at a circuit map.
JUDGE HEYDINGER: That's correct.

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MS. OVERLAND: Okay. I'll carry on.
JUDGE HEYDINGER: Okay. Thank you.
BY MS. OVERLAND:
Q And you don't recall that there are no substations on that stretch of 345 kV line from Jamestown to Maple River? Beyond the ones at Jamestown and Maple River?
A It's possible. I'm just not 100 percent sure without looking at a circuit map.
Q Okay. And how old is that line from Jamestown to Maple River?
A I'm not -- I don't know what the in-service date of the line was.
Q Do you know what the capacity of that line is?
A It is a standard 345 kV line. I would have -- I'd be guessing.
Q Do you know if it would be conductored with -- well, what type of line --
A I don't know the exact conductor, 345 lines can be built with various different conductor arrangements, and I just don't happen to know that offhand.
Q Is there a probability that it would be the newer high-capacity ACSS conductor?
A I don't know.
MR. BEALL: Your Honor, asked and

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answered.
JUDGE HEYDINGER: Yeah, he already said he didn't know, Ms. Overland.
BY MS. OVERLAND:
Q If it were an older line that is low-capacity conductor, would reconductoring with a higher capacity wire provide -- be one way to address the problem of this unbalanced generation?
JUDGE HEYDINGER: What unbalanced generation are you referring to?
MS. OVERLAND: The -- let me rephrase that. I won't even go there.
BY MS. OVERLAND:
Q You referred in your testimony to operating steps. Would that be the same as operating guides?
A Not exactly.
Q Then what is operating steps and what are operating guides? Do you know?
A They're similar. An operating guide is essentially a formalization of operating steps that operators may take in certain circumstances.
Q If line loading is heavy on a line, are there methods to take to decrease the loading on the line?
A The loading on the line? Yes.
Q And are there formal procedures to address high

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loadings of line in the case of a contingency?
A Sometimes.
Q Would operating guides be one such -- let me rephrase this. Are operating guides one way of controlling the load flows on a line?
A Again, sometimes.
Q And what are they the other times?
A Sometimes they're not appropriate.
Q And are you familiar with TLRs?
A Yes.
Q Can you explain that, please, for the record?
A Transmission loading relief is a NERC operating procedure wherein scheduled transactions are curtailed in some priority, which I'm not completely familiar with, but are curtailed to relieve loadings on lines I think based on their contribution. I'm not sure whether it's based on contribution to loading or priority. But it's a method of altering generation schedules or transactions that result from that, such that line loading can be relieved.
Q And would you agree that network resource dedicated generation -- or energy, is one of the priorities in TLRs that would -- hmm -- not be curtailed?
A I'm not sure of the -- since I don't deal in the operating horizon regularly, I'm not completely sure

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of the priority in that mechanism.
Q Okay. Do you know anything about TLR levels of 1 through 5? Do you know anything about that?
A Generally.
Q Would you agree that the TLR levels are stepped actions taken for high line loading on any number of reasons?
A I'm sorry, could you repeat that question?
Q Yeah, I'll rephrase it. Would you agree that TLRs are stepped actions to be taken where there is a problem with the line?
A Yes, there's several steps involved in line loading relief through the TLR mechanism. Of course, line loading is not the issue in this particular part of the testimony.
Q We were talking about alternatives to this project and --
A But the alternatives had nothing to do with thermal line loading in this part of the system.
Q TLRs are also used to address voltage issues, if you're looking at an extreme voltage deviation; are they not?
A They are. Except that in this case the issue is the loss of the line that I think we're talking about, in which case there is no loading on that line.

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Q How many times would that line have been lost over the last year?
A I don't know, but certainly its loss is certainly something that has to be planned for under the NERC standards.
Q And that would be under n-1 standards?
A Under the complete NERC standards.
Q And one last question on the TLRs. Would you agree that there are several steps before you get into a step that involves load shedding?
A Yes, certainly. Load shedding, I'm not sure if that's a part of TLR, the firm transactions, so certainly load shedding, if it's part of the TLR, would be the last step.
Q The last step?
A I would imagine.
Q You would have gone through like four steps before you get to that last step?
MR. BEALL: Objection, assuming facts not in evidence.
JUDGE HEYDINGER: Yes. Your point is that there are other options taken before that one?
MS. OVERLAND: Correct.
JUDGE HEYDINGER: You can ask that question, I'm not sure if he knows for certain.

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BY MS. OVERLAND:
Q You testified about the graded steps of 1 through 5 and you agree that those are the TLR steps?
A Again, as I don't work in the operating environment, I'm not 100 percent familiar with all of the steps. I am familiar with them, but I don't regularly apply them. So I think there are actually six steps, if I'm not mistaken.
Q But you would agree that they are a graded series --
A Yes, they're a series of steps that has sequential impact, increasing impact on the risk of load loss, basically.
Q That's -- now, can you briefly explain what operating guides are? You talked about the operating steps?
A As I stated before, they're basically a formalized set of operating steps that an operator would have documented to take when certain conditions on the grid prevail.
Q And you testified on page 19, on line 1, about a severe contingency condition. And I'd like to know, how common are severe contingency conditions?
A I'm sorry, could you repeat that?
Q How common -- how common are severe contingency conditions?

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A I can't state the probability of a particular condition. They would vary one to the other.
Q How about historically? Can you recall the last one in Minnesota?
A Your reference to severe conditions here is to condition -- is to conditions that need to be evaluated and provided for, again, under the NERC standards. Some are qualitatively recognized as more severe than others, in terms of the number of facilities involved.
Q And, again, NERC standards, that's that n-1 standard that requires that the system be able to function with one -- one item off line, that the --
A That's one of the NERC standards, there are many. And the one that was applied here was the ability of the system to maintain stability after what's called a Category C-3 event, which is a -- the loss of one element followed by the loss of another.
Q And then that would be a double contingency; correct?
A Yes. It's a C-3, it's an n-1-1.
Q And is it correct that that is a planning standard that is beyond n-1?
A It's beyond n-1, it's within the NERC standards to make sure that the system remains stable for that

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contingency. Which was the reason for this particular upgrade in that part of the system.
Q Is that a necessity in planning, as n-1 is?
A Absolutely, it's part of the national standards.
Q And so it's your testimony that double contingency planning is the NERC standard?
A Yes. The NERC standard includes several categories of events that need to be tested for. Category A is system attack; Category B is events involving loss of a single facility; Category C is events of loss of more than one facility, of which there are, I believe, nine separate types of events; Category D is more extreme outages than even Category C. All of those have to be tested for and system performance has to be integrated with the standards.
Q And so was all -- well, what percentage of -- how do you determine what transmission would be evaluated under a double contingency standard?
A Evaluated in what sense?
Q Well, for instance, on page 19 of your testimony, line 12, you're talking about an overload involving two transmission elements out of service.
A Page 19, you said? I'm sorry.
Q Right. Lines 12 and 13.
A And, yes, I found that reference in them. Could you

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please repeat the question again?
Q And you would agree that that would be planning for a double contingency?
A I've only stated in those lines that there's an overload condition for several conditions involving two transmission elements off service.
Q So that's two elements out of service, that would be a double contingency?
A Yes, it's a double contingency, it's a Category C event under the NERC standards.
Q And would planning to that level of a double contingency -- the term has been used previously in this proceeding about beefing up the system, would that be beefing up the system, planning at that level?
A No, it would be planning in accordance with the NERC standards.
Q All other things being equal, you're testifying about reactive power issues and on page 19 -- starting on page 16 but essentially throughout this section, where you're talking about voltage, the range where voltage has to stay within, all other things being equal, which requires more reactive support? A 10-mile line between generation and load or a 100-mile line between generation and load?

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A I guess I don't think of transmission lines as requiring reactive support, per se. I think it's the load that requires reactive support.
Q Is it true that large transmission lines use more reactive power than a short line?
A That's true, depending on the amount of load carried by the line. You could have it the reverse, possibly.
Q But that would require a very low load; is that correct?
A On which line?
Q Of the one that you say that may be the exception?
A Yeah, it would be atypical.
Q So if you have a moderately or a highly loaded line, a long line would use more reactive power than a short line?
A Again, it depends very much on the loading, because transmission lines both consume and provide reactive support to the line. Consume and reactive power is a square of the current flowing and they inject reactive power as a square of the voltage on the line. So they're at both the source and a consumption, consumer reactive power.
Q Now, with the physics, you're going to have to explain this a little bit when you get to square of

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the power flowing. My question goes back to some previous testimony where your line losses -- if the load is doubled, the line losses are quadrupled, and that was Mr. Rogelstad's testimony on Monday or Tuesday. Is that similar, then, to the reactive power equation?
A Which equation are you referring to?
Q The square of the power flowing. You were just talking about the square of the power flowing.
A The square of the currents in the line.
Q I believe the term that you had used was power flowing, would current be --
A That's current of the power.
Q So then reactive power seems to -- could you explain the relationship of reactive power to line losses?
A Which kind? The relationship between reactive power and line losses?
Q Yes.
A Typically, none.
Q Could you explain that equation regarding the square of current flowing regarding reactive power a little more completely?
A Okay. The reason I said typically known is because line losses are typically thought of as real power losses, which has to do with the resistance of the

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conductor, and reactive power is consumed based on the reactives of the line, not the --
Q Not the impedance?
A Not the -- well, not the resistance.
Q Not the resistance.
A But generally speaking, since the reactive losses go to square of the current, the higher the current flow, the more the reactive losses.
Q Thank you. And would it also be true that the longer the line, the higher the reactive losses? With nothing in between, that the longer the line, the higher the reactive losses?
A Again, I think that statement really can't be -- the answer to that is not necessarily because you have more reactive supply from that line also.
Q Are you familiar with the TIP study that was used in formulating CapX?
A I know of it. I have not read that study, or if I have it was only in a cursory manner quite a long time ago.
Q Do you know anything about the reactive power aspects of that study?
A I couldn't quote them, no.
Q On line 20 -- on page 20, line 8, you're referring to a line between Boswell, Wilton and Winger. Do

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you know where those substations are?
A Generally, yes.
Q Is the Boswell coal plant located in the Boswell substation?
A I believe that's the case.
Q And where is Wilton?
A I believe it's northwest of Boswell some distance. I'd have to look at a circuit map to locate it exactly.
Q Okay. Referring to line 14, you're talking about a line from Center to Jamestown to Maple River. What generation is near Center?
A I don't know without -- I'd have to look at a map again.
Q And on line 21 -- excuse me. Page 21, line 8, would you agree that the scenario you're presenting there, that's a double contingency scenario? On page 21, line 8, and then 8 going through 12.
A At line 8, the end of that sentence is part of the sentence that says even for the single contingency loss of the Grant County to Elbow Lake line, this would result in voltages below design at Elbow Lake, and then goes on, should a double contingency occur in 2016 without the proposed project, voltages would be as low as 47 percent of nominal.

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Q And so that scenario you're presenting there is the double contingency scenario; is it not?
A Yeah. What it's saying is that you have a NERC standard violation for a single contingency, and for the NERC double contingency condition the voltages are so low that it's unlikely that any load would be able to be sustained.
Q And on page 21, starting at 13, you're addressing double contingencies; is that correct?
A Yes.
Q And on line -- on that same page, lines 21 and 22, you state that as there is not sufficient generating facilities in the area to mitigate conditions, so would you agree that sufficient generating facilities in the affected area could help mitigate conditions?
A It would take a substantial amount compared to the load in the area.
Q What's substantial?
A I think the total load in this area is about -- this time frame, in the 170 megawatt area. And according to our analysis you would need to drop about 50 megawatts of that 170 megawatts of load in the area in order to sustain the contingency. So you would have to have probably several times that 50

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megawatts of new generation inside that area in order to avert these issues.
Q So you're saying 50 megawatts wouldn't do it?
A Not from a generation addition standpoint. From a load drop standpoint, that was the critical level that needed to be curtailed in this year, and then it would be more than that every year. Associated with load growth, of course.
Q And would you agree, then, on page 22, line 2, where you start talking about the next contingency, that would also be addressing a double contingency situation?
A Yes. Starting with line 2, actually what that is saying is that the 50 megawatts was not the most -- was amount of load shed that would have to be shed, rather it's 61 megawatts. The distinction was that the prior sentence says we're talking about the amount of load shed that you'd need to resolve the thermal loading issue and 61 was the amount you'd need to resolve the voltage issue.
Q For the thermal loading issue, could that be addressed by reconductoring?
A Yes. Potentially.
Q Okay.
A It depends. It depends on the -- it depends on the

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structures that are already on there.
Q But that's one possible alternative?
A Again, it depends. You can't necessarily reconductor lines if, for example, they're already -- the connector size is such that the weight of the -- you have to replace the entire towers.
Q And in looking at that scenario, was reconductoring considered?
A I believe it was.
Q And where would we find that information?
A You know, let me -- in trying to recollect these analyses that were done by my engineers, I think the alternatives we looked at in the Alexandria area were not to strictly fix the thermal overload, because there was a combination of thermal overloads and voltage, and so I think what we looked at here was a lower voltage alternative than the proposed solution. In other words, bringing in a 230 kV source from someplace relatively nearby, rather than providing the source from transformation from the proposed project.
Q Okay.
A And in that way that alternative would provide a comparable sort of solution, in that it would

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address both the thermal and the voltage issues, as the proposed line does.
Q And then in the next paragraph, the next question, the proposed Twin Cities to Fargo line, would you agree that power flows typically in that area from the northwest to the southeast?
MR. BEALL: Just so I'm following along, are we still on page 22?
MS. OVERLAND: Page 22, right. The question beginning on line 5, calling it the Twin Cities to Fargo line.
THE WITNESS: I'm sorry. And the question was?
BY MS. OVERLAND:
Q The question is would you agree power flows generally in that area from the northwest to the southeast?
A I'm not sure. I don't recall. I didn't look at the power flow personally to see which direction for the specific contingency conditions for, certainly, what direction the power flow is.
Q Are you familiar with the term North Dakota export?
A Yes.
Q What lines are included in North Dakota export?
A That I'm not 100 percent sure about. I'd have to go

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back and look.
Q Would you agree that part of the CapX -- would you agree that CapX would increase North Dakota export?
A I didn't do that analysis to demonstrate that, so I can't testify to that.
Q So you don't know?
A I don't know for sure. The line was not put in. Or in our analysis, in any event, we didn't demonstrate or testify to any justification on that basis. The line was put in for the reasons we testified to, which was to avert voltage collapse conditions involving the loss of the Center-Jamestown line, in part, up in the Red River Valley area, and for the other thermal and voltage issues that we identified in the Alexandria and St. Cloud areas. It had nothing to do with transfer capabilities in our analysis.
Q You did testify that you were familiar vaguely with North Dakota export. Have you ever seen North Dakota export addressed as a negative number?
A No. I'm not sure I know what you mean.
Q Was that a no or a not sure?
A No, I've never seen it addressed as a negative number.
Q Thank you. And would you agree that page 22, line

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16, starting at the end of line 16, are also setting out a double contingency situation?
A Well, we're not setting out a double contingency, we're continuing with the same contingencies and it's a -- a continuation of an answer that involves both double and single contingencies.
JUDGE HEYDINGER: Ms. Overland, I want to interrupt you for a moment. I had told Mr. Krikava that we would check at 10:30 to see what the status was of the cross-examination of this witness and, as a result, the need for Ms. McCarten to appear at 11:00 or 11:30. Could you give me some indication of the length of your continued cross-examination?
MS. OVERLAND: Half an hour, maybe 45.
JUDGE HEYDINGER: And, Ms. Maccabee, did you indicate you had about an hour?
MS. MACCABEE: I believe so, Your Honor.
JUDGE HEYDINGER: I think it's fair to say, Mr. Krikava, that Ms. McCarten won't need to appear until after lunch.
MR. KRIKAVA: Very good. Thank you, Judge. Thank you.
JUDGE HEYDINGER: All right. Ms. Overland, you may continue.
BY MS. OVERLAND:

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Q On page 33 at the top, lines 1 and 2 of your direct?
A Um-hum.
Q You're again stating that redispatched generation isn't an option because there's very little generation available in the area. And in this scenario would -- is it -- would increased generation be an alternative that may support the load?
A I think they're the same question we had before, we're still talking about Alexandria.
Q Well, it's a different place in your testimony, I wanted to clarify.
JUDGE HEYDINGER: What page were you referring to, Ms. Overland?
MS. OVERLAND: Page 23, line 22.
JUDGE HEYDINGER: So you jumped ahead.
THE WITNESS: And you said page 23, line --
BY MS. OVERLAND:
Q 1 and 2.
A 1 and 2?
Q 1 and 2, correct.
A I'm sorry. And the question was, would generation --
Q -- in the area be an alternative to support the

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load?
A If there were sufficient amounts.
Q Okay. And then down at the bottom of page 23, where you're addressing the 230 kV option, you're noting that the voltages at Elbow Lake are improved to 96.1 percent. And would you agree that 96.1 percent is within the range of what you'd like the voltage to be?
A Yes. The point of that was to compare to the voltage that you get out of the solution.
Q On page 24, line 15, where you're talking about the Benton County to Granite City loss of that line involving both circuits. Could you explain the NERC standards regarding double circuiting?
JUDGE HEYDINGER: Could you be more clear?
MS. OVERLAND: Okay. Well, he had referred --
JUDGE HEYDINGER: You mean in contingency planning? Is that what you mean?
MS. OVERLAND: In transmission planning. Yes.
JUDGE HEYDINGER: In transmission planning. If you understand the question.
THE WITNESS: Double circuiting --

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BY MS. OVERLAND:
Q Double circuiting.
A Double circuiting.
Q Is the failure of -- is a double circuit going down regarded as an n-1 or an n-2; do you know?
A That's one of the NERC Category C events, and I don't recall the exact number, one of the nine that you have to plan for.
Q That doesn't quite answer it. Is a double circuit going down regarded as a n-1 violation?
A Well, the -- I think there's a debate about that. If I understand -- I'm guessing where you're coming from on that. It certainly is a single initiating event, generally, 'cause it involves both circuits on a structure. The NERC standards don't speak in terms of n-1s or n-2s, they speak in terms of events involving the loss of either a single facility or multiple facilities. This is one of the nine different types of events in Category C that are characterized as events involving the loss of multiple facilities.
Q I think that clarifies it. Let me just run this by just again. Well, would loss of a single -- would loss of, for example, the Benton County to Granite City tower, which is double circuited, that would be

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regarded as a loss of multiple line -- facilities; is that correct?
A Yeah, generally with a single initiating event. In other words, the important distinction is there's no time to react between those two events.
Q It just happens simultaneously?
A Yeah, which means if you can't withstand that condition you have to take operating steps in advance of that happening.
Q Okay. So then would that also be the case with a double circuit in the CapX option?
MR. KRIKAVA: Your Honor, could I ask that that be read back, please?
JUDGE HEYDINGER: Certainly.
(Whereupon, the question was read back by the court reporter.)
THE WITNESS: Yes. Any double circuited line would be subject to testing of the system to see that the system could withstand the loss of that Category C event.
BY MS. OVERLAND:
Q And then given that, as far as reliability goes, and NERC planning, a double circuit -- is it correct that a double circuit wouldn't offer much as a reliability boost?

