STATE OF NEW HAMPSHIRE

PUBLIC UTILITIES COMMISSION

March 8, 2023 - 9:34 a.m. **DAY 2**
21 South Fruit Street
Suite 10
Concord, NH

[Hearing also conducted via Webex]

RE: **DE 20-161**
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE d/b/a EVERSOURCE ENERGY:
2020 Least Cost Integrated Resource Plan.

PRESENT: Chairman Daniel C. Goldner, Presiding
Commissioner Pradip K. Chattopadhyay
Commissioner Carleton B. Simpson

Alexander Speidel, Esq./PUC Legal Advisor

Doreen Borden, Clerk & PUC Hybrid Hearing Host

APPEARANCES: **Reptg. Public Service Company of New Hampshire d/b/a Eversource Energy:**
Jessica B. Ralston, Esq. *(Keegan Werlin)*

Reptg. Clean Energy New Hampshire:
Elijah Emerson, Esq. *(Primmer Piper...)*

Reptg. Residential Ratepayers:
Donald M. Kreis, Esq., Consumer Advocate
Michael Crouse, Esq.
Office of Consumer Advocate

Reptg. New Hampshire Dept. of Energy:
Mary E. Schwarzer, Esq.
(Regulatory Support Division)

Court Reporter: Steven E. Patnaude, LCR No. 52

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E X H I B I T S

P R O C E E D I N G

CHAIRMAN GOLDNER: Okay. Good morning, and welcome back. I'm Chairman Goldner. I'm the Presiding Officer here today, along with the Commissioner Simpson and Commissioner Chattopadhyay.

This is the second continued day of hearing DE 20-161, the Public Service Company of New Hampshire 2020 Least Cost Integrated Resource Plan filing review proceeding. We will be starting this morning with continued Commissioner questions for the Eversource witness panel, with the members -- the members of which are still under oath from yesterday.

For purposes of the court reporter's transcript and our housekeeping, we would like the attorneys for all the parties to introduce themselves again, and indicate if there are any procedural or other matters for the Commission to consider this morning.

So, we'll begin with that, and the Company.

MS. RALSTON: Good morning. Jessica Ralston, from Keegan Werlin, on behalf of Public

Service Company of New Hampshire, doing business as Eversource Energy.

CHAIRMAN GOLDNER: Okay. Are there any -- I'm sorry. Are there any procedural or other matters you'd like to bring up before we get started today?

MS. RALSTON: Nothing new, just the issues we discussed yesterday.

CHAIRMAN GOLDNER: Okay. Very good. And the Department of Energy?

MS. SCHWARZER: Thank you, Mr. Chairman. Mary Schwarzer, Staff Attorney with the Department of Energy.

CHAIRMAN GOLDNER: Okay. Very good. The Consumer Advocate?

MR. KREIS: Good morning, Mr. Chairman, Commissioners. I'm Donald Kreis, the Consumer Advocate, here on behalf of residential ratepayers. The holder of the only wallet in the room, because the ratepayers pay for everything. And, in that capacity, I would humbly propose that we have some discussion today about how the rest of this hearing will proceed.

I'm paying my witnesses, who are from

out-of-town, by the hour. They sat patiently yesterday, while Eversource attempted to backfill into an inadequate Integrated Resource Plan. And, given that they are the only witnesses who are not testifying on the screen, who are from out-of-town, and who are being paid by the hour, I'd kind of like to get them on and off as early in this day as possible. And I'm also a little worried that, by the end of this day, we won't be done.

CHAIRMAN GOLDNER: Okay. And CENH?

MR. EMERSON: Eli Emerson, from Primmer, Piper, Eggleston, & Cramer, on behalf of Clean Energy New Hampshire. And I have no issues to discuss this morning.

CHAIRMAN GOLDNER: Okay. Thank you, sir.

Okay. First, we'd like to inform the parties that the Commission has deliberated on the question of the late-filed Partial Settlement Agreement between the DOE and the Company. The Commission has decided to accept the Settlement Agreement for consideration under the relevant standards as being conducive to promoting the

orderly and efficient conduct of the proceeding, and not impairing the rights of any party in this proceeding. However, the determination does not mean that we will approve the Partial Settlement Agreement, and, in fact, we have strong initial reservations about its terms.

The Commission would therefore require the scheduling of a third day of hearing focused on the Partial Settlement Agreement, after we conclude our hearing of the case in chief regarding the approvability of the Company's LCIRP under the statutory standards. We suspect that the case in chief presentations may also require some third day.

So, at this point, I think, let's start with the parties. We'll ask you to get out your calendars and ask for a date that will work for this continued third day of the hearing. From EM&V.

Mr. Emerson?

MR. EMERSON: So, I'm curious if it makes more sense then for Mr. Skoglund to do his surrebuttal testimony in that hearing, just because it probably does focus on the issue --

one of the issues addressed in the Settlement.

So, I'm just throwing that out there for consideration.

CHAIRMAN GOLDNER: Okay. Thank you, Mr. Emerson.

Okay, let's work on a third day. If everyone could get out your calendars please, we can get the day scheduled right now. I have my calendar open.

[Short pause.]

CHAIRMAN GOLDNER: Attorney Ralston, we'll let you lead. If you would like to confer, I mean, that's fine, too. But we'll let you lead. Do you have a proposed date that would work for the Company?

MS. RALSTON: Oh, I apologize. I thought the Commission was going to propose dates for us to consider.

CHAIRMAN GOLDNER: Okay.

MS. RALSTON: You want us to propose a date?

CHAIRMAN GOLDNER: Yes. That would be --

MS. RALSTON: Is the Commission's

calendar online? I don't want to propose dates when you already are booked, so --

CHAIRMAN GOLDNER: Yes. Just throw out some dates that work for you, and we can just see if they work for everyone else.

MS. RALSTON: Okay.

[Short pause.]

MS. RALSTON: Are the Company's witnesses available on Monday, March 20th?

[Multiple Eversource witnesses indicating in the affirmative.]

MS. RALSTON: It appears Monday, March 20th, might work for the Company.

CHAIRMAN GOLDNER: Okay. I'll ask CENH and OCA and DOE if that works for them?

MS. SCHWARZER: Mr. Chairman?

CHAIRMAN GOLDNER: Yes.

MS. SCHWARZER: We could make March 20th work, but the 13th is closer in time. And, although I haven't heard from my remote witnesses yet, as I think we've all turned off our phones, but I was hoping to hear from them.

Ron, Joe, can you hear my voice? I need to know if you're available on March 13th or

March 20th, to address the Commission's request for a third day?

MR. WILLOUGHBY: Mary, this is Ron. I am not available on the 20th or the 13th.

MS. SCHWARZER: Okay.

MR. DeVIRGILIO: I am available on both dates. However, Mary, it's not this docket, but we do have -- we will be supporting the other docket on Liberty on Tuesday and Wednesday of next week, and may need Monday.

MS. SCHWARZER: Okay.

