

July 27, 2023

**VIA ELECTRONIC MAIL AND  
FEDERAL EXPRESS**

Steven M. Kahl  
Executive Director  
North Dakota Public Service Commission  
State Capitol Building, Department 408  
600 East Boulevard  
Bismarck, ND 59505-0480

Re: NORTHERN STATES POWER COMPANY  
ADVANCE DETERMINATION OF PRUDENCE  
460 MW SHERCO SOLAR FACILITY  
CASE NO. PU-21-152  
OAH FILE NO. 20210274

Dear Mr. Kahl:

Enclosed for filing in the above referenced matter, please find a copy of the transcript prepared by Janet Shaddix Elling of the North Dakota Public Service Commission's hearing of the-above referenced case held on July 11, 2023.

Please contact me at (612) 492-6129 or [simpser.zev@dorsey.com](mailto:simpser.zev@dorsey.com) if you have any questions regarding this filing.

Sincerely,

DORSEY & WHITNEY LLP



ZEV SIMPSE

Enclosure

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STATE OF NORTH DAKOTA

PUBLIC SERVICE COMMISSION

Northern States Power Company                      Case No. PU-21-152  
Advance Prudence - 460MW Solar  
Sherburne County, Minnesota Application

North Dakota Public Service Commission's hearing held on July 11, 2023, beginning at approximately 8:30 a.m. at the Public Service Commission, State Capitol, Bismarck, North Dakota 58505.

COMMISSIONER RANDY CHRISTMANN, CHAIR  
COMMISSIONER SHERI HAUGEN-HOFFART  
COMMISSIONER JULIE FEDORCHAK

ADMINISTRATIVE LAW JUDGE:   TIMOTHY DAWSON

ZEVIEL T. SIMPSON, Attorney at Law,  
appeared for and on behalf of the Applicant.

MITCHELL D. ARMSTRONG, Special Assistant  
Attorney General, appeared for and on behalf of  
Advocacy Staff.

JOHN SCHUH, Special Assistant Attorney  
General, appeared for and on behalf of the North  
Dakota Public Service Commission

TRANSCRIPT PREPARED BY:  
Janet Shaddix Elling,  
Registered Professional Reporter

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1 (Whereupon, the following  
2 proceedings were duly had, to wit:)

3 JUDGE DAWSON: Good morning. I'm Timothy  
4 Dawson, I am an Administrative Law Judge designated  
5 by the Office of Administrative Hearings upon the  
6 request of the Public Service Commission to serve as  
7 hearing officer for this hearing. This is North  
8 Dakota Public Service Commission case number  
9 PU-21-152.

10 Before we begin today, please silence  
11 your cell phones, and there is an attendant sheet in  
12 the back, please sign that sometime today.

13 This is the hearing on the Application of  
14 Northern States Power for an Advance Determination  
15 of Prudence for the Development of Approximately 460  
16 Megawatt Grid Scale Photovoltaic Solar Capacity at  
17 NSP Sherburne County Generation Station Site. The  
18 project is known as the Sherco Solar Project.

19 Let the record show that it is 8:30 a.m.  
20 and we are at the commission hearing room on the  
21 12th Floor of the State Capitol in Bismarck, North  
22 Dakota. This is the time and place set by Notice of  
23 Hearing issued by the North Dakota Public Service  
24 Commission on April 12th, 2023.

25 The issue to be considered today is

1 whether the resource addition is prudent.

2 The first thing we'll do is have  
3 appearances.

4 Mr. Simpser, please make your appearance  
5 for the record and tell me who is with you.

6 MR. SIMPSEY: Thank you, Your Honor.

7 Zev Simpser, Dorsey & Whitney, on behalf  
8 of the Applicant, Northern States Power. With me is  
9 Ian Dobson, of Xcel Energy Services, he's the lead  
10 regulatory counsel.

11 JUDGE DAWSON: Mr. Armstrong.

12 MR. ARMSTRONG: Mitch Armstrong, Special  
13 Assistant Attorney General, on behalf of the PSC  
14 Advocacy Staff. With me is Adam Fenfandt, Jim  
15 Heidell, and Victor Schock, all part of Advocacy  
16 Staff on this case.

17 JUDGE DAWSON: Okay. And Advisory Staff.

18 MR. SCHUH: Good morning, Your Honor.

19 John Schuh with Advisory Staff, I'm legal  
20 counsel for the commission. With me is Robert  
21 Frank, an analyst on the case.

22 JUDGE DAWSON: Well, I was going to ask  
23 if there is anybody in the audience that wants to  
24 give public testimony today, but I don't see anybody  
25 that appears to be from the public at large so I'll

1 skip that portion of my introduction.

2 It's time for opening comments. The  
3 portfolio holder is Sheri Haugen-Hoffart.

4 Commissioner.

5 COMMISSIONER HAUGEN-HOFFART: Well, good  
6 morning, everyone, and welcome to this rainy day.  
7 What a change of weather.

8 I really don't have any opening comments.  
9 I know there will be quite a bit of testimony on  
10 this case to go through, some conflicting  
11 information, or conflicting testimony, so I look  
12 forward to that. So I'm just going to say let's get  
13 this ball rolling on my behalf.

14 So I'll turn it over to Commissioner  
15 Christmann.

16 COMMISSIONER CHRISTMANN: Nothing to add,  
17 just an interesting and long case already and  
18 looking forward to getting it wrapped up.

19 JUDGE DAWSON: Commissioner Fedorchak.

20 COMMISSIONER FEDORCHAK: Thank you,  
21 Judge.

22 Thank you, Staff, Advocacy, Company, for  
23 all the information, the back and forth for a couple  
24 years now. This case, yes, stretches back in time  
25 to a different time.

1           But I think it's really important and I  
2 look forward to a discussion today about some issues  
3 that we haven't talked much about. One of which is  
4 the company's plans to retire prematurely the Sherco  
5 facilities and so I intend to ask some questions  
6 about that. As well as questions about this project  
7 as a whole itself and other things related to it.

8           So looking forward to the discussion of  
9 all these important issues.

10           JUDGE DAWSON: Are there any preliminary  
11 matters or motions, Mr. Simpser or Mr. Armstrong?

12           Mr. Simpser.

13           MR. SIMPSEY: Yes, Your Honor, just some  
14 housekeeping.

15           We've distributed an exhibit list and the  
16 company moves to stipulate into testimony all items  
17 listed on there.

18           JUDGE DAWSON: We have a motion and the  
19 exhibits are 1 through 16 and they're so marked.

20           MR. ARMSTRONG: Advocacy Staff  
21 stipulates.

22           JUDGE DAWSON: As such, they will be  
23 admitted into the record.

24           (Exhibits 1 through 16 offered and  
25 received.)

1 MR. SIMPSON: Thank you, Your Honor.

2 One other just housekeeping item. There  
3 are some trade secret items in the record that are  
4 probably going to be useful to refer to as part of  
5 the discussion. I'll do my best to jump in if  
6 something may come out that is trade secret. Our  
7 goal is to not have to close the hearing. There's  
8 only a handful of numbers and we can refer to them  
9 and we plan to refer to them by just citing to  
10 testimony, you know, X testimony on page X, that  
11 number, that should help keep this as an open  
12 hearing. If anybody needs trade secret copies of  
13 anything, we have some sitting in the back of the  
14 room as well.

15 And then the last item, Your Honor, is  
16 Mr. Chris Shaw is going to be adopting the  
17 testimonies of Mr. Chamberlain and Mr. Krug and will  
18 be the policy witness for the customer -- I mean for  
19 the Company.

20 I've discussed this with Mr. Armstrong,  
21 but I'd defer to him if he has any objections.

22 JUDGE DAWSON: Mr. Armstrong.

23 MR. ARMSTRONG: No objection.

24 JUDGE DAWSON: So --

25 COMMISSIONER FEDORCHAK: Judge?

1 JUDGE DAWSON: Commissioner Fedorchak.

2 COMMISSIONER FEDORCHAK: I just have a  
3 question about process in regards to the trade  
4 secret stuff.

5 So would it be possible to have copies  
6 that we see when we get to those sort of references  
7 and just be able to look at them and not refer to  
8 them verbally and then keep the hearing open? Is  
9 that your intention?

10 MR. SIMPSEY: That's the intent.

11 COMMISSIONER FEDORCHAK: That would be  
12 great. Thank you.

13 JUDGE DAWSON: Well, are there any other  
14 preliminary matters or motions?

15 Mr. Simpser.

16 MR. SIMPSEY: Not on our end, Your Honor.

17 JUDGE DAWSON: Mr. Armstrong?

18 MR. ARMSTRONG: No, Your Honor.

19 JUDGE DAWSON: I think with that we can  
20 begin.

21 Mr. Simpser, you can either make opening  
22 remarks or call your first witness.

23 MR. SIMPSEY: I'll call my first witness,  
24 Mr. Christopher Shaw, to the stand. And Mr. Shaw  
25 will have an opening statement.

1 JUDGE DAWSON: Mr. Shaw, can you restate  
2 who you're adopting the testimony of again?  
3 Mr. Chamberlain --

4 MR. SHAW: Sure. So I'm adopting Greg  
5 Chamberlain's direct testimony and then Al Krug's  
6 rebuttal testimony.

7 JUDGE DAWSON: I'm required by law to  
8 tell you the penalties for perjury in this state.  
9 Perjury is a Class C felony punishable by a fine of  
10 up to \$10,000 or imprisonment up to five years or  
11 both.

12 Do you understand what perjury is and the  
13 penalties for it?

14 MR. SHAW: I do.

15 JUDGE DAWSON: Understanding so, do you  
16 promise or swear that the testimony that you're  
17 about to give will be the truth, the whole truth,  
18 and nothing but the truth?

19 MR. SHAW: I do.

20 JUDGE DAWSON: You may begin.

21 MR. SIMPSEY: Thank you, Your Honor.

22 DIRECT EXAMINATION

23 BY MR. SIMPSEY:

24 Q Good morning, Mr. Shaw. As we've noted, you're  
25 adopting the testimonies of Mr. Chamberlain and

1 Mr. Krug. You have read them and are prepared to  
2 answer questions relating to them?

3 A I have, yes.

4 Q I understand you have an opening statement?

5 A I do.

6 Q Please proceed.

7 A Good morning, Commissioners.

8 My name is Christopher Shaw, I'm a  
9 regulatory policy manager at NSP, the Applicant in  
10 this case. I'm adopting the direct testimony of  
11 Mr. Greg Chamberlain and the rebuttal testimony of  
12 Mr. Al Krug as my own and I'm the company's policy  
13 witness.

14 Before we begin, I'd like to offer a few  
15 brief remarks.

16 This proceeding is the first of several  
17 related to the long forecasted need for Xcel to add  
18 resource additions to our system to meet a capacity  
19 need driven by several large resources rolling off  
20 the system or otherwise retiring. The Sherco Solar  
21 Project is one of those resources that form part of  
22 a broad strategy that includes the repowering of the  
23 Wheaton generating station in Wisconsin as well as  
24 the soon-to-be issued from a dispatchable generation  
25 RFP.

1           As Xcel Energy moves through the larger  
2 energy transition happening in our region and the  
3 nation, we need to plan to ensure that we can  
4 provide safe and reliable electric service at  
5 affordable rates.

6           The Sherco Solar Project is prudent. The  
7 tax benefits that are available from the Inflation  
8 Reduction Act have significantly brought down the  
9 levelized cost of energy of the project such that it  
10 is a least cost resource to follow our identified  
11 capacity need. Utilizing a solar resource to meet  
12 our capacity needs is consistent with our resource  
13 planning analysis, including analysis conducted  
14 using North Dakota resource plan assumptions. We  
15 believe the record therefore supports the granting  
16 of an ADP for the project.

17           With that said, the original cost of the  
18 project and the reality that the project was  
19 initially driven in large part by Minnesota policy  
20 priorities, that led us to the assessment that the  
21 project may not be consistent with the commission's  
22 assessment of prudence. Consequently, we proposed  
23 an alternative cost allocation methodology that  
24 would provide North Dakota ratepayers the capacity  
25 and energy benefits of the project while incurring

1 the costs of the resource more consistent with North  
2 Dakota priorities, namely a combustion turbine.

3 Our proxy pricing proposal provides a  
4 reasonable alternative outcome if the commission  
5 determines that North Dakota customers should not  
6 fully participate in the project.

7 I look forward to the discussion and I'm  
8 available to answer any questions you have. Thanks.

9 JUDGE DAWSON: Questions?

10 MR. SIMPSON: No, Your Honor.

11 With that, the witness is available for  
12 cross-examination.

13 JUDGE DAWSON: Mr. Armstrong.

14 MR. ARMSTRONG: Thank you, Your Honor.

15 CROSS-EXAMINATION

16 BY MR. ARMSTRONG:

17 Q Good morning, Mr. Shaw.

18 A Good morning.

19 Q Just so I'm clear, you're adopting Mr. Chamberlain  
20 and Mr. Krug's testimony with no changes as your  
21 own, correct?

22 A Right.

23 Q So their testimony is as if you were under oath  
24 saying it today?

25 A Correct.

1 Q This application was submitted on April 16th of  
2 2021. Are you familiar with that?

3 A Yes.

4 Q So at that time the company had made the decision to  
5 proceed forward with the Sherco Solar Project?

6 A Correct.

7 Q And at that time when the application was submitted,  
8 the company fully admitted it was inconsistent with  
9 North Dakota policy and North Dakota law as far as  
10 prudence?

11 A Correct. So at that time via the -- I guess the  
12 resource planning analysis that we had, it was  
13 showing different things under kind of Minnesota  
14 assumptions and then North Dakota assumptions that  
15 we remove any costs associated with emissions or  
16 externalities.

17 Q And the North Dakota plan called for 374 megawatts  
18 of firm dispatchable capacity to fill the need; is  
19 that correct?

20 A Correct.

21 Q And certainly this project is not firm dispatchable  
22 capacity; is that correct?

23 A Right. So the updated analysis changed during the  
24 course of this proceeding, but that's correct.

25 Q And this project was driven by a need for capacity,

1 accredited capacity from MISO?

2 A Yeah. So this -- it's fulfilling a capacity need.

3 Q And that capacity need was largely contributed to by  
4 the company's desire -- decision to early retire  
5 Sherco Coal Units 1 and 2?

6 A So the retirement of Sherco 2 contributes to the  
7 capacity, there's a number of other resources coming  
8 off of our system in that time frame so there's a  
9 significant capacity need in the mid-2020s.

10 Q What other units are coming off the system?

11 A Manitoba Hydro PPA that expires, a couple gas ETs,  
12 Mankato Energy Center retires, Invenergy, I believe,  
13 retires, and maybe Wheaton. Farah Mandich can  
14 probably get into more of the details, but there's a  
15 number of resources coming off in that time frame.

16 Q Where would you classify the early retirements of  
17 Sherco 1 and 2 as, you know, are those the main  
18 contributing factors to the capacity need that drove  
19 this project or somewhere lower down?

20 A They're significant, I don't know that -- the other  
21 ones might actually be more altogether, I can defer  
22 the specifics to Farah.

23 Q I'm talking about the need that drove this project  
24 for the need for capacity in the 2025 time frame.

25 A I think Manitoba Hydro is in the same -- in the

1 same, around '25, so that's a pretty large PPA as  
2 well. So I think the combination.

3 Q The combination of the early retirements of the  
4 Sherco units plus Manitoba Hydro?

5 A Yep, for the early part of it, yep.

6 Q And when getting to this project, NSP did not seek  
7 bids for 374 megawatts of firm dispatchable  
8 capacity, did it?

9 A Correct. The RFP was just for solar.

10 Q In fact, as you just said, NSP only solicited bids  
11 for solar projects at the Sherco site and then  
12 selected a project based on those bids?

13 A Correct, yep.

14 Q You didn't go through your normal EnCompass  
15 evaluation to determine what's the best resource,  
16 you looked for solar at the Sherco site and you only  
17 selected solar at the Sherco site?

18 A Well, no, I'd say we did our typical resource  
19 procurement process where we used the resource plan  
20 to determine the generic size, type, and timing of  
21 the resource, and then we issue an RFP targeted to  
22 meet the generic need found in the resource plan.

23 Q So if the testimony says we did not conduct a  
24 traditional resource planning by using EnCompass,  
25 you would disagree with that?

1 A Well, I guess what I'm clarifying is we don't -- we  
2 don't do an RFP that doesn't just sort of open to  
3 any type of resource. We target the RFP to meet the  
4 need identified in the resource plan.

5 Q How do you come up with the need identified in the  
6 resource plan?

7 A With EnCompass.

8 Q Yeah.

9 A Maybe that's where I got confused.

10 Q And I'll find it here in a second, but I believe it  
11 was Ms. Mandich's testimony indicated that the  
12 company did not do a full traditional EnCompass  
13 modeling to select this resource?

14 A I'll have to let her clarify what that means, but  
15 I'm -- I guess I'm confident enough for like how we  
16 generally do resource planning.

17 Q Yeah. You generally use EnCompass, develop a  
18 resource plan and then select -- go out and try to  
19 procure that resource; is that correct?

20 A Yep. Right. If I could just add maybe one thing.  
21 Typically, when we would be soliciting a resource,  
22 it would be -- it would have a larger geographic  
23 scope. So in this case it was somewhat different  
24 than previous RFPs and that it was more targeted in  
25 geography as well.

1 Q And the need that was being addressed was the need  
2 for capacity?

3 A Well, the need being addressed was the need for  
4 solar resources identified in the resource plan.

5 Q And which resource plan?

6 A So at that time it was the supplement of our last  
7 resource plan. So that's our supplement plan.

8 Q When you say at that time, you're talking in when?

9 A So when we made the filing so in '21.

10 Q And the North Dakota plan called for firm  
11 dispatchable?

12 A The North Dakota plan had firm dispatchable, that's  
13 correct.

14 Q Would you agree with me that usually with the  
15 capacity needs solar is not the traditional resource  
16 for capacity need?

17 A I think it depends. I think if you have a capacity  
18 need, part of why you use EnCompass is to determine  
19 what's the best resource to meet the need.

20 Q If you have -- what are examples of firm  
21 dispatchable resources?

22 A I think a CT is the obvious one, yeah.

23 Q If you have a 100 megawatt CT and a 100 megawatt  
24 solar farm, which one provides more capacity?

25 A The accredited capacity of solar could be less than

1 the CT.

2 Q How much less?

3 A Well, currently it's around 50 percent of its  
4 nameplate.

5 Q And so even though at the time of filing the  
6 application NSP was aware this was inconsistent with  
7 prudence under North Dakota law, you are still  
8 seeking -- well, actually, I don't even think in the  
9 application you asked for a determination of advance  
10 determination of prudence, you just asked for a  
11 proxy pricing method?

12 A Correct. And so that's why -- that's what drove  
13 that recommendation, or that ask in our initial  
14 testimony, was we understood that it was  
15 inconsistent with North Dakota planning policy.

16 Q And then a year and a half or so goes by and all of  
17 a sudden some federal tax credits become available  
18 and now it's the company's position that this is the  
19 least cost option?

20 A Right. So actually two things happened. There was  
21 the additional analysis conducted and the resource  
22 plan where we then developed this alternative plan  
23 that used a tie line to connect into the Sherco  
24 site. I think that drove some of the differences in  
25 the planning. And then as you just said, the ITC

1 was passed and it significantly reduced the cost of  
2 solar.

3 Q And during that time the actual price of the project  
4 increased, correct?

5 A That's for capital?

6 Q Yes.

7 A Yep.

8 Q But the tax credits allowed you to at least argue it  
9 was the least cost option?

10 A Right. So I guess the tax credits more than offset  
11 that increase and actually significantly reduced the  
12 levelized cost of the resource.

13 Q The tax credits don't do anything to provide better  
14 capacity, do they?

15 A No, the tax credits are monetary credits.

16 Q And are you even sure of how much accredited  
17 capacity this project is going to fill?

18 A So, yeah, long term there's, I mean, there's a  
19 number of -- I'd say there's kind of two main issues  
20 at MISO that have kind of developed in this time  
21 period. There's this move to a seasonal construct  
22 and then there's kind of ongoing discussion around  
23 accreditation of nonthermal resources. So we had to  
24 make assumptions about what we expect the solar  
25 resource to provide, capacity to provide in terms of

1 all of the (inaudible) to the system. But those are  
2 the nonthermal accreditation discussions still  
3 ongoing at MISO.

4 Q And when you say nonthermal, a firm dispatchable  
5 resource would not be nonthermal typically, right?

6 A Right. So it's -- it's solar, wind, and storage, I  
7 think.

8 Q If you were building what the North Dakota plan  
9 called for you would know how much additional  
10 capacity you were going to get?

11 A There would be more certainty around the capacity.

12 Q Now and into the future, correct?

13 A There's always uncertainty on how the reliability  
14 construct might change into the future. And, you  
15 know, the way that we do our resource planning we're  
16 making assumptions around, you know, what those  
17 resources are going to provide, we're looking at,  
18 you know, how they dispatch in our system over, you  
19 know, all the hours of the year. So, I mean, we  
20 plan in a way that, you know, isn't just to like the  
21 minimum of the current MISO standard, we're sort of  
22 contemplating that there will be changes. So I  
23 think there's always some risk. I would agree that  
24 there's a lot of discussion around the nonthermal  
25 accreditation currently at MISO.

1 Q Well, now retiring Sherco 2 early would have  
2 provided known capacity as well, correct?

3 A Again, I think there would be more certainty then on  
4 the capacity.

5 Q And when did the company become aware of MISO's  
6 ongoing process related to accreditation with  
7 nonthermal capacity?

8 A I don't recall when that discussion started, but  
9 Ms. Mandich might be able to provide more, it's been  
10 going for -- I don't recall.

11 Q It's been a number of years?

12 A It feels like it, but I'm not sure.

13 Q It wasn't unexpected, was it?

14 A It's been -- no, I don't think it's unexpected. And  
15 I think one of the assumptions we've made in our  
16 resource plan is that the accreditation of the solar  
17 declines over time.

18 Q Sure. And part of the thing that's happened with  
19 the capacity is it's also gone to seasonal  
20 accreditation, correct?

21 A Correct. Yep.

22 Q And the numbers for what they've attributed to  
23 capacity are not trade secret, are they?

24 A No, I think that's correct.

25 Q And so what the company's assumed is that there will

1 be 50 percent capacity, nameplate capacity; is that  
2 correct?

3 A It starts at 50 and then it declines.

4 Q Declines 2 percent to the next 10 years?

5 A That sounds right.

6 Q And so that's different than what you were expecting  
7 MISO to actually come up with; is it not?

8 A I don't -- no, I don't know that I'd say that it's  
9 different. I think this is probably a better topic  
10 for Ms. Mandich as the director of resource planning  
11 to answer, but, yeah, I don't think it's different.

12 Q How did you incorporate in the seasonal capacity?

13 A So we haven't done -- we don't have an analysis that  
14 tries to look at this in terms of a seasonal  
15 construct, the analysis in this case is based on the  
16 annual construct. But we're a summer peaking  
17 utility and so it's the summer peak that drives our  
18 capacity needs.

19 Q And the tax credits that essentially make you able  
20 for you to argue this is least cost also expire,  
21 don't they?

22 A They expire?

23 Q Like for 10 years?

24 A Correct.

25 Q And how long is this project, the lifetime of this

1 project?

2 A It's -- I think it's -- I can't remember, I guess.  
3 It's longer than 10 years.

4 Q And the argument for a least cost option assumes  
5 you'll be able to get full production tax credits  
6 for that full 10-year time period?

7 A Yeah, we've assumed -- we've assumed taking the  
8 production, you know, the full production tax credit  
9 over those 10 years, yep.