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A As compared to --
Q A line and then a line -- another line in another geographic location?
A Yes, I would say that in general two circuits utilizing two separate rights-of-way would have -- and otherwise equivalent end points would have more reliability than two circuits on a single right-of-way.
Q Okay. Thank you.
A I would also say that two circuits on a single structure, on a single right-of-way, is extremely common in the industry and generally good planning practice.
Q Going to your testimony at page 26, where -- line 10. Are you there?
A Yes, ma'am.
Q You're talking about a critical line would be 105 percent of its rating. Isn't 105 percent within the range that you address on page 13?
A I must have the wrong reference. You said --
Q Page 26, line 10.
A Oh, I was on the wrong page.
Q Right in the middle there, 105 percent.
A 26, line 10.
Q Correct.

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A Okay.
Q And the question, isn't that 105 percent within the range as you set it out on page 13, line 11?
JUDGE HEYDINGER: Are you reading your numbers correctly, Ms. Overland?
MS. OVERLAND: Yes.
BY MS. OVERLAND:
Q Page --
JUDGE HEYDINGER: I see 1.05 of nominal, you're talking about --
MS. OVERLAND: Oh, wait a minute. Let me correct this. Thank you, Your Honor.
BY MS. OVERLAND:
Q When you say 105 percent of its rating, do you mean MVA in that case or do you mean voltage?
A It's MVA.
Q Okay. Got it. And line -- page 27, line 2, you're referring to -- you're saying that the areas can be expected to experience significant reliability problems unless new capacity is introduced into the area. So logically, then, doesn't that suggest that new capacity could alleviate -- in the area could alleviate the problems?
A Yes. I was referring to transmission capacity.
Q Would generation capacity also alleviate -- in the

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area also alleviate the problem?
A If it could be expected that there was sufficient generation capacity to be introduced into these immediate load areas to maintain reliability as compared with the transmission solution, that would be true.
Q And would you agree that -- let's see. This is page 27. You saw a number of scenarios starting on page -- line 15 and going down to the bottom of the page. And would you agree that the first scenario, where Adams to Rochester would overload, would that be an n-2 also -- let me rephrase this. On page 27, lines 15 through 17, you're talking about the Adams to Rochester line. And because there is an and there, combinations involving line and power generator forced contingencies, would that also be a double contingency scenario that you're setting out there?
A Yes. These scenarios were a combination of line and line and line and generator contingencies.
Q And so, then, to keep this short, would you agree that all of those are double contingency scenarios?
A Yeah, they're all NERC Category C-3 contingencies.
Q And on the top of page 28, line 3, where you talk about two supply line routes from Byron and Adams if

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they're out of service, again, would that be a double contingency?
A What line again, please?
Q Line -- page 28, line 3. I wonder if actually that might be a triple. But that's a double contingency?
A And the question was, again? I'm sorry.
Q That's at least a double contingency?
A Yes, that's true.
Q Moving to line 5?
A Double contingency --
Q Or triple?
A No, it's a double. It's the Silver Lake generator with the loss of the Byron-Maple Leaf line.
Q Now, looking at line 5, we're talking about --
A It's a double assuming that the generator was on and running. The distinction between two transmission lines being out and a generator on the line is significant because the generator may be forced off line and the probability of a generator being off line is considerably higher than any transmission line being off line when you consider frequency and duration. So generally the combination of a generator being off, which could be off for dispatch reasons or for forced outage reasons, taken together with a line outage is considered a much more risky

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planning condition to plan for.
In other words, a much higher probability event than two lines, even though both of them are considered Category C-3 type events. They have distinctly different probabilities. And this one is a rather higher probability than other types of double contingencies. That was the thing about the outage, is outages, in this particular area there were numerous ones that involved combinations of generators and lines, which is a relatively higher probability event involving more than one facility.
Q In line 5, where you're talking about the Silver Lake 1, 2 and 3 and Cascade 1 potentially -- well, you're using a lot of qualitative language, you know, if the smaller peaking units that may potentially be retired earlier, what do you know about retiring of the Silver Lake 1, 2 and 3 and Cascade 1?
A We rely here on the filing of the Applicants that indicated that there was some reason to believe that these units may not be available. And so we consider that a potential risk, that these units, given that they're peaking units, if they may be retired they are, therefore, in all likelihood older facilities on the system, and our experience is that

peaking units that get older cannot always be counted on when they're needed specifically to be operated certainly tend to increase in forced outage probabilities. And we have received numerous requests for the retirement of these types of older peaking units, which under our tariff we need to evaluate before the facilities are retired so we understand their impacts and so on.

So it seemed to us good to consider as a planning proposition the what-if condition if these units were retired, and that's why we included it in our analysis and provided that as one of the possible scenarios and listed consequences. Which would be, as we pointed out, extremely severe. If that were to be the case, the loading events would be in a few short years, 2011 as high as 173 percent of capability of the facilities, which is quite extreme. So we listed that as a demonstration of the possible risks in the area.

Q And to be clear, what is the field type, then, for each of those units? To be specific?

A These are peaking units, so I would -- I would -- I guess I don't know is the answer. The best answer --

JUDGE HEYDINGER: Ms. Overland, you can

go ahead and finish this line of questioning, but then we should take a morning break.

BY MS. OVERLAND:

Q Okay. Just one more quick one before the break. Page 28, moving on to the next line, line 6. Would you agree that, again, this is addressing double contingencies?

A Yes. Again, it's a double contingency of the type that involves the generator and the line.

Q Right. Thank you.

Break time?

JUDGE HEYDINGER: All right. Let's take a break for 15 minutes.

(Break taken from 10:52 to 11:06.)

JUDGE HEYDINGER: Can everyone take their seats, please? Ms. Overland, you may continue.

MS. OVERLAND: Thank you, Your Honor.

BY MS. OVERLAND:

Q Mr. Webb, looking at page 28 --

JUDGE HEYDINGER: Excuse me. I'm going to have to ask you to wait. I've noticed the staff is not back to put back on the telephone. So if you'll just hold for a moment, we'll give them a chance to come back.

MS. OVERLAND: All right.

(Off the record.)

JUDGE HEYDINGER: Are you ready to put us back on the phone?

All right. You may continue, Ms. Overland.

MS. OVERLAND: Thank you.

BY MS. OVERLAND:

Q Mr. Webb, looking at page 28, starting on line 16 and going into line 18, you testified that this new transformer in line will parallel the Byron transformer and the Byron to Maple Leaf 161 line. Now, earlier you had testified about double circuiting and reliability aspects of that. Isn't this a similar situation?

A No. In fact, this is the opposite situation that you described as more reliable, because these -- this is putting a -- it's electrically in parallel, but it's sourced at a different location, so the second transformer is at the new substation, which is a more reliable way to install a second transformer, and the second line is also sourced out of that new substation.

Q So it's geographically separated?

A It's geographically separated, yes.

Q How far?

A A relatively short distance, but I don't know the exact mileage.

Q Okay. Throughout your testimony you have brought up many issues that were double contingencies and we've addressed a few of them. Would you agree that in your testimony most of the -- that you have more double contingency examples than single contingency?

A I haven't analyzed that comparison. I would say, though, that we have to evaluate all of the conditions that are required to be evaluated within the NERC standards. It's not discretionary, it's mandatory national standards, you know, subject to penalties and so on, if we don't design the system with regard to those planning standards, all of them equally.

Q And would you agree that the characterizations of the NERC standards have changed somewhat now that they've been blessed by FERC?

JUDGE HEYDINGER: What was that word?

BY MS. OVERLAND:

Q Adopted by FERC?

A I would say that the largest characteristic is that they are much more strengthened and enforceable than they were before. In terms of what the standards are, they have not changed materially.

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Q Okay.
A First of all, there are numerous standards, and we're talking here about the transmission planning standards.
Q Correct. Thank you. Looking at the chart on page 30, Table 1, where you're setting up a scenario where French Island 3 & 4 peakers are off, and then listing critical facilities and contingency events. With the peakers off, would that make all of these contingency events listed a second contingency?
A Yes. I would characterize all of the contingency events listed here as NERC Category C events.
Q Another question I had was --
JUDGE HEYDINGER: Can I interrupt just to be sure I'm clear? Would that include the one on line 1?
THE WITNESS: Thank you for that correction, or question. That one on line 1 is a single contingency, and I think that's the -- and I'm looking down, that's the only single contingency on that list.
JUDGE HEYDINGER: I'm sorry, Ms. Overland. I really wanted to be sure I understood.
BY MS. OVERLAND:

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Q Can you explain what aspect of that makes it a single contingency? Oh, never mind, I figured it out. I'm a little slow this morning. Thank you.
Looking at the scenario where you set it up where French Island 3 & 4 peakers are off, and this is a summer peak table, would those peakers typically be off in a summer peak scenario?
A I believe that's the case. All systems are required to carry reserves and those reserves are carried generally with peaking units. And so many peaking units are off line in the normal dispatch condition for a peak summer day.
Q Did you model this with the French Island 3 & 4 peakers on?
A We did.
Q Do you recall what that result was like?
A Yes. On page 31, lines 14 and 15, approximately, it says we considered the effect of operating the only remaining generators that were modeled off line in the peaking units at French Island, this option will not relieve all of the overloaded conditions identified in the projected area.
Q And does that mean logically that it would have relieved some of them?
A I think it did resolve some of them, but not all of them.

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Q Do you recall how many? Which ones?
A No, I can't. I wouldn't be able to recollect that.
Q Okay. And on --
A Nevertheless, that would leave us with design violations.
Q On page 31, lines 2 and 3, you're testifying that the project will introduce a strong 345 V, I assume you mean kV there? Line 2, right in the middle?
A Correct.
Q Actually kV. Okay, kV source into the area by terminating the 345 kV Rochester to North La Crosse line with a 345/161 kV transformer. Now, regarding terminating it there, does that make it a radial line?
A Yeah, the line is designed in this phase of the projects to stop at La Crosse.
Q And does the NERC criteria have anything to say about reliability in radial lines?
A No.
Q And, again, it's this phase of the -- of the CapX project that would terminate there, correct?
A The projects as proposed terminate there. I would also add, going back to the other discussion, that radial might be a stretch term. It's an integrated

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network line, because it's -- you may look at it as a radial line at 345 kV.
Q Correct, and that was my question.
A The interconnection of the underlying system and provides a source, the loss of which is a single contingency, and makes it look like what is the normal system condition today, which is not a problem. We're not designing the line for normal system conditions, we're designing the line for contingent conditions. So if we have this additional line in there, the first contingency is the loss of that line and it makes the system look like a perfectly normal system and so it adds an extra contingency. So it's not strictly a radial line to load, it's an integrated network line, it simply stops at 345 at that location.
Q But regarding the 345 system, it would be a radial line?
A It's an integrated 345 kV line extension, I think is probably a better term.
Q And is it correct, it is not connected to any 345 facilities?
A It does not extend beyond La Crosse.
Q Thank you. On page 33 you were asked how many generation interconnection requests are pending in

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the MISO queue at this time. And I'm going to pass around an information request response. This would be Exhibit 60.

(Whereupon, Exhibit 60 was marked for identification by the court reporter.)

BY MS. OVERLAND:

Q Let me know when you've had a chance to take a look at it.

A Yes.

Q Okay. Could you look -- well, first, what you're looking at, what's been labeled as Exhibit 60, what is it?

A It looks to me to be Midwest ISO responses to an information request from No CapX dated April 24th, 2008.

Q And did you work on this, providing this response?

A It was provided under my direction.

Q Thanks.

MS. OVERLAND: And, Your Honor, I offer Exhibit 60.

JUDGE HEYDINGER: Any objection? Exhibit 60 is received.

(Exhibit 60 offered and received.)

BY MS. OVERLAND:

Q And I ask you to refer to number 5, which is

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addressing the MISO queue. And in this response, would you agree that at the time there was 3,441 megawatts of coal in the MISO queue?

MR. BEALL: Your Honor, at this point I'm going to lodge an objection because the information request refers to a PowerPoint, and the one that Ms. Overland is referring to in this particular response was a slide, and I think it's a bit confusing, so if she's got a copy of that for the witness to look at, that would be very helpful.

MS. OVERLAND: Not a problem. I'll go a different way.

JUDGE HEYDINGER: Okay.

BY MS. OVERLAND:

Q Looking at question 5 b., where you're asked to identify megawatts of coal in the MISO queue, state by state for Minnesota, South Dakota, North Dakota, Iowa and Wisconsin, as of May 5th how many megawatts of coal did you identify in the MISO queue?

JUDGE HEYDINGER: Are you asking him to sum those totals?

MS. OVERLAND: Well, just for Minnesota.

MR. BEALL: Your Honor, I think the document speaks for itself.

BY MS. OVERLAND:

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Q Well, in that case, would you add them up and let us know how many total megawatts in the MISO queue for Minnesota, South Dakota, North Dakota, Iowa and Wisconsin?

JUDGE HEYDINGER: Let's give him a chance to use a calculator, if someone has one available.

THE WITNESS: Yes. The -- the response states that in reference to the MISO queue, I think it's in reference to the plot of where the -- and what's in the queue is also part of the request, how much coal there is, and we listed the amount of coal in the queue at the time at May 5th and it's, you know, 13 -- you're asking the total sum?

BY MS. OVERLAND:

Q Yes, please.

A For these states it looks like 13, 25, 38, something over 4,000 megawatts. I would also add, though, that it's very important to note that, by comparison, in Minnesota, although this 726 of coal, there's 24,000 megawatts of wind, and in South Dakota there's 10,900 megawatts of wind. In North Dakota --

MS. OVERLAND: Objection, that's not responsive.

JUDGE HEYDINGER: Just respond to the

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question that's posed to you.

THE WITNESS: Okay.

BY MS. OVERLAND:

Q Is it correct that -- what would you -- does the 600 megawatts in South Dakota represent the Big Stone II project?

A I don't know that for sure.

Q And is it correct that, would you recall your testimony, that the Big Stone interconnection was included in the MTEP modeling because it was close to signing an interconnection agreement? I mean, you recall that the MTEP 07 states that it was added in the modeling?

A Yes, it was included in the modeling because it was expected. But in the planning horizon, it was expected at the time of that study that those transmission lines and the plant would be in service in the 2011 -- no, the 2013 time frame, which was the planning horizon for MTEP 07.

Q And I believe you addressed this with Mr. Crocker, but I'm not sure, or maybe it was with Ms. Maccabee. Is it correct that the lower numbers in the MISO queue are interconnected and go through the study process and are interconnected before the final numbers?