MR. DeVIRGILIO: But, at this point, I'm available on Monday, and the following week.

MS. SCHWARZER: Ron, are you available the 27th?

MR. WILLOUGHBY: I am not available again until April 6.

MS. SCHWARZER: Okay.

CHAIRMAN GOLDNER: April 6th works for the Commission as well, if that's acceptable to everyone else?

MS. SCHWARZER: Mr. Chairman?

CHAIRMAN GOLDNER: Yes.

MS. SCHWARZER: My calendar seems to

suggest that there's a hearing for HAWC on Step 1 approval with the Commission on April 6th?

CHAIRMAN GOLDNER: I don't -- it's not on my calendar. No. No, we don't have it on our calendars. So, it must have been rescheduled.

MS. SCHWARZER: Okay. Thank you, sir.

CHAIRMAN GOLDNER: Yes.

MS. RALSTON: Are the Company's witnesses available on Thursday, April 6th?

[Eversource witnesses conferring, and some witnesses indicating in the affirmative and some witnesses indicating in the negative.]

MS. RALSTON: It appears that actually the Company's witnesses are not available on the 6th, I apologize.

CHAIRMAN GOLDNER: Okay.

MS. RALSTON: Mr. Walker is key to the Settlement discussions and is not available.

CHAIRMAN GOLDNER: Okay.

MS. SCHWARZER: Mr. Chairman?

CHAIRMAN GOLDNER: Yes.

MS. SCHWARZER: Our witness, Ron Willoughby, is available Thursday, from 9:00 a.m.

to noon, this coming Thursday. I don't know if that's helpful. And I don't know if the Commission anticipates needing more than three hours. I know he has a hard-stop at noon.

CHAIRMAN GOLDNER: We can do that, if the parties wish to proceed tomorrow morning, 9:00 to 12:00?

MS. RALSTON: I apologize. I would have to check during a break, I may not have childcare tomorrow morning. My father --

[Court reporter interruption.]

MS. RALSTON: I'm sorry. I may not have childcare tomorrow morning. I would need to make a call.

CHAIRMAN GOLDNER: Okay. Okay. Well, let's do this. Let's give the parties the opportunity to maybe discuss during the break and find a couple dates that work, and then we can close on that later this morning.

But, the --

[Chairman and Commissioners conferring.]

CHAIRMAN GOLDNER: Okay. Thursday does not work for one of the Commissioners. So,

tomorrow morning, looks like that date is out.

Okay. If there's no further issues, we can pick up again with Commissioner questions for the Company, and come back to the third day of the hearing later, later on today.

Just a moment please.

[Short pause.]

CHAIRMAN GOLDNER: Okay. So, I'll continue with my questions. And then, I'll give my colleagues an opportunity to ask any additional questions they have of the Company witnesses.

(Whereupon ***Russel Johnson, Lavelle Freeman, Gerhard Walker, Matthew Cosgro, Elli Ntakou, Mina Moawad,*** and ***James DiLuca*** resumed as the witness panel, having been previously sworn and remain under oath.)

BY CHAIRMAN GOLDNER:

Q A question for anyone on the panel. How do you see community aggregation or efforts moving in this direction affecting your grid? Have you done any analysis or do you have any headlights on what you anticipate having to do differently,

relative to that topic moving forward?

A (Walker) Sure. Good morning. To clarify on the community aggregation, you're talking about the joint purchasing of the energy --

Q *(Chairman Goldner indicating in the affirmative).*

A (Walker) Yes. So, from the grid's perspective, where communities or individuals decide to procure their energy, whether they go through us as the last resort option, or as they procure in the open market, does not impact, in the end, on how we have to design the grid.

Q So, if they're putting more power on the grid, if they're erecting solar arrays and these kinds of things, would that affect your infrastructure in any way? I would assume you would have different pain points in your system, given the power is coming from different places?

A (Walker) So, on the statement "if they put more solar on there", yes. Then, we will see an increase in interconnections, and, at some point, that might cause system constraints that will require upgrades.

But, just for my understanding, what I'm looking at as "community aggregation" is the

joint purchasing of power, and that wouldn't necessarily directly have that solar implication.

So, stand-alone, community aggregation, no impacts. But, yes, if there is, you know, some program that I'm not aware of that allows them to more readily access solar and put that on their rooftops, then that will have implications, yes.

Q Okay. Thank you. Is there anywhere in your filing that you looked at operating costs? This was something that was brought up by the Consumer Advocate's witnesses. And it looks like that I see in the Plan -- or, I see -- I see in other places about a 57 percent increase in operating costs, about 4.5 percent, outpacing inflation.

Did you incorporate these operating costs as part of the LCIRP in any way?

A (Johnson) No. I will request that -- I believe the matrix that was discussed on the evaluation of various alternatives does include a consideration of operating costs. But I will defer that to other members on the panel.

Q Any knowledge of any operating costs incorporated in the Plan?

A (Freeman) So, what Mr. Johnson is alluding to is, on the project-by-project basis, we look at the operating costs of the solution. And that was one of the items in the matrix that was in the appendix of Exhibit 8, the supplemental testimony. So, the operating costs is certainly a critical factor in the decision of which project is the preferred alternative, as are other factors in that matrix.

And, so, in that context, it is considered part of the Plan in the determination of the solution.

Q I see. And I think the sense I'm getting from the Eversource original Plan that was developed, again, without the benefit of a lot of the folks in the room today, is that there was no stack-up. So, each plan is looked at, but, at least what's positioned back to the Commission, and maybe even your executive management, isn't an holistic top-level view, it's the people get the different details, the different pieces.

So, and, if you have that, and it's somewhere in the filing, I would love to look at it. But we're really trying to figure out

"What's the implications of all of these projects that you're doing? How does that look at the high level?"

A (Freeman) And that's a fair point, Mr. Commissioner. So, the plans we presented is a plan that traverses our thought process from inception to construction for projects, and addressing the system violations. How each of those projects are rolled into the long-range plan is another process, which, as Mr. Johnson described, he is part of that. And that is where the construct that you mentioned would come into play.

The long-range plan includes everything that the Company is doing, to address every need across the enterprise, from reliability, to asset health, to capacity projects. And those are rolled into the Company's budget. And then, a determination is made of how much the budget can tolerate with respect to the importance of the projects. And then, which projects need to be moved into a subsequent year, so that we can keep a levelized budget. That is done at the higher level with the president of PSNH. Mr. Johnson is

part of that process, as am I.

But that, as you already mentioned, was not presented in the LCIRP. We would certainly look for opportunities.

And, you know, just to reflect a little bit, Mr. Commissioner, I clearly heard you yesterday, and maybe even today, about the deficiencies in the Plan that we presented. That view of the high level of planning, of how all of the projects aggregate into the Plan, is not something that has historically been presented in the LCIRP the way it was developed. I understand that that is something you would like to see. And going forward, that is something that I can commit to include.