10 Q And at the time you filed the application you would  
11 fully admit this was not a least cost resource?

12 A Correct. Yep. That's why we proposed the proxy  
13 price.

14 MR. ARMSTRONG: I have nothing further.  
15 Thank you.

16 JUDGE DAWSON: Mr. Schuh.

17 MR. SCHUH: Your Honor, I don't have  
18 questions for this witness.

19 JUDGE DAWSON: Okay. Commissioner  
20 Haugen-Hoffart.

21 COMMISSIONER HAUGEN-HOFFART: Thank you.

22 EXAMINATION

23 BY COMMISSIONER HAUGEN-HOFFART:

24 Q You testified on it a little bit, I mean, I need  
25 clarification. So you have retired under the Sherco

1 one of the units already. Can you explain your  
2 retirement of the Sherco?

3 A Yep. So the first -- so we haven't retired a unit  
4 yet. The first unit that retires is the end of this  
5 year so the end of '23, that's Sherco 2. The next  
6 unit is -- we anticipate it would retire at the end  
7 of 2026. Excuse me. And then Sherco 3 is the  
8 remaining unit, which we would retire in 2030.

9 Q Which one was in 2026?

10 A Sherco 1.

11 Q Okay. Are these early retirements?

12 A So they've been accelerated in the last two resource  
13 plans.

14 Q And what was the decision for that?

15 A So we looked at -- excuse me. So in our last  
16 resource plan we looked at impacts of the early  
17 retirement of Sherco 3 and King. And so we did an  
18 analysis looking at the -- the costs of accelerating  
19 those retirement dates for both of those units and  
20 then determined that it was prudent to retire on the  
21 kind of dates I just relayed. And for Sherco 1 and  
22 2 that was actually analysis we had done two  
23 resource plans ago. So that was a resource plan I  
24 think that was initially filed in 2015. And a  
25 decision came out of Minnesota probably in 2017.

1 And so that's doing the kind of, I guess, the  
2 typical resource planning analysis where we're doing  
3 different modeling with EnCompass, like the resource  
4 planning model that looks at sort of system costs  
5 under different assumptions and capacity expansion  
6 plans.

7 Q So you got -- you're taking accelerated depreciation  
8 on those plants?

9 A Yeah. So, yep. So we accelerated the depreciation  
10 to account for the early retirement in each, right,  
11 exactly.

12 COMMISSIONER HAUGEN-HOFFART: Okay.

13 Thank you. I have no further questions.

14 JUDGE DAWSON: Commissioner Christmann.

15 EXAMINATION

16 BY COMMISSIONER CHRISTMANN:

17 Q I'm not sure I fully understood that discussion you  
18 had with Mr. Armstrong regarding the PTCs.

19 A Okay.

20 Q So as I was listening to that, this is intended to  
21 be a resource that will last more than 10 years, but  
22 how long are you counting on getting production tax  
23 credits?

24 A Oh, it's 10 years, yeah.

25 Q And when do they expire under the current law?

1 A So you're able to take the production tax credit for  
2 10 years under the current law.

3 Q So you feel that without any changes in law you  
4 already will receive all of the production tax  
5 credits you're planning for here?

6 A Right. Yep. So the IRA, the changes in the IRA  
7 allowed us to take the PTC. And so it was -- before  
8 the IRA that was actually the ITC that we were  
9 anticipating we would take for this project, which  
10 is sort of a percentage of the total costs of the  
11 PTCs instead of per megawatt-hour tax credit. And  
12 the other I guess major change in the IRA was that  
13 you can -- you can monetize those credits and sell  
14 them to third parties. So that also helps with the  
15 economics.

16 Q Is anything factored in along the way on -- when we  
17 refer to projects as being low cost, is there  
18 anything factored in -- oh, and then to set up the  
19 question, but what is low cost or what isn't low  
20 cost changes based on the amount of federal  
21 subsidies available, correct?

22 A Yeah, I would agree. I think that had a significant  
23 impact here, yeah.

24 Q This was -- this being termed by you as low cost was  
25 influenced by the availability of federal money?

1 A Yeah. Well, maybe let me say that out. I think  
2 prior to the IRA, when we made this initial filing  
3 we acknowledged that it was higher cost and that's  
4 why we proposed this proxy price as an alternative  
5 with the IRA. And the updated levelized cost of the  
6 project, the levelized cost of the project actually  
7 came below the proxy prices that we had proposed, or  
8 the proxy price that we had proposed in the initial  
9 filing. So it moved from being above those proxies  
10 to below the proxy that we proposed.

11 Q So does EnCompass or does any people at the company  
12 calculate in any cost for who's going to pay those  
13 subsidies, that your customers have to pay some  
14 taxes to make those available, the corporate tax  
15 rates that were lowered a few years ago, that's set  
16 to expire here in a year or two, in the near future,  
17 and the companies are going to -- everyone is going  
18 to have to pay more taxes to make this money  
19 available, but is any of that calculated in or is  
20 that just free money?

21 A Well, yeah. I mean, I think the model -- the model  
22 is taking it as a credit and not sort of I guess  
23 trying to figure out tax burdens or something of  
24 customers. It's sort of strictly the impact on our  
25 system costs and on electricity costs.

1 Q And so I work more with this PPA than I do with  
2 MISO, but when I hear the vast majority of the  
3 utilities in the SPP circles saying, well, we're a  
4 summer peaking company, there is different levels to  
5 that; am I correct?

6 A I think so. So in terms of like how the difference  
7 between your summer peak and winter.

8 Q Right.

9 A Yep.

10 Q Some utility down in south Texas might have a more  
11 dramatic summer peak than what Xcel might, correct?

12 A Correct. Yep.

13 Q So among utilities at MISO, are you closer to middle  
14 ground there than most of the rest that also  
15 consider themselves summer peaking?

16 A Yeah. I don't know that I could say, you know, I  
17 know like Otter Tail is a winter peaking, I think  
18 Minnesota Power, for example, of the utilities that  
19 we just interact with a lot are much closer in terms  
20 of their peaks than us, but as far as the broader  
21 MISO footprint, I'm not sure that I could say.

22 Farah might have a better idea.

23 Q Okay. I might come back to that, but I'm  
24 formulating a question.

25 A Yes.

1 Q So with the retirements of Sherco, when did you say  
2 that -- the plans I think said retirement of Sherco  
3 1 and 2 entered the planning phase earlier than 3.

4 A Correct.

5 Q So when did that really start? How long has that  
6 been a strong consideration?

7 A It was initially put forward in the 2015 IRP. So  
8 actually it was just before I had joined the company  
9 that the proposal to accelerate the retirement dates  
10 of Sherco 1 and 2 was made.

11 Q And so the costs that are out there, the  
12 depreciation beyond this retirement, these early  
13 retirement dates, is that all factored into your  
14 cost model, too, or where is that accounted for?

15 A Yeah. So the way we would set up the model when we  
16 do those on the resource plan is to accelerate  
17 the -- so you'd have the remaining plant and  
18 investments through the old depreciation life and  
19 then we would accelerate that depreciation to be  
20 fully depreciated by the proposed retirement date.  
21 So that for Sherco 2, for example, you would have  
22 the plant fully depreciated at the end of this year.  
23 But I should clarify is that in the last North  
24 Dakota rate case we had proposed to accelerate the  
25 depreciation for -- for purposes of setting rates,

1 and then in the -- I guess we had a settlement where  
2 we agreed to keep it at the same -- at the current  
3 depreciation life, which is through so then current  
4 depreciation life, which was just through 2034, so  
5 in North Dakota rates reflect the depreciation life  
6 through 2034.

7 COMMISSIONER CHRISTMANN: Okay. I don't  
8 think I have any other questions.

9 JUDGE DAWSON: Commissioner Fedorchak.

10 COMMISSIONER FEDORCHAK: Thank you,  
11 Judge.

12 EXAMINATION

13 BY COMMISSIONER FEDORCHAK:

14 Q Thank you, Chris. Why don't we stay a little bit on  
15 the Sherco retirement issue. If you didn't retire  
16 Sherco, would you need this project?

17 A So if we didn't -- if we weren't retiring this  
18 project, I guess as I was discussing with  
19 Mr. Armstrong, we would have -- there would still be  
20 a capacity need 'cause there's sort of other things  
21 driving the need, but it would change our overall --

22 Q What is that capacity need immediately? Isn't it  
23 like 300 and something?

24 A Yeah, I think we've got a -- I'll just probably let  
25 Farah do that, but there's a need sort of increasing

1 in the mid 20s because of these different resources  
2 roll off.

3 Q Right.

4 A So if we weren't retiring this plant we would have  
5 to sort of reoptimize and look at what sort of  
6 resources we would need. We would still need  
7 resources in this time frame, obviously we wouldn't  
8 be reutilizing the interconnection like we are with  
9 this project so there would be different projects  
10 than this.

11 Q What's the capacity at Sherco, the one that's  
12 retiring?

13 A It's about 700 megawatts.

14 Q Okay. So when Farah comes up, if you can  
15 quantify -- like match those, that seems  
16 significantly more than what the capacity,  
17 identified capacity shortage is. So I'm not  
18 understanding how you would need additional  
19 resources if you kept Sherco, if you didn't retire  
20 that.

21 A Oh, sure.

22 Q You know, the gap is -- it seems more than fillable  
23 by Sherco. So if you can clarify that, that would  
24 be great.

25 When you did the cost comparisons, did

1           you include the cost of the accelerated depreciation  
2           and the levelized costs of energy for this facility?  
3           So you're retiring Sherco, the costs of that to  
4           ratepayers plus the costs of the replacement, was  
5           that all included in the levelized costs of energy  
6           or just --

7           A       Just the project, right.  Yep.

8           Q       Okay.  So why isn't it fair to look at it more like  
9           how I described, as one decision and the costs of  
10          all of that, versus a decision, a different decision  
11          of keeping it open?

12          A       Yeah.  No, I guess that's a good question.  I mean,  
13          typically we're looking at the cost of the resource  
14          and then we're doing the modeling, we've got sort of  
15          the existing system and then we're sort of modeling  
16          the impacts of the -- the resource additions.  So I  
17          guess if we weren't reanalyzing the shutdown of  
18          Sherco 2 in 2023, we're just kind of taking that as  
19          a given, as the system that we needed to take as a  
20          given and then sort of determine the best resources  
21          to fill.  We did overlay that.  We did sort of put  
22          together in the -- actually several proxy prices.  
23          So one of them was looking at the cost of continued  
24          operation of Sherco 2 and then replacement with a CT  
25          after 2034.  So I think that sort of gives -- sort

1 of where that gets into that issue and sort of what  
2 would the costs be for this sort of capacity and  
3 energy based on continued operation at Sherco.

4 Q Without going into the trade secret stuff, I looked  
5 at that and the numbers and it was -- there was  
6 some -- it sort of felt like uncertainty by the  
7 company on how that would, you know, compare.

8 Whether it would be a sure thing that that would be  
9 more expensive than just going -- and that was  
10 pretax breaks, that was preIRA, so I would --

11 A Yeah, I would --

12 Q So it's fairly comparable, though, to what you guys  
13 were proposing as a proxy price?

14 A Right.

15 Q Okay. So when you -- when you're looking at the  
16 shutting down, the premature retirement of these  
17 coal facilities largely to meet your carbon goals,  
18 I'm assuming; is that fair?

19 A Well, in -- so when we do -- the carbon goals are  
20 not, like -- I'll answer this even though probably  
21 Farah should. But the carbon goals aren't the  
22 constraint in the model, but we use emissions cost,  
23 we have like carbon costs that we include in the  
24 model. And then when that gets optimized, you know,  
25 it's pretty much on a similar path, I guess, to meet

1 the company's goals, but the kind of mechanism in  
2 the analysis is a carbon adder rather than the  
3 constraint of the company goals.

4 Q Same thing.

5 A It gets you to basically the same spot.

6 Q Yeah.

7 A I just --

8 Q I mean, if you didn't have the carbon goals you  
9 wouldn't have the carbon adder?

10 A Well, the carbon adder I'm virtually required to  
11 include in Minnesota.

12 Q Okay. Fair enough. Minnesota has that and then the  
13 company --

14 A The company also has goals, yes.

15 Q Has goals of its own?

16 A Yeah.

17 Q So the goal is by 2050, correct?

18 A Right.

19 Q For the company, and now Minnesota is it for 2040,  
20 but that was after these plans were in place. So  
21 have you -- have you looked at other approaches?  
22 Or, actually, just tell me, and if it's not -- if  
23 Farah would be better, I'd like to know what other  
24 approaches the company has taken in analyzing its  
25 path to decarbonization. And in terms of what

1 realistic technologies can get you there, at what  
2 time frame and at what cost. And have you looked at  
3 an all-in cost for getting there. In any way,  
4 shape, or form?

5 A Yes. I'll let Farah follow up on this, but just to  
6 set some -- in the resource plan we're looking at  
7 sort of different, like a number of different  
8 scenarios. So some of them have early coal  
9 retirements, some of them have nuclear extension,  
10 and then sort of combinations. And then we're  
11 looking at, you know, we develop these, you know, I  
12 guess more generic resource additions that then we  
13 can analyze how those fit into those, it's kind of  
14 base portfolios, and then make comparisons between  
15 those, those different -- those differences in  
16 baseload scenarios.

17 Q And are the generic resources -- or technologies, do  
18 they exist yet? The generic ones that you're  
19 modeling?

20 A Right. So we're modeling is, you know, right, ones  
21 that exist, so solar and wind and we did a storage  
22 in the model as well.

23 Q So wind batteries. All right. And you've looked at  
24 the cost of all of that?

25 A Right. I guess maybe more to the point you are

1 making, so our plan I guess concedes that we don't  
2 currently have the, you know, the specific plans of  
3 how we get to 2050, that there does need to be some  
4 additional progress made in technological  
5 development to get us the final -- all the way to  
6 like carbon-free.

7 Q And because of that, it's -- I just really need to  
8 understand why or how the company did, if I don't  
9 understand what you did, evaluated the possibility  
10 of using your existing resources longer, letting the  
11 technology develop, and maybe you could, you know,  
12 by 2030 have a better picture of what those  
13 technologies look like and their costs and could  
14 then start retiring Sherco and still meet your  
15 carbon goals at a lower cost with less risk to your  
16 customers. Did you look at that, on extending these  
17 lives of the coal facilities, or was it more of like  
18 first item on the agenda, shut down coal?

19 A We didn't look at -- so we didn't look at extending  
20 like beyond 2034, but we looked at --

21 Q Using them to their fullest?

22 A Using to the full life compared to the early  
23 retirement.

24 Q And what did you look at in those factors in terms  
25 of what was the decider for how you ultimately chose

1 this route?

2 A Well, sure. So costs, but the costs including  
3 the -- so what we call the present value of societal  
4 costs, which includes the impact of the emissions  
5 under scenarios that have lower emissions than  
6 others.

7 Q Um-hmm. But you also had no idea at that point what  
8 the cost to replace them is going to be and still  
9 don't?

10 A Well, we're relying on the assumptions that we make  
11 for the resources. Kind of generic assumptions on  
12 what we think are reasonable costs and attributes of  
13 resources that could be used to meet whatever needs  
14 the system has.

15 Q Well, I'm following MISO pretty closely and the  
16 current proposal for accreditation is not even close  
17 to 50 percent for solar. I mean, especially in the  
18 winter.

19 A Right. So I don't -- and that's the nonthermal  
20 accreditation discussion --

21 Q Right.

22 A -- at MISO. Yeah.

23 Q Which gets to the costs of the resources that you're  
24 using to replace them because you have to have a  
25 certain amount of accredited capacity, right?

1 A Yep. Yes.

2 Q And that affects the costs of what you're building  
3 to replace what you're retiring?

4 A Yes. So if we have to -- you know, if we have to  
5 end up acquiring more resources than anticipated  
6 that would impact the cost, overall costs of the --  
7 to the system.

8 Q All right. Well, I do need to understand better,  
9 that better, what other approaches the company has  
10 studied for decarbonization, in terms of, you know,  
11 looking at -- if you did look at all at running the  
12 coal through 2034 and then replacing it. And still,  
13 I mean, I'm not suggesting you shouldn't meet these  
14 decarbonization goals, I'm just saying I think  
15 there's been a real lack on big companies like Xcel  
16 who is a leader in fully exploring all the options  
17 and quantifying all the costs. Because now with the  
18 solar and the wind there's an additional cost in  
19 transmission that nobody is calculating in the  
20 prices of ADPs like this one, that transmission  
21 isn't even part of it. Granted, you're connecting  
22 to an existing interconnection, but there's other  
23 transmission buildout going on all over the place  
24 that isn't being calculated as part of your  
25 decarbonization goal costs either. I don't think.

1           Maybe, but prove me wrong, I'd love it if you proved  
2           me wrong on that.

3                         So getting to this facility, if Minnesota  
4           wasn't requiring Xcel to invest a certain amount in  
5           solar, would this project have been one of your  
6           choices or the choice for your capacity? You said  
7           earlier that we were looking for solar.

8    A       Right. So we were looking for solar based on the  
9           need identified in the resource plan for solar in  
10          this time frame. So I think it was based on the --  
11          based on the resource plan and our preferred plan  
12          that we issued the RFP for solar at Sherco.

13   Q       Okay. You've looked at some of the other -- or you  
14          talked about some of the other options, one of them  
15          being this Wheaton station, or other things that are  
16          happening. Did the company explore the option of  
17          expanding that, making a larger expansion at the  
18          Wheaton station? Could you have made that bigger,  
19          added a few more rice units there?

20   A       I'm going to let Ms. Mandich answer that question,  
21          she's been more involved in that --

22   Q       Okay.

23   A       -- project.

24   Q       Okay. Did you look at -- look at building the gas  
25          CT in North Dakota that the company is committed to

1 and taking that approach to meeting this capacity  
2 need?

3 A Yeah. So we also have, in addition to solar  
4 identified, we have -- we continue to have a need  
5 for firm dispatchable on our system. And so we have  
6 made -- so the resource plan coming out of our last  
7 resource plan, or order coming out of Minnesota  
8 acknowledged the need for firm dispatchable  
9 resources in our megawatts of firm dispatchable  
10 resources so we have made an initial filing in  
11 Minnesota that sort of lays out the scope of the  
12 process. And so, you know, eventually that will  
13 lead to us issuing an RFP with an open process for  
14 competitors to submit bids in, but we intend to  
15 submit the Fargo CT into that proceeding.

16 Q Why didn't you look at --

17 A And a filing in North Dakota of course as well.

18 Q Sure. Why didn't you look at that facility being  
19 the need for this capacity shortfall that you're  
20 addressing with this project?

21 A So we did in the resource plan. So in the resource  
22 plan we have these, you know, we have solar and firm  
23 dispatchable kind of available to include in the  
24 analysis. And so the resource plan was identifying  
25 solar in this time frame and then the firm

1           dispatchable comes on a little later in '27 and '29.  
2           And so we'll be sort of targeting -- the acquisition  
3           process is to fulfill the needs that were identified  
4           in the resource plan.

5       Q       So the resource plan identified solar because  
6           Minnesota has solar requirements --

7       A       Well, so --

8       Q       -- that you have to meet?

9       A       -- in our alternate plan we actually had solar  
10           identified in this time frame, both with the carbon  
11           costs included and without the carbon costs  
12           included. So we did have solar identified even  
13           without those -- those emissions adders.

14      Q       Did you -- initially your IRP called for using the  
15           interconnection at the Sherco facility with a gas  
16           combined-cycle. And then you changed from that  
17           because I think some of the intervenors in the  
18           Minnesota process wanted you to and you changed that  
19           to a solar. And so now the company is saying that  
20           that facility isn't, you know, basically what I read  
21           your testimony to be is that site isn't appropriate  
22           for a gas facility, that you couldn't have done a CT  
23           there. So help me understand how at one point it  
24           was part of your plan to put one there and then now  
25           it isn't feasible?

1 A Sure. So we had -- so this is the previous IRP, I  
2 believe, the 2015 IRP. We had identified --

3 Q Actually, no, the 2020. Because I have a letter  
4 from Dave Sederquist and he filed it, the 2020-2034  
5 Upper Midwest Resource Plan. It has Xcel proposes  
6 to purchase the Mankato Energy Center and construct  
7 a new natural gas combined-cycle at our Sherco site.

8 A Yeah. So I guess I'm saying is the initial analysis  
9 identified --

10 Q I'm sure, okay.

11 A -- out of the need for the combined-cycle and Sherco  
12 was in that previous IRP and sort of coincided with  
13 the analysis of the early retirements at Sherco 1  
14 and 2. So there's not good gas infrastructure in  
15 the area. So even then, you know, one of the  
16 challenges was to develop gas infrastructure to be  
17 able to serve by plant, of course it didn't have  
18 good emissions and so that was sort of offsetting.

19 Q How far away is the gas to connect to that facility?

20 A I think we had assumed we would need -- I don't  
21 right off remember. I feel like it was maybe even  
22 like -- yeah, I shouldn't speculate.

23 Q Okay.

24 A It's a pretty significant way, I think it was over  
25 \$100 million.

1 Q For the pipeline?

2 A Yeah, that we were assuming for the pipeline, yeah.

3 Q Okay. If Farah can clarify that, that would be  
4 helpful, too.

5 A So that was always a challenge. I think at the time  
6 we identified the need for the combined-cycle, we  
7 also had, you know, higher costs of, you know, solar  
8 and wind and other resources that could be used to  
9 meet needs. And so as the last resource plan  
10 progressed, we looked at instead of the  
11 combined-cycle, doing the tie lines. So building a  
12 transmission line that would tie into the  
13 interconnection at Sherco and then allowing  
14 resources to connect to that, that tie line. And I  
15 believe a CT was one of the resources at the end of  
16 the tie line that could be located closer to gas  
17 infrastructure that was part of that alternative  
18 plan.

19 Q Okay. Is there a possibility to expand at the  
20 Mankato Energy Center to meet a capacity need?

21 A I don't know if there's a -- I don't know if there's  
22 a capacity to expand. There's the first -- so  
23 there's two parts of Mankato, we have two PPAs. The  
24 first PPA expires in the mid-2020s so there would be  
25 the potential to extend the PPA for Mankato 1, which

1 is 300-some megawatts.

2 Q About the same time that this -- but you're assuming  
3 in this plan that that expires and you don't extend  
4 it?

5 A Right. Yep.

6 Q Is that because of Minnesota policy?

7 A No, as a general rule we don't -- we don't model PPA  
8 extensions just more for competitive reasons so that  
9 when we go into negotiations --

10 Q I see.

11 A -- we do not, you know, already telling them we're  
12 going to buy.

13 Q Um-hmm. Okay. And then, okay, so you said earlier  
14 that this project hasn't been modeled under the  
15 seasonal construct?

16 A Right.

17 Q So why is it -- why would it be prudent for North  
18 Dakota to approve investing in a capacity project  
19 that hasn't even been modeled under the current  
20 capacity construct of the RTO, which you're in?

21 A Yeah, and that's a good question. I think, as I  
22 noted earlier, because we're summer peaking our, you  
23 know, and solar provides, you know, the most  
24 capacity in the summer and maybe very little in the  
25 winter. We think at least in the near term solar

1 additions will kind of make sense and provide  
2 capacity to our system. And, you know, we've --  
3 there's always uncertainty, I guess, in terms of,  
4 you know, what could change and how MISO might  
5 change, but we've -- we've modeled these -- the way  
6 that we do our analysis, we really are looking at  
7 how these resources are going to meet our system  
8 needs on an hour-by-hour basis.

9 Q Um-hmm.

10 A So, you know, we think the analysis that we've done  
11 still shows that this project provides benefits to  
12 our system.

13 Q If the solar capacity accreditation drops and it's  
14 less than what you're anticipating here, how would  
15 you feel about capacity need?

16 A We'd have to do more analysis I think on what sort  
17 of resources we would need. What would make the  
18 most sense to fill that capacity need, yeah.