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MR. BEALL: I'm going to object on vagueness, Your Honor.
JUDGE HEYDINGER: Try again, Ms. Overland.
BY MS. OVERLAND:
Q Would you agree that the projects in the MISO queue are assigned a number at the time that they are -- they join the queue?
A Yes. They are assigned a number, that's correct.
Q And are these numbers relatively consecutive?
A Yes.
Q And is it correct that the earlier you sign up on the queue, the lower your number is? And the number -- those projects that come in later will have a higher number generally?
A As I testified yesterday, I think it's generally true that the order -- that the queue priority is based on the request date.
Q And do you --
A Initially.
Q -- know how long these various coal plants have been in the queue?
MR. BEALL: Objection, foundation.
JUDGE HEYDINGER: I think you have to determine whether he has a basis to know that,

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because he indicated that he was not the person who managed the queue.
BY MS. OVERLAND:
Q Is it correct that you were the person who directed that this list of coal in the MISO queue be put together?
A Yes. We requested this of the interconnection manager.
Q And do you have any information regarding the dates that those coal plants were put into the queue?
A No, I do not.
Q And on page 34 --
JUDGE HEYDINGER: Are you referring, again, to his direct testimony?
BY MS. OVERLAND:
Q Direct testimony, page 34, yes, lines 1 through 6. The question is regarding the proposed Brookings to Twin Cities project and its provision of capacity to support the delivery of renewable energy. The question, however, doesn't specifically address renewable energy, so I want to clarify, the 700 megawatts, are you testifying that that 700 megawatts, there would be renewable energy on that line?
A Yes.

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Q And how will you guarantee that there would be 700 megawatts of renewable energy on that line?
A I think it's a likely conclusion because, as we also testified, there are close to 60 renewable energy generator interconnect studies that have been done assuming that this line is in service, and those 60 constitute a part of the 7,000 megawatts that are in the immediate vicinity of the line and would be connected -- and end up to that line. And so, ultimately, not directly, but would feed direct -- would feed the other facilities directly into that line.
So, given the fact that as many as, I think the number was 58 wind interconnect generators have already -- that are in the immediate vicinity of that line have already been studied assuming that line is in service, it's highly probable that that 700 megawatts is essentially -- would be subscribed from a capacity basis, would be utilized by that renewable energy capacity that's right in that vicinity.
Q Now, you've used the words probably and likely. That's not a guarantee, is it?
A It's not a guarantee.
Q And are you aware -- first, let's look at Exhibits

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22 through 25, Xcel's proposals. Specifically, line 23. Excuse me, Exhibit 23.
MR. BEALL: I don't think Mr. Webb has a copy of that.
JUDGE HEYDINGER: Sir, do you have Exhibit 23?
THE WITNESS: Yes.
BY MS. OVERLAND:
Q Looking at Exhibit 23, would you agree that both of the application proposals go to the Hazel Creek substation and the Minnesota Valley substation?
A Both of the proposals?
Q Yes. The application proposal and the upsizing alternative that both --
A Yes. Exhibit 23 shows connections to the Minnesota Valley, yeah.
Q And then could you refer to Exhibit 28, please? Do you have Exhibit 28?
A Yes.
Q And do you recognize this as the Big Stone transmission proposal in Minnesota?
A I haven't really -- no, I don't recognize it as that, per se. I'm not completely familiar with this paragraph.
Q Let's take a hypothetical. If this were the Big

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Stone transmission proposal for interconnection of the Big Stone stub, if it went to the Minnesota Valley substation, would that be the same substation as that Minnesota Valley substation?
A Yes, that would be the same substation.
Q And if this were Big Stone and it were connected there, is it possible that the Big Stone coal plant transmission would connect to the CapX transmission project?
MR. BEALL: Are we still talking about a hypothetical?
BY MS. OVERLAND:
Q This is a hypothetical.
A There would be an electrical connection, yes.
Q Thank you. You can put those away. You have testified that you're vaguely familiar but not the generation interconnection person in charge of the MISO queue; is that correct?
A That's correct.
Q Do you know anything about the amount of wind in queue in Illinois?
A I have some statistics on that. There are about 7,280 megawatts of wind in Illinois.
Q What about Indiana? Do you have anything on wind in Indiana?

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A I don't have that at my disposal here.
Q Okay. I know Wisconsin, do you have anything for wind in Wisconsin?
A Yes. 1,971 megawatts in the queue for wind in Wisconsin.
Q So then Illinois has roughly seven times the wind in queue as Wisconsin?
A That's correct.
Q Okay. Looking at page -- your testimony at page 35, lines 1 and 2. You're testifying that 58 projects have been or are being studied with the Brookings line project as part of the base case. Does that mean that CapX -- this part of CapX has been incorporated into the modeling?
A Yes.
Q And if they're being studied, in what entity are they being studied?
A I don't understand that question.
Q Well, I'm familiar with, say, the NMSPG group studies, and would this be the MISO studies?
A Yes. These would be the Midwest ISO generator interconnection studies.
Q And then who are those done by? The in-house?
A Yes.
Q Okay. Do you know if in that base case that

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includes -- oh. Because Big Stone II has been incorporated into the MTEP 07, would you know if that's also be been incorporated into the base case for these projects?
A That I don't --
JUDGE HEYDINGER: I'm sorry, I want to be sure I understood the question.
MS. OVERLAND: Let's just do this.
BY MS. OVERLAND:
Q You testified there's a MTEP 07 modeling base case, and then is that distinct from others that are used; is that correct?
A That's correct.
Q Okay. And these 58 projects that are being studied with the Brookings line projects, that's distinct from that MTEP 07, correct?
A That's also correct.
Q And the MTEP 07 included the Big Stone in its modeling; do you know if these -- the modeling for these projects includes Big Stone as well?
A I don't know that for a fact.
Q Do you know if it includes Excelsior Energy's project?
A No. Since I don't manage these studies, I don't know that.

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Q Okay. Oh, when you were testifying about the 700 megawatts, on page 34, of incremental power transfer?
A Yes.
Q That would be of their lines 1 through 6. Do you know what the capacity of this first -- do you know the thermal limits expressed in MVA of the capacity of this Brookings-Twin Cities line?
A Not offhand.
Q Do you have a rough --
A It's more than 700 megawatts. It's --
Q Could it be over 2,000?
A It's probably on the order of 1,000.
Q Do you know the specs of the line?
A Let me correct that answer. Each circuit would be 1,000, and since parts of the line are double circuited, you would have potentially somewhere between one and two thousand for the double circuit.
Q Have you taken into account that the lines are supposed to be bundled?
A Yes, that would potentially increase that thermal capability. I just don't recall exactly the thermal capability of the line offhand.
Q So if it was, say, 1,000 before it were doubled with the bundling, that could be like 4,000, couldn't it?

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A Doubtful. In any event, the thermal capabilities --
Q Thermal.
A You know, the -- the transfer capability is what is the important factor.
Q Correct, but I was asking about thermal capacity.
A Sure. I don't know what it would be in bundling versus unbundling, specifically.
Q But would you agree that electrical bundling would double the thermal capacity of the line?
A Not necessarily.
Q If it's bundled with the same conductor, doesn't that mean that there's two of them?
A Yeah, but the -- bundling the conductors is usually done to influence the reactive performance of the line, reduce the impedance, or the reactive -- let's see, the reactance to the line, using their reactive consumption that we talked about earlier. Not specifically bundled for the purposes of increasing thermal capability, although there is some increase in the thermal capability.
Q Are you saying -- is it your testimony that bundling a line, all things being equal, doesn't --
A It increases the capability of the line.
Q Are you saying that it does not double capacity of it?

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A I don't know that it doubles capacity of the line. It certainly doesn't double the transfer capability, it --
Q Excuse me, we were weren't discussing transfer capability, we were discussing MVA and thermal limits.
A Yeah. I'd have to go back and I'd have to look specifically, I haven't committed to memory the relationships there.
Q We'll deal with that through another witness.
MS. OVERLAND: No further questions.
JUDGE HEYDINGER: All right.
Ms. Maccabee.
MS. MACCABEE: Thank you, Your Honor.
CROSS-EXAMINATION
BY MS. MACCABEE:
Q Good morning, Mr. Webb.
A Good morning.
Q I believe it was in discussions yesterday with Ms. Marrow that you were asked about futures. If you could turn again to your direct testimony on page 9?
A Okay.
Q And if you could look at the question on lines 12 and 13. You are asked the question, Please describe

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the Midwest ISO efforts to develop the long-range transmission plan for the region, and do I understand correctly that in your answer you discuss the need to develop long-term planning concepts that are based on several different possible futures?
A Yes.
Q And if you would be so kind as to read out loud, so we know we're in the same place in the testimony, beginning on line 17, and then I have a couple questions. These futures, sir?
A These futures differ in certain basic assumptions that could impact decisions about the most prudent transmission expansion that should be developed in order through most efficiently and reliably delivered future generation to meet future demand levels.
Q If you'd keep going, sir?
A Four possible futures have been developed. Among the variables that define these futures are capital costs of resource technologies, load and energy growth forecasts, fuel price and availability, environmental costs and initiatives, and economic conditions such as inflation, discount rates, wind credits, et cetera.
Q Thank you. Do I understand correctly that at least

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in the 10- to 20-year time frame, your opinion is that one needs to consider these five variables that define the various features?
MR. BEALL: I'm going to object. I think it misstates the testimony. I don't think there was any reference to time frames.
MS. MACCABEE: Maybe I should clarify.
BY MS. MACCABEE:
Q Mr. Webb, do the words long-range transmission plans in line 12 refer to the 10- to 20-year time frame that you were discussing in your testimony yesterday?
A Yes, they do.
Q Thank you. If you could reread the question, then, with that clarification?
(Whereupon, the question was read back by the court reporter.)
THE WITNESS: Yes.
BY MS. MACCABEE:
Q Thank you. Now, this may be really elemental, but I was confused before. In the testimony that you filed, and yesterday when you talked about studies done for MISO regarding each of the three CapX projects, do I understand correctly that these studies were conducted in either late 2006 or 2007?

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A That's correct.
Q And that these studies were performed assuming existing and committed generation and using load forecasts that were provided by the Applicants?
A That's correct.
Q And when you use the word Applicants, you meant the Applicants in this proceeding for the CapX 2020 projects; is that correct?
A Yes.
Q And this may sound like Transmission for Dummies. Am I correct in understanding that these studies done by MISO are different from the ones that are included in the CapX application for the three CapX 2020 projects?
A That one I have to break down a little bit with you. These studies are different than which ones? I'm a little bit confused.
Q The MISO studies that you've referenced in your testimony are different studies --
A Well, which ones are those? Because I referenced different studies and different planning horizons in my testimony.
Q Let me get that clear. I think in your testimony that was filed and your testimony yesterday, you had three -- you referenced three specific studies that

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were done in the five- to 10-year planning horizon time, 2011 and 2016, for each of the specific CapX projects. Am I correct thus far?
A I'm just not quite getting your reference on the three specific studies. I mean, we studied the CapX projects sort of as a combined study. That was a study, it was a focus study, I think I referred to it as, as a part of the general MTEP studies that are ongoing, go from year to year. So if you mean three separate studies by studying one for each of the lines, is that what you were referring to there?
Q You know, Mr. Webb, I think this is really helpful and I want to make sure that I have the right name. So with your clarification, MISO did a focus study which studies all three CapX projects that are the subject of this proceeding for the period 2011 through 2016. Is there a name for that study so that from now on when I refer to it I can make a clear record?
A No, we haven't named it. I mean, it's the studies that support our testimony.
Q If I called that the MISO CapX study, would that be a fair way of --
A That would be fine, then I would know what you're talking about. Thanks.

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Q So the MISO CapX study is different from the ones that were provided in the -- by the CapX utilities in the application for this proceeding; is that correct?
A That's correct. We do an independent evaluation of projects that make up part of the MTEP.
Q And just to make the record clear, if you would just like to take a quick look at the studies in Appendices A-2, A-3 and A-4 of Exhibit 1, those are the studies for the specific CapX projects that are in this application, I just want to make sure that I'm understanding correctly that these are different from the MISO CapX study. So if you want to take a moment to look at the application, go ahead, sir.
JUDGE HEYDINGER: The application is to your right. Look in Volume 1.
THE WITNESS: Okay.
JUDGE HEYDINGER: And you said Appendix A-2, A-3, A-4?
MS. MACCABEE: Yes, Your Honor.
THE WITNESS: Yes. These are different studies than the studies that we did.
BY MS. MACCABEE:
Q Now, in the MISO CapX study that pertained -- the section that pertained to the Fargo line, do you

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know what the assumptions were for annual peak winter load growth in the Red River area?
A No. I don't know what the -- in the MISO study, what the growth was?
Q What level of load growth was forecasted in that study? The study that you describe in your testimony.
A I couldn't tell you offhand. As I testified yesterday, we -- the load forecasts were projected by the Applicants. We modeled those, tested the reliability of the system against those, and tested the effectiveness of the proposed projects in meeting issues that we found. That's the way the study was performed.
Q And I don't want to be repetitive, I just want to make sure I have a clear record. In the MISO study for the Fargo line, do you know what the assumptions were for annual peak winter load growth in Alexandria?
A I've looked at those numbers, my recollection is they were in the -- between the 1 to 2 percent range, but I can't recall offhand exactly what the load growth rate was that established the load levels that were in the models that we analyzed.
Q Rather than going through each one of them

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individually, would it be fair to say that you couldn't offhand recall the specific load growth forecasts for any of the specific communities in the MISO study for the Fargo line? I don't want to sound like I'm badgering you, that's why I'm just asking.

A No, we -- that's true. I would not be able to recall the specific load growth forecast rates nor precisely the exact load level. However, we did do a review of the load levels that we were studying in each of the areas, such that, you know, we compared that with typical load levels that we've seen in other models from a trend basis to see that the load levels were reasonably in line with what we've seen in other models, so that, you know, just to identify if there were any anomalies in the loads that were in the model that we were basing the study upon. So we didn't -- we don't do a blind acceptance of the load forecasts, we -- we take those from our load-serving entities because we think that the load-serving entities have the best capabilities to analyze and provide the most accurate forecasts. We don't have those capabilities internally. We do the look at those for reasonableness, again, against trends and other models and things like growth,

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other reports of load levels in the models, and as recorded through the NERC regions and things like that, the NERC studies. You know, we know what the general growth rates are as recorded by our members through those NERC regional organizations.

In addition, we have confidence, or at least we understand that the load-serving entities, certainly our transmission owner members have state regulatory processes which they will have to support the forecast that they make. So on that basis we generally feel comfortable that our load modeling with those kinds of checks is sufficient for us to perform our planning responsibilities.

Q Just going back. I think you said it was true that you couldn't recall any of the specific assumptions for annual peak load growth that were used to justify the Fargo line; is that correct?

A I couldn't recall the specific numbers that represented load growth.

Q Thank you. And in the MISO CapX study for the La Crosse line, would it be correct to say that you don't recall offhand the specific assumptions for annual peak summer load growth in either the Rochester area or the La Crosse area?

A No, other than, as I said, I believe they -- I

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believe most of them were generally in the 1 to 2 percent load growth rate. I couldn't recall specifically.

Q So you couldn't recall specifically. And these load forecasts were provided by the Applicants, as you testified earlier?

A Correct.

Q Do you know which conservation and demand-side management strategies were included in any of these load growth forecasts?

A No, I do not.

Q For example, in the Rochester area, do you know whether the load growth forecasts took into account the demand-side management recommended in Rochester Public Utilities June 2005 report on the electric utility baseline strategy for 2005 to 2030 infrastructure?

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

(Whereupon, the question was read back by the court reporter.)

THE WITNESS: No, I do not know precisely what demand reduction or demand-side management, load management levels were incorporated into the forecasts that we received from the Applicants.

BY MS. MACCABEE:

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Q I'm just trying to understand also the assumptions that were made regarding generation in the MISO CapX studies. Do I understand correctly that the studies were performed assuming existing and committed generation?

A That's correct.

Q And, hypothetically, if one of the communities affected by the La Crosse line were committed to installing significant new peaking generation in the time frame of the study, would that affect the results of the MISO CapX study for that La Crosse line?

A Affect the results in some way that I have no basis to establish what that would be.

Q So without actually conducting a study including that variable, it wouldn't be possible to predict whether the same problems would still arise or whether they would not still arise?

A Some sort of study would have to be performed.

Q Now, just to clarify. In the areas where -- that would be served by the proposed La Crosse transmission line, did your MISO CapX study assume that there would be no additional new generation?