But I do apologize that the LCIRP developed from previous versions, there were discussions, tech sessions, settlements, we had additional things that were included. And, so, it kind of developed almost like Frankenstein's monster. And I own a big part of that. But I will do a *mea culpa* here. I joined the Company -- and if I'm going a bit long, please stop me.

I joined the Company in August of 2020, at the end of August. This Plan was submitted in October. So, I didn't have -- I did not have much of an opportunity to shape the Plan. And that is not me not taking responsibility, it is to say that, going forward, a lot of things have changed. We have a team that has different skillsets than we had in 2020. We can do electrification forecasts. We can do a lot of planning with tools and processes we did not have back then.

I understand now more what is required from such a plan. And, so, going forward, I can commit, with your guidance, to provide something that is more in line with what you're looking for, that is more reflective and representative of what our planning process is. Which, by the way, are very rigorous, and able to produce a reliable plan for low cost. But it is just scattered across the document.

So, if you will allow us, for this Plan, if you are so inclined, to produce maybe another document that delineates, to Commissioner Simpson's questions yesterday, how the different

parts of the submittal meet the requirements of 378:38. And we can submit that after-the-fact.

But, going forward, for the next LCIRP, the requirements that you have expressed will be addressed explicitly. I will make sure of that. And we can even commit to filing that before 2025. An earlier filing I think would give you a really good view of where the Company is going, how the Company has evolved with respect to, not just planning, but documenting that planning process for the Commissioner's review.

MR. KREIS: Mr. Chairman, I move that that entire peroration be stricken from the record, as (a) not responsive to your question; and (b) not appropriate.

You know, it just blows my mind to hear an Eversource witness say, essentially, "We didn't know that the statute actually meant what it says. And we didn't hear the OCA raise every single one of these issues about the vast inadequacies in this Plan."

And, really, the kind of proposal that Mr. Freeman just made to you is something that should come from Eversource's counsel, and should

be subject to, I guess, legal argument, because that raises a raft of legal issues. And we -- let's just say the OCA has some strong opinions about those issues.

CHAIRMAN GOLDNER: Okay. Thank you. Thank you. I will leave that in the record. I found that explanation helpful.

And I think one of the things that we need to sort out here, if not today, then in this proceeding is, is there a supplemental filing that would be helpful to everyone? Is there some combination of a supplemental filing and an accelerated new proceeding that would be helpful?

And, in the end, I think we're all trying to get to the same place, which is a useful LCIRP, that can be helpful to everyone, all the parties in this room and the Commission. And moving, really, from what I'll call a "process focus", which is what I think the LCIRP has been in the past, and, in fairness, the statute asks for a lot of process -- a lot of process questions, to one that's more focused on outcomes.

How do we make use of this LCIRP? Yes,

there's a lot of work that goes into this, thousands of pages, people have done a lot of work to put this together. But what we need to figure out is, "how this can be useful?" And the way to do that is to focus on outcomes.

So, I'll proceed now with some additional questions.

BY CHAIRMAN GOLDNER:

Q I would like to understand if the utility, if Eversource, in this case, has considered options like internet or cellular providers present? So, that is, you have a premium service, you can get as much power as you want. You know, that's kind of one service that you offer. And then, you have a discount, if the utility is allowed to control power on devices, when needed.

Is that something that you have done to try to sort of lower your costs in the long term, sort of this, what I'll call a "cellular" model? Has that been something that the Company has ever considered?

A (Freeman) So, one of the things that is adjacent to that concept would be what we do with interruptible load, where we can -- or demand

response, where a customer can receive payment or rebate, if we have the ability to interrupt that load at peak times when our system is stressed, and we can reduce the loading on the system. I think that is probably as far as the Company has gotten along those lines.

I kind of thought you were going in the direction of different levels of reliability for different rates, which is a whole different discussion that I don't even want to entertain at this point. But I will say, let me leave it at that. That's interruptible rates, and having the ability to interrupt customers if they're given a rebate, is probably the most that we have done.

And I'm not aware of a utility in the country that has done what you are suggesting. But I could be corrected.

Q Okay. You could be the first then, so that would be great.

And I want to ask you sort of a technical question. I assume the Company prefers that, when people are putting power back on your system, that it's at the Company's request. You're calling for the power, as opposed to

people just throwing power on your system.

But, if people are throwing a lot more power on your system in the future, whether that comes from, you know, solar arrays for residential, or sort of small-scale solar, or battery storage, or whatever it is, is that something that the Company is concerned about, is sort of free-wheeling power coming back on your system? Is that something that you've contemplated?

A (Freeman) Well, so, let me correct your premise, respectfully. The Company -- the Company has tried to create a system that can accommodate power from customers, to the extent that customers would inject that power. We wouldn't necessarily call for power, unless we view it as a distribution asset that can defer or delay some other type of infrastructure. And, in that case, we would need to have controlability of it.

Absent that, if you're talking about the solar panels on people's houses, the utility-scale solar, CHP, fuel cells, whatever, we look at those on a case-by-case basis, and we ensure that infrastructure can accommodate any

amount of power that a customer wishes to inject.

And it's all very customer-driven. We get from the customer what the export limit is, how much the customer intends to export. We study that, in the worst case, and then we design the system to accommodate the "worst case" impacts. So that everyone can inject as much power as they want to meet their goals or the state's clean energy goals. So, that's --

Q And I think that is something that would be very interesting for the Commission moving forward is to understand, you're, obviously, having to add costs, at least in some cases, as you analyze this on a case-by-case basis.

A (Freeman) Yes.

Q And those additional costs are sort of difficult to find in this proceeding, to understand the implications of this power coming on your system. And, if distributed power does become dominant, what does that look like, from a grid perspective? Is it going to add billions of dollars to the grid? Hundreds of millions of dollars?

Getting a better handle on that, in the

big picture, would be very helpful, I think, to all the parties and, certainly, to the Commission.

A (Freeman) If you don't mind, Mr. Walker can opine.

A (Walker) Yes. I can spin **[?]** it over. So, if we do see, and this is the expectation, that we'll see a high degree of electrification, both on the consumption side, that's heating, vehicles, and on the generation side, be that ground-mounted solar or rooftop solar, and wind, where applicable. And the first thing to just keep in mind is that those, aside from the rooftop solar, will probably not show up in the same regions. Typically, load is where we don't have a lot of space, or be it windmills or ground-mounted solar, and vice versa. So, build-out driven in the respective areas is likely to benefit either generation or load, but in only rare cases will target both.

We're conducting a study internally and with EPRI. Not for this specific service territory, but for another one, to understand what means in the long term, in additional

distribution capital investments. While I don't have the final numbers for that yet, the answer is "yes." That additional distribution investments in the billions over the next decades to accommodate that.

Q Yes. That's very good. And I think we're in excellent alignment, in terms of what the Commission at least would want to see moving forward, as the situation changes, as more distributed power comes on the system, how does that affect your cost structure, and what does that mean for ratepayers moving forward?

Ultimately, ending in a rate case, but the LCIRP is a great opportunity to understand what's going on before the entropy of a rate case happens.