19 Q So given I agree with you, there's a lot of things  
20 that are changing and there's a lot of unknowns.  
21 But when we're talking about prudence, wouldn't it  
22 be the most prudent to at least be modeling and  
23 considering the things that are known, and that  
24 seasonal concept has been known now for -- you've  
25 been operating under it for at least a year. I mean

1 not even knowing how this fairs under that model,  
2 that's just like a big gap for me.

3 A Okay. I might like Farah to see if she can follow  
4 up with a little more detail on how we kind of  
5 expect the seasonal to work.

6 Q Okay. All right. Let's see here. Okay. I think  
7 I've covered most of what I need to with you. Thank  
8 you, Chris.

9 A Thanks.

10 JUDGE DAWSON: Mr. Simpser.

11 MR. SIMPSE: Thank you, Your Honor.

12 REDIRECT EXAMINATION

13 BY MR. SIMPSE:

14 Q Thank you, Mr. Shaw, that was an interesting  
15 discussion. I want to just talk to you about a few  
16 items that came up. Just a couple of items to  
17 respond to Mr. Armstrong here.

18 Part of the reasoning behind using a very  
19 site specific outcome for the RFP was really also  
20 related to the fact that it was very challenging to  
21 find any projects that could interconnect to the  
22 transmission system at reasonable costs at that  
23 time; is that fair?

24 A Yeah. The last several, you know, DTP studies at  
25 MISO have resulted in pretty significant costs for

1 projects to interconnect into the MISO system. So  
2 this enabled to utilize existing interconnection as  
3 a significant method.

4 Q And then also the company was aware that there were  
5 going -- that there was the potential for there to  
6 be advantageous tax outcomes while they were  
7 pursuing the project, correct?

8 A Yes. We did some analysis on the potential for tax  
9 reform.

10 Q So it was no surprise when tax reform came and the  
11 LCOE went down?

12 A I mean, it was a possibility.

13 Q Okay. I want to talk a little bit about Sherco 1  
14 and 2 and talk about the history here. I know  
15 you've testified about this issue in other  
16 proceedings especially in other states. But my  
17 recollection is that the company seriously started  
18 to study what to do with the life of Sherco 1 and 2  
19 back in a 2010 study; is that correct?

20 A You're straining my memory, but I think there was --  
21 I think there was a study back then, yeah.

22 Q And that study was intended to determine if it was  
23 worthwhile to invest in selective catalytic  
24 reduction technologies versus retiring of plant when  
25 those may be necessary?

1 A I recall -- I recall, yes, that the trade-off was  
2 between CRs and retirement. That's probably all I  
3 recall.

4 Q Okay. And that's sufficient. And I just -- I think  
5 what I'm trying to say is that since that 2010  
6 lifecycle management study, the company has  
7 continued to analyze Sherco not only from a carbon  
8 reduction standpoint, but also from a future  
9 necessary investments standpoint, and to determine  
10 when it makes more sense to invest further in the  
11 plant given its then life. Is that a fair analysis?

12 A I think that's fair. I think you're sort of saying  
13 this has been on the table for a while, have  
14 something to consider, there's been a lot of  
15 uncertainty around whether you'd actually need SCRs  
16 throughout that time frame. I think just to go back  
17 to our discussion, the first time we had proposed to  
18 retire the Sherco 1 and 2 early was in that 2015  
19 IRP.

20 Q Right. That's when the decision was ultimately  
21 made --

22 A Right.

23 Q -- after many years of analysis?

24 A I think that's right. So it was before I was with  
25 the company, but that's my understanding.

1 Q And then when you make that analysis, just wanting  
2 to confirm, your resource planning looks at the  
3 entire system on a revenue requirements basis; is  
4 that correct?

5 A Correct. So we're looking at -- yeah, the present  
6 value of the generation on the system.

7 Q And that includes any accelerated depreciation that  
8 may be impactful to the system, correct?

9 A Correct, yes.

10 Q I also want to talk a little bit about the sort of  
11 resource planning approach, and certainly  
12 Ms. Mandich can help discuss this a little bit more.  
13 But the company appears to have used this last  
14 resource plan to essentially address a larger  
15 capacity need in the mid-2020s with multiple  
16 resources; is that right?

17 A That's correct. There's a number of resource  
18 additions that the resource plan calls for.

19 Q And like Ms. Mandich discussed, that includes  
20 repowering some resources, adding solar and adding  
21 also firm dispatchable resources?

22 A Correct.

23 Q And as you move through the resource planning  
24 process, and I just want to make sure I caught this  
25 correctly, the last analysis you did through that

1 resource planning process, that was long after we  
2 filed this -- this application, right?

3 A It was -- I don't know if it was long after. I  
4 think we filed it a few months after, correct, yeah.

5 Q So you had an updated analysis and under that  
6 updated analysis with societal costs analysis or  
7 revenue requirements analysis, in other words, in  
8 both the Minnesota and North Dakota views, solar was  
9 selected as the correct least cost generic resource  
10 to meet the '24, '25 need?

11 A Yes. I think it's a 2016.

12 Q '16, okay.

13 A If not '25 addition, yeah.

14 Q Okay. Then the last piece I wanted to talk about is  
15 I think we all agree that there's some accreditation  
16 risk with the project. Is that fair to just  
17 stipulate?

18 A Yes. I would agree.

19 Q And does the company's proxy proposal help  
20 ameliorate or hedge against some of that risk?

21 A It does. So the proxy proposal was to use the MISO  
22 cost of new entry for the actual accreditation of  
23 the facility. So if the accreditation ended up  
24 being lower than we assumed, we would recover less  
25 through the proxy, we'd only recover what was

1 actually granted by MISO.

2 Q And so that would be, essentially, you'd only pay  
3 for what you get so if there was less accreditation  
4 there would be less costs to North Dakota  
5 ratepayers, right?

6 A Correct.

7 MR. SIMPSON: I have nothing further.

8 JUDGE DAWSON: Mr. Armstrong.

9 MR. ARMSTRONG: Thank you.

10 RE-CROSS-EXAMINATION

11 BY MR. ARMSTRONG:

12 Q Mr. Shaw, I have some additional questions for you.

13 Just to be clear, you had mentioned when  
14 you were talking with the Commissioners about the  
15 IRA, that's the Inflation Reduction Act?

16 A Yes.

17 Q And that was enacted in August of 2022?

18 A That sounds right.

19 Q And so a year and four months after this  
20 application, right?

21 A Yep.

22 Q And you may have expected some tax benefits, but you  
23 didn't know what they would be; is that fair?

24 A I think that's fair. I think the, you know, the  
25 main benefit here was that solar could take a PTC

1 and those credits could be monetized. So I think  
2 that that possibility was something that we  
3 contemplated, but whether and when and what exactly  
4 would pass of course we didn't know.

5 Q Because even in the initial application there were  
6 tax credits calculated in, they just weren't enough  
7 to make it the least cost option?

8 A So we were using like existing ITC at the time, yep.

9 JUDGE DAWSON: Mr. Armstrong, could you  
10 bring your microphone just a little closer?

11 MR. ARMSTRONG: Yes.

12 JUDGE DAWSON: Thank you.

13 BY MR. ARMSTRONG:

14 Q And so it wasn't until something happened in August  
15 that made you able to argue anyway this was the  
16 least cost option?

17 A Correct. Correct, yeah, I mean, we changed our  
18 request.

19 Q And honestly we've talked about a lot of different  
20 plans today and you've said the plan now calls for  
21 solar. Originally the plan did not call for solar,  
22 it called for a combined-cycle, correct?

23 A Correct. And so just so it's crystal clear, I  
24 guess, there was an IRP supplement filed in 2020  
25 that had the -- under that analysis there was the

1 firm dispatchable, the CT. The updated alternate  
2 plan filed in '21 then had the solar.

3 Q The updated alternate plan that selected solar was  
4 based on a settlement with Minnesota, correct?

5 A No, it wasn't based on a settlement. That was an  
6 updated analysis where we analyzed using the tie  
7 line to connect resources at the Sherco site.

8 Q And what restrictions were placed on what could use  
9 the tie line in that evaluation?

10 A There were -- there were restrictions. I mean,  
11 Ms. Mandich can answer that one.

12 Q There were restrictions placed on the plan by the  
13 company that led to the result that Sherco Solar was  
14 the selected project?

15 A I think I need to let Ms. Mandich answer the  
16 question. I think that the -- it wasn't prescribed  
17 in terms of what exactly would interconnect at a  
18 particular time, but there were -- there was a  
19 framework, I guess, in the model. I can let  
20 Ms. Mandich discuss that in more detail.

21 Q When did the company agree with -- I'm just looking  
22 at the order to close out the 2020 to 2034 Upper  
23 Midwest Resource Plan identified the company shall  
24 acquire by 2026 1,300 megawatts of solar resources  
25 to replace the capacity following the retirement of

1 Sherburne County Generation Station Unit 2. When  
2 did the company agree to that in Minnesota?

3 A So that was part of our proposed alternate plan and  
4 then the commission's order reflected for that plan.

5 Q That occurred sometime after the company had  
6 identified the combined-cycle unit at the Sherco  
7 site?

8 A I'm not sure I'm following. So we made the -- the  
9 last IRP and the alternate plan was filed in '21.  
10 The order was '22, February '22. So that's  
11 reflecting the commission's order based on the  
12 alternate plan that was filed.

13 Q There's no technical reason or impossibility of  
14 tying a combined-cycle into the existing  
15 interconnection at the Sherco site, is there?

16 A There is no -- say that again.

17 Q The combined-cycle could use the transmission  
18 available at the Sherco site, right?

19 A Yeah, we have that proposed.

20 Q Just like the CT?

21 A Correct. Yep.

22 Q And so in Mr. -- I'm going to go back to something  
23 Commissioner Fedorchak asked you about in  
24 Mr. Chamberlain's testimony. He said the need for  
25 this project resulted from a 92 megawatt capacity

1 deficit in 2026, which rose to 1,016 megawatts by  
2 2030. Are you familiar with that in his testimony?

3 A Generally, yes.

4 Q Okay. In Mr. Krug's testimony I wasn't able to find  
5 a number for the short following 2026, but then you  
6 said by 2030 there was a 2,443 megawatt capacity  
7 deficit. Are you familiar with that?

8 A Generally, yes.

9 Q Why is the capacity deficit accelerating so much?

10 A I am going to let Ms. Mandich answer the questions.  
11 I think there's a lot of different moving pieces  
12 between those analyses and she's got some of the  
13 tables with the different resources in her testimony  
14 and so I'm going to let her answer that.

15 Q Would you at least agree that part of it is because  
16 you're retiring good capacity units and replacing  
17 them with less efficient capacity units?

18 A I don't think so. I think in each of those plans we  
19 have the retirements of the -- that had Sherco  
20 included. And so I would like to let Ms. Mandich  
21 answer those sort of what are the different pieces.

22 Q Are the energy needs increasing by -- deficits  
23 increasing by that much?

24 A I'm not sure.

25 Q You're planning a need for more capacity than you

1 are for a need for more energy; is that fair to say?

2 A We have -- I think that's fair to say, that we have  
3 more of a need for capacity than energy. We're a  
4 net seller into the market.

5 Q And even those numbers don't calculate in how MISO's  
6 seasonal construct is going to affect that?

7 A Even -- well, which numbers?

8 Q Well, you don't know how -- you know MISO is going  
9 to have a seasonal construct and you know you have  
10 this rising capacity need, but you don't know how  
11 it's going to be accredited through MISO at this  
12 point in time?

13 A So we -- yeah. And I don't want to mix the two. So  
14 we don't know what the resolution ultimately will be  
15 of the nonfirm accreditation.

16 Q But you do know that you agreed with Minnesota that  
17 we need to build more solar?

18 A We know that our analysis and the alternate plan  
19 called for solar additions in the mid '20s.

20 Q In the analysis that had restrictions on it?

21 A The analysis that had -- well, I think that's  
22 getting into the details of the model, I'll need to  
23 let Ms. Mandich talk about those.

24 MR. ARMSTRONG: That's all I have. Thank  
25 you.

1 JUDGE DAWSON: Mr. Schuh.

2 RECROSS-EXAMINATION

3 BY MR. SCHUH:

4 Q Mr. Shaw, just a couple questions. So obviously  
5 there's an outstanding obligation that NSP provided  
6 I think back in 2015, 2016, to construct and operate  
7 200 megawatts of firm dispatchable capacity resource  
8 in North Dakota by December 31st, 2021. Does the  
9 approval or disapproval of this resource, would that  
10 impact the likelihood of that being constructed and  
11 put into operation?

12 A No, I don't think so. As I noted, we've -- the  
13 resource plan identified the need for firm  
14 dispatchable resources, we've started that process  
15 in Minnesota and we intend to make a filing  
16 proposing the Fargo CT as part of that process.

17 Q Okay. I was speaking about this application and the  
18 testimony as well in the current ADP relative to I  
19 guess other ones in the past, is that usually  
20 there's an extensive revenue requirement analysis,  
21 and this of course it seems like it's really focused  
22 on the base cost of energy which I understand it is  
23 all interplayed with all that as well as, you know,  
24 comparing operational costs. If you would take, I  
25 guess if we approved this ADP, would that be

1 consistent with, I guess, the least cost planning  
2 for our customers in North Dakota under North Dakota  
3 laws and regulations?

4 A Yes. This goes back to our discussion about the --  
5 the alternate plan and the resource plan that was  
6 approved. And under those assumptions, when we  
7 removed carbon costs and reoptimized even under  
8 those assumptions without the carbon costs we did  
9 have solar as the least cost addition in '25.

10 Q Right. And I definitely heard you on that. Maybe I  
11 was getting a little bit confused, too, because  
12 we're going back and forth, we keep saying least  
13 cost planning but you guys keep saying least cost  
14 planning in Minnesota and then, you know, you flip  
15 into North Dakota, which for the purpose of the  
16 hearing we should only be talking about North Dakota  
17 least cost planning so operating under North Dakota  
18 laws.

19 But let me give you a hypothetical. And  
20 I understand you're not the resource planning person  
21 and Ms. Mandich is here to answer those questions,  
22 but so you construct an integrated resource plan  
23 under North Dakota -- a Minnesota framework, and  
24 then you subsequently backed out the externalities  
25 of carbon costs, community solar, as well as I think

1           you provided one other as well in the testimony.  
2           But had you constructed integrated resource plans  
3           solely under North Dakota planning, would it look  
4           the same?  Would we be looking at these same  
5           resources?  So starting with only North Dakota  
6           resource planning.

7       A     Yeah, I don't know if we know the answer to that.  I  
8           think we've got the North Dakota resource planning  
9           process that we'll be engaging in going forward, I  
10          think.

11       Q     Sure.

12       A     You know, what we've done is, like I said, is taken  
13          out those carbon and externality costs and  
14          reoptimized the model, but --

15       Q     Sure.

16       A     -- I think knowing what a North Dakota plan would  
17          use can take some more engagement with the staff and  
18          the commission.

19       Q     Absolutely understand that.  But would it be fair to  
20          say that if we did put forward North Dakota resource  
21          planning and then subsequently you made an  
22          alternative plan for Minnesota where you, I guess,  
23          then put in recovering costs, that we would probably  
24          be looking at -- there's a likelihood, but at least  
25          a good chance we'd be looking at two very different

1 resource plans?

2 A I would expect they would be different, I don't know  
3 if I can speculate on whether it would be different  
4 or not.

5 MR. SCHUH: Thank you. Those are all the  
6 questions I have, Your Honor.

7 JUDGE DAWSON: Commissioner  
8 Haugen-Hoffart.

9 COMMISSIONER HAUGEN-HOFFART: No, I have  
10 no additional questions.

11 JUDGE DAWSON: Commissioner Christmann?

12 COMMISSIONER CHRISTMANN: One  
13 clarification from Commissioner Fedorchak's  
14 knowledge as a leader in the organization of MISO  
15 States.

16 FURTHER EXAMINATION

17 BY COMMISSIONER CHRISTMANN:

18 Q If I understood that dialogue correctly, the  
19 assertion was that MISO, before any changes that are  
20 coming up as far as accreditation already isn't  
21 accrediting solar at 50 percent. I mean, that's  
22 what you're using here to show this as least cost.  
23 Did I understand that correct? And do you disagree  
24 with her on how they're accrediting or did I  
25 misunderstand?

1 A I think there's two pieces. There's the nonthermal  
2 accreditation, which I think Commissioner Fedorchak  
3 was referring to, which is still pending and an  
4 ongoing discussion, and then there's the seasonal  
5 construct which has been implemented. And my  
6 understanding is that was about 50 percent for the  
7 summer.

8 Q Okay.

9 JUDGE DAWSON: Commissioner Fedorchak.

10 COMMISSIONER FEDORCHAK: Thank you,  
11 Judge.

12 FURTHER EXAMINATION

13 BY COMMISSIONER FEDORCHAK:

14 Q Just to clarify for my colleague, I was talking  
15 about the proposals for the new accreditation.

16 To follow up to your conversation with  
17 Mr. Armstrong, in the analysis that showed, the  
18 modeling that showed this project as being the least  
19 cost resource for North Dakota to meet your capacity  
20 need, how was the accreditation calculated? So the  
21 value --

22 A As we had I guess discussed previously, the  
23 contract, it starts at 50 percent and then declines.

24 Q That's under your model?

25 A Yep.

1 Q That chose that?

2 A Yep.

3 Q Okay. So would you agree, though, that that is a  
4 significant unknown and it could change the prudence  
5 if that accreditation, that capacity accreditation  
6 changes?

7 A I would say that there certainly is uncertainty  
8 around what we're going to get for accreditation for  
9 solar going forward. I'm really not the MISO  
10 expert, I know our other folks have a lot of  
11 concerns with the proposal.

12 Q Right. Okay. Let's see here. Oh, and one other  
13 thing. How much of the interconnection, the  
14 company's interconnection amount at the Sherco  
15 facility, how much of that does this project assume?  
16 So this is what --

17 A Yeah. This is a portion of it, so there's about 700  
18 megawatts total from the retirement of Sherco 2. So  
19 then we have, like I think we found an ADP for the  
20 next additional solar project to fill our need.

21 Q Okay. When all the Sherco retires, what's that  
22 interconnection?

23 A It's about 2,000 megawatts altogether.

24 Q Okay. And have you made plans for the replacing all  
25 of that or are you still working on that?

1 A Well, we've made -- we have the resource plan that  
2 contemplates those retirement dates and so then the  
3 capacity expansion identified in the resource plan  
4 would fill that need.

5 Q Okay. And it's pretty much all solar?

6 A It's solar and then it's the firm dispatchable  
7 resources.

8 Q At that site?

9 A Well, not at the site.

10 Q At the Sherco site?

11 A Sorry, at the Sherco site it's -- I think it's -- I  
12 should probably let Ms. Mandich answer. I think  
13 there's wind identified on the line and then a  
14 potential for a dispatchable resource as well.

15 Q Okay. And then in your conversation with  
16 Mr. Simpson you talked about the system-wide energy  
17 needs and costs that were calculated in terms of  
18 your IRP, and that that accelerated depreciation was  
19 included in that so those costs were calculated.  
20 I'm just curious, in that calculation where are  
21 those costs assigned? To the retiring resource or  
22 to like, you know what I'm saying, back to our  
23 earlier question, I get that you're calculating it,  
24 but it matters where you assign them in terms of  
25 what looks like the most -- the lowest cost

1 resource?

2 A Yeah. I mean, it would change the revenue  
3 requirements of the retiring resource. So there's a  
4 annual revenue requirement in the model for Sherco  
5 2, for example, and then they may change the  
6 depreciation life from 2034 to where the  
7 requirements change.

8 Q So they're assigned to that unit?

9 A Yeah.

10 COMMISSIONER FEDORCHAK: All right.

11 Okay, thank you. I think that's it for me.

12 JUDGE DAWSON: Mr. Simpser.

13 MR. SIMPSEY: I have nothing, Your Honor.

14 JUDGE DAWSON: If there are no further  
15 questions, and I see none, you may step down.

16 (Witness excused.)

17 JUDGE DAWSON: And I have the time of  
18 9:53 so we'll take a 10-minute break 'til 10:03.

19 We're at recess.

20 (Recess taken.)

21 JUDGE DAWSON: We are back on the record.  
22 And Mr. Simpser, Mr. Shaw previously, that was his  
23 name, correct?

24 MR. SIMPSEY: Yes.

25 JUDGE DAWSON: And you spell that like

1 S-H-A-W.

2 MR. SIMPSEY: Yep, like the supermarket.

3 JUDGE DAWSON: Okay. And Chris with a C  
4 or a K?

5 MR. SIMPSEY: With a C.

6 JUDGE DAWSON: Okay. He's new to some of  
7 us and so we are just not familiar with the spelling  
8 of his names.

9 Would you like to call your next witness?

10 MR. SIMPSEY: Yes. The witness who needs  
11 no introduction, the company calls Ms. Farah  
12 Mandich.

13 JUDGE DAWSON: You were here for my  
14 previous warnings as to perjury so you understand  
15 what perjury is and the penalties for it?

16 MS. MANDICH: Yes, I do.

17 JUDGE DAWSON: Understanding so, do you  
18 promise or swear that the testimony that you're  
19 about to give will be the truth, the whole truth,  
20 and nothing but the truth?

21 MS. MANDICH: Yes, I do.

22 JUDGE DAWSON: With that, you may begin.

23 MR. SIMPSEY: Thank you, Your Honor.

24 DIRECT EXAMINATION

25 BY MR. SIMPSEY:

1 Q Good morning, Ms. Mandich.

2 A Good morning.

3 Q You are the same Farah Mandich that submitted  
4 prefiled direct testimony, rebuttal testimony and  
5 surrebuttal testimony in this case?

6 A I am.

7 Q And would your testimony be the same today if you  
8 were giving it when you filed it?

9 A Yes.

10 MR. SIMPSEY: With that, the witness is  
11 available for cross.

12 JUDGE DAWSON: Please turn your  
13 microphone on, or if it's not on, bring it just a  
14 little closer.

15 THE WITNESS: I think it's on now, but  
16 maybe I wasn't close enough to it.

17 JUDGE DAWSON: Thank you.

18 MR. SIMPSEY: We tender the witness for  
19 cross-examination.

20 JUDGE DAWSON: Mr. Armstrong.

21 CROSS-EXAMINATION

22 BY MR. ARMSTRONG:

23 Q Ms. Mandich, I asked Mr. Shaw about the changes in  
24 the needs for capacity, in Mr. Chamberlain's  
25 testimony it said 92 megawatts by 2026 and 1,000

1 megawatts by 2030, and then Mr. Krug said 2,400-some  
2 megawatts by 2030. What's the reason for that  
3 change in needed capacity?

4 A So there were multiple things that changed in the  
5 underlying assumptions between the first -- the  
6 supplement resource plan when we filed this and then  
7 the alternate plan that we filed later. I think  
8 primarily the gap is a couple things. So there were  
9 resources that we planned to replace, which would be  
10 the Wheaton, for example, the Wheaton capacity, that  
11 were sort of taken out of the baseline and put into  
12 sort of the new additions line. So that is one  
13 driver of differences. The load forecast is  
14 slightly different, didn't make a huge difference.  
15 And then the other difference may have been the  
16 removal of the Sherco CC from sort of the assumed  
17 resources, but I would have to go back and check.  
18 So there are multiple things, we updated multiple  
19 assumptions and those things change over time.

20 Q Whatever the reasons may be, there is an increasing  
21 need for capacity by 2030?

22 A Yes, that's correct.

23 Q And what we're here dealing with today was a project  
24 that was originally intended to address a capacity  
25 need in 2020 -- so the application, it said 2024,

1 2025, 2026, so it's in that time frame; is that  
2 correct?

3 A Yes, in the mid-2020s.

4 Q Okay. In the mid-2020s. And that was 92 megawatts  
5 at least at the time of Mr. Chamberlain's testimony?

6 A That's correct.

7 Q What is it now?

8 A For the summer, I don't know that number off the top  
9 of my head. I think there's obviously a lot of  
10 changes happening with the seasonal construct and  
11 other accreditation. I think at the time we filed  
12 in the resource plan the annual construct I think  
13 the deficit in the '25, '26 planning year was about  
14 230.