A Only the new generation, again, that was, as I said, had -- in the area that would have had signed

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interconnection agreements, then that generation would have been on line --
Q In the Rochester area --
A -- in the model.
Q I apologize, I didn't mean to cut you off. In the Rochester area, can you identify for us what new generation would have been considered in doing that analysis? Just Rochester first.
A No.
Q And that no means that you don't know if there was additional generation that would have been considered?
A Well, it means that I would have to go back and look at the models to see if there were any generators in the interconnection queue that had signed interconnection agreements that were therefore modeled, but I do know that there are not significant generation in the queue that is close enough into the area of where the load is that those generators would have provided any relief. And in any event, that would have come out in the analysis of the study.
Q I don't have the study in front of me, so I'm just asking. Can you identify for the Rochester area any additional generation that would have come on line

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that is included in the model?
MR. BEALL: For sake of clarity, the time frame here?
BY MS. MACCABEE:
Q I'm sorry. Come on line in the time frame of the MISO CapX study which we've already got on the record through 2016?
A As I said, what would have been in the model would have been generation from the interconnection queue at the time that we started the study, which would have been in early 2007, approximately. Generation from the queue that had signed interconnection agreements would have been in the model, that was the premise of the model.
Q And, then, just to clarify. Do you know of any facilities in the Rochester area that would have met that criteria and would have been in this model?
A Not without reviewing the data.
Q Do you know any facilities in the La Crosse area that would have met this criteria and would have been included in your model -- in the model -- the MISO CapX model as additional generation?
A Again, not without looking at the data.
Q But offhand you can't recall any additional generation that was modeled in either the Rochester

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or the La Crosse areas?
A Additional to --
Q Additional to existing -- sorry.
A Not without looking at the data.
Q Now, as we sit here today, can you identify any additional generation that would have been modeled in the MISO CapX studies through 2016 from either the Red River, the Alexandria, or the St. Cloud areas?
MR. BEALL: And, Your Honor, I don't want to pose an objection. Ms. Maccabee, are you talking about specific by name projects, or --
MS. MACCABEE: I'm just asking a question. The witness can answer it with whatever knowledge he has.
MR. BEALL: Then I guess I object on the grounds that the question is vague.
JUDGE HEYDINGER: Are you asking essentially the same question you were asking before? Were there signed interconnection agreements taken into account in those studies, do you know and, if so, what were they? Is that what you're asking?
MS. MACCABEE: Yes, Your Honor.
JUDGE HEYDINGER: Can you answer that,

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Mr. Webb?
THE WITNESS: Again, without looking at the data, I can say that the premise upon which the models were built for these tests were to include existing generations and otherwise generation that was committed as having signed interconnection agreements from the queue.
BY MS. MACCABEE:
Q I understand the premise, I just want to clarify. Can you, sitting here, identify any generation in the areas that would be served by the proposed Fargo transmission line, and that's the Red River, the Alexandria, and St. Cloud area, that meets the criteria that you set for committed generation and would have been included in these studies?
A Not without looking at the data.
Q Do I understand correctly that the variables we've been discussing, the load growth forecasts and the possibility of additional local generation, would affect the loadings of transmission lines in the areas to be served by the Fargo and La Crosse CapX projects?
A It would have some effect on the loading, yes.
Q Without knowing what the forecasts were and without knowing what additional local generation might have

been added, is it possible to determine what the effects would be on the loading of the transmission lines?
A Without knowing -- could you read that back, please?
Q That's not clear, that's my fault.
Without knowing what the forecasted load growth rates are, and without knowing what the additional generation in these areas is, would it be possible to determine to what degree transmission lines would be overloaded, to what degree there would be problems under various contingencies?
A Well, let's be clear. My answer is not that the Midwest ISO did not know what generation or what load forecast -- not rate, but forecast, was in the model. We knew exactly what that is. And if I looked at the data I would be able to point out exactly which generation was or was not in the model. I just, sitting here, can't recall the specific generators that met -- that were in the model at the time.
Q And I didn't mean to create the inference that you didn't know. I'm suggesting if there was information today that suggested either that the forecast today is different, or information today suggesting that demand-side management was

different, or that the plans for additional generation are different, we wouldn't be able to determine the effects on transmission line loading without going back and studying them. That was the nature of my question. Now, can you respond to that question?
MR. BEALL: Your Honor, I'm going to interject an objection, but we might be able to solve with clarification. When Ms. Maccabee talks about different, different than what?
MS. MACCABEE: I'm sorry, I thought it was clear.
BY MS. MACCABEE:
Q Different from what was assumed in the model that you tested in the MISO CapX study. Do you want the question read back?
A No.
JUDGE HEYDINGER: Go ahead.
THE WITNESS: I think I understand the gist of the question. You know, my answer there is -- it's a very specific question you're asking and so I think we need to be careful with the response.
In order to determine exactly what the effect would be, as close as modeling could predict,

you would have to rerun it. However, that doesn't mean the conclusions would change significantly from the study. And the reason why I draw that conclusion, or the basis for that is that when you look at the severity of the conditions that we're seeing for the -- that the study showed without the project, we're looking at things like, in some cases, 233 percent of the loading capability of lines, 154 percent, 124 percent, large areas of voltage collapse. In my opinion, there would have to be a very wide, very, very significant change in forecast level to relieve those kinds of overloads. It's not like we have here some marginal loading levels in the five to 10 percent range. We have some very, very high overload levels that we're looking at. And so I think that would accommodate a fairly wide range of differences in the specific load levels in the area.
BY MS. MACCABEE:
Q And that's -- your testimony is that just changing forecast alone, it would have to be a substantial change in order to affect the results of your study; is that correct?
A Yes, given the level of the problem that we've seen.
Q And perhaps, and I think you've already testified

that there would have to be relatively significant additions of new generation capacity to affect the results of these studies. Is that a fair characterization of what you were testifying to earlier this morning?
A That's also true.
Q And there might have to be relatively significant changes in demand-side management to affect peak shifting, to affect the conclusions that you reached in your study. Is that also a fair statement?
A Yes. And all of the above would have to be fairly precisely targeted. It would be relatively high amounts in specifically targeted areas.
Q And if we had -- looking at the conditions that were modeled in the MISO CapX study, since then there have been additional transmission to the area, in the Rochester area, the RIGO lines, and additional forecasted generation and additional demand-side management, would you agree that those accommodation factors might change the results that were in the MISO CapX 2016 study?
A No.
Q So are you testifying today that there's nothing that would change the results of the study?
MR. BEALL: Your Honor, objection.

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JUDGE HEYDINGER: That's not what you asked.
THE WITNESS: I'm testifying -- the answer is no, because the sum total of each of the things that you've identified, for one thing, given the level of problems that we're seeing from a reliability perspective, as I testified to, would require very significant amounts of generation and load conservation in the area. And it would have to be specifically targeted. And we have no indication that that will be occurring in the time frame that the projects are needed, which is almost immediate.
BY MS. MACCABEE:
Q You said that we have no indication that any of these things will be occurring, and if you would like to be a little bit more clear about who is we?
A Midwest ISO.
Q Okay. And it would be correct that Midwest ISO did not test or review or study any of the assumptions different from the ones that you got from Applicants regarding these variables; is that correct?
MR. BEALL: Your Honor, I'm going to object. I think that misstates his testimony.
JUDGE HEYDINGER: I agree. I'll sustain the objection.

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BY MS. MACCABEE:
Q Now, let's turn back to the testimony on page 26, line 22. Am I understanding correctly that the studies from the La Crosse line were based on peak demand?
A That's true.
Q What's your understanding of the time during which peak generation is likely to run?
A Could you qualify time a little better?
Q Generally, is peak generation in operation at the times of peak demand?
A Some. Some peaking generation is on. And even that is not necessarily true, but certainly not all peaking generation is on at the time of peak.
Q Is peak generation designed to be in operation at the time of peak demand?
A It's designed to be able to be -- to come on quickly, but it is also designed to provide reserve capability.
Q Now, if I turn to page 28 of your direct testimony at line 5. I think you were talking about this before with Ms. Overland. Do you characterize Silver Lake 1, 2, 3 and Cascade as smaller peaking units that may potentially be retired earlier?
JUDGE HEYDINGER: Earlier than --

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BY MS. MACCABEE:
Q That's exactly what it says here. There's no qualifier.
A Well, earlier would mean earlier than the study date. In other words, the 2011 peak period.
Q So when you say earlier in this testimony, are you talking about the potential of these facilities would be retired before 2011?
A Yes.
Q Is there anything on which you're basing a conclusion that any or all of these peak facilities are slated to be retired before 2011?
A I'm sorry, is there anything --
Q Is there anything on which you're basing this conclusion, or assertion, I should really say, not conclusion, assertion that these facilities are likely to be retired by 2011?
MR. BEALL: Your Honor, I think I'm going to object on the basis that she's misstating the testimony. I think the sentence starts out with the word if.
MS. MACCABEE: Let me clarify.
JUDGE HEYDINGER: Yes.
MS. MACCABEE: That's fair enough.
BY MS. MACCABEE:

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Q Do you have any information that forms the basis of this hypothetical on lines 5 to 6, that the units, Silver Lake 1, 2 and 3 and Cascade 1, are likely to be retired by 2011?
A No.
Q Do you have any way of evaluating how likely or unlikely that hypothetical situation might be?
A No, we don't know the likelihood. Again, as I discussed earlier, our representation starting on line 5 would be what the severity of the loading conditions could be if those peaking units were retired. And it was our understanding that the -- there has been some indication by the owners of those that it's possible that those units would be retired. That's why we reviewed that scenario as a possible condition.
Q Now, has anything been filed with MISO suggesting that any of those facilities are likely to be retired in the time frame before 2011?
A No, not that I'm aware of. Not at this time.
Q Now, are you aware that the Cascade Creek generation unit in Rochester is a natural gas facility that was upgraded with a 50 megawatt addition in 2001?
A No.
Q Okay. Now, if you could turn to page 30, Table 1,

the chart of overloading conditions. Do I understand correctly that for all of the overloading conditions in Table 1, the French Island 3 and 4 peaking plants are assumed to be turned off?
A I'm sorry, what was that reference? On page --
Q Page 30 of your testimony, in Table 1.
A Yes. Yes, the assumption there was that those peaking units may not be dispatched at the time of peak, and if those were off these would be the results.
Q So, just to clarify, even the first row, the Contingency Event, when the Genoa-Coulee 161 kV line is down, is actually a Category C event because you have already assumed that two peaking facilities would be off line?
A Yes, but that's just a dispatch pattern. That's just a reasonable dispatch pattern which forms your base case. And the contingency enumeration is taken from your base case condition. It's a reasonable assumption to assume that some peaking units may not be on in your dispatch case.
JUDGE HEYDINGER: Can I just follow up? I want to be sure I'm clear. When you say base case, you mean, then, before -- or that that's the premise upon which the n-1 or n-2 contingencies are

built?
THE WITNESS: That's correct.
JUDGE HEYDINGER: Thank you. I just wanted to be sure I understand that.
BY MS. MACCABEE:
Q But in that base case, you're assuming they're not being dispatched, but not assuming they'd be unavailable?
A That's true.
Q If -- this may be really elementary, but if they are available, can you explain why they wouldn't be turned on in the event of any of these contingencies?
A Well, they would be turned on, and to the extent, though, that you have single contingency events, which you do, that would mean that the units would essentially be compelled to be operating under system normal conditions, which very likely may not be the economic dispatch order. And so you'd be setting yourself up for a situation where the system is unreliable unless you're forced to run a small number of units that may not normally be on before any contingency occurs.
Q Once again, just to clarify, but do the loading levels reflected in Table 1 include having turned on

the French Island 3 and 4 peakers, or not having turned those on?
A The loadings are with these -- the table says with these peakers off.
Q Did you also do loadings assuming that they were turned on? These specific contingencies?
A I need time to look at the testimony to determine that, to recall that.
JUDGE HEYDINGER: Is that on page 31?
BY MS. MACCABEE:
Q Is that page 31, lines 13 to 16? Is that situation reflected in your testimony on page 31, lines 13 to 16?
A Yes, it is. Thank you for that.
Q Which of the conditions were relieved by turning on peaking units 3 and 4, French Island?
A I'd have to look at the contingency tables. The -- it's likely that the most severe events were not relieved in the table. In all likelihood --
Q But you actually don't have a memory, then. I would just ask, if there's something you don't remember, not --
A Well, it's likely that it's the 124 and 113 percent overloads that couldn't be completely relieved with those units running.

Q But you can't tell me as you sit here to what degree you believe the actual overloading might be if the French Island peakers 3 and 4 were turned on?
A I'd have to look at the contingency results, but they'd be overloaded.
Q Now, I think you were talking yesterday, as well as today, about economic dispatch for MISO. Do you recall that testimony?
A Redispatch for MISO.
Q Economic dispatch.
A Oh, the market operation?
Q Yes.
A Yes.
Q Do I understand correctly that the lowest cost resource is dispatched if there's no transmission constraint?
A That's correct.
Q And in calculating this cost, am I correct that the cost doesn't include environmental externalities?
A That I don't know for sure. It's the -- it's actually not the cost, it's the price. It's the offer price.
Q And by definition, if it's a price rather than a cost it would not include environmental externalities; isn't that correct?

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A I don't know.
Q Isn't baseload coal often the lowest price resource in the economic dispatch model?
MR. BEALL: Objection, assumes facts not in evidence.
BY MS. MACCABEE:
Q Oh, I should ask. Do you know whether baseload coal is often the lowest price resource for dispatch using the MISO economic dispatch model?
A The lowest price?
Q Yes.
A I don't know that for a fact.
Q Now if you'd turn to page 14 of your direct testimony.
A 14?
Q Yes. Lines 17 to 20. You testified that a suitably robust transmission plan should be compatible with or support energy supply policies such as state Renewable Energy Standards. What do you mean by compatible with or support state Renewable Energy Standards?
A What do I mean by support energy policies? That section of the sentence?
Q Yes.
A Well, it just means what it says. That the plan

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should take into consideration a number of factors. Among them should be the ability to enable, as much as possible, energy policies and law.
Q Do you have an opinion regarding whether Minnesota -- whether any steps should be taken to make it more likely that any transmission lines approved in this proceeding will be used to support Minnesota's energy policies and law regarding renewable energy?
A No, I -- no.
Q So you just don't have an opinion?
MR. KRIKAVA: Objection, asked and answered.
MS. MACCABEE: Okay.
BY MS. MACCABEE:
Q Step back for a minute. Can you explain to me what MISO is?
A A FERC-approved regional transmission organization.
Q And who are the members of the MISO?
A We have various members. Among them -- I could list them, but you mean generally?
Q Just generally.
A A number of transmission-owning members. We also have nontransmission-owning members, which may be market participants of one form or another.

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MS. MACCABEE: Your Honor, could I approach the witness?
JUDGE HEYDINGER: Yes, you may. Ms. Maccabee, could you let me know how long this might take and whether we should take the lunch break at this time?
MS. MACCABEE: I just noticed the time. I'll finish this up quickly and then we can go on to it after the break.
JUDGE HEYDINGER: All right. Did you want this marked?
(Whereupon, Exhibit 61 was marked for identification by the court reporter.)
BY MS. MACCABEE:
Q Could you please identify what this document is?
A Yes. I was hoping you would provide me with this. It looks like the -- perhaps a print from our web page that shows the members of the Midwest ISO.
MS. MACCABEE: Your Honor, I'd like to offer Exhibit 61 into evidence and save some time.
JUDGE HEYDINGER: Any objection? Hearing none, the exhibit marked for identification as 61 is received.
(Exhibit 61 offered and received.)
MS. MACCABEE: Your Honor, if you'd like

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to take a break now, I can take up again after lunch.
JUDGE HEYDINGER: That would be fine. We will adjourn until 1:30.
(Hearing adjourned at 12:31 p.m.)

STATE OF MINNESOTA)
) ss.
COUNTY OF HENNEPIN)

REPORTER'S CERTIFICATE

I, Janet Shaddix Elling, do hereby certify that the above and foregoing transcript, consisting of the preceding 105 pages is a correct transcript of my stenographic notes, and is a full, true and complete transcript of the proceedings to the best of my ability.

Dated August 15, 2008.