Okay. I just have a couple more questions. Then, I'll ask my fellow Commissioners if they have anything that they would like to follow up on.

There was a note in, again, I think it was the OCA's filing, that talks about load capacity maps that are specifically used for distributed resources, and asking the question of

"why aren't those available today?"

Can someone maybe address that question for me please?

A (Freeman) So, was your term "hosting capacity maps"?

Q "Loading capacity maps".

A (Freeman) "Loading capacity maps". For distributed resources?

Q *(Chairman Goldner indicating in the affirmative).*

A (Freeman) Okay. So, the term what we have used is "hosting capacity maps", which is the same thing.

Q Yes.

A (Freeman) And, so, hosting capacity maps were actually published in New Hampshire in December of 2022 for the first time. And we have committed to publish -- to updating those every month, and aligning those across our footprint, to provide information to developers as to where there is space on our infrastructure for more solar.

Now, we have also taken a couple of further steps to that analysis and hosting capacity maps. We are rolling out a tool called

"PowerClerk" in the summer, in the second quarter to the third quarter of this year. PowerClerk is a well-known interconnection administration tool, where developers who want to build solar projects, they would apply through PowerClerk, and PowerClerk would manage the interconnection process. And it also holds the data, and this is the important part, it has a database of all of the solar, of all of the export capacity, the battery sizes, and this data would now be mapped on the hosting capacity map. So, our maps would be more accurate, because it has a more accurate representation of what has been deployed historically, and what's in the queue. So, PowerClerk would manage the queue, and be able to reflect that in the hosting capacity maps.

Q Oh, very good. And where is this published?

A (Freeman) Where are the hosting capacity maps published?

Q Is it on your webpage or is it --

A (Freeman) Yes. There's a link on our webpage --

Q Okay.

A (Freeman) -- for that map.

Q Okay.

A (Freeman) And, just one third thing, we have also deployed a tool called "GridTwin". Which, Mr. Walker, if you don't mind, this is a very important tool that we've been asking for developers in New Hampshire.

A (Walker) Yes. So, as mentioned yesterday morning, there was an update to the filed exhibits. We, since last week, have that GridTwin tool online. That is also on our webpage. It's now service territory wide. It allows developers of large-scale solar to basically access a territory-wide database of every property out there, figure out how close is it to our infrastructure; how much capacity does our infrastructure have; what's an estimated interconnection cost at that point of infrastructure; what is the estimated cost of the parcel? So, we're tapping into the publicly available tax assessor records, that sort of give an idea, is that forested? Is it, you know, green land? Is it low land? What is it? Can you develop on it? Factors, such as altitude change, like how steep is it? Is it on a cliff or whatever?

So, all of this information is now available for developers in reference to our infrastructure, for them to go find ideal parcels to develop.

Q Very nice. And that's -- is that a technology that other utilities in the country or the Northeast have available already, or is Eversource a leader in this category?

A (Walker) I'm proud to say that we're the first ones in the nation to do that. This is in cooperation with a start-up out of MIT, where we're the first company deploying that at scale.

Q Excellent. That's very good to hear. And I just -- I think I have maybe one more question, and that's for the Planning group, anyone please feel free to answer.

But there's probably something you feel like you're missing. If you had more visibility, if you had more sensors, if you had other resources available to you, you could do a better job, what would you list as your top two or three, what's on your wish list, in order to do a better job, from your perspective?

A (Freeman) I will start, and then I will ask my

colleagues to opine on the distribution side, and maybe Mr. Walker on the forecasting and verification side.

So, that's a great question. One of the things that we always wish we had more of, as a utility, is visibility down to the end customer. And it's surprising when people learn that oftentimes utilities don't know they have lost power, right? They had to call. And then, the utility would be able to map that to where they are, and then be able to figure out, you know, what piece of equipment has failed, and then give them a time to restore.

AMI is one of those technologies that allows a utility to know when a customer has lost power, but also allows utilities to understand what the demand at the customer's location is in real-time. So, there are a couple of pieces of technology that gives us visibility and control over endpoints. AMI is one.

And DERMS is another. "DERMS" is "Distributed Energy Resource Management System". And that piece of software allows us to be able to have visibility over every distributed energy

resource, every solar panel, every CHP, every gas engine that's out there. But not just have visibility, we have the ability to control it, and to change the set points. And where that's important is that will allow us to reduce the interconnection costs sometimes, because PV, for example, has the ability to operate in a volt-var mode. And "volt-var mode" means they can inject that power into the system to help control the voltage.

So, instead of us upgrading the conductor, making bigger conductors, or putting CapEx or reclosers out there, we have the option to use the PV to help mitigate the impacts that the PV is having on the system. The technology exists. But we don't have the DERMS to be able to ensure that that is orchestrated in the right way.

We do have a DMS now, which is a very powerful piece of software within our control centers, that allows us to orchestrate the distribution system, switch sectionalized devices to reconfigure the system, but we don't have SCADA out to all of our substations, and we don't

have electronic or numerical relays at all of our substations. We still have old electromechanical relays, which the DMS cannot operate. So, having the ability to change out those old relays with new numerical relays at an accelerated pace, all in, say, a grid mod. program, would be tremendous, for the Company and for the customers, because we would be making use of technologies that we have to a greater extent for our customers and for our purposes.

And those are a couple of things that come to my mind.

A (Johnson) So, for the distribution line side of it, from a planning perspective, and you kind of said it, more visibility into the system. And we've been deploying, as I mentioned, you know, DSCADA devices, which give us real-time kW/k-var, you know, amperage information at points on the system. But, you know, the target for that program is to break down into blocks of 500 customers.

But, to get further down into the system, we've also been installing pretty significant numbers of line sensors, which use a

cellular-type technology, to be able to provide us load information.

Now, with all of these, there's always a blend of planning benefit and operational benefit. And, for me, there's as much or more operational benefit to having that data. As Lavelle said, especially when you get into the non-bulk portion of our system, lower voltage substations, most of them do not have numerical relays, we have the inability to get real-time, necessarily, loading from those. We don't have the ability to interrogate, to recognize or fault-locate to help with restoration.

But what some of these line -- what these line sensors give us, in addition to loading information, is they also notify us when there's an outage. We can use them if we appear to have a miscoordination on the system, they help with the analytics of that. And, so, that ability is really very, very helpful, so that we can resolve any issues that exist on the system.

But it all comes down to exactly that, visibility, and the ability to manage that information. And, so, I'll add to that. Those

line sensors that I spoke to, when we talk about future enhancements to that, right now, that information is brought back via cellular, through a shared site to get access. It's not tied to our energy management system, which the control center has visibility to.

So, hoping someday the plan is is to incorporate that into the SCADA system as well at the control center, such that they will have real-time information to recognize both for loss of power, but also to be able to make real-time decisions on whether or not you can use certain circuit ties that have limited capabilities.