15 Q And it is fair to say if we were not retiring Sherco  
16 Unit 1 or Sherco Unit 2 early, we wouldn't be  
17 addressing a capacity need in mid-2020s, would we?

18 A I don't agree with that. There are many other  
19 resources that are coming off the system in the  
20 mid-2020s. And so I think the need might be pushed  
21 out one or two years, but we would still have a need  
22 in the mid-2020s.

23 Q You'd agree, it would be less of a need?

24 A It would be lower, that's correct.

25 Q And you would agree that it wouldn't require a

1 construction of an entire solar farm at the Sherco  
2 site which would not even be possible?

3 A There would be no open interconnection at the Sherco  
4 site if we were not retiring Sherco 2 and Sherco 1,  
5 that's correct. I will say that I think we would  
6 still need additional capacity in that time frame  
7 which may be solar.

8 Q And with respect to this project, the Sherco project  
9 we're dealing with today, you heard me ask Mr. Shaw  
10 about that the company didn't engage it's full  
11 traditional EnCompass modeling for selection of this  
12 project; is that accurate?

13 A I think what that refers to is the fact that in  
14 previous acquisitions we would look at the price of  
15 the proposed project relative to a set of generic  
16 resources. So when we're procuring resources that  
17 are over and above our needed capacity, because  
18 they're economic, we would employ that to look at  
19 whether it was prudent to acquire that resource or  
20 not. In this case we have a capacity need and so  
21 the appropriate analysis to compare it to is saying  
22 the resource plan indicates a capacity need, we have  
23 to go to the market to see what the most economic  
24 resource is available to meet that need, and in this  
25 case it was the Sherco Solar Project.

1 Q When was it the Sherco Solar Project? Or why was it  
2 the Sherco Solar Project? I guess both those  
3 questions. When did it identify the Sherco Solar  
4 Project as the most economical resource to meet your  
5 capacity need?

6 A So we proposed to reutilize the interconnection for  
7 solar in our alternate plan that we filed in 2021.  
8 In the supplement IRP filed in 2020, which was I  
9 think the prevailing plan when we filed the proposal  
10 for this project, the project -- the resource plan  
11 showed that there was a need for solar in the  
12 mid-2020s, but it didn't specify which  
13 interconnection it would use so it was a generic  
14 solar resource.

15 Q And how did your plans restrict the use of the  
16 interconnection at the Sherco site?

17 A So, you know, when we do resource planning analysis  
18 we're doing modeling, but we have to constrain the  
19 modeling with, you know, some parameters that  
20 recognize the reality of what's available, right.  
21 So for the period of time around when Sherco 2  
22 retires, so at the end of '23 to '26 in their  
23 replacement window, we only allowed the model to  
24 select solar for that interconnection. The model  
25 could choose other resources elsewhere in the system

1 so not reutilizing interconnection if it was more  
2 cost-effective to do so, but specifically for that  
3 interconnection for that period of time we only  
4 allowed it to choose solar because it practically  
5 isn't feasible to build other resources in that area  
6 in that time frame.

7 Q And what time frame are you talking about for  
8 building?

9 A '24 to '26, the replacement window for Sherco 2.

10 Q Well, you started -- I'm trying to make sure I don't  
11 involve trade secret information. But if I  
12 understand correctly, the initial plan for this  
13 project was going to qualify for production tax  
14 credits based on work done in 2020.

15 A So initially when we proposed the project it would  
16 have qualified for investment tax credits. And that  
17 may have included -- yeah.

18 Q So you really had 2020 to 2024, '25 to plan  
19 connections in a resource at this site?

20 A Yeah. I mean, we were evaluating options  
21 internally, yeah.

22 Q You heard Mr. Shaw say you would at least be asked  
23 about the plan to retire Sherco beginning in 2010 so  
24 there's been 15 years to be planning how to use this  
25 site?

1 A Yes. So the company has been considering its  
2 options for reutilizing the interconnection at  
3 Sherco for several years.

4 Q So if it was a gas dispatchable resource, the  
5 company could have been working towards that for a  
6 number of years as well?

7 A And I believe there was work done, significant work  
8 done up to that point as well.

9 Q And when you filed your initial testimony, you  
10 acknowledge that this project was not consistent  
11 with North Dakota law and North Dakota policy as  
12 well, correct?

13 A That's correct, at the time the North Dakota  
14 scenario in the resource plan did not indicate a  
15 solar need at that time frame.

16 Q And at that time it indicated a firm dispatchable  
17 resource?

18 A That's correct.

19 Q And actually without the restrictions on the Sherco  
20 site, it actually identified a resource at that site  
21 as well, did it not, combined-cycle?

22 A So the Sherco CC was included in the modeling, it  
23 wasn't freely selected, it was just included as a  
24 replacement resource for Sherco 2 and 1.

25 Q Would you also agree that solar is not typically a

1 traditional resource to fill a capacity need?

2 A It's not a pure capacity resource, I agree with  
3 that. But it does confer capacity credits as well  
4 as energy.

5 Q And at best it's about 50 percent capacity need?

6 A Currently, yes, the default accreditation is 50  
7 percent for the summer.

8 Q What's the default accreditation for CP, or  
9 combined-cycle?

10 A I don't know that off the top of my head, but it's  
11 substantially higher.

12 Q And it's consistent throughout the entire year,  
13 correct?

14 A I believe there are certain seasons where it gets  
15 somewhat less accreditation, but not as low as  
16 solar.

17 Q It doesn't vary as much as solar?

18 A It doesn't vary, yeah, as much.

19 Q And the company's application did not evaluate  
20 seasonal accreditation for the capacity for this  
21 project, did it?

22 A No, it did not. When it was proposed seasonal  
23 accreditation wasn't confirmed.

24 Q But when you filed your second or third round of  
25 testimony, seasonal accreditation was known,

1 correct?

2 A Yes. So the seasonal construct is now in place.  
3 The nonthermal accreditation that solar resources,  
4 for example, will get during all the seasons is not  
5 yet known.

6 Q So now you know it's going to be seasonable, you  
7 don't know how much it's going to be per season?

8 A Correct.

9 Q And you haven't even tried to calculate that based  
10 on what's expected?

11 A I think MISO's changed the numbers quite a few times  
12 so it's hard to pin down one number that we can  
13 expect for the long-term. I would say part of the  
14 reason we proposed the proxy prices, that we  
15 understand that there's some volatility there and so  
16 a proxy price mechanism would ameliorate that.

17 Q The other thing that would ameliorate that would be  
18 constructing a firm dispatchable resource; would it  
19 not?

20 A Largely I would agree with that, although I do  
21 understand that MISO is considering changing the  
22 accreditation for thermal resources as well in its  
23 new seasonal construct. So there still would be  
24 risk. I mean, there's risk for any resource, but it  
25 won't be accredited in the future the way it's

1           accredited now.

2       Q     You're not expecting thermal resources to be  
3           accredited less than say a solar resource, are you?

4       A     I would be surprised, but I don't really know what  
5           they're planning.

6       Q     The thermal resources provide more certainty  
7           throughout the entire year; do they not?

8       A     Generally, yes, I would agree with that.

9       Q     And with the -- you heard Mr. Shaw testify, I think  
10          you're familiar, that North Dakota ratepayers, as it  
11          stands right now, are still paying expenses for the  
12          Sherco Units 1 and 2 through 2035, end of 2034?

13      A     Yeah, I'm not familiar with how that is structured.

14      Q     But you're here today asking for North Dakota  
15          ratepayers to pay for this project at the same site  
16          going forward however many years?

17      A     Yes.

18      Q     And you're saying if the commission doesn't like --  
19          doesn't view the Sherco Solar Project as prudent  
20          then there should be a proxy price?

21      A     Yes, that's the proposal.

22      Q     And that's because this is needed for capacity?

23      A     It was selected in a -- solar resources were  
24          selected in a resource plan, which is why we're  
25          moving forward with the project.

1 Q And there's really no way to recover it through --  
2 the cost of it through one of the commission's  
3 riders, is there?

4 A Of the proxy or --

5 Q No, the cost of this project. It's not a fuel cost  
6 rider project, it's not a renewable energy rider?

7 A I guess I'm not familiar with how the cost recovery  
8 specifically would work.

9 Q Okay. And the proxy you're using is MISO CONE; is  
10 that correct?

11 A For the capacity we propose to use MISO CONE.

12 Q And do you know what the MISO -- how the MISO CONE  
13 is calculated?

14 A Generally they use an estimate from the Energy  
15 Information Administration of a CapX for a new CT,  
16 and apply, you know, different factors for whatever,  
17 cost of capital and those types of things, to get  
18 the cost per kilowatt-month.

19 Q Do you know if they included ROE in that  
20 calculation?

21 A I don't know. My understanding is they included  
22 cost of capital.

23 Q And are you aware if that cost of capital is similar  
24 to NSP's?

25 A My understanding is that it's slightly higher.

1 Q So the company is asking for MISO CONE as a proxy  
2 with a slightly higher cost of capital than what NSP  
3 is currently recovering through its rates?

4 A Yes, my understanding is that is what CONE includes.

5 Q Wouldn't that be a -- even if you were to have a  
6 proxy pricing, wouldn't you use the cost of capital  
7 that NSP has under its rate system?

8 A Well, I think part of the reason we propose MISO  
9 CONE is because it's sort of a publicly known number  
10 that MISO publishes every year and it's consistent  
11 with how we do proxy pricing in South Dakota and so  
12 it seemed reasonable to propose.

13 Q Isn't the CONE a maximum bid amount?

14 A It is -- so I'm not a MISO expert, but I believe it  
15 is not a maximum in the seasonal construct anymore.  
16 There is individual seasons, the auction can yield a  
17 price higher than CONE.

18 Q I'm struggling, though, with you being the one  
19 proposing MISO CONE as a proxy price and then saying  
20 I'm not a MISO expert on the CONE. So help me  
21 understand how we can figure out if the CONE  
22 actually is reflective of NSP's rates when it's got  
23 a different weighted average cost of capital and  
24 that's what you're proposing as the proxy price?

25 A Yes. So I think in terms of the proxy price that

1 we're setting up, the CONE is a reasonable  
2 representation of the new costs, the cost of new  
3 entry for a CT in the market. And so if the  
4 commission decides that it does not want to approve  
5 Sherco Solar and it would rather approve a proxy,  
6 that is a reasonable representation of what a cost  
7 for a new entry could be in the market in MISO in  
8 general, and so that's why we proposed it as one  
9 option for -- in our preferred option for the proxy  
10 price of capital -- or proxy price of capacity.

11 Q You use that as your preferred option, that's what  
12 you're asking the commission to do if it doesn't  
13 grant approval of prudence for this project?

14 A Yes.

15 Q And why wouldn't it be better just to address this  
16 all in a rate case with all the factors considered  
17 with the early retirement of Sherco, the selection  
18 of this project, I mean, there's multiple different  
19 factors that went into this selection. Why should  
20 the commission commit to using that rate structure  
21 from the -- from the MISO CONE now with only  
22 considering this one project?

23 A Well, I think that's certainly an option available  
24 to the commission if they would prefer that. I  
25 think, you know, we are saying, you know, with the

1 costs that we know now that the Sherco Solar Project  
2 is a prudent resource to procure. If the commission  
3 believes that there's too much uncertainty, we can  
4 use a proxy price to ameliorate that uncertainty,  
5 but it's possible that -- or they could be  
6 considered in a rate case as well.

7 Q And the company never did solicit any bids for any  
8 other resource at the Sherco site, did it?

9 A No, our resource plan indicates a generic resource  
10 need and then we issue RFPs specific to the generic  
11 resource type that is identified in the resource  
12 plan.

13 Q And which exact resource plan are you talking about?

14 A Well, solar was the resource selected in the  
15 Minnesota version of the plan in our supplement and  
16 in both the Minnesota and the North Dakota versions  
17 of the plan in the 2021 alternate filing.

18 Q And what restrictions were on the use of this site  
19 in the 2021 filing? Did you allow a combined-cycle  
20 to connect to the transmission?

21 A We did not include a combined-cycle in the resources  
22 that could be selected for the interconnection in  
23 our alternate plan. We did analysis that examined  
24 that, a plan that still included the Sherco CC as  
25 well. But in the plan that we ultimately proposed

1 for approval, and got approval for in Minnesota  
2 anyway, that was not an option that the model could  
3 have selected. It could have selected a generic CC  
4 elsewhere, system, if that was cost-effective.

5 Q So the plan selected the solar project based on  
6 restrictions that led it to select the solar  
7 project?

8 A So putting reasonable constraints on the resources  
9 that could be used to refill the Sherco  
10 interconnection, yes. The only resource that was  
11 available to it for that interconnection was solar  
12 at the time. But the model had options to choose  
13 other resources that were not utilized in  
14 interconnection if it was cost effective.

15 Q The North Dakota plan selected 374 megawatts of firm  
16 dispatchable; did it not?

17 A In the supplement in 2020, yes.

18 Q Are you saying the North Dakota plan had  
19 unreasonable -- didn't have reasonable restrictions?

20 A Well, at the time we were not proposing to reutilize  
21 the Sherco interconnection for that unit, the 374  
22 megawatt CT unit would be somewhere else on the  
23 system.

24 Q Why?

25 A Well, at the time we were still proposing to build

1 the Sherco CC reutilizing Sherco 1 and 2's  
2 interconnection.

3 Q Well, that's what I'm trying to get at. It seems  
4 like every time -- we're kind of going in circles  
5 here, but it seems like every time you're talking  
6 about the plan you're talking about reusing the  
7 interconnection for solar so it's going to select a  
8 solar project.

9 A Yeah. I think there's definitely been several  
10 iterations of the plan. I would say in our latest  
11 iteration, the one that we now have approval for in  
12 Minnesota through the order that was referenced  
13 previously, we decided to not pursue the Sherco CC  
14 and pursue other resources that could use that  
15 interconnection. The modeling that we did, the  
16 analysis showed that that would be an economic way  
17 to reutilize the interconnection, right, so we have  
18 opening up when Sherco 2 retires.

19 Q And by that point in time you had already committed  
20 to having this solar project at that site?

21 A We had proposed that already, yes.

22 Q As we sit here today, do you know how much capacity  
23 will be accredited to the Sherco Solar Project?

24 A I can tell you that currently the default for summer  
25 is 50 percent. By the time the project is placed

1           into service I do not know for sure what the  
2           capacity accreditation will be.

3       Q       And the need for the project overall is to get  
4           additional capacity?

5       A       It's filling a capacity need, yes.

6                       MR. ARMSTRONG:  Thanks.  That's all the  
7           questions I have, Your Honor.

8                       JUDGE DAWSON:  Mr. Schuh.

9                       MR. SCHUH:  I'll defer to the commission.

10                      JUDGE DAWSON:  Commissioner  
11           Haugen-Hoffart.

12                      COMMISSIONER HAUGEN-HOFFART:  Thank you.

13                                       EXAMINATION

14       BY COMMISSIONER HAUGEN-HOFFART:

15       Q       Regarding the ADP, there seems to be a lot of  
16           assumptions, correct?

17       A       Yes, that's correct.

18       Q       Can you clarify those assumptions for me in your own  
19           words?  I mean, what are the assumptions and why  
20           should we consider it?  Help me understand that.

21       A       Yeah.  So I think I'm going to start by giving a bit  
22           of context.  So the resource plan that we concluded  
23           in 2022 --

24       Q       And that's Minnesota's plan?

25       A       Minnesota's plan, but we also included a North

1 Dakota compliance scenario. Includes of a broad  
2 range of assumptions, you know, when we do analysis  
3 and modeling we're loading lots of assumptions into  
4 the model about load, capacity accreditation, costs  
5 of different resources, all of those types of  
6 things.

7 The modeling helps us select a preferred  
8 plan and then when we go and procure resources, you  
9 know, in accordance with the preferred plan that's,  
10 you know, sort of what we're basing the need on.  
11 The assumptions that really underlie this particular  
12 project I would say primarily are the capital costs,  
13 which we, you know, are provided in the application.  
14 There's assumptions about how much energy it will  
15 produce over time. And then how much capacity  
16 accreditation it will get. And the tax credits that  
17 are available to it. So those are, I would say,  
18 kind of the main -- the main assumptions that go  
19 into the calculation of what the levelized costs of  
20 the project will be and whether it's cost-effective  
21 relative to other projects we could procure.

22 Q So what are your main points that this is  
23 cost-effective when these are the assumptions that  
24 are still unknown? That's what I'm not connecting  
25 as far as --

1 A Yeah. So, you know, when -- the market's changing  
2 very quickly right now. I think when we concluded  
3 the resource plan under the assumptions that we knew  
4 at the time, solar was the least cost resource that  
5 we could procure in the 20 -- mid-2020 time frame to  
6 meet capacity needs. There are other resources in  
7 the plan that we're adding. So as Mr. Shaw  
8 mentioned earlier, there is a repowering of a CT,  
9 there's a firm dispatchable RFP that's going to be  
10 going out pretty soon. So those are all resources  
11 that we're planning to utilize to meet that capacity  
12 need in the mid-2020s.

13 When we ran the RFP this project was the  
14 least cost project available to us. And so that is  
15 sort of the basis of understanding that we have a  
16 capacity need, we need to procure something to fill  
17 it. With the information that we knew at the time,  
18 this was the lowest cost resource we could achieve.  
19 And since that time tax policy has been passed that  
20 make it more cost-effective.

21 Q I just sit back and look at all this work done and  
22 you had reliable resources in Sherco, and I don't --  
23 I just can't wrap my head around why the early  
24 retirement when we had these firm dispatchable  
25 resources, and then early retirement, I just -- it

1 doesn't make sense to me. And who's paying for it  
2 and who ends up paying for it.

3 So thank you for taking the time again  
4 with the assumptions, I'm not saying where I'm at  
5 with that, but...

6 Proxy pricing. Can you explain just  
7 generically why you looked at that and what it  
8 means?

9 A Yeah. So I think when we initially proposed the  
10 project we recognized that it wasn't necessarily  
11 going to be consistent with North Dakota planning  
12 principles. And so we wanted to propose a way that  
13 North Dakota customers would still be paying their  
14 fair share of the capacity and energy that the  
15 project will produce, but, you know, allowing --  
16 sort of allowing for understanding that that may not  
17 be the preferred resource that North Dakota would  
18 select to meet that need.

19 And so, you know, I'm an economist by  
20 training so what we're doing in that proxy price  
21 analysis is looking at the opportunity costs. So if  
22 we didn't build this resource, what would be able to  
23 provide capacity? If we didn't build that resource,  
24 what would provide energy? And sort of breaking  
25 those attributes of the resource apart and into two

1 component parts. And so for the capacity, the  
2 purest capacity resource you can price largely as a  
3 CT, and so if you look at how much accredited  
4 capacity the Sherco Solar Project would provide, if  
5 you don't want to be in a situation where you're  
6 granting an ADP for the Sherco Solar Project you  
7 could say, well, I'm going to get this amount of  
8 capacity out of this project and so I will pay an  
9 amount commensurate with the value of that capacity,  
10 which we proposed at CONE.

11 And then for the energy, you can say,  
12 well, I don't necessarily want to say that this  
13 project is least cost from a North Dakota  
14 perspective, but it's going to provide some energy  
15 and so we would pay the amount of the value of the  
16 locational marginal price, the day-ahead price for  
17 the energy that that would produce. And so in that  
18 sense, you know, we're saying that, you know,  
19 we're -- we may -- we may not agree with this  
20 project, but we're still going to be paying the  
21 North Dakota share for the capacity it confers and  
22 the energy it confers, and that's sort of what the  
23 proxy price is set up to do.

24 Q Okay. Thank you for that explanation. So they  
25 would be -- North Dakota customers would be paying

1 the proxy price plus the cost of the retirement of  
2 Sherco?

3 A No, I don't think so. But I'm not entirely sure how  
4 the cost recovery for Sherco works.

5 Q With the North Dakota customers?

6 A Yes, that may be a better question for Mr. Shaw or  
7 someone else.

8 COMMISSIONER HAUGEN-HOFFART: Okay.

9 Thank you, I have no further questions.

10 JUDGE DAWSON: Commissioner Christmann.

11 EXAMINATION

12 BY COMMISSIONER CHRISTMANN:

13 Q Mr. Armstrong had a lot of really good questions  
14 there and I'm trying to clarify a couple things.

15 So you did your modeling, but because of  
16 your previous studies and decisions, you set the  
17 model so it could only choose solar for this  
18 interconnection, correct?

19 A That's correct.

20 Q And the point of your modeling is to help you  
21 clarify kind of a draft of your planning, right?

22 A That's correct.

23 Q So why do you do that? 'Cause I always presumed the  
24 model kind of takes a lot of information that's  
25 known that you fed into it and that's just a much

1 more efficient way of getting a long ways down the  
2 road in the planning cycle; is that a --

3 A Um-hmm.

4 Q -- pretty fair description?

5 A Yes. I think the way that I sometimes describe it  
6 is that generic resources that would interconnect  
7 through the MISO queue otherwise have  
8 interconnection costs associated with them that we  
9 put into the price assumptions. And so if you have  
10 resources that are available to you that don't have  
11 independent interconnection costs because they're  
12 reutilizing a different resources interconnection  
13 that's retiring, you wouldn't model those prices in  
14 the same way.

15 And so if you think about the  
16 interconnection realization as a bubble inside the  
17 broader Xcel Energy system that we're modeling, the  
18 model always has an option to choose the resource  
19 inside the bubble or elsewhere on the system. And  
20 so if the model is choosing a resource inside the  
21 bubble, that means that even though we constrained  
22 the type of resource that could be chosen inside  
23 that bubble, that's a more cost-effective resource  
24 than a resource that could be chosen somewhere else  
25 on the system. So it's co-optimizing those two

1 things at the same time.

2 Q Why wouldn't the model just be left alone and  
3 recognize the value of that interconnection  
4 availability?

5 A That's a good question. The model is kind of dumb,  
6 right? So if you don't constrain it in a particular  
7 way, so let's say we have 700 megawatts of  
8 interconnection open, if we don't constrain it and  
9 say in that time frame that we can use the  
10 interconnection, it has to be constrained in some  
11 way to say what resources can be realistically  
12 selected and how much of them can be built there, or  
13 else the model is going to see a cheap resource  
14 inside that bubble and just build as much of it as  
15 possible. So you have to put some realistic  
16 constraints around the timing that the  
17 interconnection has to be reutilized, the type of  
18 resource that can be built in that area, and the  
19 costs of those resources to let the model make a  
20 good decision about whether to choose a resource  
21 inside that bubble or choose a resource somewhere  
22 else in the system.

23 Q I can kind of see biasing it for timing, but why do  
24 you have to limit it on what type of resource?

25 A I think for the Sherco example, you know, if you

1 examine the land that's available and the  
2 infrastructure that's available around that site,  
3 there is not very good wind resources, for example,  
4 available right next to Sherco. And so I suppose we  
5 could have allowed the model to evaluate wind, but  
6 realistically there's no good wind resources around  
7 that area and so it just didn't make sense to  
8 include it.

9 Q So when the wind -- when the model wouldn't  
10 recognize that the wind resources aren't going to be  
11 productive, then it would choose solar over wind?

12 A Potentially, yeah. Potentially we could have done  
13 it that way. But --

14 Q If the model is really worth using, it should  
15 recognize that if the wind resources aren't good  
16 there?

17 A Yeah. If we set the inputs correctly, or in a way  
18 that reflected reality of what was available there,  
19 I think we would have gotten to the same outcome.  
20 We would have seen that solar is realistically the  
21 only resource that could be developed in that time  
22 frame with the infrastructure available to us in  
23 that area. So you can say we took a shortcut.