JANET SHADDIX ELLING
Registered Professional Reporter

La Crosse Subs

605295 BANGOR 8
680398 BRICE
680028 CAL CITY
680160 CENTERVL
605312 COONVAL8
605310 COULEE 8
605134 E WINON8
605317 FRENCH G
605318 GALESVI8
605137 GOODV1 8
605136 GOODV2 8
680396 GRANDAD
680395 GREENFIE
605314 HOLMEN 8
680029 HOUSTON
680444 KRAUSE 8
605316 LAX 8
602026 MAYFAIR5
680031 MND PRAR
680393 MT LAX
680402 NEW AMST
605315 ONALASK8
680167 PINE CK
605294 ROCKLND8
680397 SAND LAK
680146 SPARTA
605293 SPARTA 8
605298 SPARTA28
605311 SW CRK 8
605319 TREMPLO8
680507 WILDTUR8
605135 WINONA 8
605296 WSTSALE8

La Crosse Loads

602026 MAYFAIR5 161.00
605293 SPARTA 8 69.000
605294 ROCKLND8 69.000
605295 BANGOR 8 69.000
605296 WSTSALE8 69.000
605298 SPARTA28 69.000
605310 COULEE 8 69.000
605311 SW CRK 8 69.000
605312 COONVAL8 69.000
605314 HOLMEN 8 69.000
605315 ONALASK8 69.000
605316 LAX 8 69.000
680146 SPARTA 69.000
680444 KRAUSE 8 69.000
680029 HOUSTON 69.000
680398 BRICE 69.000
680028 CAL CITY 69.000
680160 CENTERVL 69.000
605134 E WINON8 69.000
605317 FRENCH G 69.000

605318 GALESVI8 69.000
605137 GOODV1 8 69.000
605136 GOODV2 8 69.000
680396 GRANDAD 69.000
680395 GREENFIE 69.000
680031 MND PRAR 69.000
680393 MT LAX 69.000
680402 NEW AMST 69.000
680167 PINE CK 69.000
680397 SAND LAK 69.000
605319 TREMPLO8 69.000
680507 WILDTUR8 69.000
605135 WINONA 8 69.000

Rochester Buses
680437 PLESNT V
680440 ROCKDELL
680442 CANISTEO
680443 KALMAR
680447 GENOA_8
680450 ORONOCO
680452 RINGE
680456 CHESTER
680460 MARVALE
680463 AIRPORT
680465 MARION
680466 PLESNT G
625435 BAMBER V
625430 CASCADE
625420 IBM
625405 CROSSTWN
625415 N HILLS
625440 SILVER L
625410 WILLOW C
625425 ZUMBRO R

Rochester Loads
625405 CROSSTWN 161.00
625410 WILLOW C 161.00
625415 N HILLS 161.00
625420 IBM 161.00
625425 ZUMBRO R 161.00
625430 CASCADE 161.00
625435 BAMBER V 161.00
625440 SILVER L 161.00
625447 WSTSDE 161.00
680443 KALMAR 69.000
680447 GENOA_8 69.000
680450 ORONOCO 69.000
680452 RINGE 69.000
680456 CHESTER 69.000
680460 MARVALE 69.000
680463 AIRPORT 69.000
680465 MARION 69.000
680466 PLESNT G 69.000
680437 PLESNT V 69.000
680440 ROCKDELL 69.000
680442 CANISTEO 69.000

-----Original Message-----
From: Rasmussen, Pamela Jo [mailto:pamela.jo.rasmussen@xcelenergy.com]
Sent: Friday, May 28, 2010 9:00 AM
To: Sirohi, Udaivir - PSC
Cc: 'Knapp, Leslie'; Hillstrom, Thomas G; King, Amanda R; 'Agrimonti, Lisa'; Thompson, Chuck DPC; Donovan, David D; Fannucchi, William - PSC
Subject: CAPX-HRL 345 kv project--engineering study

Udaivir:

Here is an updated version of the planning study we will be using as part of our need documentation for the CPCN for the CAPX Hampton-La Crosse project. We are now working on the CPCN need section and this document will be included as an appendix.

We would appreciate it if you could take some time in the next few weeks and review this document. Then if there are any major concerns, let us know and we will meet with you to address those concerns.

I am not e-filing this document. If that needs to be done, please let me know.

Have a nice holiday weekend.

Pamela Rasmussen
Xcel Energy | Responsible By Nature
Manager, Siting & Land Rights
P.O. Box 8, Eau Claire, WI 54702-0008
P: 715.737.4661 C: 715.577.2739 F: 715.737.2480

E: pamela.jo.rasmussen@xcelenergy.com

Data Request

(August 4, 2010)

Please note that although DPC and NSP along with several other utilities had performed regional electric transmission need analyses for transmission network spanning parts of MN and WI and had received approval, as stated on page 2 of the CapX2020 Technical Studies Summary Report dated May 2010 (2010 TSSR), for a 345 kV transmission line extending from Hampton (MN) to Rochester (MN) and then to La Crosse (WI) form MN Public Utilities Commission, DPC and NSP need to establish the need for the proposed 345 kV line for the La Crosse area transmission network for their CPCN application to be filed with the Public Service Commission. In this context, I am seeking response to the following questions:

Q. 1. Please provide the names and capacities of Wisconsin hydroelectric generators and their capacity factors for 2004 to 2009. (See 2010 TSSR, p. 4)

Q. 2. The CapX2020 "Group 1" facilities are described in 2010 TSSR on page 5. Only one of these facilities, namely the Fargo-Monticello 345 kV line, is included in the 2012 base case. But all of these facilities are assumed in service for the proposed Hampton – Rochester –La Crosse 345 kV line option. Are these facilities scheduled to be available in 2012? If yes, please explain the reasons for their exclusion from the 2012 base case. (See 2010 TSSR, p. 5)

Q. 3. Please provide the cost applicable to Wisconsin for the 345 kV line option described in Q. 2.

Q. 4. Please provide power flow and cost analyses for a 230 kV Project alternative to the proposed 345 kV line from a new Rochester Substation to a substation in the area of La Crosse, Wisconsin.

Q. 5. Please provide power flow and cost analyses for a 161 kV Project alternative to the proposed 345 kV line from a new Rochester Substation to a substation in the area of La Crosse, Wisconsin.

Q. 6. Please provide power flow and cost analyses for a double-circuited 161kV Project alternative to the proposed 345 kV line from a new Rochester Substation to a substation in the area of La Crosse, Wisconsin.

Q. 7. Mr. Jeffery Webb states in his direct testimony (p. 31) that transmission line overloading conditions are projected to start in 2011. It is unlikely that the above described 345 kV line option will be in operation in that timeframe. How do DPC and NSP plan to provide reliable service until the proposed 345 kV line becomes operational?

Q. 8. Please justify the annual growth rate of 3% used in the 2009 Update Study for moving the estimated 494 MW of local La Crosse/Winona area load from 2009 to 2012. (See 2010 TSSR, p. 11.)

Q. 9. Please explain: a) the parenthetical note stating "[m]odeling the units as on in the base case gives them "must-run" status; b) does the model treat peaking units modeled "as on" as "must-run" units?; c) why were not the French Island Units 3 and 4 modeled as peaking units rather than representing them off-line? (See 2010 TSSR, p. 4 and p. 11 and 2009 Update Study, p. 24.)

Q. 10. Please provide 2008 costs for operating the two 70 MW French Island peaking units for transmission system support.

Q. 11. Please refer to 2010 TSSR, section 5 (b) (i) 2, page 11. The last line of the third paragraph states "[a]ll further facility need and system deficiency dates which are discussed in this report reflect the updated study work and most recent load forecasts." It appears from the quoted sentence that 2010 TSSR includes "updated study work" and "load forecasts" that were not included in 2009 Update Study dated July 2009. Please identify by giving page numbers from 2010 TSSR that provide information on the "updated study work and most recent load forecasts" that were not included in 2009 Update Study.

Q. 12. Please identify the studies cited in 2010 TSSR and 2009 Update Study that include analysis of power transfer across the Minnesota-Wisconsin Interface, supporting the conclusion that the 345 kV line option will provide "foundation for future power transfer into Wisconsin." (See 2010 TSSR, p. 19.)

Q. 13. Please refer to 2010 TSSR, section 6, p. 20, which states "MISO did not complete a published transmission study for the Project." Has MISO since completed the study? If so, please provide a copy of the MISO study.

Q. 14. Please provide power flow analyses that show the reliability improvement in the Rochester area for the proposed 345 kV transmission line from a new Rochester Substation to a substation in the area of La Crosse, Wisconsin, assuming the projects listed at bullet points one and three in 2010 TSSR, page 20, are operational.

Q. 15. Please provide power flow analyses that show the reliability improvement in the Rochester area for a 230 kV transmission line from a new Rochester Substation to a substation in the area of La Crosse, Wisconsin, assuming the projects listed at bullet points one and three in 2010 TSSR, page 20, are operational.

Q. 16. Please refer to 2009 Update Study. It lists on page 29 a 161 kV system alternative for the La Crosse area. Please identify it with alternatives evaluated in "Southern Minnesota-Southern Wisconsin Reliability Enhancement Study (SMSWRES) dated March 13, 2006.

Q.17. Please explain why Alternative D recommended in SMSWRES was not evaluated in 2009 Update Study?

-----Original Message-----
From: Rasmussen, Pamela Jo
Sent: Thursday, September 09, 2010 2:27 PM
To: 'Sirohi, Udaivir - PSC'
Cc: 'Knapp, Leslie'; Hillstrom, Thomas G; King, Amanda R; 'Agrimonti, Lisa'; Thompson, Chuck DPC; Donovan, David D; Fannucchi, William - PSC
Subject: 05-CE-136 Partial response to 8/4/2009 data request.

Udaivir:

Attached is a response to Questions 2, 4, 7, 8, 9, 11, 12, 13 and 15. We are finalizing our analyses for the remaining questions and will forwarded then in a few weeks. Please let me know if you have any questions.

Pam Rasmussen
Manager, Siting & Land Rights
715.737.4661

-----Original Message-----
From: Sirohi, Udaivir - PSC [mailto:Udaivir.Sirohi@wisconsin.gov]
Sent: Wednesday, August 04, 2010 9:10 AM
To: Rasmussen, Pamela Jo
Cc: 'Knapp, Leslie'; Hillstrom, Thomas G; King, Amanda R; 'Agrimonti, Lisa'; Thompson, Chuck DPC; Donovan, David D; Fannucchi, William - PSC
Subject: RE: CAPX-HRL 345 kv project--engineering study

Pam,

I am attaching a data request based on my review of your technical studies. Please let me know if you have questions on my data request.

Thank you,

Udaivir

-----Original Message-----
From: Rasmussen, Pamela Jo [mailto:pamela.jo.rasmussen@xcelenergy.com]

Sent: Friday, May 28, 2010 9:00 AM
To: Sirohi, Udaivir - PSC
Cc: 'Knapp, Leslie'; Hillstrom, Thomas G; King, Amanda R; 'Agrimonti, Lisa'; Thompson, Chuck DPC; Donovan, David D; Fannucchi, William - PSC
Subject: CAPX-HRL 345 kv project--engineering study

Udaivir:

Here is an updated version of the planning study we will be using as part of our need documentation for the CPCN for the CAPX Hampton-La Crosse project. We are now working on the CPCN need section and this document will be included as an appendix.

We would appreciate it if you could take some time in the next few weeks and review this document. Then if there are any major concerns, let us know and we will meet with you to address those concerns.

I am not e-filing this document. If that needs to be done, please let me know.

Have a nice holiday weekend.

Pamela Rasmussen
Xcel Energy | Responsible By Nature
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PSCW Docket 05-CE-136
PSCW Data Request of August 4, 2010

Applicants' Response to Certain Questions
September 3, 2010

This document responds to Questions 2, 4, 7, 8, 9, 11, 12, 13 and 15. The remaining questions are currently under review and will be forwarded when complete.

Question 2: *The CapX2020 "Group 1" facilities are described in 2010 TSSR on page 5. Only one of these facilities, namely the Fargo-Monticello 345 kV line, is included in the 2012 base case. But all of these facilities are assumed in service for the proposed Hampton –Rochester –La Crosse 345 kV line option. Are these facilities scheduled to be available in 2012? If yes, please explain the reasons for their exclusion from the 2012 base case. (See2010 TSSR, p. 5)*

Response: No, the proposed Brookings Co – Hampton 345 kV CapX2020 "Group 1" project is not scheduled to be in-service in 2012. The in-service dates for the Group 1 Projects are as follows:

- Brookings Co – Hampton 345 kV project (Q2 2015)
- Fargo – Monticello 345 kV project (Q1 2015);
- Bemidji—Grand Rapids 230 kV project (Q2/Q3 2012)
- Hampton – Rochester – La Crosse 345 kV project (Q2 2015)

All Group 1 projects were studied when analyzing the Hampton – Rochester – La Crosse 345 kV option because all Group 1 projects are scheduled to be in service by 2015.

Question 4: *Please provide power flow and cost analyses for a 230 kV Project alternative to the proposed 345 kV line from a new Rochester Substation to a substation in the area of La Crosse, Wisconsin.*

Response: No 230 kV alternative has been identified for the Hampton – Rochester – La Crosse 345 kV Project. The study team chose not to do a 230 kV alternative for the Project for several reasons:

1. The primary reason is that a 230 kV alternative would introduce a new voltage in each of the three areas where the Project connects: SE Twin Cities (Prairie Island/Hampton area), Rochester, and La Crosse. In these areas 345 kV, 161 kV and 69 kV voltages are the primary transmission voltages. When a new voltage is introduced there are significant cost implications to incorporate the non-standard transformers and substation equipment necessary to transform from 345 kV to 230 kV, and then to the local area lower voltages of 161 kV and 69 kV. Since there were no existing 230 kV lines in the area and no plans in the future, 230 kV was not included.

2. Planning engineers determined that even if a 230 kV alternative were feasible, past planning efforts for other areas indicated it would provide system benefits comparable to the 161 kV alternatives for each community, but at a higher cost due to the need for major installations to accommodate the new voltage.

3. In addition when introducing non-standard transformer voltages and/or sizes, there are not system spare transformers available, and therefore new stock equipment purchases would become necessary, increasing overall costs for the utility.

Question 7: *Mr. Jeffery Webb states in his direct testimony (p. 31) that transmission line overloading conditions are projected to start in 2011. It is unlikely that the above described 345 kV line option will be in operation in that timeframe. How do DPC and NSP plan to provide reliable service until the proposed 345 kV line becomes operational?*

Response: As a temporary solution, MISO will call on the operational French Island 70 MW peaker (Unit 4) to run when there is a prior outage on the system.

Question 8: *Please justify the annual growth rate of 3% used in the 2009 Update Study for moving the estimated 494 MW of local La Crosse/Winona area load from 2009 to 2012. (See 2010 TSSR, p. 11.)*

Response: In the 2006 La Crosse / Rochester Study, engineers used the historical average of 3% as the growth factor for the La Crosse area. The actual 2006 peak grew by 3% per year until a peak of 494 MW was reached in 2009. For the Update Study and the TSSR, engineers used the most recent load forecast (average of 1-2% for the Rochester and La Crosse areas – forecast provided as Appendix D to the TSSR) to forecast the area peaks for future years. This new forecast resulted in the previously determined 494 MW peak in 2009 to be realized as a 494 MW peak in 2012.

Question 9: *Please explain: a) the parenthetical note stating "[m]odeling the units as on in the base case gives them "must-run" status; b) does the model treat peaking units modeled "as on" as "must-run" units?; c) why were not the French Island Units 3 and 4 modeled as peaking units rather than representing them off-line? (See 2010 TSSR, p. 4 and p. 11 and 2009 Update Study, p. 24.)*

Response: a) In our PSSE models a generator can either be represented by a "1" or a "0.1" for on, and "0" for off. If we run a study with the generator set to "on" for all analysis then the system is relying on the output of that generator in all system conditions. This is essentially modeling a "must-run" generation scenario.

b) Yes, as explained in part a. above.

c) As described in part a. above, there is no model differentiation in PSSE between "must-run" and peaking units. Therefore, it is common practice to run the PSSE model with peaking units turned off and analyze the effect their output would have for specific outages when reviewing results. As part of such analysis, the bus voltage at the plant is evaluated to ensure it is high enough to enable to unit to start up following a critical contingency.

Question 11: *Please refer to 2010 TSSR, section 5 (b) (i) 2, page 11. The last line of the third paragraph states "[a]ll further facility need and system deficiency dates which are discussed in this report reflect the updated study work and most recent load forecasts." It appears from the quoted sentence that 2010 TSSR includes "updated study work" and "load forecasts" that were not included in 2009 Update Study dated July 2009. Please identify by giving page numbers from 2010 TSSR that provide information on the "updated study work and most recent load forecasts" that were not included in 2009 Update Study.*

Response: The TSSR includes the load forecasts and updated study work that was included in the 2009 Update Study (See Appendix D to the TSSR). No new forecasts or study work were created specifically for the TSSR. Rather, the TSSR summarizes all study work on the 345 kV project and 161 kV alternatives for support of the CPCN filing.

Question 12: *Please identify the studies cited in 2010 TSSR and 2009 Update Study that include analysis of power transfer across the Minnesota-Wisconsin Interface, supporting the conclusion that the 345 kV line option will provide "foundation for future power transfer into Wisconsin." (See 2010 TSSR, p. 19.)*

Response: In March of 2009, Minnesota transmission owning utilities jointly worked on three transmission planning studies:

- Southwest Twin Cities – Granite Falls Transmission Upgrade Study
- MN RES Update Study
- Capacity Validation Study

These three studies all analyzed transfer of power from Minnesota into Wisconsin. All three studies concluded that a new 345 kV connection between Minnesota and Wisconsin is required before any increase in transfer capability can be achieved. The studies further concluded that the Hampton – Rochester – La Crosse 345 kV line, in combination with a line from La Crosse to the Madison area, would increase power transfer capability.

The three studies are published on the Minnesota Transmission Owners website. Downloads are available at the following link under the headings "Recent Transmission Studies": and "Capacity Validation Study". http://www.minnelectrans.com/reports.html.

Question 13: *Please refer to 2010 TSSR, section 6, p. 20, which states "MISO did not complete a published transmission study for the Project." Has MISO since completed the study? If so, please provide a copy of the MISO study.*

Response: No, MISO has never completed a formal study for its independent analysis beyond the public testimony of Jeff Webb as provided as an Appendix to the TSSR.