So, those are all operational benefits, but they also have that benefit of allowing you to do better planning, right? To avoid investments that, you know, if you have more accuracy on the loading and more accuracy on the timing of loading, that's the other piece of it, to understand the diversity of the loads, the better planning you can do, the more you can defer potential upgrades, or find other solutions -- things you can defer that potentially you can find other solutions as well.

Q And why hasn't Eversource more aggressively pursued these technologies? It's really a cost issue, where you're very careful about the cost? Or is it new technology, where it just became available last year? Why is Eversource not farther ahead on this, I guess?

A (Johnson) Yes, it's a cost issue. For example, if you look at numerical relays, we target those that are facing obsolescence issues or, you know, so -- and, really, they're very limited. For example, this year in the budget, I think with have, in the budget specifically for that, you know, five numerical relays to replace.

Now, others get replaced as we work in a substation for asset condition reasons, or others, those are all addressed as part of that, that project, to bring them in.

But, as far as specifically identified, you know, we have the discussion, it's part of the planning process to determine what's going into the next year's plan. But it is that balance between the cost to serve new customers, and other more critical reliability items at this time.

CHAIRMAN GOLDNER: Okay. Very good. Yes. My encouragement would be to put these kinds of options in front of the parties, in front of the Commission, ahead of any rate case. So, we can have an understanding of what you're trying to do, why you're trying to do it. And it makes rate cases perhaps a little less contentious and difficult. And using this opportunity, this forum, to have that kind of understanding, I think would be to the benefit of all.

I'll stop here on my questions, and return to Commissioner Simpson and Commissioner Chattopadhyay, to see if there is any additional questions for the Eversource witnesses?

CMSR. CHATTOPADHYAY: Good morning.

BY CMSR. CHATTOPADHYAY:

Q So, there was some discussion about interruptible rates. Can you give me a sense of how many customers are on interruptible rates or whether you have any in New Hampshire?

A (Johnson) I'll give a general response, but we would have to take a request to get the detailed information for that.

The Company does have an interruptible rate that is available in New Hampshire. I do not know the numbers of customers participating in that.

And there is also interruptible programs through ISO that customers participate in. You know, there are rules as to they can't take credit for, you know, getting credit for both programs for interrupting at the same time. So, there's rules that they don't overlap like that.

But there are -- those are two existing interruptible programs that are there. But, I apologize, I do not know the specific number of customers that participate.

Q It's important to know whether that tariff is making any difference. So, I think the way you have responded tells me that you're not really thinking in terms of making that a useful tool. And I'm just -- or, at leaves I'm concerned about that.

So, I would request, this could be a record request, and question would be: Please provide the data on the number of customers who

are on the interruptible rates class, or classes?

And this additional question, I'm asking it, but I'm not sure whether it will be part of the RR, because I want to get more clarity. As far as the ISO-New England alternative that you talked about, for customers who are using that, do you have any visibility?

A (Johnson) We do not. And that is, when I was in the Planning group, that was one of the issues that we had, as far as the ISO program goes, because it's aggregated through a third party, we do not have visibility, from a Planning group who is the participant in that.

I think Gerhard can provide some additional -- did you have additional insight in the?

A *(Witness Walker indicating in the negative.)*

A (Johnson) On the interruptible program today, it's -- the extent of it is limited by the funding that is available, approved through the existing regulatory process. But we will take your record request, and get you the information that you asked for.

MR. KREIS: Mr. Chairman, if I might?

The OCA would like to note, I guess, for the record an objection to that kind of record request. I readily admit that Commissioner Chattopadhyay raises an important issue. But it goes to the heart of this case.

The question isn't "What is Eversource doing with respect to interruptible rates?" The question is "How do interruptible rates figure in the Company's Integrated Least -- Least Cost Integrated Resource Plan, and planning?" And the obvious answer, going back to the colloquy between Mr. Freeman and Chairman Goldner, is they didn't take it into account. They did not take it into account.

And they cannot be allowed to backfill their Integrated Resource Plan now by responding to record requests from the Commission. It's just inconsistent with the statute, and it is unfair to the Company's ratepayers.

CMSR. SIMPSON: Can you point to the statutory authority that's the basis of your position?

MR. KREIS: The statutory authority? You mean, other than referring you to the series

of RSA sections that comprise the Least Cost Integrated Resource Planning?

But, really, what I'm relying on --

CMSR. SIMPSON: What section says that they can't provide that information?

MR. KREIS: Section 40 says that this Company cannot raise its rates unless there is an integrated resource plan "on file with the Commission that has been approved", or one is being considered "in the [regular] course of business", meaning the Commission's business.

But this kind of process, where the Company backfills its IRP by serially supplementing its Plan, and then coming here to this hearing and discovering that all of a sudden the Commissioners have discovered, to their great credit, that the Plan is ridiculously inadequate, now they are backfilling, and essentially doing an end-run around that requirement.

And it goes exactly to what Chairman Goldner was talking about earlier, having to do with rate cases. The idea is here, what the Legislature has told everybody here the paradigm is, is that these utilities do least cost

integrated resource planning. It's reviewed by you, the Commissioners. You know what the Company's resource deployment plans are, and have blessed them. And then, after-the-fact, when they come in with a rate case, as Chairman Goldner said, it goes more smoothly, and there are no surprises.

This Company is making a mockery out of that whole paradigm.

CMSR. SIMPSON: Where does RSA 378:40 say that the Company cannot respond to Commissioner Chattopadhyay's question?

MR. KREIS: There is no -- there is no statement explicitly to that effect in the statute.

CHAIRMAN GOLDNER: Commissioner Chattopadhyay, any further questions or --

CMSR. CHATTOPADHYAY: Yes, I do.

CHAIRMAN GOLDNER: Okay. Continue.

CMSR. CHATTOPADHYAY: So, I'm not a lawyer, but I'm pretty sure --

CHAIRMAN GOLDNER: I'm sorry. I'm sorry, Commissioner Chattopadhyay. So, I'm going to reserve the record request as number "23" in

the record.

CMSR. CHATTOPADHYAY: Okay.

CHAIRMAN GOLDNER: It will be "23".

*(**Exhibit 23** reserved for record request.)*

MS. RALSTON: Before we -- apologies. Before you move on, will the Commission be issuing a procedural order with record requests, or can we just confirm exactly what we're to provide?

CHAIRMAN GOLDNER: Yes. So, yes, Attorney Ralston, I think the cleanest approach would be for us to issue a procedural order, a short procedural order, for clarification.

MS. RALSTON: Yes. I just want to make sure my notes were clear before we move on.

CHAIRMAN GOLDNER: Sure. Thank you for clarifying.

CMSR. CHATTOPADHYAY: So, the way I look at it, is I'm not asking you to go back and change your LCIRP Plan. I'm just trying to understand something that you talked about, and, therefore, I was asking these questions.

And, really, what I'm trying to get a

sense of, if you have interruptible rates already, whether it's working, whether it's helping in any ways, being prepared for the future, because a lot of things are changing? And, so, that's the essence of my inquiry here.