24 Q When you say the resources that are available, I'm  
25 thinking on the line of wind right now. Like, are

1           there too many trees there that it's not going to  
2           blow, is that just not a wind-rich area?

3       A     Right, it's not a wind-rich area relative to other  
4           places on our system.

5       Q     So the development of a wind farm there would have a  
6           very low production wind farm compared to one  
7           elsewhere --

8       A     Likely that's true.

9       Q     So doesn't the model notice that? Isn't that  
10          information that the model should have if it's  
11          really a very good model?

12      A     If we had entered a wind resource that represented  
13          the cost and capacity of wind being built at the  
14          Sherco site, I think likely it would have been too  
15          expensive to be selected. And so instead of  
16          developing all of those inputs and trying to  
17          estimate what a wind resource realistically would  
18          cost in that area, we sort of prescreened to say  
19          realistically the only resource that can be built in  
20          this time frame on that site in that area is solar  
21          and so we just made solar available to select.

22      Q     Okay. So now I can kind of see where the wind  
23          example that you took me down, at least in many  
24          cases, it's easier to see an area where wind is not  
25          going to work out. And so rather than build all

1           those details into the model we just tell the model  
2           not to consider that?

3       A     Um-hmm.

4       Q     So what is it about a combined-cycle gas plant that  
5           caused you to make it so that it couldn't consider  
6           that?

7       A     Yeah, currently there is not sufficient gas delivery  
8           infrastructure at the site to actually flow gas to  
9           the plant to power it.

10      Q     How far is it?

11      A     I believe it's -- I think Mr. Shaw mentioned that it  
12           was somewhere in the range of 100 miles. I'm not  
13           entirely sure, but it's quite a long distance and  
14           would be expensive.

15      Q     But Mr. Shaw prefaced that with saying he really  
16           didn't know.

17      A     I think we probably have it somewhere, I don't know  
18           it off the top of my head. But it's a long  
19           distance.

20      Q     And how much did you study what the costs of that  
21           would be?

22      A     So we did include costs in the plans that had the  
23           Sherco CC in it. We estimated, I believe it was  
24           something on the order -- and I can actually find it  
25           in here. It was, I think, approximately seven times

1 higher than the cost of gas CT delivery because of  
2 the magnitude of delivery infrastructure you would  
3 have to build to get the gas there. And so that was  
4 our initial assumption when we were getting closer  
5 to the time when we would actually have to start  
6 doing those investments. I think we recognized that  
7 the costs may be higher than we even had thought  
8 before and so that a decision was made to offer an  
9 alternative.

10 Q And was all this consideration purely internal or  
11 was it publicized in some way that you would be able  
12 to gain the knowledge of others in the area or along  
13 the way that might be interested in gas service that  
14 would have lessened the cost, or did you just  
15 figure, no, we need X number of miles of pipeline  
16 and it was going to cost this much and just assume  
17 that no one else would participate in that?

18 A That's a good question. I'm not actually sure. I  
19 think we would have to follow up on that.

20 Q I'd like to know what level of information gathering  
21 you did because it's been our observation here  
22 from -- that there's a whole lot of people  
23 clambering for natural gas service, but individually  
24 it doesn't work, but sometimes in working together  
25 it does become workable.

1 COMMISSIONER CHRISTMANN: I have no other  
2 questions. Thanks.

3 JUDGE DAWSON: Commissioner Fedorchak.

4 COMMISSIONER FEDORCHAK: Thank you,  
5 Judge.

6 EXAMINATION

7 BY COMMISSIONER FEDORCHAK:

8 Q Good morning, Farah.

9 A Good morning.

10 Q It's still morning. I'm trying to decide where to  
11 start.

12 Let's talk a little bit about the  
13 existing Sherco facilities. In the company's  
14 evaluation of Sherco, how big a factor was or is  
15 economics in terms of that plant and your decision  
16 to keep it or retire it? How big of a consideration  
17 was economics in that?

18 A So the decision to retire Sherco 2 and 1 was made in  
19 a resource plan previous to when I started at the  
20 company. My understanding is that cost was a major  
21 factor in that decision. I think it would be costs  
22 under Minnesota planning principles so obviously  
23 would include some consideration of carbon costs.  
24 But cost is a major factor, a primary factor in how  
25 we determine our resource plans along with other

1 factors.

2 Q So part of that economic consideration, that MISO  
3 capacity market probably played part of a role in  
4 that?

5 A It does, yes.

6 Q Has the facility been running a lot in the last  
7 year? Or it's retired now, right?

8 A It's not retired yet. So it's scheduled to retire  
9 at the end of '23, the first unit. I don't know off  
10 the top of my head whether it's been running quite a  
11 bit. I would be speculating as to how much it's  
12 been running.

13 Q Okay. Could you guys let us know and file with us  
14 the --

15 MR. SIMPSON: The cap factor of Sherco 2?

16 COMMISSIONER FEDORCHAK: Um-hmm. This  
17 last year.

18 BY COMMISSIONER FEDORCHAK:

19 Q Has MISO said anything about your plans to retire?  
20 Have they asked you to not retire it, keep it on  
21 longer, anything relating to that unit?

22 A As far as I know, the retirement request is still  
23 pending. Their generator replacement filing is  
24 still pending with MISO. I'm not aware of us being  
25 asked to keep it open.

1 Q Okay. And when do you file that, is it relatively  
2 close to the time you're retiring it? I forget how  
3 long.

4 A It's one year before so we filed it at the end of  
5 '22, the generator replacement request.

6 Q And they're still evaluating?

7 A As far as I know.

8 Q Okay.

9 A We can follow up on that, too, though.

10 Q Are you aware if there is a market for capacity in  
11 MISO right now? Like, is it needed?

12 A My understanding is that the last planning resource  
13 auction cleared at relatively low prices because  
14 there was still a surplus overall.

15 Q Have you looked at -- is that part of -- in your new  
16 resource plan, who in your company looks at the  
17 long-term capacity needs in the market?

18 A So I think that's a combination of the commercial  
19 operations team, my team understanding what MISO is  
20 seeing long term. You know, we're planning to make  
21 sure that -- our goal is to make sure that we have  
22 sufficient capacity to cover our customers plus our  
23 planning reserve margin. And then we would, you  
24 know, us, in cooperation with understanding what  
25 MISO sees as the long-term market be taken into

1 consideration.

2 Q Have you seen then the long-term projections that  
3 show a significant gap in the amount of capacity  
4 versus accredited capacity versus installed?

5 A Yes, I have seen that from MISO before.

6 Q And does that -- does the company consider the  
7 ability it might have to make money on units that it  
8 could build that had excess capacity? Do you  
9 consider that in your economic calculation?

10 A So I'd say we don't build plants on a merchant  
11 basis. So when we --

12 Q That's not what I mean, though.

13 A Yeah, we're planning --

14 Q Like you've got excess so you want to build a 400  
15 megawatt CT now and you only need 200. You could  
16 sell the other -- could you sell the other 200, how  
17 much might you be able to calculate into your --  
18 into your costs for selling excess that might be  
19 available?

20 A We do examine an opportunity to sell capacity into  
21 the planning resource auction as well as bilateral,  
22 yeah.

23 Q Okay. And how does that get calculated into your  
24 models?

25 A The modeling does take that into account in some

1 respect. There's a surplus capacity credit number  
2 that I believe it's constrained to only credit up to  
3 500 excess megawatts, but that would be factored  
4 into the cost of our plans as well.

5 Q Okay. So then when you get back to the Sherco site,  
6 how big of a factor was the environmental  
7 intervenors in your company's decision to drop the  
8 combined-cycle at Sherco?

9 A So I would say that understanding intervenor  
10 opposition is a factor that we take into account  
11 when we are planning our system, but it's not the  
12 only factor. So we're also assessing internally  
13 what the cost, you know, costs of building the  
14 projects might be, how it contributes to our carbon  
15 goals overall, how much risk we would be asking  
16 customers to incur to build a plant like that. So  
17 it's one factor of many.

18 Q And in the most recent plan, 'cause the company  
19 really had to -- I mean, I remember meeting with  
20 officials from the company after the plans changed  
21 and it was significant in terms of the  
22 reconnoitering of your system you had to do to  
23 replace Sherco with solar.

24 A Um-hmm.

25 Q Could you estimate the cost differential in terms of

1 the first plan versus what you're now referring to  
2 as the preferred plan? Where you had to redo your  
3 block start plans, you had to come up with CTs all  
4 outside of North Dakota throughout your system,  
5 replacing Sherco with all solar, like what is the  
6 cost differential in that?

7 A So we did evaluate the sort of original, the  
8 supplement plan, or the plan that still had the  
9 Sherco CC in it, alongside the alternate plan. On a  
10 Minnesota planning basis it was more cost-effective  
11 to go with the alternate plan and on a North Dakota  
12 planning basis they were pretty close.

13 Q Even after you took out the costs of carbon it was  
14 still close?

15 A Yes.

16 Q Competitive?

17 A Yes.

18 Q Okay. When you're calculating the cost of capacity,  
19 how is the -- how do you do that on a per megawatt  
20 basis? Does it include the capacity factor?  
21 Obviously, it must.

22 A The cost of new resources?

23 Q Yeah, like when you're comparing like the costs of  
24 the capacity on a megawatt-hour of solar versus a  
25 CT.

1 A Yes. So the model is a little bit more complex than  
2 just comparing them directly because the levelized  
3 cost of energy from a CT would be substantially  
4 higher than solar and that's really because they  
5 don't run as much. So on a levelized basis, you  
6 wouldn't want to compare those two directly on a  
7 levelized basis because they sort of have got  
8 different purposes to some extent. The model is  
9 doing a co-optimization for any given need in a  
10 given year, what is the most cost-effective  
11 opportunity to meet that need. And so that's being  
12 handled in the modeling.

13 Q I'm not being very clear, I think. What I'm trying  
14 to understand is there's one way to -- I think  
15 comparing resources on an energy basis is one thing,  
16 but when you're talking about capacity, how does  
17 capacity factor, the capacity factor get included  
18 into the cost calculation?

19 A So the capacity factor, like how much energy it  
20 produces during the year is really -- it's really  
21 more of an energy consideration.

22 Q Okay. But I don't mean it like that. In order to  
23 get 100 megawatts of capacity from a CT, or say you  
24 need 100 megawatts of capacity, you might need 110  
25 megawatts of a CT and you might need 300 megawatts

1 of a solar, that's 400 megawatts. So per megawatt,  
2 how do you calculate the capacity then? You know  
3 what I mean?

4 A Yeah.

5 Q If you're having to build so much more nameplate --

6 A From that perspective, certainly a CT, from a pure  
7 capacity perspective, is going to provide higher  
8 accreditation on a megawatt-per-megawatt basis than  
9 solar.

10 Q Um-hmm.

11 A When we're doing resource planning, it is  
12 co-optimizing meeting that capacity need with  
13 valuing the energy that comes out of a project and  
14 so it's not quite so simple as just looking at them  
15 next to each other and comparing. And so that's why  
16 we use that modeling framework to evaluate what our  
17 best options are.

18 Q So then when you're in a situation like this where  
19 you only need it for capacity, how do we evaluate  
20 it? Why does the energy come into it? If we're  
21 only --

22 A Yeah.

23 Q -- needing it for capacity, why are we -- why does  
24 the energy component that favors the intermittent  
25 resource, why does that come into play?

1 A I think -- so I think I understand the question. I  
2 think the difference is that we're evaluating costs,  
3 but there's also value to the energy that is output  
4 from the resource, whether it's a CT or a solar  
5 project or any other type of project. And so when  
6 we're doing resource planning analysis we're looking  
7 at the costs, but it's also looking at the value to  
8 customers of the energy that that resource would  
9 produce. So they're both relevant to consider even  
10 if the primary issue is that we need capacity added  
11 to the system.

12 Q Um-hmm. And is the idea that this would be  
13 supplanting higher cost resources?

14 A In part, yes.

15 Q And at what point have you maxed out on that  
16 ability, though? I mean, it feels like we've done  
17 that a lot, and at some point -- how do we know  
18 we've reached the return where we've supplanted all  
19 that can be supplanted at any given moment and now  
20 we're just over building?

21 A Um-hmm. So I think the way that we -- we can  
22 evaluate that in a couple different ways. One way  
23 is that most of the resources so far that we've  
24 added to the system have been wind, which have a  
25 fundamentally different profile than solar. Solar

1 generates energy much closer to the peak demand of  
2 the day and so it's a different -- it's similarly  
3 maybe supplanting, but it's at a different time.

4 Q Sure.

5 A And then I think, you know, part of the resource  
6 planning analysis is looking at, you know, how much  
7 are we assuming we can sell into the market and at  
8 what price at a given time. We do sensitivities on  
9 that analysis, we refresh the assumptions when we do  
10 new resource plans so we are continually evaluating  
11 that to try to ensure that we're not sort of over  
12 estimating the value that those resources will be  
13 able to provide. But, you know, there's always risk  
14 of that.

15 Q All right. Did you guys look at -- did you evaluate  
16 adding batteries to this project and how did that --  
17 how would that affect the cost and the capacity?

18 A Yeah. We have not yet evaluated adding batteries to  
19 the site. It would increase the accreditation of  
20 the resources behind the interconnection if we  
21 included batteries because batteries get higher  
22 accreditation. It would also obviously increase the  
23 costs.

24 Q Is there tax incentives for batteries?

25 A There are. Yeah, the batteries can get the

1 Investment Tax Credit at I believe 30 percent  
2 depending on the type of labor that you use.

3 Q Um-hmm. Okay. So you talked a little -- you were  
4 kind of getting towards this with Commissioner  
5 Christmann, but the capacity accreditation that this  
6 facility ultimately gets will definitely -- one  
7 thing we know for sure MISO is doing is accrediting  
8 based on performance?

9 A Um-hmm.

10 Q So tell me about this site as a solar -- you said  
11 it's not very good for wind, how is it generally for  
12 solar?

13 A Yeah, I would say in terms of relative to other  
14 places on our system, I think it's probably  
15 moderate. The capacity factor is trade secret, but  
16 I believe it is in the testimony so it's the  
17 project -- for this project it's slightly higher  
18 than our generic assumptions for solar so we're  
19 getting a little bit more out of it than we might  
20 assume in the modeling for a generic solar resource.  
21 So --

22 Q So when you say it's moderate, is there other places  
23 in your system that are better?

24 A Yeah. Yes. So the further south and west you go,  
25 the higher the capacity factors could be generally.

1 Q Okay. You've talked a lot -- you've mentioned a lot  
2 that the time frame is an important thing here and  
3 that's hard for me to understand, too.

4 When did the time frame become kind of  
5 the main factor and what caused that? 'Cause it  
6 seems like when you first started out there was more  
7 than enough time to consider just about any  
8 resource. What caused this time crunch?

9 A So there are two primary factors. I would say one  
10 is the timing of the resource need, which comes up  
11 in the mid-2020s. The other factor is that when  
12 Sherco Unit 2 retires, we have a three-year window  
13 in which we can reutilize the capacity  
14 interconnection at that site. And so if we're going  
15 to reutilize the interconnection, the resource will  
16 have to be placed into service by the end of '26.  
17 And so that also factors into the time constraint.

18 Q So, hmm, I'm learning something new. If there's  
19 only three years, what you're saying is so you  
20 retire and three years later you have to have your  
21 new facility up and running, are you saying that it  
22 would be pretty impossible for you to do anything  
23 but solar?

24 A At this point I think it would be very challenging.

25 Q Okay. But you said at this point, which confuses

1 me. Like say you're all -- would it be possible if  
2 you had been doing the planning for a CT to stop  
3 operation, decommission and build and have online  
4 and ready to run within three years a new gas  
5 facility? A gas generator?

6 A As we sit today, I think that would be very  
7 challenging to do because --

8 Q Not as we sit today, I'm just talking like if you  
9 had planned for that and you were ready to go, could  
10 you do it? I'm just wondering if MISO needs to  
11 change their window and it should be four years or  
12 five years or something to -- I mean, because if the  
13 window only allows one type of resource, then  
14 that's -- that's pretty limiting.

15 A Yeah. So I think when we were proposing to build  
16 the Sherco CC, with that amount of lead time we felt  
17 there was time to get that project online if the gas  
18 delivery could be built in a reasonable time frame  
19 and cost. I think that was the main risk factor.

20 Q You could do that separate from the three-year  
21 window, though, you could be working on the pipeline  
22 and still running the facility?

23 A If we were going to reutilize the interconnection  
24 for the other two units to build the CC, yes, we  
25 could do that.

1 Q Okay. So three years is enough time to shut down  
2 the unit, build another CT?

3 A Yes. If we could get the gas infrastructure there.

4 Q So the narrowing of options became that you --  
5 Minnesota said that we don't want that gas unit, you  
6 change plans, and now it would be too late to get  
7 that in place to start the facility?

8 A I think that's -- yes, I think that's correct.

9 Q Okay. All right. Okay. And my last question then  
10 is kind of about this tax policy.

11 Would it be prudent for North Dakota to  
12 allow like the tax policy driver direct the  
13 development of the system? I mean, it feels like  
14 the tax policy is kind of directing the development  
15 of the system in a way that strongly favors the  
16 nondispatchable, nonfirm resources. As a resource  
17 planner do you think that's prudent?

18 A Well, I think it's one factor we consider in a broad  
19 range of factors. So, in this case, the model and  
20 the analysis we were conducting has consistently,  
21 under Minnesota planning principles, selected solar  
22 in the mid-2020s. With the tax policy now that is  
23 also consistent under the North Dakota planning  
24 principles. So it does reduce the costs of those  
25 resources. I think it's definitely a factor that is

1 valid to consider. It's not the only factor that's  
2 valid to consider. Obviously, we want to make sure  
3 that our system is reliable. We're doing 8760  
4 modeling to ensure that we have enough energy to  
5 serve customers at all hours of the day throughout  
6 the year, but it is one relevant factor to consider.

7 Q Um-hmm. And then my last question, I think I asked  
8 Mr. Shaw this, too, but once you -- this -- the  
9 company is saying that this facility is -- is a low  
10 cost facility and a prudent decision for -- even for  
11 North Dakota under our planning parameters. But as  
12 I understand it, this project hasn't been modeled  
13 under the seasonal construct and that modeling that  
14 has been done that shows that it is prudent is based  
15 on your company's capacity factor starting at 15 and  
16 going down 2 percent -- or accreditation, I'm sorry.

17 A Um-hmm.

18 Q Is that true?

19 A Yes.

20 Q And that's -- we know those are subject to change?

21 A Um-hmm.

22 Q So then the prudence would be subject to change,  
23 too?

24 A I think part of the reason we proposed the proxy  
25 price in the manner that we did is because adjusting

1 the capacity proxy for the amount of accreditation  
2 the project ultimately will get ameliorates that  
3 issue.

4 Q Okay. Then I lied 'cause you mentioned the proxy  
5 pricing.

6 Mr. Heidell proposes a number of  
7 qualifications that we should use if we were to  
8 approve a proxy. Do you agree with those? They're  
9 on page 6 of his rebuttal. So that's his May 2023  
10 rebuttal.

11 A Um-hmm.

12 Q Okay.

13 A So I -- I don't agree with all of them. And some of  
14 these were discussed in the surrebuttal testimony,  
15 but I think in particular we don't necessarily agree  
16 that a brownfield CTU is the appropriate proxy  
17 resource. We don't agree that it should be adjusted  
18 for the net CONE calculation, which I think is  
19 reflected in the second bullet point.

20 Q What about the adjust the capacity value to reflect  
21 the differential between spring, fall, and winter  
22 capacity value at Sherco?

23 A Yeah, I -- we're in agreement with that. And  
24 there's an example that we provided in my  
25 surrebuttal testimony of how we envision it would be

1 calculated. It's on page 21.

2 Q Okay.

3 A That shows seasonally how the capacity proxy would  
4 be calculated, which does take into account the  
5 particular seasons accreditation factor that Sherco  
6 Solar would get.

7 Q Oh, okay. Got that formula.

8 Okay. And then the next one, clarify  
9 that the North Dakota customers only pay for actual  
10 seasonal accredited?

11 A Um-hmm.

12 Q That's the same?

13 A Yes.

14 Q Yep. What about the next one, the demand factors,  
15 demand cost allocation factors, that's obvious?

16 A Yes.

17 Q Is there any renewable integration costs assigned to  
18 the project by MISO? Will there be?

19 A I don't think that would really be a clear number  
20 that MISO would tell us. It's an assumption we  
21 include in our modeling for the resource plans, but  
22 I don't know that MISO actually publishes an  
23 integration cost number.

24 COMMISSIONER FEDORCHAK: Okay. All  
25 right. That's helpful. Thank you, Farah, I

1 appreciate you're honesty.

2 JUDGE DAWSON: Mr. Simpser.

3 MR. SIMPSEY: Yes. Mr. Armstrong and  
4 Mr. Schuh, we intend to introduce our response to  
5 data request 3-1, I think that gets to everybody's  
6 questions about that.

7 UNIDENTIFIED: (Inaudible - no mic).

8 MR. SIMPSEY: Okay. Well, I'll use it to  
9 refresh the witness's recollection.

10 THE WITNESS: Thank you.

11 REDIRECT EXAMINATION

12 BY MR. SIMPSEY:

13 Q All right. There's been a lot of discussion,  
14 Ms. Mandich, with respect to how long is the pipe  
15 for the Sherco CC. I believe that's a trade  
16 secreted number in that response, but we do have  
17 that. In addition to that response there is a  
18 non-trade secreted number that relates to the  
19 assumed cost of the gas infrastructure on a capacity  
20 basis; is that correct?

21 A That's correct.

22 Q And based on that response is that number trade  
23 secret?

24 A No, it is not.

25 Q And what does that number represent?

1 A So the number represents the cost of the pipeline on  
2 a kilowatt-year basis.

3 Q And so help the commission understand what that  
4 means.

5 A So the costs of the pipeline includes the cost to  
6 build the pipeline from, you know, wherever it would  
7 sort of terminate on the broader gas system to the  
8 Sherco site. And it's calculated on an ongoing  
9 basis so it's something that we would pay to the gas  
10 pipeline owner over the life of the project.

11 Q And so that's a net additional charge that any gas  
12 unit at the Sherco site would need to pay?

13 A Any CC unit, yes.

14 Q Any CC unit because it's firm gas?

15 A Yes.

16 Q Okay. And what is that number?

17 A \$49.09 a kilowatt year.

18 Q Okay. So if you had a resource that was, just call  
19 it \$10 a kilowatt-year, then the total -- and it  
20 needed that infrastructure, then the total number  
21 would be 69 -- \$59 per kilowatt-year, right?

22 A Yes, that's correct.

23 Q It's just a simple addition?

24 A Yes.

25 Q Okay. But a CT unit would use a smaller pipeline,

1 is that really why it would be somewhat cheaper?

2 A Generally it probably would use a smaller pipeline,  
3 I believe. It would also not necessarily have firm  
4 delivery.

5 Q And so firm delivery of gas for CC is included in  
6 there as well?

7 A Yes.

8 Q Okay. But some amount -- some amount greater than  
9 zero and potentially up to 50 bucks would need to be  
10 added to any gas unit analysis that you would do at  
11 the Sherco site?

12 A That's correct.

13 Q And based on the wind discussion that you had with  
14 Commissioner Christmann where it's essentially you  
15 use your own judgment to say this is just not  
16 feasible?

17 A Um-hmm.

18 Q Do those gas infrastructure costs in your opinion  
19 and in your judgment, you know, help your judgment  
20 say it's probably not going to be reasonable to  
21 build a gas unit at that site with respect to the  
22 cost effectiveness of solar?

23 A I would agree with that. I think there are multiple  
24 factors that go into that, but cost is certainly one  
25 of them.