Question 15: *Please provide power flow analyses that show the reliability improvement in the Rochester area for a 230 kV transmission line from a new Rochester Substation to a substation in the area of La Crosse, Wisconsin, assuming the projects listed at bullet points one and three in 2010 TSSR, page 20, are operational.*

Response: Please see response to Question No. 4.

From: Rasmussen, Pamela Jo
To: "Sirohi, Udaivir - PSC";
cc: Knapp, Leslie; Hillstrom, Thomas G; King, Amanda R; Agrimonti, Lisa; "Thompson, Chuck DPC"; Donovan, David D; "Fannucchi, William - PSC"; Steven C Porter; jlandsman@wheelerlaw.com; "Benjamin L Porath";
Subject: 05-CE-136 Final response to 8/4/2010 data request.
Date: Tuesday, October 19, 2010 2:18:28 PM
Attachments: 05CE136_PartTwo_PSCW09042010DataRequest.pdf
Question 5 Alternative Power Flow Analysis.doc
Question 5 Alternative Cost Analysis.pdf
question 14 automaps.pdf
question 14 text.doc.docx

Udavir:

Attached are Xcel Energy and DPC's responses to the remainder of the questions from your August 4, 2010 request. I have a few clarifying questions for you and will be calling you in the next day or so.

Thank you.

Pam Rasmussen
Manager, Siting & Land Rights
715.737.4661

-----Original Message-----
From: Rasmussen, Pamela Jo
Sent: Thursday, September 09, 2010 2:27 PM
To: 'Sirohi, Udaivir - PSC'
Cc: 'Knapp, Leslie'; Hillstrom, Thomas G; King, Amanda R; 'Agrimonti, Lisa'; Thompson, Chuck DPC; Donovan, David D; Fannucchi, William - PSC
Subject: 05-CE-136 Partial response to 8/4/2010 data request.

Udaivir:

Attached is a response to Questions 2, 4, 7, 8, 9, 11, 12, 13 and 15. We are finalizing our analyses for the remaining questions and will forwarded then in a few weeks. Please let me know if you have any questions.

Pam Rasmussen
Manager, Siting & Land Rights
715.737.4661

-----Original Message-----

PSCW Docket 05-CE-136
PSCW Data Request of August 4, 2010

Applicants' Response to Certain Questions
October 19, 2010

This document responds to Questions 1, 3, 5, 6, 10, 14, 16 and 17. We previously submitted responses to the other questions.

Q. 1. *Please provide the names and capacities of Wisconsin hydroelectric generators and their capacity factors for 2004 to 2009. (See 2010 TSSR, p. 4)*

Response: Table 1 provides the names and capacities of the Wisconsin hydroelectric generating facilities owned by NSP and DPC in Wisconsin. The Flambeau units are the only hydroelectric facilities owned by DPC, the remaining units are owned by NSP.

Table 1
NSPW and DPC Wisconsin Hydroelectric Generation
#Units, Capacity and Capacity Factors 2004-2009

Plant Name	# Units	Net Cap. (MW)	2004 CF	2005 CF	2006 CF	2007 CF	2008 CF	2009 CF
Apple River	4	3.2	41.26%	48.31%	38.74%	38.02%	36.55%	30.79%
Big Falls	3	7.5	40.49%	46.25%	40.87%	34.38%	38.44%	31.31%
Cedar Falls	3	7.3	44.44%	45.33%	39.99%	39.05%	45.51%	35.66%
Chippewa Falls	6	23.5	29.66%	23.93%	22.12%	20.25%	21.53%	18.87%
Cornell	4	33.3	24.79%	22.49%	19.18%	18.61%	18.41%	14.99%
Dells	5	12.3	33.10%	42.77%	37.32%	18.66%	6.17%	25.43%
Flambeau (DPC)	3	24.0	28.34%	27.76%	24.08%	18.06%	24.15%	15.50%
Hayward	1	0.2	12.75%	17.16%	16.38%	15.22%	13.30%	75.68%
Holcombe	3	35.3	29.00%	23.70%	20.74%	19.10%	22.66%	15.72%
Jim Falls	3	56.7	26.27%	19.03%	16.31%	13.70%	18.76%	11.95%
Ladysmith	3	2.9	37.11%	34.15%	29.90%	26.05%	28.10%	18.49%
Menomonie	2	5.4	47.28%	46.19%	38.48%	37.33%	45.25%	33.97%
Riverdale	2	0.6	16.54%	15.18%	12.58%	10.44%	14.55%	37.35%
St. Croix Falls	8	25.6	43.58%	51.10%	40.23%	41.20%	45.34%	43.09%
Saxon Falls	2	1.5	55.92%	86.67%	59.92%	49.73%	39.81%	70.10%
Superior Falls	2	1.9	61.03%	80.27%	65.19%	55.34%	54.87%	59.40%
Thornapple	2	1.7	21.72%	54.40%	41.64%	32.71%	34.32%	35.81%
Trego	2	1.5	44.62%	50.11%	33.73%	34.59%	42.16%	41.45%
White River	2	0.8	22.90%	24.75%	22.27%	21.26%	20.45%	47.19%
Wissota	6	36.6	35.53%	31.56%	28.34%	27.62%	29.41%	23.58%

Q. 3. *Please provide the cost applicable to Wisconsin for the 345 kV line option described in Q. 2.*

Response: The 345 kV project costs are currently being developed and will be included with the full CPCN filing later this year. At that time cost analysis will be available by state as well as for the entire project.

Q. 5. *Please provide power flow and cost analyses for a 161 kV Project alternative to the proposed 345 kV line from a new Rochester Substation to a substation in the area of La Crosse, Wisconsin*.

Response: Cost analysis (in 2010 dollars) and power flow analysis for this new 161 kV alternative, as described below, is included with these responses in the following files which are attached:

- Cost Analysis: Question 5 Alternative Cost Analysis.pdf
- Power flow: Question 5 Alternative Power flow Analysis.doc.

Due to the 2009 Update Study's determination that the 161 kV alternative from the 2006 La Crosse/Rochester Study did not serve load past 2013, a new La Crosse area lower voltage alternative was studied in 2010. This alternative as described below will serve the load in the La Crosse area until approximately the 600 MW load level, or approximately 2028 using the load forecasts included in Appendix A-1 of the TSSR report. However, there is less improvement to regional reliability with this option. Load serving capability is also lower.

In order to improve the load serving capability of the La Crosse/ Winona area without a new transmission source, a number of existing 161 kV lines in the area would need to be rebuilt to help the existing system handle the load growth. Table #2 below shows the facilities that need to be upgraded. Upgrading these facilities allows the transmission system to reliably serve load until 600 MW or approximately 2028.

Table 2:
161 kV Transmission System Upgrades Required to Address Project Need[1]

161 kV Line Rebuilds	Miles
Genoa - La Crosse Tap	21
Coulee - La Crosse	8.5
Genoa - Coulee	19
Genoa - Lansing	20
Alma - Marshland	27
La Crosse - Mayfair	4
Marshland - La Crosse Tap	24

New 161/69 kV Transformers	Size
Tremval Upgrade existing	112 MVA
Coulee #3	112 MVA
Marshland #3	112 MVA
La Crosse #1	112 MVA
La Crosse #2	112 MVA
Coulee #1	112 MVA
Monroe County #2	70 MVA

[1] In addition to the upgrades listed on Tables 1 and 2, there are 14 existing 161 kV and 69 kV lines which need clearance and terminal limits addressed.

Total Miles of Rebuilt 161 kV	**125.5**

69 kV Line Rebuilds	**Miles**
Coulee - Swift Creek	2
Coulee - Mt. La Crosse	5
Total Miles of Rebuilt 69 kV	**7**

Substations (New and Expansions)	
Coulee	Expansion
Marshland	Expansion

To improve the load serving capability past the 600 MW load level, the La Crosse/Winona system needs a new transmission source. At this point a 345 kV line or a 161 kV line could be added as a source. For a 161 kV alternative, an approximately 100 mile 161 kV line was looked at from Red Wing, Minnesota to La Crosse, Wisconsin with ties in at the following substations: Spring Creek, Lake City, Alma, Marshland, Onalaska and La Crosse. This 161 kV source, in addition to the list of system upgrades in Table 1, can serve load growth in the La Crosse / Winona area until the 750 MW load level, or approximately 2045. This is the same load level that the 345 kV project can serve as will be proposed in the application. This complete alternative is shown in Table #3 below.

Table 3: 161 kV Alternative Facilities

161 kV Line Rebuilds	**Miles**
Genoa - La Crosse Tap	21
Coulee - Swift Creek	2
Coulee - La Crosse	8.5
Genoa - Coulee	19
Genoa - Lansing	20
Alma - Marshland	27
La Crosse - Mayfair	4
Marshland - La Crosse Tap	24
Total Miles of Rebuilt 161 kV	**125.5**

69 kV Line Rebuilds	**Miles**
Coulee - Swift Creek	2
Coulee - Mt. La Crosse	5
Total Miles of Rebuilt 69 kV	**7**

New 161 kV Lines	**Miles**
Alma - Marshland #2	28
Marshland - Onalaska	26
Onalaska - La Crosse	5
Spring Creek - Lake City	20
Lake City - Alma	22
Total Miles of New 161 kV	**101**

Total 161 kV Alternative Cost	**$377 Million**
New 161/69 kV Transformers	**Size**
Tremval Upgrade existing	112 MVA
Coulee #3	112 MVA
Marshland #3	112 MVA
La Crosse #1	112 MVA
La Crosse #2	112 MVA
Coulee #1	112 MVA
Monroe County #2	70 MVA
Jackson Co Upgrade Existing	112 MVA
Lake City #2	70 MVA
Onalaska #1 and #2	112 MVA

Substations (New and Expansions)	
Coulee	Expansion
Marshland	Expansion
Alma	New
Spring Creek	Expansion
Onalaska	New
Lake City	Expansion

Total Cost	
La Crosse 161 kV Alternative	$330 Million
Rochester 161 kV Alternative	$ 47 Million

In order to have a full comparison between the 345 kV project and the 161 kV alternative, cost analysis, generation transfer capability and regional system benefits were analyzed as well. In addition, consideration was also given to the need in Rochester which required inclusion of the Rochester 161 kV alternative in assessing the overall alternative cost as the 345 kV project serves load in the Rochester and La Crosse / Winona load areas. The Rochester 161 kV alternative, estimated at $47M, includes two new 161 kV lines. The 161 kV improvements in the La Crosse area and Rochester area are both required to equal the transmission system improvements of the proposed 345 kV line.

Regional Reliability with the 161 kV Alternative

The analysis done in 2010 to study additional 161 kV alternatives for the 345 kV project has helped support the 345 kV project as the best alternative both for the load serving areas of Rochester and La Crosse / Winona, and the greater region.

The 161 kV alternative described would require improvements to the existing transmission system in addition to building a 100 mile 161 kV line that crosses the Mississippi river, all of which would have none of the regional benefits realized by the 345 kV project:

The 345 kV line from the Twin Cities to Rochester and on to La Crosse serves as an important first step in a greater regional transmission system build-out. In Wisconsin, the transmission grid in the western portion of the state, along with interface loading levels across the Minnesota – Wisconsin border, limit the ability to interconnect new generation in Minnesota as well as generation from points further west. Planning engineers have identified the lack of a 345 kV facilities between Minnesota, La Crosse and points east as the impediment to further transfers. ATC has announced its intentions to construct a 345 kV transmission line from La Crosse to the Madison area ("Badger—Coulee Project") which will help address this deficit. If a 161 kV alternative were constructed, a 345 kV connection to Minnesota would still be required to connect to the Badger—Coulee Project to increase transfer capability.

Q. 6. *Please provide power flow and cost analyses for a double-circuited 161kV Project alternative to the proposed 345 kV line from a new Rochester Substation to a substation in the area of La Crosse, Wisconsin.*

Response: A double circuit 161kV would perform similar to the 161kV alternative discussed in question 5 above, and provide similar load serving capabilities. However, double circuit 161kV would cost more than the single circuit 161kV construction, and would increase the overall cost of the alternative with no measurable added benefit. For these reasons, a double circuit 161kV alternative is not a viable solution for the La Crosse / Winona area.

Q. 10. *Please provide 2008 costs for operating the two 70 MW French Island peaking units for transmission system support*.

Response: Xcel Energy's Energy Supply area does not discriminate French Island's unit operation for energy versus transmission reliability. This is potentially a question that could be directed to MISO who dispatches our system. In addition, the 70 MW Unit 3 at French Island is indefinitely mothballed with no current plan for repairs. Therefore, currently only the 70MW Unit #4 is available for system support. This will be discussed in our CPCN application.

Q. 14. *Please provide power flow analyses that show the reliability improvement in the Rochester area for the proposed 345 kV transmission line from a new Rochester Substation to a substation in the area of La Crosse, Wisconsin, assuming the projects listed at bullet points one and three in 2010 TSSR, page 20, are operational*.

Response: The response to this question is included with this filing as two separate files: Question 14 text.doc and Question 14 automaps.pdf.

The .doc file explains the outages which show the Rochester load serving issues and how the proposed fix will alleviate the overloads. The .pdf file shows the overloads on automap files.

Q. 16. *Please refer to 2009 Update Study. It lists on page 29 a 161 kV system alternative for the La Crosse area. Please identify it with alternatives evaluated in "Southern Minnesota- Southern Wisconsin Reliability Enhancement Study (SMSWRES) dated March 13, 2006.*

Response: As stated in the 2009 Update Study, page 31:

"In the previous study, the 161 kV alternative was shown to last until approximately the 2026-2028 timeframe. This differs from the results found in this study due to the following major drivers:

- The voltage criteria for the French Island generator buses were refined in this study. The French Island voltage was said to meet criteria only if it was at least .95 pu.

- The System Alternative studied in this study – the Genoa-North La Crosse 161 kV line – did not include other line work (re-conductors or rebuilds) as did the original Rochester & La Crosse study."

Due to the differences discussed above, the alternative discussed in the 2009 Update Study, as well as the 161 kV alternative discussed in question 5 above do not directly tie to any alternatives in the SMSWRES Study.

Q.17. *Please explain why Alternative D recommended in SMSWRES was not evaluated in 2009 Update Study?*

Response: Please refer to the response to question 16.

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September 2010 161 kV alternative

Rebuilds	**161**	**161**	**161**	**161**	**161**	**161**	**161**	**161**	**161**	**161**	**69**	**69**	
	Genoa - La Crosse Tap	**Coulee - Swift Creek**	**Coulee - La Crosse**	**Genoa - Coulee**	**Genoa - Lansing**	**Alma - Marshland**	**La Crosse - Mayfair**	**Marshland - La Crosse Tap**	**Tremval - Alma**	**Tremval - Mayfair**	**Coulee - Swift Creek**	**Coulee - Mt. La Crosse**	**Total**
Length	21	2	8.5	19	20	27	4	24	34	31	2	5	198
Install	$ 12,500,000	$ 1,190,000	$ 5,060,000	$ 11,310,000	$ 11,900,000	$ 16,070,000	$ 2,380,000	$ 14,280,000	$ 20,230,000	$ 18,450,000	$ 500,000	$ 1,250,000	
ROW	$ 250,000	$ 20,000	$ 100,000	$ 230,000	$ 240,000	$ 330,000	$ 50,000	$ 290,000	$ 410,000	$ 380,000	$ 20,000	$ 60,000	
Overheads		$ 90,000	$ 370,000	$ 820,000	$ 860,000	$ 1,160,000	$ 170,000	$ 1,030,000	$ 1,460,000	$ 1,340,000	$ 40,000	$ 90,000	
Removal	$ 920,000	$ 90,000	$ 370,000	$ 840,000	$ 880,000	$ 1,190,000	$ 180,000	$ 1,060,000	$ 1,500,000	$ 1,360,000	$ 78,000	$ 195,000	
Environ fee	$ 640,000	$ 60,000	$ 260,000	$ 580,000	$ 610,000	$ 820,000	$ 120,000	$ 730,000	$ 1,030,000	$ 940,000	$ -	$ -	
subtotal	$ 14,310,000	$ 1,450,000	$ 6,160,000	$ 13,780,000	$ 14,490,000	$ 19,570,000	$ 2,900,000	$ 17,390,000	$ 24,630,000	$ 22,470,000	$ 638,000	$ 1,595,000	
Permitting, contingency	$ 2,150,000	$ 220,000	$ 920,000	$ 2,070,000	$ 2,170,000	$ 2,940,000	$ 440,000	$ 2,610,000	$ 3,690,000	$ 3,370,000	$ 100,000	$ 240,000	
	$ 16,460,000	$ 1,670,000	$ 7,080,000	$ 15,850,000	$ 16,660,000	$ 22,510,000	$ 3,340,000	$ 20,000,000	$ 28,320,000	$ 25,840,000	$ 738,000	$ 1,835,000	$ 160,303,000
Per mile	$ 783,810	$ 835,000	$ 832,941	$ 834,211	$ 833,000	$ 833,704	$ 835,000	$ 833,333	$ 832,941	$ 833,548	$ 369,000	$ 367,000	