BY CMSR. CHATTOPADHYAY:

Q And, so, one more thing I want to know about interruptible rates. I think I'm just -- it's been there for a long time, isn't it? I mean, it's not like you just have interruptible rates starting two years ago?

A *(Witness Johnson indicating in the negative.)*

Q No.

A (Johnson) I can tell you that we had winter interruptible rates back in the late '80s/early '90s. So, from my experience, there have been various versions of interruptible rates for decades.

Q And what is the incentive for the customer who actually is on that rate class?

If you don't know, I'm just asking you --

A (Johnson) I am not part of that department. So, I, personally, do not know the answer to that

question.

A (Walker) I wouldn't know either what the indirect incentive is. And I'm not going to go speculate here.

But I do want to address a part of your question that you had on how we account for that in planning purposes. And it is very similar in the end, at least on the forecasting side, for the existing interruptible rate customers, as, for example, demand response and energy efficiency programs. And we've discussed those at length yesterday.

If those interruptible rates exist in a certain station, and if they are pulled during, for example, peak hours, we will see that on the peak impact. And we record station peaks at the station, and that, as I mentioned, includes the inherent energy efficiency, it includes demand response programs, somebody puts on rooftop solar, and, yes, it also includes impact from interruptible rates. So, if there are a lot of customers with interruptible rates there that drives down the peak, we will record a lower peak at that station.

Again, the same example as yesterday, say the station stayed flat over the last ten years on its peak, and we've seen a GDP growth in that area of 2 percent, exactly the same example, then that might stay lower due to those interruptible peaks -- interruptible rates. So, due to the fact that they exist, they will impact the station peaks, and they will drive down the peaks, which will be reflected in the forecast, because it pushes down the correlation of load growth to GDP development in the region. And that's the key component of the economic trend forecast.

So, yes. It is captured in that forecast.

Q But to what extent, is really my focus? So, hopefully, the answers that I will receive will help me get a sense of that.

A (Walker) Well, so, as for the fact that there are customers with interruptible rates, and that has an impact on the peak, it is fully captured in the forecast.

I think the other part to this question might be, is the above-and-beyond additional

deployment of interruptible rates to, in the sense of a non-wires alternative, to mitigate an existing overload or forecasted overload, and back to the discussion we had yesterday on the process of how we evaluate that.

And the tool does allow for us to look at not specifically named out in interruptible rates, but demand response, which, for a large part, has the exact same impact on the electrical system. You are basically turning off certain assets at a certain time.

So, we do have the technical ability to evaluate that, inside toolsets under the demand response capabilities. And we've provided, at least for the demand response and energy efficiency programs, an overview of those impacts in Exhibit 1, starting at Bates 037. If you scroll down a little bit from there, to Bates 041 of Exhibit 1, there are tables showing the summer and winter impact of those respective programs.

Q Okay. As you may have sensed, I'm really interested in seeing how that program can be made more effective. And, so, there might be issues like making it more flexible, in terms of also

using the price as a tool. So, if you notice that it's not working a whole lot, so, maybe the incentive isn't good enough. So, things like that.

And, so, really, this is a future-focused inquiry at my end.

A (Walker) Yes.

Q So, I just wanted to underscore that.

A (Walker) Yes. And I entirely agree with you. Flexibility on the grid is a key asset in the future.

But I do want to point out two points here, specifically to what Mr. Freeman said when we were asked, you know, "What is the wish list?", especially for time-varying tariffs as such.

Smart meter/AMI infrastructure is critical, because you need to know when, at a certain point of time, was the energy consumed by a specific customer. So, there is a certain requirement to have that end-point metering infrastructure that is time-resolved to even start considering time-varying tariffs, that needs to be in place.

The next consideration is where we're seeing a certain limitation of those assets is, let me give you an example. As we transition to electric heating, more and more heat pumps in the systems, we will see winter peaking systems that will drive the design standard. And we have not asked specifically, but through studies conducted, we expect that there is going to be a certain reluctance of customers to have their heat turned off in the coldest time of the year as a demand, right? So, we just have to consider "what are we targeting here?" Like, "what would that interruptible rate target?" And the by far biggest driver in an electrified future is heating.

And I can imagine the backlash we'll be getting if, on a day where we're hitting zero Fahrenheit, with a minus 20 wind chill, we're suddenly pulling interruptible rates that start turning off heat pumps. That's also -- and that's a very difficult question to answer. And, at some point, there has to be a discussion about how much do we invest to operate the infrastructure, and how much does the customer

have to give to mitigate some of those upgrades. So, there is a bit of a balance to be struck.

And the critical aspect here is, for our planning purposes, is the difference between voluntary and mandatory programs, right? So, demand response programs, for example, have an opt-out feature. So, for my system planning purposes and forecasting purposes, I have to treat that very carefully. Because, if the customers decide to opt out of a demand response call, I'm still faced with a system load. And, unless I have a good understanding of what the participation is, or it's a mandatory participation, where the customer does not have an option to get away from that demand response call or interruptible rate, then, as from our utility system, we still have to hold that capacity in reserve. Because, God forbid, again it gets cold, customers opt out of that call, the load gets pulled, the transformers overload. Then, we have a bad situation nobody wants to be in.

So, that, I entirely agree, but it's a very complicated topic that I really do want to

highlight. And, as we're changing the way we're consuming load, I think it's much easier turning off the air conditioning for a couple of hours in the summer peak with an interruptible load, than it is turning it off in the winter with electric heating.

Q Okay. Let's go to another issue that I've been thinking about. Go ahead.

A (Freeman) I'm sorry. So, just to -- I know we have a record request. But I just wanted to point out that, in Exhibit 1, on Bates 042 there's a table that shows the extent of the commercial and industrial customers that have an interruptible rate. So, in 2020 -- in 2019, it was 3,900 kilowatts, in 2020, it's 6,500 kilowatts of industrial -- commercial/industrial customers with an interruptible rate.

The table also includes residential customers that have load control, direct load control with their thermostat, and customers with battery storage behind the meter.

So, this is up to 2020. Obviously, this program has probably even more participation in subsequent years. But, at the time of the

filing, this is the information we had. We'll be happy to supplement that with the record request.

Q Okay. If you know, of the entire load, what percentage are we talking about here? Negligible?

A (Freeman) Yes, pretty small, sir. Yes.

Q Okay. So, let's go to the other question I have, it's sort of a general question. I mean, I've looked at the Plan. And we know that there is a statute, Section 378:39. I mean, it talks about financial costs, and you're going to look at alternatives. You know, are you going to rank them when you have equivalent financial costs, equivalent reliability, and equivalent environmental, economic, and health-related impacts?

So, I think about that statute, when I'm going through the Plan, I'm not getting a very good sense of, you know, a sort of a benefit-cost analysis, to give me a good sense of how different projects -- how different options have been compared.