1 Q And so while there was concern by intervenors with  
2 respect to gas emissions and the proliferation of  
3 gas units on your system, there is also a  
4 fundamental economic basis where gas could be  
5 essentially appropriately constrained out of the  
6 model for the Sherco site?

7 A Yes. That is the goal of the alternate plan, was to  
8 show an alternative case that did not include gas at  
9 the site.

10 Q And even though you constrain that particular  
11 site -- well, let me ask the question differently.

12 By constraining that particular site do  
13 you provide a cost advantage to whatever resource  
14 could use that site?

15 A Well, it opens the interconnection availability.

16 Q So you eliminate the cost of interconnecting --

17 A Yes.

18 Q -- at that site? And to find a spot on the system  
19 you would have additional interconnection costs?

20 A That's correct.

21 Q That is included in that analysis?

22 A Yeah.

23 Q So at the end of the day as the model looked for  
24 any -- a solution anywhere on the system, it  
25 determined that the solar without interconnection

1 costs is the optimum resource that the model would  
2 tell you to select?

3 A That's correct.

4 Q And then do you do anything once you get that model  
5 output or do you -- or is the model the true source  
6 of truth?

7 A Well, we obviously evaluate whether the model is  
8 giving us realistic expectations of how much  
9 capacity can be added to the system in a given year.  
10 And ensure that, you know, we think that we can  
11 procure that magnitude of capacity in the time frame  
12 that we're evaluating.

13 Q And so in your judgment as the director of resource  
14 planning, the outcome in both the Minnesota and  
15 North Dakota modeling that selected a solar resource  
16 at the Sherco site as the least cost resource,  
17 frankly, that's a reasonable outcome?

18 A I believe it is a reasonable outcome.

19 MR. SIMPSEY: Okay. Your Honor, I'd like  
20 to recall Mr. Shaw to address some of the ratemaking  
21 issues so I'll just throw that out there.

22 BY MR. SIMPSEY:

23 Q But let's talk a little bit more about the resource  
24 planning model. 'Cause I think that there's a lot  
25 of discussion about that here.

1                   Would it be reasonable to say that the  
2                   resource planning model really selects resources  
3                   relative to each other?

4     A     Yes.

5     Q     And so there is some judgment in the inputs about  
6            what order of magnitude price differential there is  
7            between resources, correct?

8     A     That's correct.

9     Q     And also the operating characteristics of the  
10           resources?

11    A     That's correct.

12    Q     And O&M costs?

13    A     Um-hmm.

14    Q     And capital costs?

15    A     Yes.

16    Q     Okay. If we were living in a world where there was  
17            no renewable intermittent resources, or essentially  
18            1952, back then a resource planner would be happy to  
19            make decisions about do you choose a peaking  
20            resource like a CT or an intermediate resource like  
21            a CC, correct?

22    A     That's correct.

23    Q     And the model would help you make that ultimate  
24            judgment, correct?

25    A     Yes.

1 Q And the tradeoffs there are about capital costs and  
2 cost of energy, correct?

3 A Yes, capital and operating costs, yep.

4 Q Versus cost of energy. And there would be times  
5 when the model would help you select a  
6 combined-cycle and times where it would help you  
7 select a peaking resource, correct?

8 A That's correct.

9 Q And modeling has improved very much since 1952, I'm  
10 assuming?

11 A Substantially.

12 Q And so you can go ahead and have the model help you  
13 assess that entire bundle of items as it makes  
14 choices relative to each other?

15 A Yes, I'd agree with that. The model has a menu of  
16 options it can choose from and it is co-optimizing  
17 those things to choose the least cost plan given the  
18 parameters it's set up to take.

19 Q So even though a gas CT and a solar resource are  
20 apples and oranges, by utilizing the model you can  
21 actually weigh the benefits of one against the  
22 other?

23 A Yes, that's correct.

24 Q And so based on all of those analyses, the company's  
25 determined that when you take all the little parts

1 and pieces and that the Sherco Solar outcome is the  
2 prudent outcome?

3 A Yes.

4 Q And the company didn't have that point of view when  
5 it first filed, correct?

6 A That's correct. Yep.

7 Q And that was based strictly on cost?

8 A Yes.

9 Q Okay. When you're making that overall analysis,  
10 does the model account for the lumpiness of  
11 generation?

12 A It does in some respect if we constrain it. But  
13 otherwise, if left unconstrained, it won't  
14 necessarily. So we have to use some judgment in  
15 assessing how much capacity can come on in a given  
16 year.

17 Q Okay. So let's talk about the proxy price for a  
18 minute. Outside of what we're proposing, help me  
19 understand the concept behind the proxy price, or  
20 said differently, would it be fair to say that the  
21 proxy price would provide to North Dakota ratepayers  
22 the same economic outcome as what -- as a CT?

23 A I think it would -- from a capacity perspective,  
24 yes. It would be equivalent to, you know, saying  
25 we're going to procure credits associated with a

1 particular number of, you know, megawatts of a CT.

2 Q So if the model were to have selected a CT, and in  
3 your judgment that would have been reasonable, and  
4 it selected solar on a different set of assumptions,  
5 in your judgment it would have been reasonable, by  
6 using that proxy you're able to equalize both  
7 analyses?

8 A Yeah. I would agree with that.

9 Q And on an energy basis, you know, energy is going to  
10 be consumed and so the proxy is just market pricing,  
11 correct?

12 A Yes.

13 Q And so it has nothing to do with the dispatchability  
14 of the resource and/or the actual capacity factor of  
15 the resource?

16 A No, it would be evaluated at the day-ahead LMP at  
17 the NODE, that whatever the solar is going to put  
18 into the system, that's how much it would be valued  
19 at.

20 Q So in a lot of ways the question about the capacity  
21 choice is the megawatt, or the dollars per  
22 megawatt-year, what is the appropriate dollars per  
23 megawatt-year?

24 A Yeah.

25 MR. SIMPSON: I have nothing further.

1 JUDGE DAWSON: Mr. Armstrong.

2 MR. ARMSTRONG: Before I begin, just for  
3 clarification, I don't have any objection to the  
4 data request being entered, I just want to look at a  
5 break. So it should be Exhibit 17 then, correct?

6 JUDGE DAWSON: Right. Correct.

7 MR. ARMSTRONG: Because I have some  
8 questions for her related to it.

9 JUDGE DAWSON: No problem.

10 MR. SIMPSON: Then we'll offer it in.

11 JUDGE DAWSON: I don't have a copy, but  
12 I'm more than happy to mark it as Exhibit 17 and  
13 admit it.

14 COMMISSIONER FEDORCHAK: Your mic isn't  
15 on, Judge.

16 JUDGE DAWSON: I will mark it as  
17 Exhibit 17 and admit it.

18 (Exhibit 17 marked, offered and received.)

19 RE-CROSS-EXAMINATION

20 BY MR. ARMSTRONG:

21 Q Ms. Mandich, I just have a few questions bouncing  
22 around to a couple of scenarios and I'm going to get  
23 to that in a second.

24 But you talked a lot about the model and  
25 so you said the model calculates a surplus capacity

1 credit. Does the model account for the winter value  
2 of the CT capacity in selecting Sherco Solar?

3 A No. When we conducted the modeling, there was only  
4 an annual construct and so the model accounts for  
5 that on an annual basis, which was primarily in  
6 summer. I will say the modeling that we use is 8760  
7 hourly modeling and so we are accounting for  
8 customers' energy needs in all hours of the year,  
9 but from a capacity perspective it's primarily  
10 evaluating summer.

11 Q And does the model use MISO CONE at all?

12 A We don't use MISO CONE in the modeling, no.

13 Q So your own modeling doesn't use MISO CONE, but  
14 that's what you want the proxy pricing to be?

15 A That's correct.

16 Q And you want the proxy pricing to be the MISO CONE  
17 value of a greenfield CT?

18 A That's correct.

19 Q And in your -- I think your surrebuttal testimony  
20 you said we are already developing the Wheaton  
21 brownfield site?

22 A That's correct.

23 Q But you also have the Inver Hills -- using  
24 Exhibit 17 you have Inver Hills and Blue Lake are  
25 possible brownfield CT locations; are they not?

1 A In general, that's correct.

2 Q Those two sites have gas lines at them, correct?

3 A They do.

4 Q How do you define the difference between brownfield  
5 and greenfield?

6 A So primarily the difference in the costs are related  
7 to the interconnection right at the site.

8 Q I apologize. I don't think you're answering my  
9 question. I mean, I just -- is the definition  
10 between brownfield and greenfield related to the  
11 costs?

12 A In part, yes. Based on the condition of the site.

13 Q Maybe you are answering my question and I will learn  
14 something.

15 A Yeah. The primary difference is that a brownfield  
16 site would already have interconnection availability  
17 and the gas infrastructure, although there are  
18 ongoing demand charges for gas so we would still be  
19 paying for gas infrastructure even though it was a  
20 brownfield site.

21 Q Okay. So having gas infrastructure, does that mean  
22 having a gas line to the site?

23 A Yes.

24 Q Or I suppose some reasonably close distance?

25 A Yes.

1 Q And then interconnection to --

2 A The MISO market.

3 Q Yeah, okay. So that's how you define the -- is that  
4 your definition or is that like a standard  
5 definition?

6 A That's how the costs are different that we model in  
7 general brownfield is, you know, a site that's  
8 already been disturbed or, you know, an industrial  
9 site, essentially.

10 MR. ARMSTRONG: That's all the questions  
11 I have. Thank you.

12 JUDGE DAWSON: Mr. Schuh.

13 MR. SCHUH: Nothing, Your Honor.

14 JUDGE DAWSON: Commissioner  
15 Haugen-Hoffart.

16 COMMISSIONER HAUGEN-HOFFART: Yes, I have  
17 a couple questions.

18 Further EXAMINATION

19 BY COMMISSIONER HAUGEN-HOFFART:

20 Q Farah, when you were talking about capacity factor,  
21 you -- and I think there was a question that was  
22 asked and you talked about value to the customer?

23 A Um-hmm.

24 Q Can you explain that to me just so I understand what  
25 you define as value to the customer?

1 A Sure. Yes. The energy that's produced by the  
2 resource will be sold into the MISO market and will  
3 presumably attain some revenue that would be a  
4 benefit to customers.

5 Q Okay. Thank you.

6 Yesterday I came across an article in  
7 Utility Dive, it's called Dive Brief, and the title  
8 says Minnesota PUC Approves Xcel's Plan to Install a  
9 10 Megawatt/1,000 Megawatt Per Hour Form Energy  
10 Battery System. This is dated -- it was published  
11 July 7th.

12 A Um-hmm.

13 Q And it goes on to state that Minnesota regulators on  
14 Thursday approved what I just said for Xcel  
15 Minnesota utility NSP. And it goes on to state that  
16 it's going to be built near NSP's 1,879 megawatt  
17 coal-fired Sherco power plant in Becker, Minnesota.  
18 And it goes on to talk about the retirements of the  
19 Sherco facilities and the dates. And it goes on to  
20 state NSP expects construction on this pilot project  
21 to start in the third quarter next year for the  
22 battery system to be operating by the end of 2025,  
23 according to Dobson. Per this article, is this the  
24 intention of NSP, to build this battery project on  
25 the -- near the Sherco plant?

1 A I think it is near the Sherco plant, yeah, that's  
2 correct.

3 Q And it will -- can you explain a little bit more  
4 about this project for us in relation to the Sherco  
5 plant?

6 A So, yeah. I've not been super involved in the  
7 development of that project. My understanding is  
8 that it's going to be near the Sherco site, it's a  
9 pilot project to kind of evaluate how the technology  
10 works. So, yeah, I think that's essentially the  
11 extent of what I know about it, to be honest.

12 Q Okay. So, I mean, the whole intent -- and I  
13 understand it's a pilot project, but battery  
14 storage, so, like, to be utilized, like, during  
15 winter or some of that? I mean, to really increase  
16 the capacity of the Sherco plant, the solar plant?

17 A I think it's relatively small, but, yeah, it could  
18 be used to store energy over longer durations and  
19 discharge over longer durations.

20 Q Okay.

21 MR. SIMPSON: (No mic) As an offer, I  
22 would lay out an exhibit and some discussion about  
23 the battery project and how it's intended to be used  
24 so, Commissioner, you can understand that.

25 COMMISSIONER HAUGEN-HOFFART: Okay.

1 MR. SIMPSON: If that would be helpful.

2 COMMISSIONER HAUGEN-HOFFART: Yeah, I  
3 mean, yeah. It's kind of appropriate timing to read  
4 this.

5 So I have no further questions. Thank  
6 you.

7 JUDGE DAWSON: Commissioner Christmann.

8 FURTHER EXAMINATION

9 BY COMMISSIONER CHRISTMANN:

10 Q Earlier you indicated that at this point it would be  
11 kind of too late to develop anything else by the  
12 2026 Sherco 2 retirement deadline?

13 A Yes.

14 Q Is that just an arbitrary date that the company set  
15 for that retirement? Could you change that to 2027  
16 or 2028? For example, your coal provider cut off  
17 that contract and so you had no choice but to retire  
18 at that date, or how -- tell me about that date.

19 A Yeah. So the planned retirement date for Sherco 2  
20 has been scheduled to be the end of '23 for quite  
21 some time, since the 2015 resource plan was approved  
22 in Minnesota. I believe the order was issued in  
23 2017. And so because it's -- that's about five  
24 months from now. We're pretty far down the road on  
25 planning for that retirement. We've submitted the

1 request for replacement capacity to MISO already.

2 Q And I apologize, I think I did say Sherco 2, 'cause  
3 they're kind of being --

4 A Out of order.

5 Q -- retired out of order. I meant Sherco 1 that is  
6 in 2026, when you were talking earlier that because  
7 of that 2026 deadline it was too late to do anything  
8 else.

9 A Okay. So, yeah, Sherco 1 is on a path to retire by  
10 the end of '26. That is fully the intention of the  
11 company to retire it in that time frame. And then  
12 from that time there would be three years to  
13 reutilize the interconnection for that project.

14 Q Okay.

15 A Yeah.

16 Q So it's fully the company's intention, but just  
17 because the company wants to? Has that been  
18 mandated by Minnesota, has your co-contract been cut  
19 off? Why is that such a hard, fast deadline?

20 A It's been approved by the Minnesota commission in an  
21 IRP order. So we would have to try to change the  
22 order if we were going to extend the life of the  
23 project, I believe. Mr. Shaw might be able to speak  
24 to the regulatory process that that would require a  
25 bit more.

1 Q Our planning process called for firm dispatchable  
2 energy and you don't seem to have trouble to change  
3 that.

4 A I think we are planning for firm dispatchable  
5 capacity to be added in that time frame as well.

6 Q And I wanted to go back to the thing about the  
7 pipeline costs. So this whole potential retirement  
8 of Sherco, I think we heard earlier was the  
9 discussion of that started around the 2010 time  
10 frame already; is that correct?

11 A I believe that's right.

12 Q So it's been going on for well over a decade. And I  
13 know you're on the electrical side, but are you  
14 familiar with, in the oil and gas pipeline business,  
15 the term open season?

16 A I'm not.

17 Q So an open season is generally when you put out  
18 plans to potentially construct a pipeline from  
19 roughly point A to point B and see who all jumps on  
20 board to see if this is something that is  
21 reasonable. And did the company ever either itself  
22 as its own company or with some other pipeline  
23 company in these more than 10 years since you've  
24 been contemplating this, do an open season to see  
25 who all else might be willing to sign on to make it

1 a more affordable project?

2 A I don't know that information, I think we would have  
3 to follow up on that.

4 Q But you're not aware of doing anything --

5 A I'm not aware of it, no.

6 Q And if it wasn't done, that actual cost of providing  
7 gas, once that process would be done could actually  
8 be somewhere between -- I guess between zero and 100  
9 percent of the actual costs depending on how many  
10 others wanted to be part of that project?

11 A Yeah. I'm unfortunately not aware of how our gas  
12 planning team pursues those questions.

13 Q On the electrical side when you do transmission  
14 planning, do you only plan transmission lines based  
15 on what Xcel specifically needs to get from point A  
16 to point B or is it part of the whole energy system  
17 process and calculating in many variables such as  
18 who else might use that transmission line and things  
19 like that?

20 A As a part of the MISO market, MISO is taking into  
21 account the needs of customers, not just in Xcel  
22 Energy's service area, certainly.

23 Q Okay. But when you think about the costs to get a  
24 pipeline there, you just looked at it as a sole use  
25 pipeline?

1 A Yeah, I would really need to defer to the gas  
2 planning team in follow up.

3 COMMISSIONER CHRISTMANN: No other  
4 questions. Thank you.

5 JUDGE DAWSON: Commissioner Fedorchak.

6 COMMISSIONER FEDORCHAK: Okay. Thank  
7 you, Judge.

8 FURTHER EXAMINATION

9 BY COMMISSIONER FEDORCHAK:

10 Q Farah, I'm sorry, I meant to ask you a couple  
11 questions that I asked Mr. Shaw and he deferred to  
12 you. One of them was what's the size of that  
13 Wheaton station and is there an option there to  
14 expand that for additional capacity?

15 A So I believe it's approximately 250 or around there  
16 megawatts. I don't know if the site is constrained,  
17 but we're constrained by the interconnection  
18 capability there. So if we wanted to increase the  
19 interconnection capability we would have to go  
20 through the queue for the incremental  
21 interconnection to expand that.

22 Q Okay. So you're maxed out at that --

23 A Yes.

24 Q -- spot? And then he and I talked a little bit  
25 about Mankato, but kind of the same thing. Can you

1 walk through what the options for future expansion  
2 at Mankato or restrictions might be there, and  
3 whatever -- also, what happened with Mankato? We  
4 were talking about this a little yesterday and at  
5 one point the company was going to buy it and I  
6 think maybe that didn't happen, but if you could  
7 refresh my memory on that.

8 A Yeah, so the company did purchase Mankato for a  
9 period of time as an unregulated asset and  
10 subsequently sold the Mankato plant to another  
11 owner. I don't know whether there is excess  
12 interconnection there to expand the plant beyond  
13 what it is, the size that it currently is. But we  
14 don't own the site so we wouldn't be in control of  
15 that.

16 Q Okay. And you have a PPA for how much there now?

17 A Two units. I believe one of them is 335 megawatts  
18 and the other one might be slightly larger than  
19 that.

20 Q Okay.

21 A Yeah.

22 Q Is it the full output of that facility?

23 A Yes.

24 Q You've got all of it?

25 A Yes.

1 Q Okay. All right. Your plans for this site it seems  
2 are pretty solidly set forward using the Sherco  
3 interconnection for solar. How does the future  
4 accreditation decisions that MISO makes play into  
5 your company's plans for the Sherco interconnection?

6 A So we're in the process of preparing for a new  
7 resource plan that's slated to be filed in February  
8 of '24. We'll be evaluating a range of  
9 interconnection -- or accreditation sort of  
10 scenarios depending on how finalized MISO's proposal  
11 is at that time to try to evaluate sort of the range  
12 of potential outcomes depending on what MISO  
13 ultimately decides and what FERC accepts.

14 So it's something we're going to evaluate  
15 in the next resource plan, but ultimately that  
16 resource plan is going to cover a planning period of  
17 2024, really the decisions we could make are really  
18 going to sort of start coming into effect in like  
19 '26 through 2040. And so for reutilizing the  
20 interconnection from this plant, that's really not  
21 going to be under consideration at that point  
22 because we'll already have had to select those  
23 resources to fill it.

24 Q So you're pretty much set at this plant?

25 A From my perspective, for Sherco 2, it would be very

1 challenging to change course at this point.

2 Q So kind of regardless of what their accreditation  
3 decision is, you're probably looking at solar at  
4 those facilities?

5 A To replace Sherco 2, yes.

6 Q All right. So you and Mr. Simpson had an  
7 interesting discussion about modeling. Is the  
8 modeling that you guys do similar across the  
9 industry? Are other utilities doing modeling the  
10 same, similarly?

11 A Yes, other utilities do resource planning modeling  
12 using hourly or chronological models certainly.

13 Q And so you seem to have a lot of faith in these  
14 models. How should I as a regulator be looking at,  
15 in weighing my faith in these models, given that  
16 we're repeatedly seeing concerns from NERC ranking  
17 the MISO footprint of which Xcel is a leader in as a  
18 high risk area?

19 A Um-hmm. I think for Xcel Energy, you know, we're  
20 planning to meet our own capacity needs surely to  
21 cover that and so that we're not sort of over  
22 relying on the broader MISO system for capacity.  
23 And so, you know, modeling --

24 Q Is it your modeling that tells you what to use?

25 A Yep. Highly reliant on the inputs that we include.

1 And so that's part of the reason we do a lot of  
2 sensitivity analysis, is to try to plan for the  
3 range of outcomes that could happen in the future.

4 Obviously in the last two years there has  
5 been a lot of change that we didn't necessarily  
6 anticipate in the previous resource plan. And so  
7 those things will have to be reevaluated. And I  
8 think that the primary question I try to think about  
9 is making sure that we're including a range that  
10 reasonably represents the range of potential future  
11 outcomes that we know at the time we file the plan,  
12 but things change in the interim period. So, yeah,  
13 I think that's why the plans are consistently  
14 reevaluated over time. But there are certain  
15 windows in which, you know, the decision period had  
16 essentially passed at some point and we have to sort  
17 of make decisions with the information we had at the  
18 time.

19 Q Does your company consider the warnings from NERC  
20 and MISO about the pace of retirements and the lack  
21 of replacement generation, accredited replacement  
22 generation to meet the capacity needs?

23 A Certainly part of the reason we plan on a fixed  
24 resource adequacy basis is to ensure that we're not  
25 over relying on other people to develop capacity for

1 us.

2 Q If other people don't, could your customers be  
3 affected?

4 A They could, yes.

5 Q And how do you protect against that?

6 A I think we can do as much as we can to plan for our  
7 own customers.

8 Q I will say I very much appreciate the company's  
9 commitment to that and to having your own resources  
10 versus relying on the market. I mean, you're just  
11 too big to rely on the market.

12 A Yeah, we believe that.

13 Q But, you know, MISO is seen over and over again, so  
14 we can kind of scoff at our North Dakota's suspicion  
15 of this over reliance of -- on intermittent  
16 resources, but this isn't just a, you know,  
17 farfetched notion that we have.

18 A Um-hmm.

19 Q We've seen over and over again the consequences of  
20 this. And we don't have the tolerance for it. And  
21 our customers don't want it and they don't want to  
22 pay for stuff that isn't going to deliver.

23 A Um-hmm.

24 Q And we can't approve it. So that's just our bottom  
25 line. Whether Xcel or others believe that or

1 respect it really is of no consequence to me at all.  
2 So the models are fine, but they fail and they have  
3 failed and we've seen it. So we can't be relying  
4 too heavily on these models, especially when it's  
5 been abundantly clear through the course of this  
6 conversation that you can twist these models to  
7 produce anything you want.

8 So I'm not overly comfortable this  
9 morning, having heard how the models are constrained  
10 and basically turned into, you know, you give them  
11 the parameters you want to get what you want them to  
12 spit out.

13 So, anyway, I do have a significant  
14 respect for your knowledge, though, and appreciate  
15 your patience with us and all the information you  
16 shared. So thanks for that.

17 THE WITNESS: Thank you.

18 JUDGE DAWSON: Mr. Simpser.

19 MR. SIMPSE: I have nothing further,  
20 Your Honor.

21 JUDGE DAWSON: Any further questions?

22 MR. ARMSTRONG: No, Your Honor.

23 JUDGE DAWSON: Seeing no further  
24 questions, you may step down.

25 (Witness excused.)

1 JUDGE DAWSON: Now you say you have one  
2 more witness, a recall?

3 MR. SIMPSEY: You know, I think we'll  
4 waive, we'll pass on that.

5 JUDGE DAWSON: Okay. And I'm trying to  
6 judge whether we should do lunch now, and I think  
7 it's probably a good idea so we'll take a lunch  
8 break.