New Line	**161**	**161**	**161**	**161**	**161**	
	Alma - Marshland #2	**Marshland - Onalaska**	**Onalaska - La Crosse**	**Spring Creek - Lake City**	**Lake City - Alma**	**Total**
Length	28	26	5	20	22	101
Install	$ 16,660,000	$ 15,470,000	$ 2,980,000	$ 11,900,000	$ 13,090,000	
ROW	$ 1,360,000	$ 1,260,000	$ 240,000	$ 970,000	$ 1,070,000	
Overheads	$ 1,280,000	$ 1,190,000	$ 230,000	$ 910,000	$ 1,000,000	
Removal	$ 1,230,000	$ 1,140,000	$ 220,000	$ 880,000	$ 970,000	
Environ fee	$ 900,000	$ 840,000	$ 160,000	n/a	n/a	
River Crossing					$ 10,000,000	
subtotal	$ 21,430,000	$ 19,900,000	$ 3,830,000	$ 14,660,000	$ 26,130,000	
Permitting, contingency	$ 3,210,000	$ 2,990,000	$ 570,000	$ 2,200,000	$ 3,920,000	
	$ 24,640,000	$ 22,890,000	$ 4,400,000	$ 16,860,000	$ 30,050,000	$ 98,840,000
Per mile	$ 880,000	$ 880,385	$ 880,000	$ 843,000	$ 1,365,909	

Substation/Transformers 299

$ 259,143,000

868,150.75

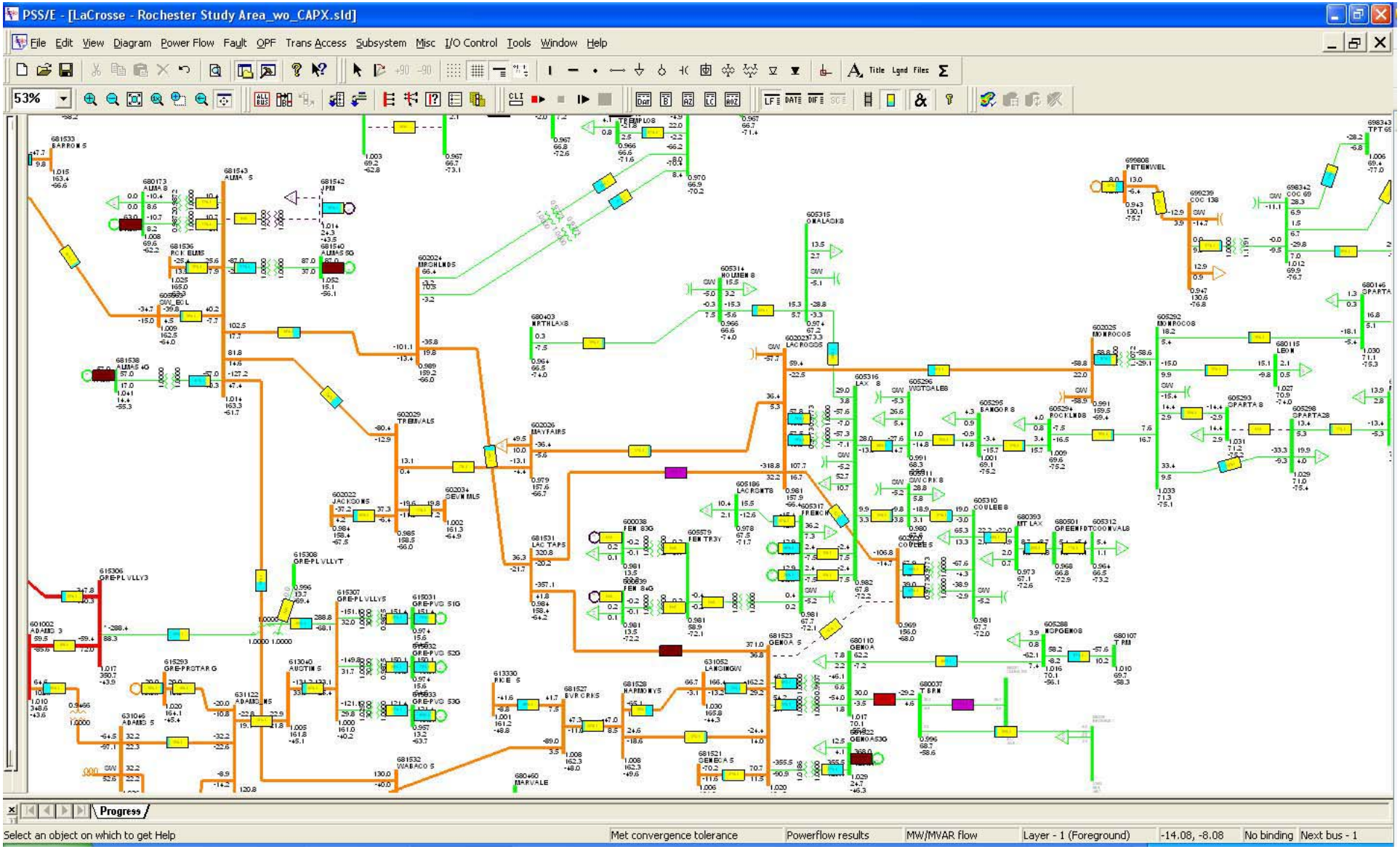
		Tremval	**Jackson Co**	**LaCrosse**	**Coulee**	**Marshland**	**Onalaska**	**Lake City**	**Spring Creek**	
	Install and land	$ 2,195,000	$ 2,311,000	$ 4,720,000	$ 11,033,000	$ 8,230,000	$ 13,363,000	$ 13,363,000	$ 2,195,000	
3.09%	Overheads	$ 67,826	$ 71,410	$ 145,848	$ 340,920	$ 254,307	$ 412,917	$ 412,917	$ 67,826	
5%	Environmental Fee	$ 109,750	$ 115,550	$ 236,000	$ 551,650	$ 411,500	$ 668,150	$ 668,150	$ 109,750	
	Subtotal	$ 2,372,576	$ 2,497,960	$ 5,101,848	$ 11,925,570	$ 8,895,807	$ 14,444,067	$ 14,444,067	$ 2,372,576	
15%	Permitting, contingency	$ 355,886	$ 374,694	$ 765,277	$ 1,788,835	$ 1,334,371	$ 2,166,610	$ 2,166,610	$ 355,886	
		$ 2,728,462	$ 2,872,654	$ 5,867,125	$ 13,714,405	$ 10,230,178	$ 16,610,677	$ 16,610,677	$ 2,728,462	$ 71,362,639

$ 330,505,639

Outage of JPM Generation + Genoa - Coulee 161 kV line

The image below shows the outage of JPM Generation plus the outage of the Genoa - Coulee 161 kV line on the 491 MW base case.

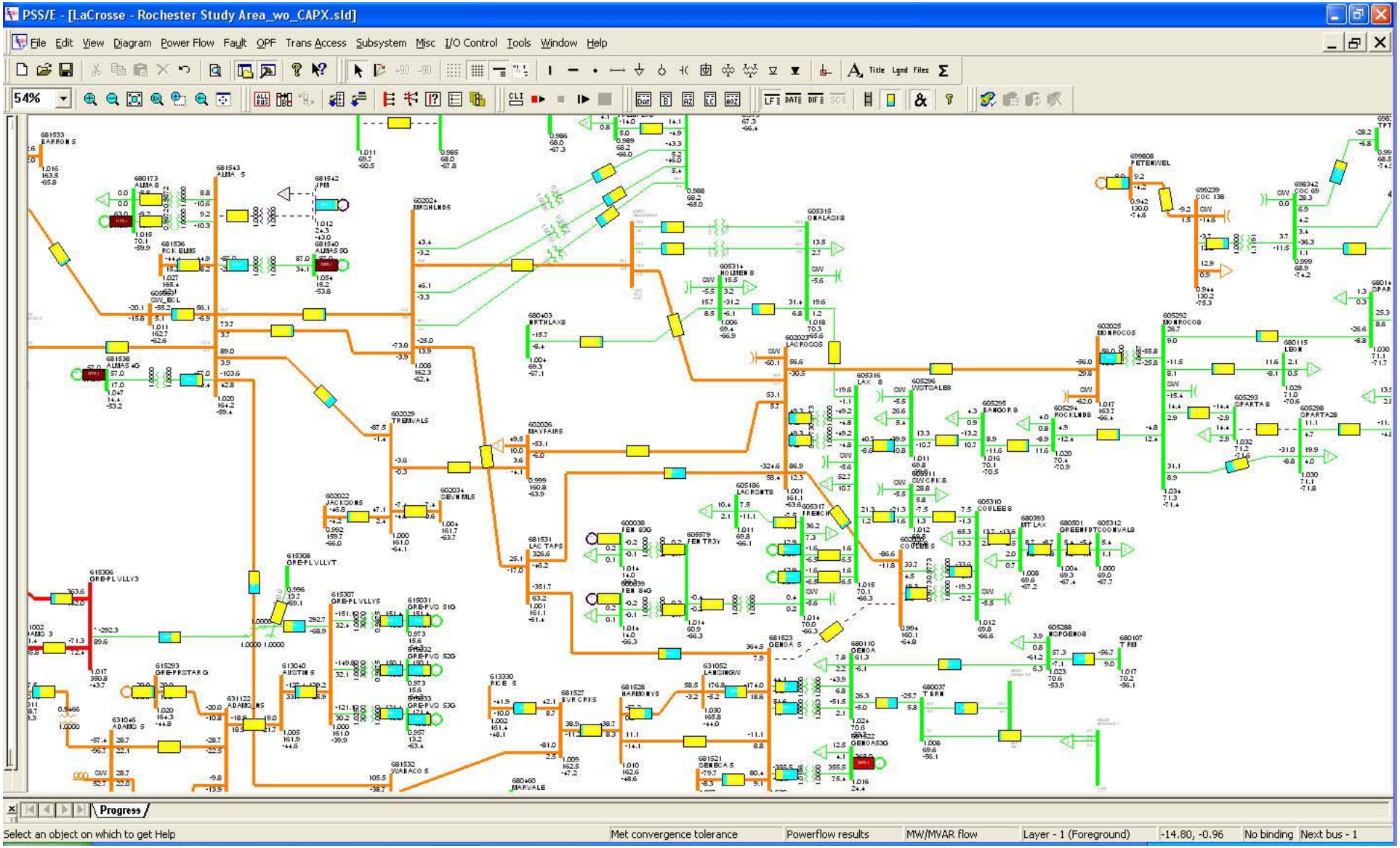
- La Crosse – La Crosse Tap 161 kV line is loaded to 98% of emergency
- Genoa – La Crosse Tap 161 kV line loaded to 119% of emergency



The image below shows the outage of JPM Generation plus the outage of the Genoa - Coulee 161 kV line on the 491 MW base case with the entire 161 kV alternative included.

- La Crosse – La Crosse Tap 161 kV line is loaded to 68% of emergency
- Genoa – La Crosse Tap 161 kV line loaded to 73% of emergency

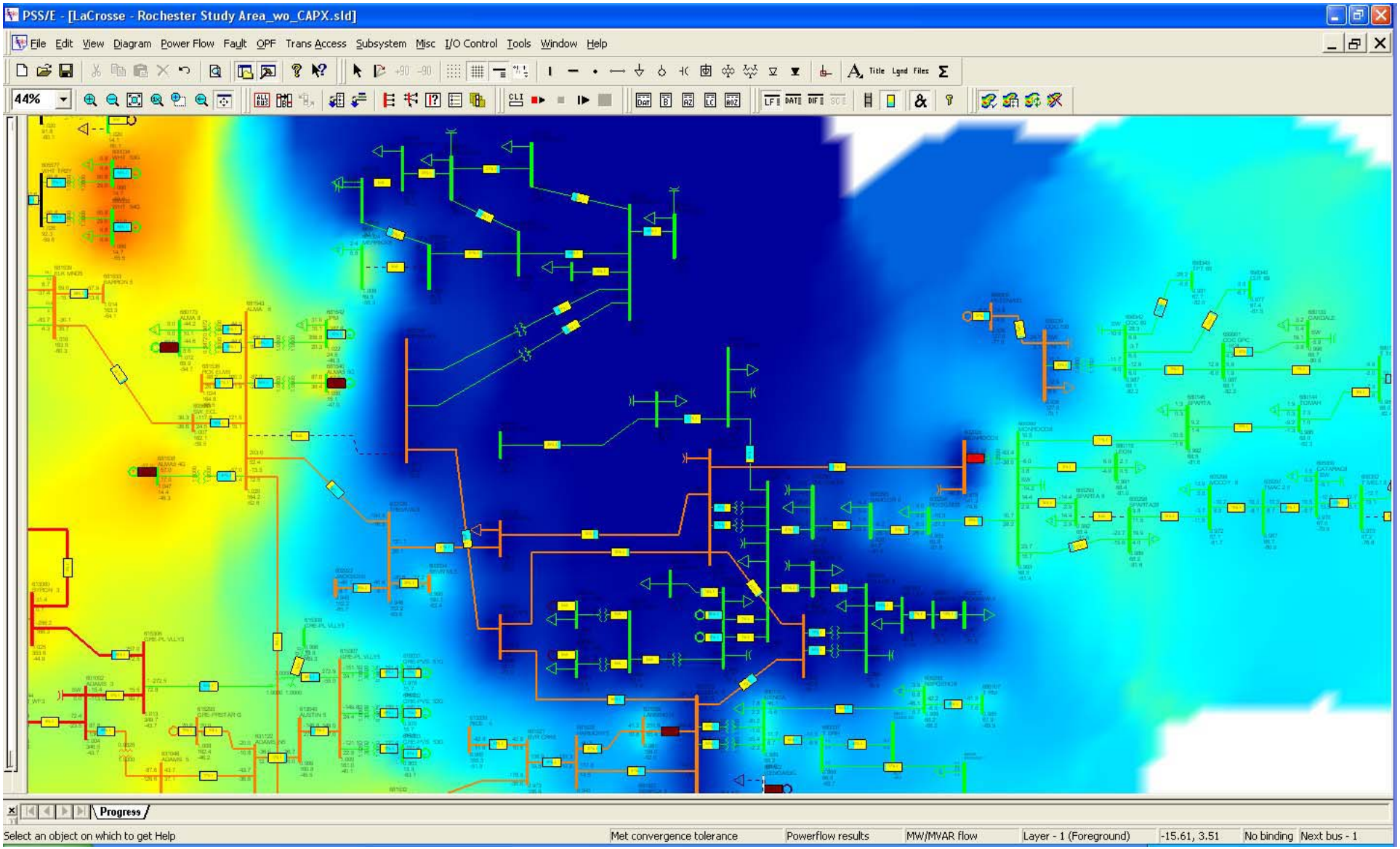
The 161 kV option effectively eliminates this critical continency.



Outage of Genoa Generation + Alma - Marshland 161 kV line

The image below shows the low voltage problems caused by the outage of Genoa Generation plus the outage of the Alma - Marshland 161 kV line on the 491 MW base case.