A lot of discussion in the Plan about, you know, for example, "grid modernization is

excellent", "it needs to happen", things like that. But, really, this is about the future. So, I'm talking about, next time around there's a plan, I would expect it to be a lot more in-depth, in terms of trying to help the Commissioners, you know, meet their role when they are looking at this statutory requirement.

So, I just -- so, give me a sense of, you know, is the Company already thinking about it, and just illuminate on that issue?

A (Freeman) No, no. First of all, thank you for your guidance. Because this is, you know, admittedly, my earlier soliloquy that was objected to, this is kind of where I was going. That this is illuminating for me, and that -- and it was always where the Company was headed, in terms of providing more actionable information for the Commission.

When we did the 2020 report, that information was not included. As you know, we subsequently submitted Exhibit 8, which is a supplemental filing to address some of the 378:39 information that was missing.

But what I can commit to now is letting

you know, for each project, we do do that cost-benefit analysis on a project-by-project basis, using that updated matrix, right? And that is a key part of how we look at the projects, and how we weighed the attributes of each project. And that matrix, which is at the end of the filing, the supplemental filing, has weighted attributes for environmental issues, for the costs; for the reliability, of course, reliability is a benefit; for loss reduction, that's a benefit. And, for each project, it results in a score that allows us to evaluate which of the options would best meet the goals of the project.

And, going forward, that is part of a submittal that would be produced for every single LCIRP. And would also -- I'd be happy to provide a narrative that describes how that's done.

A (Walker) In addition to that, to the matrix Mr. Freeman just highlighted, again, if we take a look at Exhibit 4, the confidential, Part 1, starting Bates 008, is the NWA framework, which answers the questions you've asked specifically about how we do that comparison.

So, a couple of items out of this that I would like to highlight, to kind of underscore how we do this evaluation, is, number one, we do a capacity analysis. So, the framework and the tools we have allow us to determine, as you mentioned, from a capacity perspective, do they achieve the same standard? Can we get through the same timeline with an alternative solution?

And we look at rooftop solar, ground-mounted, storage system, behind-the-meter, front-of-the-meter, energy efficiency, demand response, CVR, and on-site generation options for that.

Then, we do do a detailed financial analysis for each of those, and basically on determining what the rate impact of each of those solutions is, that takes into consideration deferral of investments. So, assuming that the substation is needed, for example, in '25, then we can defer that out to 2030 or 2035. We have a certain value of deferral by pushing out that investment. That is calculated as a net present value on revenue requirements.

And then, we look at the alternative

solutions. And, into those alternative solutions, a bit tying into an earlier question from you, and we do look at, for example, also O&M costs. Typically, for the alternative solutions, they are a little bit higher than for the traditional solutions. For example, battery storage systems have energy losses and continuous consumption. That gets all baked in.

It also gets incorporated what future revenue streams of those might be. They can participate in energy markets and the Forward Capacity Market, all of that. In the realms of what's possible for those resources, and what today's ISO rules allow us to do, gets put into that, and we get a benefit-cost ratio. Typically, we're aiming for a benefit-cost ratio of greater than one, of course, for the non-wires alternatives.

So, we do detail that in a very -- in a very detailed way in that document. And, following that NWA framework, and I can get you the exact Bates number, if you give me a second.

Oh, and to clarify, also, for example, on Bates 033 of the document, we detailed, for

example, cost assumptions we have. Those cost assumptions are based off of public data from NREL. We're using nationally published data there. Of course, --

Q Can you -- Can you, sorry, can you remind me again which exhibit you're looking at?

A (Walker) Exhibit 4, Part 1. We're still in the same document, Bates 033.

Q Bates Page 033.

A (Walker) Yes. That's where we start, for example, in cost assumptions for different solutions. And those are ever-evolving, right? This is a snapshot from 2022. NREL publishes updated cost numbers, online, on a yearly basis. So, we will update those numbers. They are updated on a yearly basis to reflect the most current figures.

If I can refer you to Bates Page 040 of the same document, that is Exhibit 4, Part 1, you will see our revenue requirement assumptions. Looking at what accounts we use for the Modified Accumulated Cost Recovery System, how many years we're assuming for recovery for different types of asset classes; what are we assuming in

lifespans for inverters, for battery cells, *et cetera*.

If you scroll down further through that, it also details how we calculate the pre-tax WACC values, or the Weighted Average Cost of Capital for all of those solutions.

And, following, on Bates Page 041, that is the page after that, we have our matrix tables in there for all of the cost calculations. That's basically how we are looking at our cost comparison and what the impacts for the revenues are.

And then, if you scroll to Bates Page 050, that is where we've included the report for the Loudon Station that was mentioned yesterday, which goes to the entire detail of such an analysis, both from the technical side, "Can we match capacity?", "How often do we need the resource?", as well as the financial aspects.

And, if we look specifically at the results of that, that's Bates Page 052, Figure 1, the Company has outlined what the different solutions are. With the solution here, specifically, this is a very unique case, due to

it feeding a racetrack, we have a very good understanding of when and where the load occurs, based on schedules. We basically have an understanding what the solutions are, and that's the results here.

But, again, that's a longer document, I'm not going to go through all of that. But I did wanted to point to your question on how we do that analysis and the comparison, especially on the financial aspects of it. That's documented in Exhibit 4.

CMSR. CHATTOPADHYAY: Thank you. That's all I have.

CMSR. SIMPSON: Appreciate the additional comments this morning. These are the types of "smart grid" technologies that I would anticipate being clearly delineated as options evaluated in your plan.

BY CMSR. SIMPSON:

Q You mentioned "AMI", you mentioned "distribution management systems", "numerical relays", and there's a lot of discussion in the exhibits about upgrades to Schweitzer devices.

At a high level, what's the Company's

strategy to deploy these devices? And what's your vision to share the data that comes from these devices, in a meaningful way, to enable customers to make different decisions about how they use energy and integrate devices onto the system, and change their behavior and resulting energy costs?

A (Freeman) So, I will begin, and then I will allow my colleague to address the second part of your question.

But the high-level question about the deployment of technology, and how the Company views that as part of its planning and operational paradigm, is a really good question. Because, absent a grid modernization program, so to speak, that will allow us to accelerate adoption of these technologies, the Company has found that we need to be able to fit the technology into a project, to add into our rate base as we move forward.

We would not use the absence of a grid modernization program as an excuse not invest in the system.

Q Why does the Company not have a grid

modernization program?

A (Freeman) A grid modernization program, the Company has a program, but it is not a state-sanctioned grid modernization program, as we've seen in other states. And I guess that's what I meant.

So, the Company does have grid modernization efforts, but there is not a state-sanctioned grid modernization program.

A (Walker) And, I think, to what Mr. Freeman is saying, we're doing the grid modernization investments as they fit into the capital plan that Mr. Johnson outlined. They're going to be done to be cost-effective, in coordination with other efforts at a station, or if something gets replaced.

If we are talking about a grid modernization program, in terms of terminology, that is then outside of the capital budget. An additional budget, that can be invested solely targeted for certain initiatives, be that volt optimization, be that DERMS, that can be done and planned for outside of that capital budget, and thus accelerated.