9 How many witnesses do you have for this  
10 afternoon?

11 MR. ARMSTRONG: Just one.

12 JUDGE DAWSON: Just one. So is an hour  
13 appropriate?

14 With that, I'm going to go with an hour  
15 and we'll come back at 12:45.

16 (Lunch break.)

17 JUDGE DAWSON: -- on the record.

18 From our carryover from the morning  
19 session, Mr. Simpson is done, correct?

20 MR. SIMPSEY: Yes, we'll rest our direct  
21 case.

22 JUDGE DAWSON: Okay. With that,  
23 Mr. Armstrong, do you have a witness?

24 MR. ARMSTRONG: Advocacy Staff calls  
25 James Heidell.

1 JUDGE DAWSON: You were here for my  
2 previous admonitions as to perjury?

3 MR. HEIDELL: Yes, I was.

4 JUDGE DAWSON: So you understand what  
5 perjury is and the penalties for it?

6 MR. HEIDELL: Yes, I do.

7 JUDGE DAWSON: Understanding so, do you  
8 promise or swear that the testimony that you're  
9 about to give will be the truth, the whole truth,  
10 and nothing but the truth?

11 MR. HEIDELL: Yes.

12 JUDGE DAWSON: You may begin.

13 MR. ARMSTRONG: Thank you.

14 DIRECT EXAMINATION

15 BY MR. ARMSTRONG:

16 Q Are you the same James Heidell who prepared the  
17 prefiled testimony?

18 A Yes, I am.

19 Q And if I were to ask you those same questions today  
20 would your answers be the same?

21 A Yes, they would.

22 Q Do you have any --

23 UNIDENTIFIED: Can you get closer to your  
24 mic?

25 BY MR. ARMSTRONG:

1 Q Do you have any corrections or revisions?

2 A Yes. One minor correction in my direct testimony on  
3 page 16, line 11, it says dating back to 2006, it  
4 should be dating back to 2016.

5 Q Have you been present in the hearing room today and  
6 listened to the testimony of NSP witnesses?

7 A Yes, I have.

8 Q Has that testimony changed any of your opinions at  
9 all?

10 A No, it has not.

11 Q Mr. Heidell, are you recommending approval of the  
12 ADP application for Sherco Solar?

13 A No, I am not.

14 Q Can you please summarize why not?

15 A Yes. As discussed this morning, the company did not  
16 identify it as the least cost resource under North  
17 Dakota criteria. I also pointed out a couple points  
18 that there's -- the company is long on energy and so  
19 that excess energy that comes with the project is  
20 not being used to, you know, essentially, you know,  
21 set prices for their customers, but instead they're  
22 taking essentially a bet on the MISO market so that  
23 was a risk that wasn't really evaluated. That  
24 energy was actually more expensive than both the PA  
25 and company forecasts what MISO energy would be.

1 And then I also identified the risk of the capacity.

2 Q If the commission were to approve the ADP, are you  
3 proposing any conditions?

4 A Yes, I am. The condition is -- well, the primary  
5 condition is that the -- if the company has to get  
6 more capacity in the future as a result of having --  
7 getting less accredited capacity than what the  
8 company assumed in their application, that future  
9 capacity costs would be disallowed. In other words,  
10 that the North Dakota customers should not pay for  
11 that capacity twice. And also that the risk of the  
12 capacity assumption get transferred to the  
13 shareholders of Xcel, but not to the North Dakota  
14 customers. There were --

15 Q Go ahead.

16 A I was just saying there were, you know, a couple  
17 minor points about the tax credits, that the company  
18 be held to the tax credits in the costs that they  
19 assumed.

20 Q And those are laid out in your prefiled testimony?

21 A Yes, they are.

22 Q You've heard some discussion today about what's  
23 going on at MISO as far as accreditation for  
24 capacity and the process. Can you just briefly  
25 explain to us your understanding of what's happening

1 with the MISO process right now?

2 A Right. As talked this morning, you know, MISO has  
3 gone to the seasonal capacity construct. You know,  
4 MISO, even though Xcel is -- or NSP is currently  
5 summer peaking, MISO is winter peaking. I think  
6 there's -- that is probably one of the concerns of  
7 going to a seasonal capacity construct.

8 I think the other concern that MISO is  
9 very concerned about and was talked about this  
10 morning is that right now there's a relatively small  
11 amount of solar on the system, maybe a couple  
12 hundred megawatts. The queue has over 1.2  
13 gigawatts, you know, all that is not going to be  
14 built. There's a large amount of solar coming onto  
15 the system, you know, is expected to come onto the  
16 system as states like Minnesota, Wisconsin, pursue  
17 aggressive renewable energy policies and I think  
18 they're very concerned about system reliability.

19 Q Do you anticipate the accredited capacity for this  
20 project under MISO's new system to be more or less  
21 than that projected in NSP's application?

22 A I -- my feelings will be less.

23 Q During your review of this, did NSP place limits on  
24 its review that led to the selection of this  
25 project?

1 A Yes, they did. I think as a, you know, leave it to  
2 the company for all the details, but I think we know  
3 that as a result of the settlement on the original,  
4 on the 2020 resource plan, the 2021 plan, remove the  
5 Sherco combined-cycle from the analysis so that was  
6 one constraint. The other constraint that was  
7 talked about this morning by Ms. Mandich is that the  
8 only thing that could use the Sherco interconnection  
9 rights would be, for the 2026, would be the Sherco  
10 Solar Project.

11 Q In its rebuttal testimony NSP has now asserted this  
12 project as least cost, you're aware of that,  
13 correct?

14 A Yes, I am.

15 Q Do you have concerns about whether this resource is  
16 the least cost option even now?

17 A I do. In my testimony I say I don't think they  
18 adequately demonstrated that it was least cost.

19 Q And can you summarize why not?

20 A Yeah. I think there are two primary reasons. One  
21 is the capacity issue that was discussed earlier  
22 this morning, that the testimony adopted by Mr. Shaw  
23 said that, you know, as of October 2022, that they  
24 would start anew, but they never actually evaluated  
25 different scenarios for capacity, the accredited

1 capacity of the solar project. And so I think  
2 there's a lot of risk there that, you know, I would  
3 say that that IRP or good planning process, whether  
4 it's in the cycle or without the cycle, if you were  
5 starting anew, would be that you would look at  
6 different scenarios for what the accredited capacity  
7 would be even if you don't know what the outcome  
8 would be as opposed to setting one set of  
9 assumptions.

10 And the other thing is what I talked  
11 about on the original application is the energy  
12 risk. I mean, if you -- I believe it's a public  
13 number, but I won't say it, but if you think about  
14 the capacity cost on the dollars per kW basis for  
15 Sherco Solar is on the order of twice what the  
16 combustion turbine costs, and then you think about,  
17 well, you know, they don't even get the full  
18 capacity value. It's, you know, pick a number  
19 somewhere between 30 and 50 percent. So you're  
20 relying on the energy market, you're relying on  
21 sales to MISO to make up a fair amount of the cost  
22 to make this least cost.

23 And you're also -- you're looking at a  
24 system with a lot more solar coming on, which is  
25 likely to depress the value that energy sold into

1 the MISO market when the Sherco Solar will be  
2 producing. I think that was a risk that was not  
3 adequately investigated by the company.

4 Q NSP has also requested proxy pricing if an ADP is  
5 denied. What do you recommend with respect to proxy  
6 pricing?

7 A Well, I recommend not approving the proxy pricing  
8 really for policy reasons.

9 Q Can you explain those briefly?

10 A Sure. I think one of the reasons was discussed this  
11 morning, is the -- that my understanding is that  
12 this commission really hasn't -- has not made a  
13 decision on the Unit 2 coal plant. So essentially  
14 by approving proxy pricing, you're saying that  
15 you're going to pay for the Sherco Solar capacity,  
16 you're still paying for the Sherco coal capacity,  
17 that seems like an issue that should be dealt with  
18 in a rate case so that you're not paying for it  
19 twice.

20 I think the other issue is -- another  
21 issue is how you -- is recovering capacity costs  
22 that shouldn't be -- my understanding is shouldn't  
23 be recovered through the renewable energy rider, it  
24 would be a change in policy to recover it in the,  
25 you know, the fixed -- the fuel cost rider. And I

1 think that, you know, recovering the fuel cost  
2 rider, it becomes a complex decision because the  
3 commission knows that Sherco 3 is in front of it and  
4 the commission knows that the 345 kV transmission  
5 line is in front of it, which is another 2,000  
6 megawatts. So you have a whole -- a whole bunch of  
7 capacity issues potentially. You know, the  
8 commission obviously hasn't looked at the matter or  
9 decided on the matter yet, but there's a lot of  
10 implications as to, you know, what you do about that  
11 capacity cost, and it seems like that deserves more  
12 consideration than is really being put forth in  
13 front of this ADP procedure.

14 Q If the commission were to adopt a proxy pricing  
15 method, what would you recommend be the basis for  
16 that?

17 A So I -- the company and I disagree on using MISO  
18 CONE. I think that there are a couple big issues  
19 with the MISO CONE. Well, I mean, the first issue  
20 is the company in its IRP noted that they use  
21 consultants, they use their internal, you know,  
22 internal review, they use comments from others to  
23 come up with the cost of a combustion turbine  
24 whether it brownfield or greenfield. And now  
25 they're saying that a number set by the DOE, my

1 consultants, Sargent & Lundy, in 2019 is a better  
2 first cost than what the company developed in their  
3 IRP. And my question is, well, why did you develop  
4 the IRP if that's not the cost you should use. So I  
5 think the cost in the IRP is the appropriate cost,  
6 it was given due consideration by the company and  
7 reviewed at least by the Minnesota commission.

8 A couple other issues is that it was  
9 talked a little bit more about the cost of capital.  
10 MISO is using a 13.4 percent return on equity. My  
11 understanding is that the company's original  
12 analysis used 9 and a quarter, but I believe the  
13 rate case is 9 and a half, I'm not sure, but it's  
14 certainly significantly below the 13.4.

15 The third problem with MISO CONE is MISO  
16 levelizes that cost, otherwise they take a capital  
17 cost. And so the question this morning about  
18 turning into dollars per kW or dollars per, you  
19 know, megawatt-day, they levelize it over 20 years,  
20 the company has come up with a 35-year life for  
21 Sherco Solar, so essentially under their proposal  
22 you're paying that 20-year rate for an extra 15  
23 years so that also gives over recovery.

24 So that's my three main objections to  
25 using MISO CONE.

1 MR. ARMSTRONG: Thank you. I'll tender  
2 you for cross.

3 CROSS-EXAMINATION

4 BY MR. SIMPSEY:

5 Q Mr. Heidell, how are you?

6 A I'm doing well. Good to see you.

7 JUDGE DAWSON: Hold on one second.

8 Mr. Schuh, did you have a question?

9 MR. SCHUH: Yeah, I'll wait until after  
10 cross.

11 BY MR. SIMPSEY:

12 Q I wanted to start off on your questions about energy  
13 and capacity. And do you think the company has a  
14 capacity need in 2024 to 2026?

15 A I believe that the IRP, the supplement in the North  
16 Dakota scenario identified the first need for summer  
17 capacity in 2026 of approximately 220 megawatts.

18 Q Okay. So we can at least all stipulate there is  
19 some need that needs to be met on the capacity side?

20 A There appears to be, yes.

21 Q And you just testified for a lot of reasons you  
22 don't like the company's proposal. If you were King  
23 for a day, how would you meet that need?

24 A Well, that kind of goes back to this morning that  
25 the -- the situation that we're in today with

1 limited options is the result of a whole series of  
2 actions that the company took in '21, '22 and '23,  
3 this year. And so I would think that back in 2021  
4 or 2022 that they should have been more aggressively  
5 pursuing the combustion turbine, and not just the  
6 Wisconsin site, but, you know, with two other sites  
7 that were discussed in response 3-1 this morning.

8 Q Would the brownfield CT proxy essentially achieve  
9 the same economic outcome as what you just suggested  
10 should have been done?

11 A It probably would have been similar. I mean, I  
12 think the answer is that had the commission -- had  
13 the company said that they wanted to, you know,  
14 let's say put a CT at Blue Lake or whatever else,  
15 they would have come forth with actual cost, which  
16 might be different than the brownfield CT, but --  
17 it's a proxy.

18 Q Okay. So you also talked about in your testimony a  
19 lot about the Sherco CC or potentially putting a CT  
20 at Sherco. So I wanted to -- you use models in your  
21 everyday work, don't you?

22 A Yes, I do.

23 Q And when you hit enter on the model, do you just  
24 take what comes out of the model as gospel?

25 A No, I do not.

1 Q So you use your own independent judgment to assess  
2 the model, correct?

3 A Well, to assess the model and also understand that  
4 assumptions drive models so I'm very big on  
5 testing -- evaluating the assumptions that go into  
6 the model and what that does to the result.

7 Q And assumptions always have some basis and at least  
8 some assumed facts, correct?

9 A Hopefully.

10 Q So if you were in Xcel Energy's shoes, we talked  
11 about the constraints at the Sherco Solar area, you  
12 would agree at least that to put a CT at Sherco  
13 would require some additional gas infrastructure,  
14 correct?

15 A That is true.

16 Q And what would you have used as a proxy for that gas  
17 infrastructure, or an assumption for the cost of  
18 that gas infrastructure?

19 A Without, you know, I will, you know, take it that,  
20 you know, the company did adequate due diligence and  
21 that the cost that was referenced this morning in  
22 3-1, you know, was correct, although I -- I do think  
23 that the comment this morning about investigating  
24 other users of the pipeline is sort of an  
25 interesting concept.

1 Q And you wouldn't be able to do that as part of your  
2 modeling exercise, would you?

3 A Well, I think this goes back to the planning. That  
4 if you're sitting here and starting anew in October  
5 of 2022, it's a little late. But I think the  
6 decision that was made, I believe it was in the  
7 direct testimony, was that the decision to pursue  
8 Sherco Solar started in 2020 with starting to build  
9 some transformer banks. So, you know, at that point  
10 it was too late. But I think the issue is that you  
11 don't demonstrate prudence by not, you know, by not  
12 taking a whole bunch of actions to get to a point  
13 where you have no choice.

14 Q Okay. I mean, you're assuming then that the company  
15 never did any work whatsoever to investigate  
16 building gas infrastructure for the Sherco CC?

17 A No, that's not my assumption. I take the testimony  
18 this morning that they did -- that they did do  
19 research.

20 Q Okay. You said that it's your opinion that the  
21 capacity accreditation will be less than 50 percent?

22 A That's correct.

23 Q And have you been an actual participate in the RAS  
24 process?

25 A Myself personally, no. But I rely heavily on one of

1 our experts who is -- who is very involved in MISO  
2 and follows it for many of our clients.

3 Q Okay. So back to the question of what you would do  
4 to meet the capacity need. You did mention that the  
5 company should be relying on the PRA at least to  
6 bridge short-term gaps. Do you still stand by that  
7 statement?

8 A I think that's a slight mischaracterization of the  
9 statement. I said that I thought one of the -- if  
10 you -- since the company was building resources to  
11 meet the 2027 in increased capacity, I would have  
12 thought that of the options that the company would  
13 consider for meeting the 230, whatever the exact  
14 number is, megawatts in 2026, you know, the company  
15 could look at a bilateral contract, they could  
16 evaluate the risk of using the PRA for one year,  
17 they could, you know, talk to Mankato. I mean, they  
18 could talk to other people that want capacity. And  
19 that, those -- it did not appear from the testimony  
20 that the company investigated those other short-term  
21 options.

22 Q Okay. So you're not proposing that the company move  
23 away from its FRAP principles then?

24 A Oh, not for long term, no.

25 Q Okay.

1 A I think that -- but I would say that the company is  
2 taking, you know, long risk on the energy market and  
3 so why not evaluate the risk of using the PRA for  
4 one year.

5 Q You haven't analyzed what would happen to the MISO  
6 Zone 1 PRA if the company were to participate in the  
7 option, though, correct?

8 A I have not.

9 Q Okay. All right. Let's move on to your proxy  
10 pricing. So it's your view that neither the  
11 capacity resource the company is proposing nor a  
12 proxy pricing outcome should be deemed prudent?

13 A As part of this proceeding that's my view, yes.

14 Q But notwithstanding that, you still go on to testify  
15 about what proxy would be appropriate in your view  
16 nevertheless?

17 A What proxy would be appropriate should the  
18 commission decide that proxy pricing is appropriate.

19 Q Okay. And are you aware that the company does use  
20 the same proxy price methodology in South Dakota for  
21 ratemaking purposes?

22 A Yes, I believe that was a data response from the  
23 company.

24 Q And so -- and notwithstanding that, have you done  
25 any investigation into the success or not success of

1 that kind of pricing policy outcome?

2 A I don't know how you would determine -- what you  
3 mean by success, but no, I have not evaluated it.

4 Q Okay. So is it your proposal that North Dakota  
5 customers not participate in the Sherco Solar  
6 Project even if it gets built?

7 A Well, it's my recommendation that the -- that the  
8 commission not approve the ADP and also not approve  
9 proxy pricing. So I think that translates into not  
10 participating in the project.

11 Q And so how do you suggest we obtain the necessary  
12 capacity?

13 A Well, I think there's two different questions there.  
14 You know, how do you attain the necessary capacity,  
15 well, the answer is that I think NSP is very clear  
16 that they're building this project regardless if the  
17 capacity will be there. So I think the question  
18 that -- the more appropriate question is how should  
19 North Dakota pay for its share of that capacity.

20 Q Okay. So you think that North Dakota should pay for  
21 its share of that capacity?

22 A I think that there needs to be some mechanism for  
23 North Dakota, that customers should pay their fair  
24 share.

25 Q Regardless of what the accreditation is, correct?

1 A Well, a fair share of what the accreditation is,  
2 yeah.

3 Q Okay.

4 A Regardless as in it doesn't matter.

5 Q But a proxy price is not the way to do that, is what  
6 you're saying?

7 A I think that it's the way I started my concerns with  
8 the proxy pricing, is that the concern with proxy  
9 pricing is one is this issue double paying, you  
10 know, without determining what the solution is for  
11 the Sherco Unit 2 coal project. And the second part  
12 is that the issue becomes very complicated because  
13 of the whole set of other resources that the  
14 commission -- the two other ADPs that the commission  
15 has in front of it. And so I think the solution  
16 needs a fair amount of consideration that hasn't  
17 been given to it.

18 Q Oh, okay. So it's in absence of a record from your  
19 perspective?

20 A Yes.

21 Q But it's not necessarily a bad idea?

22 A No, there needs to be some kind of proxy.

23 Q Okay. You said something very interesting, that the  
24 commission hasn't yet determined Sherco. What do  
25 you mean by that?

1 A Well, I did not participate in the NSP rate case.  
2 My understanding in talking to Advocacy Staff is  
3 that the -- that Sherco 2 is still in rates at its  
4 current depreciation schedule and the fate of early  
5 retirement and recovery of the costs of Sherco has  
6 not been determined yet. That's my understanding.

7 Q Sure. And that's a question of ratemaking, but it's  
8 also a question of that was a settlement accepted by  
9 the commission, correct?

10 A The rate case was, but my understanding is that  
11 there was no settlement as to the determination of  
12 what happens to Sherco 2.

13 Q Sure. So currently ratepayers are not paying an  
14 accelerated depreciation, correct?

15 A That is my understanding.

16 Q So as of today, ratepayers have had no effect or no  
17 impact with respect to the planned retirement of  
18 Sherco Units 1 and 2?

19 A They've had no impact, but by paying for it they are  
20 assuming they're getting the capacity of it that  
21 comes from it.

22 Q So what you're saying is that rates will no longer  
23 reflect the retirement of Sherco 1 and 2 unless  
24 there's another rate case?

25 A No, what I'm saying is that rates will reflect

1 the -- they'll be paying for Sherco to a coal unit  
2 and if you approve proxy pricing they'll also be  
3 paying for the same capacity again.

4 Q Well, I mean, they haven't been paying for the --  
5 fully paying for the capacity of Sherco if there's  
6 no accelerated depreciation paid for?

7 A They're fully paying for it on a schedule where the  
8 unit doesn't retire early.

9 Q Okay. So wouldn't there need to be a rate case to  
10 adjust that?

11 A That's my understanding. You know, there may be  
12 other mechanisms.

13 Q And if you need a rate case to adjust that, I mean,  
14 that's just ratemaking, it's nothing more than that,  
15 they're not paying or not paying rates for what they  
16 are, there's ups and downs every year and you don't  
17 necessarily adjust rates because of those ups and  
18 downs?

19 A Sorry, I was getting troubled over it's just rates.  
20 These are customers paying bills.

21 Q But, I mean, rates are set and then there are ups of  
22 costs and downs of costs and they change and so long  
23 as the rates remain just and reasonable, you know,  
24 just because of a unit may retire or you didn't  
25 maybe repower it doesn't necessarily mean we adjust

1 rates to address that?

2 A You know, that's correct, subject to the point that  
3 the commission has the renewable energy rider in the  
4 fuel costs, you know, rider, which are mechanisms  
5 that pick up some of that adjustments in between  
6 rate cases. So it's not like the company just, you  
7 know, lives by the decision and there are not  
8 adjustments between rate cases.

9 Q So let's talk to the question about MISO CONE versus  
10 costs in the IRP. One of the things you raise is  
11 that the MISO CONE, you know, weighted average cost  
12 of capital is much higher than Xcel's approved  
13 amount, is that one of your --

14 A It's higher, my actual testimony was that the ROE is  
15 much higher.

16 Q The ROE is much higher, fine. Would it be fair to  
17 say that those ROEs or general costs of capital are  
18 more in line with what a developer would expect to  
19 earn?

20 A I think the question is if a developer was  
21 developing it for a build/own transfer, the answer  
22 is no. If the developer was developing a merchant  
23 plant, then, you know, then it might be what a  
24 developer is thinking of. But in this case we're  
25 not talking about, you know, a merchant plant, we're

1 talking about either the company building it or  
2 building their own transfer arrangement.

3 Q Or it would essentially reflect the costs that Xcel  
4 Energy could pay for a PPA?

5 A No, I disagree with that.

6 Q Why?

7 A Because when a developer has a PPA, they go to the  
8 bank and they know when, you know, the bank knows  
9 that they're having a PPA with a creditworthy  
10 company like NSP, then they have a -- the developer  
11 has less risk, the developer can also leverage up  
12 their investment much more and get a lower cost.

13 Q You also note that the company has done a lot of  
14 diligence in setting its greenfield CT costs and  
15 brownfield CT costs as part of its resource planning  
16 process, correct?

17 A I think I said diligence, maybe.

18 Q You also said that those costs were approved at  
19 least by the Minnesota commission?

20 A Yes, I did.

21 Q So one of the -- CONE is an independently created  
22 number, right? MISO just issues the CONE number,  
23 correct?

24 A I don't think that's correct. MISO takes the cost  
25 of the combustion turbine determined by the

1 Department of Energy in the annual energy outlook,  
2 takes that cost and the capital cost and converts it  
3 into a rate. That rate uses cost of capital  
4 assumptions, years of recovery, and a whole bunch of  
5 assumptions that have nothing to do with the -- what  
6 the annual energy outlook and what DOE decides.

7 Q Got you. But at the end of the day MISO is doing  
8 that? MISO is making all of those choices?

9 A MISO is making the choices, that's correct.

10 Q So it's fair to characterize the CONE price at least  
11 as coming from some independent third party?

12 A Coming to a third party through a legal and  
13 adjudicated process.

14 Q But it's in a tariff?

15 A It's in a tariff.

16 Q Overseen by FERC?

17 A That's correct.

18 Q Okay. Whereas, the cost in the IRP you said was at  
19 least approved by the Minnesota commission, correct,  
20 the greenfield and brownfield CTs?