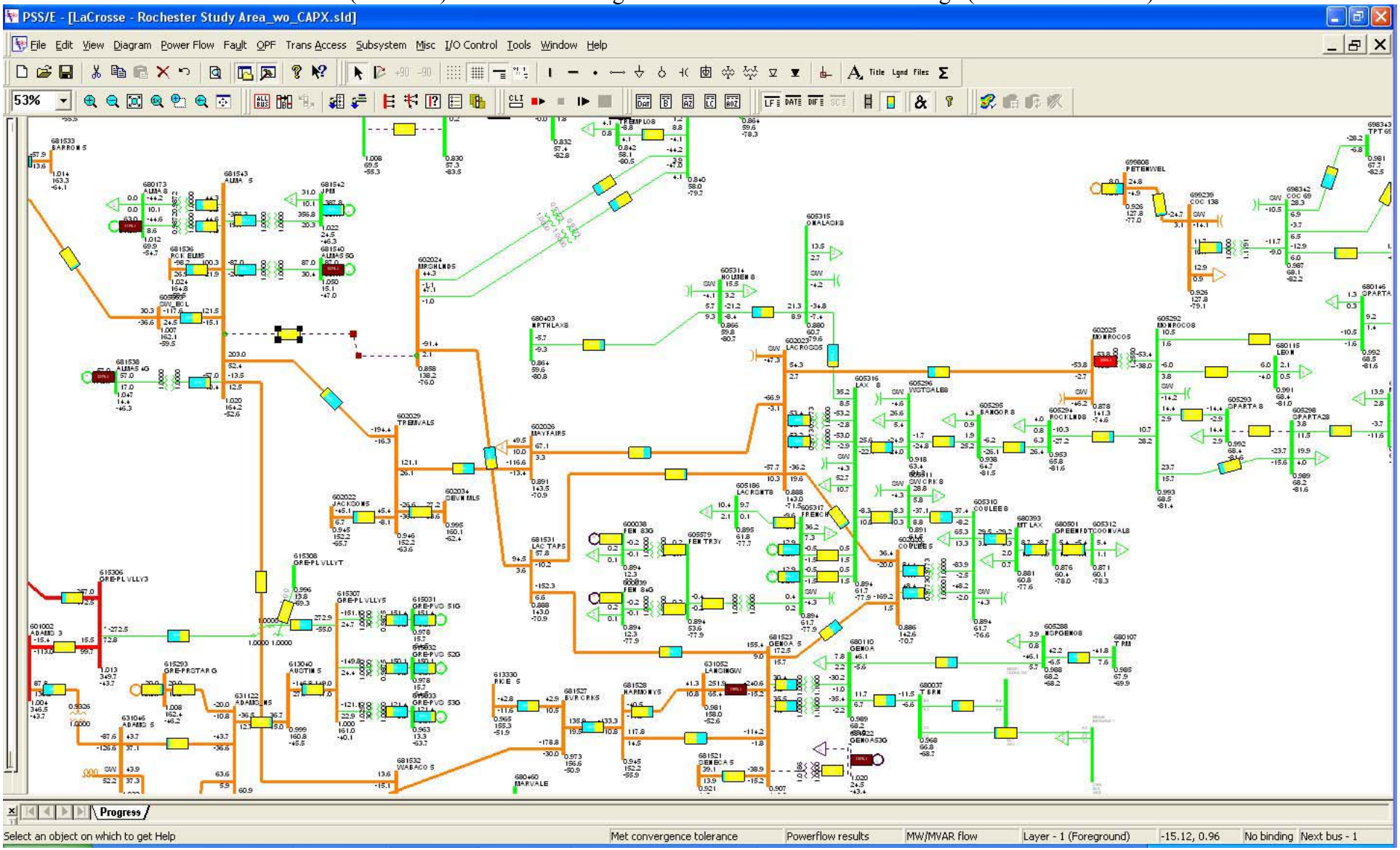
- Dark blue = below 0.9 p.u. voltage; Yellow/Green = near 1.0 p.u. voltage; Red = near 1.1 p.u. voltage



The image below shows the thermal overload problems caused by the outage of Genoa Generation plus the outage of the Alma - Marshland 161 kV line on the 491 MW base case.

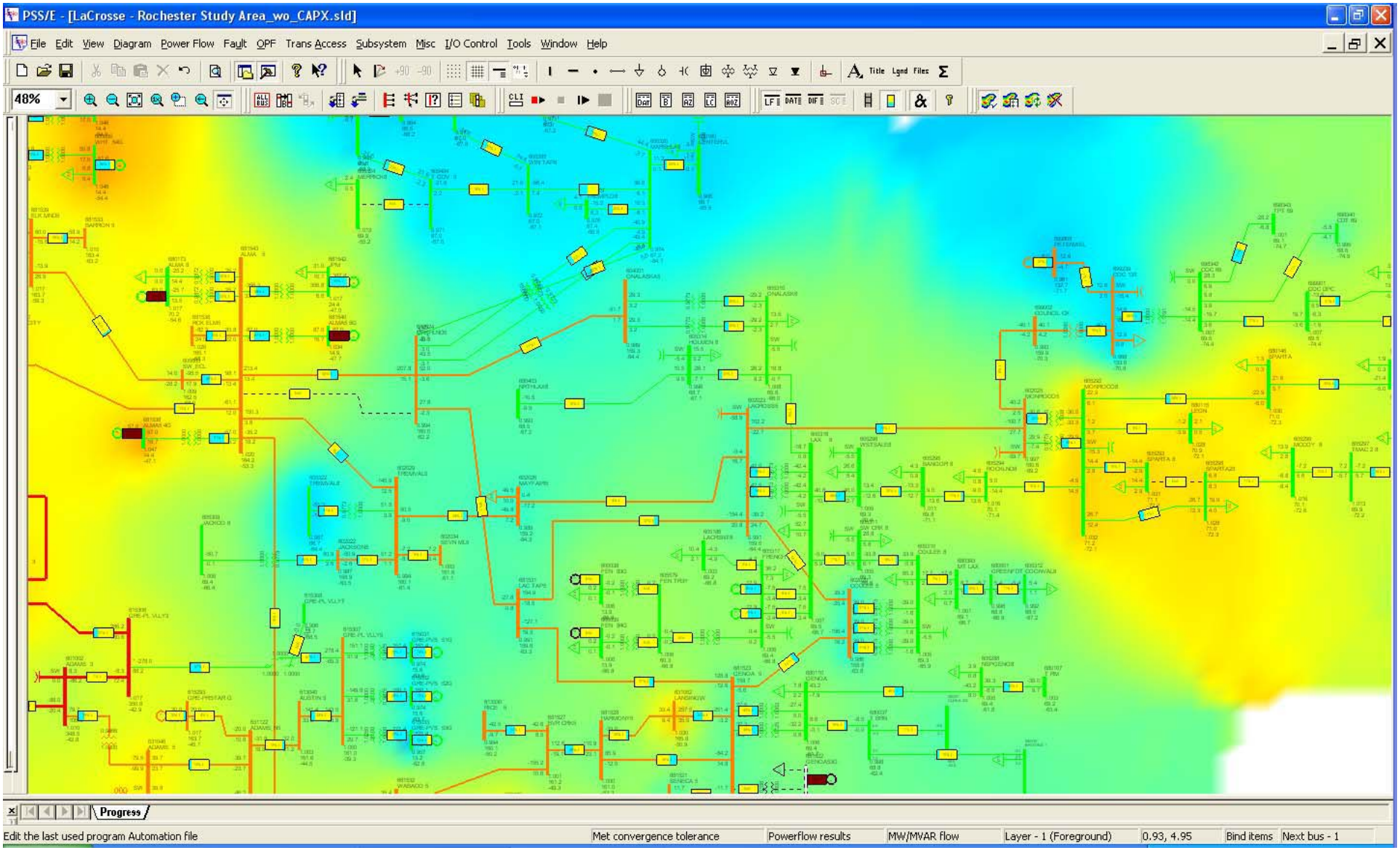
- Lansing – Genoa 161 kV line is loaded to 119% of emergency

Base Case (491 MW) With Genoa outage + Alma-Marshland 161 kV outage (Thermal Problems)



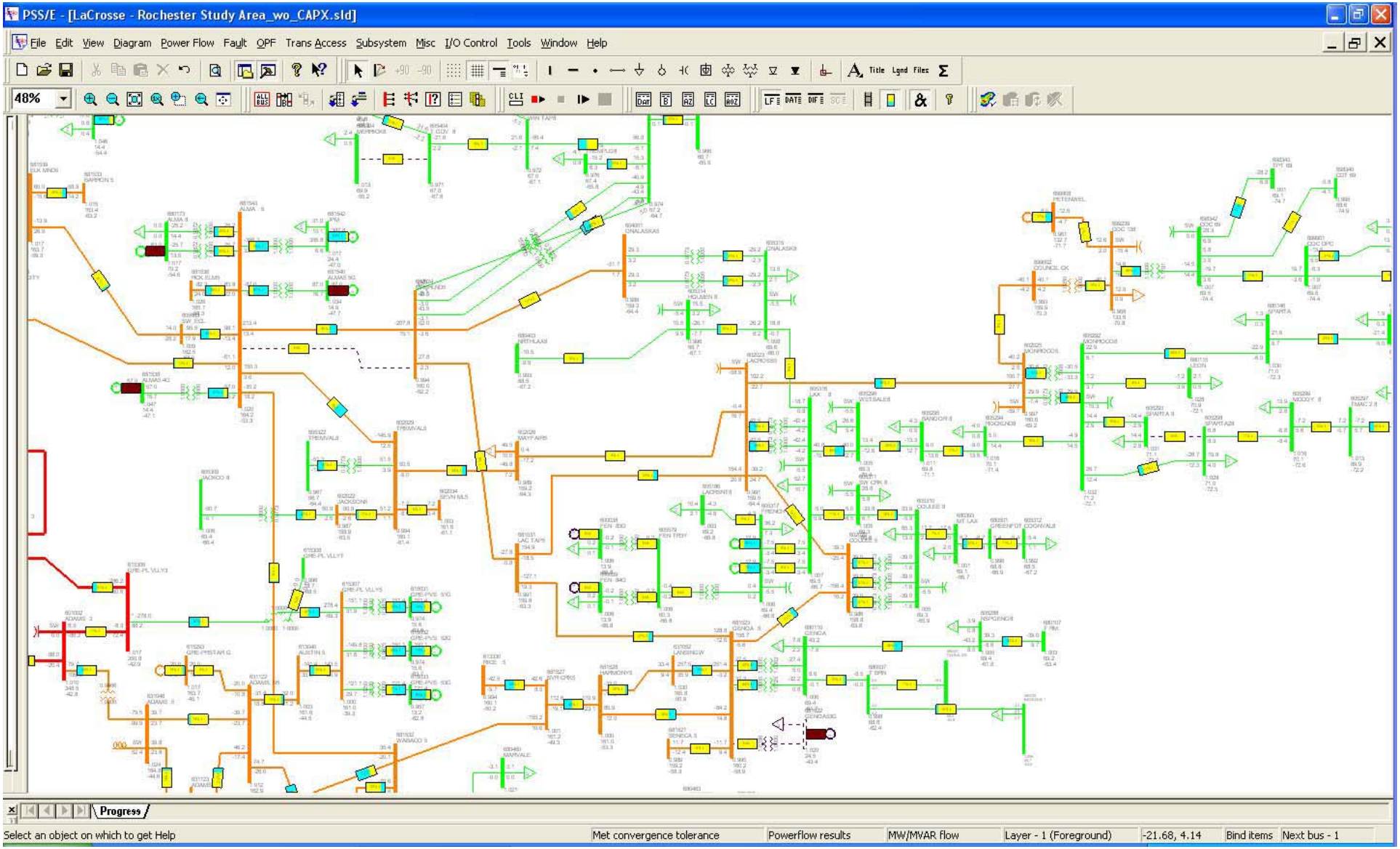
The image below shows the outage of Genoa Generation plus the outage of the Alma - Marshland 161 kV line on the 491 MW base case with the entire 161 kV alternative included.

- Dark blue = below 0.9 p.u. voltage; Yellow/Green = near 1.0 p.u. voltage; Red = near 1.1 p.u. voltage
- Low voltage problems eliminated



The image below shows the outage of Genoa Generation plus the outage of the Alma - Marshland 161 kV line on the 491 MW base case with the entire 161 kV alternative included.

- Lansing – Genoa 161 kV line is loaded to 52% of emergency
- Thermal problems eliminated



Existing System

1. Worst Case Prior Outage = Byron - Maple Leaf 161 kV
2. Worst Case Contingency = DPC/Rochester – Adams 161 kV
3. Overloaded Facility = DPC/Rochester – Wabaco 161 kV
4. Rochester Area Import Limit = 188.6 MW

```
ACTIVITY?
 Executing activity rate,area

rate,area

 ENTER OUTPUT DEVICE CODE:
  0 FOR NO OUTPUT            1 FOR REPORT WINDOW, WITH PAGE BREAKS
  2 FOR A FILE               3 FOR \\rpuprint\RPUCOPY1
  4 FOR NX-1000              5 FOR REPORT WINDOW, WITH NO PAGE BREAKS
  6 FOR ALTERNATE SPOOL DEVICE  7 FOR PROGRESS WINDOW (WITH PAGE BREAKS): 7
 ENTER LINE LOADING LIMIT IN PERCENT: 100
 ENTER 1 TO USE RATEA, 2 FOR RATEB, 3 FOR RATEC (DEFAULT=1): 1
 ENTER UP TO 20 AREA NUMBERS
680

     PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E      FRI, SEP 10 2010  10:51
 2003 MISO MODEL (JANUARY 2003), UPDATED BY RSGS
 2009 SUMMER PEAK CASE --- UPDATED (12/12/03)
                    OUTPUT FOR AREA 680 [DPC     ]
 BRANCH LOADINGS ABOVE 100.0 % OF RATING SET A:

 X--------FROM BUS--------X  X---------TO BUS---------X       CURRENT(MVA)
   BUS     NAME  BSKV         AREA     BUS      NAME        BSKV  AREA  CKT   LOADING  RATING         PERCENT
 69522* GENOA53G24.0         680      69523    GENOA  5    161   680    1     385.0       360.0          107.0
 69542   JPM     24.0         680      69543*   ALMA   5    161   680    1     418.2       360.0          116.2
 69547* ROCHSTR5 161          680      69549    WABACO 5    161   680    1     201.3       201.0          100.1
 ENTER UP TO 20 AREA NUMBERS
```

North Rochester – Northern Hills 161 kV CAPX Line Added

1. Worst Case Prior Outage = Byron - Maple Leaf 161 kV
2. Worst Case Contingency = North Rochester – Northern Hills 161 kV
3. Overloaded Facility = DPC/Rochester – Wabaco 161 kV
4. Rochester Area Import Limit = 482.6 MW

```
ACTIVITY?
 Executing activity rate,area

rate,area

 ENTER OUTPUT DEVICE CODE:
  0 FOR NO OUTPUT            1 FOR REPORT WINDOW, WITH PAGE BREAKS
  2 FOR A FILE               3 FOR \\rpuprint\GIS
  4 FOR NX-1000              5 FOR REPORT WINDOW, WITH NO PAGE BREAKS
  6 FOR ALTERNATE SPOOL DEVICE  7 FOR PROGRESS WINDOW (WITH PAGE BREAKS): 7
 ENTER LINE LOADING LIMIT IN PERCENT: 100
 ENTER 1 TO USE RATEA, 2 FOR RATEB, 3 FOR RATEC (DEFAULT=1): 1
 ENTER UP TO 20 AREA NUMBERS
680

     PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E     FRI, SEP 10 2010  11:34
 2003 MISO MODEL (JANUARY 2003), UPDATED BY RSGS
 2009 SUMMER PEAK CASE --- UPDATED (12/12/03)
                    OUTPUT FOR AREA 680 [DPC     ]
 BRANCH LOADINGS ABOVE 100.0 % OF RATING SET A:

 X--------FROM BUS--------X  X---------TO BUS---------X      CURRENT(MVA)
   BUS    NAME  BSKV         AREA  BUS       NAME        BSKV     AREA     CKT      LOADING     RATING     PERCENT
 63445* CHESTER  161         613   69547     ROCHSTR5    161      680      15       501.0       302.0      165.9
 69522* GENOA53G24.0         680   69523     GENOA  5    161      680      1        382.3       360.0      106.2
 69542  JPM     24.0         680   69543*    ALMA   5    161      680      1        420.4       360.0      116.8
 69547* ROCHSTR5 161         680   69549     WABACO 5    161      680      1        201.6       201.0      100.3
 ENTER UP TO 20 AREA NUMBERS
```

Both CAPX Lines Added: North Rochester – Northern Hills 161 kV and North Rochester – Chester 161 kV

1. Worst Case Prior Outage = Byron - Maple Leaf 161 kV
2. Worst Case Contingency = North Rochester – Chester 161 kV
3. Overloaded Facility = North Rochester – Northern Hills 161 kV
4. Rochester Area Import Limit = 826.6 MW

```
ACTIVITY?
 Executing activity rate,area

rate,area

 ENTER OUTPUT DEVICE CODE:
  0 FOR NO OUTPUT            1 FOR REPORT WINDOW, WITH PAGE BREAKS
  2 FOR A FILE               3 FOR \\rpuprint\GIS
  4 FOR NX-1000              5 FOR REPORT WINDOW, WITH NO PAGE BREAKS
  6 FOR ALTERNATE SPOOL DEVICE  7 FOR PROGRESS WINDOW (WITH PAGE BREAKS): 7
 ENTER LINE LOADING LIMIT IN PERCENT: 100
 ENTER 1 TO USE RATEA, 2 FOR RATEB, 3 FOR RATEC (DEFAULT=1): 1
 ENTER UP TO 20 AREA NUMBERS
613

     PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS/E     FRI, SEP 10 2010  12:52
 2003 MISO MODEL (JANUARY 2003), UPDATED BY RSGS
 2009 SUMMER PEAK CASE --- UPDATED (12/12/03)
                  OUTPUT FOR AREA 613 [SMMPA   ]
 BRANCH LOADINGS ABOVE 100.0 % OF RATING SET A:

 X-------FROM BUS-------X  X--------TO BUS--------X      CURRENT(MVA)
   BUS      NAME  BSKV       AREA    BUS      NAME          BSKV     AREA    CKT     LOADING    RATING    PERCENT
 63415*   N HILLS  161        613    63432    NRST 161      161      613     1       470.7      470.0     100.2
 63431*   NRST 345            600    63432    NRST 161      161      613     1       495.3      448.0     110.6
 ENTER UP TO 20 AREA NUMBERS
```