21 A That, among other pieces, yes. In addition to the  
22 diligence that the company did.

23 Q And so would it be your position that this  
24 commission should just rely on the imprimatur of the  
25 Minnesota commission for the reasonableness of the

1 greenfield and brownfield CT assumptions?

2 A No, I think that this commission has the -- I  
3 believe has the authority and under the legislation  
4 now to review the IRP, I don't believe that the  
5 commission has opened up a proceeding to review the  
6 IRP. So my comment was really more that given that  
7 the commission has not had time to review the IRP, I  
8 was just noting that not that they should, you know,  
9 defer to the Minnesota commission. I'd be thrown  
10 out of here pretty quickly if I said that.

11 Q You know, I was just checking that.

12 I have nothing further, Your Honor.

13 JUDGE DAWSON: Mr. Schuh.

14 MR. SCHUH: Thank you, Your Honor.

15 CROSS-EXAMINATION

16 BY MR. SCHUH:

17 Q So, Mr. Heidell, one of your concerns is like the  
18 double paying the proxy price and the alternative,  
19 the stranded cost, right? So obviously one way to  
20 avoid paying the -- double paying is to not pay the  
21 proxy price on the interim rate? That's what you  
22 were stating?

23 A Until such time as there is some resolution about  
24 Sherco 2 coal, yes.

25 Q Okay. So in the alternative I suppose it would be

1 the shareholders eating the stranded costs for the  
2 residual Sherco amounts to avoid that?

3 A I think that's the -- for NSP the unfortunate  
4 alternative.

5 Q Gotcha. I do have some additional questions, but I  
6 had trouble pulling them up in the testimony so I  
7 might just try to get it on the next round. I  
8 apologize for that.

9 JUDGE DAWSON: Commissioner  
10 Haugen-Hoffart.

11 COMMISSIONER HAUGEN-HOFFART: I have no  
12 questions for you at this time.

13 JUDGE DAWSON: Commissioner Christmann.

14 EXAMINATION

15 BY COMMISSIONER CHRISTMANN:

16 Q Earlier you talked about concerns about timing of  
17 the project, and 35 years and 20 years, and I was  
18 not able -- I'm still making a note from your  
19 previous point and wasn't able to keep up rapidly  
20 enough. So can you go through that whole thing  
21 again?

22 A Okay. So maybe by way of analogy, you know, if you  
23 buy a house and you take out a mortgage for 20  
24 years, you're going to pay one rate. If you take  
25 out a mortgage for 35 years, you're going to pay a

1 lower rate. In both cases, you pay off the  
2 mortgage, right, in 20 years or 35 years.

3 MISO is recovering the costs in 20 years  
4 so the company's proposal says, well, we're going  
5 to -- you're going to pay that 20-year mortgage rate  
6 for 20 years and, by the way, you're going to pay it  
7 for another 15 years. After you've already paid off  
8 your house you're going to continue to pay your  
9 mortgage for another 15 years. If that analogy  
10 makes sense.

11 In other words, you've already paid it  
12 off -- under the MISO provisions you've paid off the  
13 cost of that combustion turbine in 20 years, the  
14 company has a 35-year recovery period, so now you're  
15 paying that 20-year rate for an extra 15 years.

16 Q That's if we do the proxy price, I'll call it?

17 A Yeah. That's correct.

18 Q Okay. Now I follow you.

19 And then an interesting point was brought  
20 up by Commissioner Haugen-Hoffart earlier this  
21 morning, something I had missed, of a battery  
22 storage facility being approved here. And it  
23 sounded like it was very small and probably  
24 experimental. That's my own word at this point.

25 But it reminded me of another company,

1 another case, another generation source entirely.  
2 But where we were told that the proper thing to do  
3 was to close a coal plant and adopt a new generation  
4 source, and we did it and it's up and running for a  
5 couple years and now they need to put significantly  
6 more money in there in order to make it reliable  
7 enough. And so that gets me to wondering about  
8 this.

9 Do you suspect, if this were approved,  
10 whether it was done through the CONE proxy pricing  
11 or the company requests in the first place that  
12 along the way in order to meet the capacity demands,  
13 once this is up and -- once this money is spent and  
14 the coal plant is gone, that then all of a sudden  
15 we're going to have to pay for a bunch of battery  
16 storage, too, in order to enable this to be a good  
17 solution?

18 A So this is my hypothesis, or my opinion of, you  
19 know, what I think. My forecast of what's going to  
20 happen is that if the coal plant is closed and  
21 Sherco is built, that as more and more solar and  
22 renewable resources get added to MISO, and  
23 especially as the evening, you know, peak shifts to  
24 evening as winter peaking becomes more critical,  
25 that there is going to be more capacity resources, I

1 think Minnesota will follow New York and California  
2 and probably say we don't want gas and I think my  
3 forecast is that NSP will be in front of this  
4 commission saying that we need a bunch of batteries  
5 for reliability.

6 COMMISSIONER CHRISTMANN: Thank you.  
7 Appreciate your testimony.

8 JUDGE DAWSON: Commissioner Fedorchak.

9 COMMISSIONER FEDORCHAK: Thank you,  
10 Judge.

11 EXAMINATION

12 BY COMMISSIONER FEDORCHAK:

13 Q Mr. Heidell, one of the options when asked by  
14 Mr. Simpser for how to deal with the capacity need,  
15 one of the options you didn't say was extending the  
16 life of Sherco. How come? Even by a couple of  
17 years until the next capacity need is on the  
18 horizon.

19 A I believe that's an option, I believe that's an  
20 option that NSP has long since walked away from.

21 Q So you just didn't suggest it because you didn't  
22 think it was realistic?

23 A I didn't think it was realistic.

24 Q Okay. In their testimony, in Mandich surrebuttal,  
25 one of the questions that was asked was will Sherco

1 Solar be cheaper to operate than continuing to  
2 operate Sherco Unit 2. And her answer was very  
3 likely yes, which I thought was surprising that it  
4 wasn't absolutely yes. It wasn't, you know, like  
5 definitively yes.

6 And then in the explanation there was  
7 this kind of vague reference to operating the  
8 project and the rising costs to operate Sherco Unit  
9 2, which was sort of the reason given as to why it  
10 was very likely, but not absolutely going to be  
11 cheaper.

12 Did the -- did you guys take into what  
13 these vague rising costs were?

14 A I think it's the, you know, it's the operating costs  
15 of any facility are going up, you know, fuel prices,  
16 whether it's coal or natural gas are volatile. So I  
17 think the company is right that it's, you know,  
18 there's not a lot of certainty, I don't know that  
19 the company has -- did an extensive rereview. You  
20 know, I think there's also the reference to the case  
21 of analyzing the cost of continuing the coal plant  
22 and then switching to a CT at the end of the coal  
23 plant's life. And I don't think that analysis was  
24 updated.

25 Q Um-hmm. And did that analysis, I thought I heard

1 reference this morning that that analysis included  
2 adding OCR? Because that would have had to have  
3 been done -- you're not --

4 A I guess I would defer to the company. I think, you  
5 know, the question to ask the company is I've been  
6 in other proceedings where if the company were to  
7 let's say extend the coal plant beyond 2026, is  
8 there an environmental consent decree where all of a  
9 sudden I have to spend, you know, X hundreds of  
10 million dollars to upgrade the pollution controls,  
11 and I don't know if that's the case for Unit 2, if  
12 there's a decent -- if there is a consent decree  
13 that would force higher costs, so that would be a  
14 question for the company.

15 Q Okay. Well, I realize that it's, for the company, a  
16 foregone conclusion, but for North Dakota's  
17 ratepayers, looking at the need for capacity and  
18 even a bridge capacity, which is really what we're  
19 looking at here long term, or even for the next --  
20 until these new resources that can carry the weight  
21 of the old resources are proven, it's astounding to  
22 me that there isn't more focus on trying to use for  
23 a bridge the resources that we already have that are  
24 already connected.

25 A Yeah. Again, this is probably going off in a

1 different direction and just a personal opinion.  
2 That the focus on decarbonization, there's, you  
3 know, there's, you know, there's nothing wrong with  
4 that goal. I think that the pursuit of that goal  
5 without considering the economics and the best path  
6 forward is not -- in many jurisdictions is not, you  
7 know, I think about New York, Oregon, Washington, a  
8 number of jurisdictions where I work, that it's the  
9 least cost way to get to the goal is not necessarily  
10 being considered appropriately. I think we're in  
11 agreement there.

12 Q I do agree and I think when you question plans,  
13 folks immediately go to you don't agree with the  
14 goal, which is not a good intellectually honest way  
15 to look at this. And I think that's resulting in  
16 some pretty shortsighted policy decisions across the  
17 board.

18 But, anyway, in Ms. Mandich's testimony  
19 she says that -- and I think this is her surrebuttal  
20 on page -- let's see. Towards -- okay. Page 10.  
21 She says because the North Dakota alternate scenario  
22 was allowed to select for as many CTs as possible  
23 for every year the IRP solar's inclusion in 2024  
24 indicates that new solar is a least cost resource  
25 needed to meet anticipated capacity deficits under

1 North Dakota planning principles and the project  
2 here is a fulfillment of that need. You disagree  
3 with that. Please explain why that's wrong and does  
4 your testimony and your findings support what you're  
5 saying?

6 A So that goes back to I think one of my earlier  
7 comments that they didn't adequately demonstrate  
8 that it's the best solution. It goes back to the  
9 discussion of Mr. Simpson about, you know,  
10 short-term solutions, and it goes back to not  
11 adequately, you know, under one set of assumptions  
12 about the amount of energy revenues they're going to  
13 get from the market from Sherco Solar, and one set  
14 of assumptions about what the accredited capacity  
15 would be. But, you know, I think we're all pretty  
16 sure that both those energy and capacity assumptions  
17 will be wrong. No offense, you know, to Ms. Mandich  
18 and NSP, I mean, it's just modeling and it's  
19 unknown, and they didn't adequately, you know,  
20 evaluate the risk. While the CT has, you know, much  
21 less risk and it's known technology. I guess the  
22 other point is that they also failed to account for  
23 the winter capacity value of the combustion turbine.

24 Q Um-hmm.

25 A So it's a flawed analysis.

1 Q Okay. I had a conversation with Ms. Mandich about  
2 the cost of capacity; do you recall that?

3 A Yes.

4 Q And kind of finish that with the company's position  
5 being you can't really just compare on the cost of  
6 capacity alone. And you mentioned earlier in your  
7 testimony that the cost of capacity of the solar is  
8 way higher than the CT. So can you -- in your  
9 opinion, how should we be considering this, since  
10 we're here because of a capacity need, how should  
11 the commission be evaluating and comparing the  
12 various -- the costs of the various solutions?

13 A Well, I agree with Ms. Mandich that, you know, if  
14 you're -- and it's been an issue of the industry for  
15 a long time of how do you compare a resource that  
16 provides energy and capacity to a resource that just  
17 provides capacity. And so the company's approach is  
18 saying, well, I'm going to value the energy and the  
19 capacity from the solar, you know, is conceptually  
20 correct. I mean, I would say that if you go back  
21 two or three years or, you know, you look at what  
22 New England, ISO, New York, PGM, you know, they  
23 always have this debate of it's a least cost  
24 capacity, combustion turbine or a combined-cycle. I  
25 mean, now it's going to batteries. But they've

1 always had that debate and so part of that was  
2 always saying, well, what is, you know, you know,  
3 what is the value of the combined, you know, we have  
4 to consider the value of the energy from the  
5 combined-cycle. So I think she's right that you  
6 need to -- if a resource is providing both capacity  
7 and energy, it's fair to evaluate, you know, what  
8 the energy value should be to contribute.

9 Q And then where does that put this project in  
10 comparison to a CT?

11 A Well, I think that's -- that's one of the issues.  
12 Is besides the capacity value, the accredited  
13 capacity that was extensively discussed this morning  
14 is no one actually discussed all the risk around the  
15 energy value. I think there's substantial risk  
16 around the energy value. And I didn't have the  
17 right word this morning, but, you know, it's one  
18 thing if you're, in my mind, and I think I've said  
19 this in multiple proceedings, is that if you're  
20 buying energy just to meet your load you're  
21 essentially hedging costs for customers. It could  
22 turn out to be a good hedge, could turn out to be a  
23 bad hedge, but you're hedging costs. In this case  
24 they have like a 20 percent long position through  
25 the decade so essentially you're bidding on the

1 market and I don't think that's what utilities  
2 should be doing.

3 Q Okay. In the comparison of energy values, is there  
4 any value to comparing energy -- or including energy  
5 value of a CT? Or is it just capacity?

6 A So that kind of gets into a whole other part of the  
7 testimony and that is the issue of what's called,  
8 you know, CONE and net CONE. And, you know,  
9 conceptually, the other ISOs that I mentioned,  
10 essentially look at net CONE and say, yes, there's  
11 energy value, there are ancillary service values,  
12 and if the combustion turbine were constructed then  
13 North Dakota ratepayers would get a share of that  
14 and that would offset the costs. So I think that's  
15 true, I think the numbers in my testimony sort of  
16 show that it's a relatively small amount compared to  
17 the larger issues that are being discussed today,  
18 but on a conceptual basis I think the right thing to  
19 do is to include the energy and ancillary services  
20 as a deduction.

21 COMMISSIONER FEDORCHAK: Okay. I think  
22 that's it for me. Thank you.

23 JUDGE DAWSON: Mr. Armstrong.

24 MR. ARMSTRONG: No further questions.

25 JUDGE DAWSON: Mr. Simpser.

1 MR. SIMPSEY: Thank you, Your Honor.

2 RECROSS-EXAMINATION

3 BY MR. SIMPSEY:

4 Q Just a couple, Mr. Heidell. So it sounds to me like  
5 it wouldn't surprise you to know -- to learn that  
6 there's a requirement to retire Sherco 2 or install  
7 the CRs in its current air permit, that wouldn't  
8 surprise you at all?

9 A Evidently not.

10 Q No, okay. Would you, you know, you raised some  
11 concerns about how MISO calculates CONE with its  
12 sort of secondary assumptions, right, it takes the  
13 EIA data and puts it through its little machine,  
14 turns the crank and out comes CONE. Would you have  
15 any concerns if we used the EIA greenfield costs as  
16 the proxy and put it into our little calculator and  
17 out pops the revenue requirement?

18 A I think the EIA cost is a 2019 cost, national cost.  
19 I still would think that, you know, the company,  
20 with their consultant in doing the 2020 IRP would be  
21 a more accurate estimate. I'm not sure why the  
22 company did that process if that's not the more  
23 accurate estimate for Minnesota.

24 Q And I understand that. A couple of -- I mean,  
25 ultimately at the end of the day both your proposal

1 with respect to the brownfield, if we were to use  
2 the greenfield from the resource plan, or even net  
3 whatever, right, that all requires some set of  
4 assumptions that are subject to challenge and  
5 something the company will have to go develop; is  
6 that correct?

7 A I think going back to the argument of when the  
8 decision was made, you know, at the application, the  
9 company brownfield costs and the company's CT costs  
10 and the company -- and the levelized costs I believe  
11 were all stated in the IRP. So I don't know that it  
12 requires any new calculations. I suppose they could  
13 be reviewed.

14 Q Okay. And you would assume that we would litigate  
15 those costs in every proceeding, correct?

16 A Oh, I would hope not.

17 Q Oh. You said that a CT is known technology. Is  
18 solar not a known technology?

19 A Solar for producing energy is a known technology,  
20 solar as a capacity resource I think is -- actually,  
21 I would credit NSP as being a little bit novel there  
22 as opposed to other utilities, like specifically  
23 California utilities and the, you know, Northeast  
24 utilities that are going after battery storage to  
25 meet capacity and reliability needs.

1 MR. SIMPSEY: Okay. Nothing further.

2 JUDGE DAWSON: Mr. Schuh.

3 MR. SCHUH: Nothing more, Your Honor,  
4 thank you.

5 JUDGE DAWSON: Commissioner  
6 Haugen-Hoffart.

7 COMMISSIONER HAUGEN-HOFFART: No  
8 questions.

9 JUDGE DAWSON: Commissioner Christmann.

10 COMMISSIONER CHRISTMANN: Me either.

11 JUDGE DAWSON: Commissioner Fedorchak.

12 COMMISSIONER FEDORCHAK: None.

13 JUDGE DAWSON: Seeing that, you may step  
14 down.

15 (Witness excused.)

16 JUDGE DAWSON: Anything else,  
17 Mr. Armstrong?

18 MR. ARMSTRONG: No, Advocacy Staff rests.

19 JUDGE DAWSON: Is there anything else  
20 that needs to be brought before the commission at  
21 all today?

22 MR. SIMPSEY: Not from an evidentiary  
23 standpoint, Your Honor.

24 JUDGE DAWSON: Okay. Well, we can have  
25 public testimony. Is there anybody from the public

1 that wishes to testify? I don't see anyone from the  
2 public here, but the -- I mean, Jason, maybe Jason  
3 would know. I don't see anyone. So we'll skip over  
4 that.

5 Do we need to talk about anything in  
6 particular as to -- I think we had one thing that  
7 was thought of to be a late-filed exhibit, but it  
8 may be better filed as just information or provided  
9 as information. I don't know.

10 MR. SIMPSON: Your Honor, I have two --  
11 three items for late-filed exhibits. One we would  
12 propose in the same late-filed exhibit which is the  
13 Sherco capacity factor for the last year as well as  
14 the status of the MISO generator replacement process  
15 for Sherco 2. And then we also are proposing a  
16 late-filed exhibit with a short summary and  
17 description of the foreign battery project and kind  
18 of its purpose and how we intend to use it as both a  
19 pilot project and some source of storage.

20 JUDGE DAWSON: Is that what you say, too,  
21 Mr. Armstrong?

22 MR. ARMSTRONG: I had those two, I also  
23 had Commissioner Christmann's question about the  
24 level of information for getting gas to the site. I  
25 didn't know if the DR was supposed to be responsive,

1 fully responsive to that.

2 JUDGE DAWSON: The DR is -- should be  
3 responsive to that. How long of a pipe does it  
4 need? And I actually left it on your chair, so it's  
5 there.

6 MR. ARMSTRONG: So that's what I have  
7 left.

8 JUDGE DAWSON: Okay. Those three  
9 late-filed exhibits.

10 UNIDENTIFIED: Can you repeat the first  
11 one for me?

12 JUDGE DAWSON: Could you repeat the first  
13 late-filed exhibit?

14 MR. SIMPSON: The first late-filed  
15 exhibit will be the capacity factor for Sherco 2  
16 from last year as well as a status update on where  
17 it is in the MISO generator replacement process.

18 JUDGE DAWSON: Okay. Any objection to  
19 those?

20 MR. ARMSTRONG: No objection.

21 JUDGE DAWSON: With no objection, they  
22 will be added as exhibits. And please send me a  
23 description of those again by email. I appreciate  
24 that. So with that, right now --

25 UNIDENTIFIED: Your Honor, just one more

1 matter.

2 JUDGE DAWSON: Yes.

3 UNIDENTIFIED: Considering the fact that  
4 there's going to be late-filed things, if they put  
5 that battery resource as well, I think it would be  
6 just for the completeness of the record preferable  
7 if the commissioners article was also added as well  
8 as maybe a commission exhibit.

9 MR. SIMPSEY: No objection.

10 UNIDENTIFIED: The article that was --

11 JUDGE DAWSON: Oh, yes.

12 UNIDENTIFIED: That was addressed.

13 JUDGE DAWSON: Okay. And so we had  
14 Exhibit 17 that was added during the hearing, data  
15 request 1, and so we'll have Exhibit 18 be the  
16 article. Any objection?

17 MR. SIMPSEY: No, Your Honor.

18 JUDGE DAWSON: It is admitted.

19 (Exhibit 18 marked, offered and received.)

20 JUDGE DAWSON: So with that, we're  
21 getting near the end. And how much time for  
22 recommended findings?

23 MR. SIMPSEY: So proposed findings will  
24 be, I don't know, 30 days or so.

25 JUDGE DAWSON: Okay.

1           MR. SIMPSEY: But I think, Your Honor, if  
2 I could have a minute to confer with my client to  
3 determine if the company would like to brief this  
4 matter or not?

5           JUDGE DAWSON: Okay. Do you need like a  
6 five-minute break?

7           MR. SIMPSEY: That would be really  
8 helpful.

9           JUDGE DAWSON: Okay. We'll do a  
10 five-minute break.

11           (Break taken.)

12           MR. SIMPSEY: Thank you for everybody's  
13 forbearance.

14           The company does believe the issues here  
15 are sufficiently important to go ahead and try to  
16 brief our case. We think that that would be helpful  
17 as the commission considers items, and we understand  
18 that counsel for the commission would also  
19 appreciate some briefing, so we would propose to  
20 file our direct brief along with proposed findings  
21 60 days from today, unless that's a Saturday or  
22 Sunday, and then the following Monday. And I  
23 understand from Mr. Armstrong that Advocacy would  
24 like 30 days for a reply.

25           MR. ARMSTRONG: Correct.

1           MR. SIMPSON: And then we'll -- should we  
2 want to surreply, we would take no longer than two  
3 weeks.

4           JUDGE DAWSON: Okay. And we are in  
5 agreement on that briefing schedule?

6           MR. ARMSTRONG: Yes.

7           JUDGE DAWSON: Okay. It is so ordered.

8           And with that, I think that we can have a  
9 closing comment by the commissioners.

10           Commissioner Haugen-Hoffart.

11           COMMISSIONER HAUGEN-HOFFART: Thank you.

12           I want to thank all of you for your time.  
13 It was some great discussion. I have to say this is  
14 one of my first cases, new on events for  
15 determinants of prudence, so I learned a lot. I  
16 suppose I couldn't pick a better case to hear kind  
17 of opposing sides. So I really appreciate the time  
18 and the effort given to this.

19           And the witness, Jim, nice meeting you  
20 and putting some names to faces.

21           So I want to thank you again, like I said  
22 for about the fourth time for this, and the  
23 opportunity.

24           Interesting case, I'm glad you were  
25 patient with some of the questions as sometimes as

1 we work through this those of you who work on it on  
2 a day-to-day basis it comes easy, for those of us,  
3 it's new and exciting. So thanks again.

4 JUDGE DAWSON: Commissioner Christmann.

5 COMMISSIONER CHRISTMANN: Nothing to add  
6 except that I will say sometimes in cases I get  
7 frustrated when it seems like someone is just trying  
8 to bury us in so much information that we'll miss  
9 what's really in there. I would say both sides, the  
10 Company as well as Advocacy Staff, while differences  
11 of opinion are certainly obvious, the information  
12 was understandable and so thank you.

13 JUDGE DAWSON: Commissioner Fedorchak.

14 COMMISSIONER FEDORCHAK: Thank you,  
15 Judge.

16 I agree with Randy, the information was  
17 really clear and that is helpful. It's a  
18 complicated case. The company is, you know, in a  
19 tough position serving in states with very different  
20 approaches to this transition. So I think in that  
21 situation the best thing we can do is be clear about  
22 where we're at and move forward as quickly as  
23 possible. So I think those are two things that we  
24 can -- we can provide for you and continue to have  
25 frank and open discussions moving forward so I

1 appreciate that. Thank you.

2 JUDGE DAWSON: It is 1:51 p.m. on  
3 July 11th, 2023, and the hearing for PU-21-152 on  
4 the Application of NSP for an Advance Determination  
5 of Prudence is closed and the record is kept open  
6 subject to the filing of late-filed exhibits and the  
7 briefs.

8 This hearing is closed.

9 (Matter concluded.)

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REPORTER'S CERTIFICATE

I, Janet Shaddix Elling, do hereby  
certify that the above and foregoing transcript of the  
digitally-recorded proceeding, consisting of the  
preceding 181 pages, is a full, true and complete  
transcript of the digitally-recorded proceedings to the  
best of my ability.

Dated July 24, 2023.

/s/Janet Shaddix Elling  
JANET SHADDIX ELLING  
Registered Professional Reporter

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