Q Why are those types of investments outside of consideration of your traditional capital budget?

A (Freeman) They're not. They're not. They are part of a consideration in the traditional budget. But, because of budget constraints, because there's so many other things that need to be done in the capital budget, addressing reliability issues, new connections, there have to be structure, triage, prioritized, along with everything else.

And, to the extent that we can do things, like with DMS, we were able to get that into the budget, and executed. PowerClerk, similarly, yes, we got that into the budget, and executed it. And we are looking at doing other initiatives. The numerical relays that Mr. Johnson mentioned, we have five in the budget. We would love to have a program where we can do that systematically, and just wholesale replace the electromechanical relays with numerical relays. But we have to fit those into the budget year-by-year, along with the other priorities.

So, to the extent that we can do it, we would. We just don't have another mechanism, a

separate tracker, to accelerate it, as we have seen in other states.

Q So, leaving the tracker and separate rate mechanism aside, --

A (Freeman) Yes.

Q -- why have you not viewed this process, the LCIRP process, as a forum to evaluate those types of projects?

A (Freeman) A forum to evaluate the projects that would be needed to accelerate the grid modernization efforts? That's a fair question. In the "Grid Modernization" section, we have described some of the benefits of, for example, AMI, and how that would help in our planning process.

Q So, let's stay on that for a moment. What's the Company's vision for AMI?

A (Freeman) Mr. Walker?

A (Walker) The Company, in other jurisdictions, is rolling out AMI.

Q Tell me about that. Let's go state-by-state.

A (Walker) I can speak specifically -- I don't know exactly where the dockets are in Connecticut, I can speak specifically to Massachusetts.

Q That's great.
A (Walker) The Company has been approved to roll AMI out, --
Q Okay.
A (Walker) -- and is preparing the RFP as we speak, essentially. I think, I'm not the expert on the timelines, but we will probably be going to an RFP in Q2 of this year.
Q So, you issue an RFP for an AMI system?
A (Walker) Yes. And that includes the smart meters, that includes the back-end management, that includes the data infrastructure, --
Q Uh-huh.
A (Walker) -- the entire backhaul, all of the meter management, the reporting software, and analytics, that we -- now, the entire purpose of AMI is to gather data. So, the entire tie-in, be it into operational systems, be it into accounting systems, be it into planning. We will use this data in planning. So, all of that's happening.
A (Freeman) And, in Connecticut, it's not at the stage, obviously, that Massachusetts is. It has been proposed, it's under consideration by PURA,

but it has not been approved.

And, in New Hampshire, I understand, Mr. Johnson, that you can add some illumination.

A (Johnson) I don't intimately know this. I believe that there is an investigation underway for consideration of AMI in New Hampshire. But that's -- I'm not directly involved.

Q So, let's take the Massachusetts effort for now. Is that an expensive endeavor, to deploy AMI across your Massachusetts customers?

A (Walker) I don't have the specific numbers on what that's going to cost. But it is in the hundreds of millions.

If you're looking at -- what is the Massachusetts customer base? One and a half million? Okay. So, let's just assume, and don't quote me on the Massachusetts customer base, but let's assume that we have a million customers, and you have to provide a new smart meter to every one of those customers. You have to buy them, you have to, you know, get your meter technicians out to put them in place and replace them. So, that's time and effort. You have to install the backhaul infrastructure to get the

data, whether you're doing that with public carriers or your own infrastructure. Then, you need the servers to store and analyze the data, because you're now collecting not a monthly single value, but you're collecting 24-hour intervals, maybe 15-minute intervals, not just consumption, but amp readings, voltage readings, on all phases. We are looking at terabytes of data on a daily basis that's coming in. So, all of that infrastructure has to be put in.

So, yes, this is a larger undertaking. And that is why, as far as we've seen, those efforts happen outside of the traditional capital budget, because they just do not fit in that.

Q So, again, leaving the rate piece to the side for a moment, why has the Company not thought enterprisewide, with respect to these types of projects? That, when you have a meter data management system, or you have an AMI platform, or you have a distribution management system, that you're deploying for one state, that you would not, at some point, deploy that same system to your customers in another state, in order to achieve efficiencies and cost benefits across

your corporation?

A (Walker) So, --

Q And, so, that all customers that benefit from those technologies pay the lowest cost through the scale.

A (Walker) Yes. So, of course, the Company will, if we're deploying this in Massachusetts first, take all the lessons learned and the known infrastructure that we have, then we would utilize that information and knowledge for the other territories as we roll out.

But, since, specifically for Massachusetts, this is funded through a Massachusetts grid mod. tracker, that money is dedicated for the ratepayers in that state, and that's where it's being recovered from. So, we would have an issue utilizing that funding to roll it out to other territories.

A (Freeman) But, to your point, and I'll give you two examples, Synergi. Synergi, the forged *[sic]* process, and the Synergi Advanced Load Flow, was a Massachusetts grid mod. program. But, once that was instituted and up and running in Massachusetts, it became easier to roll it out

to New Hampshire, which was done last year, in the second quarter of 2022. And so that we standardized that in New Hampshire, because it was developed and standardized in Massachusetts. Became much more feasible, became cheaper, for the State of New Hampshire for us to do that.

Same thing with PowerClerk. PowerClerk was first rolled out in Connecticut, and it was up and running. And then, we -- an instance of that was brought to Massachusetts, up and running. And then, we took the database structure of PowerClerk, and we mapped that all to New Hampshire. And we're now rolling out an instance of PowerClerk in New Hampshire, and we should be up and running in the summer of this year.

So, those two instances we were able to leverage technology that had been developed on the grid mod. program in another state, to benefit other states within our enterprise. So, to the extent that we can do that, absolutely, we would do that.

Same thing with DMS, it's up and running in New Hampshire now, that we did it with

rate base. But the lessons learned, the way it was rolled out, would benefit the other states, as we roll out DMS in Massachusetts and Connecticut.

A (Walker) And the same thing, just to tag on, the same thing goes for GridTwin, the tool that I just mentioned earlier, is another thing that was developed as a partnership of MIT, and now it's being rolled out to Connecticut, and New Hampshire as well. And the same thing goes for the hosting capacity maps.

So, all of this does happen. But it is just a question of scale of the project. And I think AMI rollout is, by and large, the most expensive single project a utility can do. It dwarfs DERMS/DMS rollouts. It is a massive undertaking.

So, I think that is a bit of an isolated instance, where really that cannot be compared in that sense.

A (Johnson) **[STRICKEN]** *So, I have been enlightened and have more to add.*

So, per the 19-057 Settlement, there was an AMI RFP that was issued in New Hampshire.

The bids for the feasibility assessment, you know, was part of the -- was part of the process, and we have presently received those bids and they are being evaluated, is my understanding.

So, that is an update on the status of the investigation into AMI for New Hampshire.

Q Is there anything in the record before us here today that enlightens us as to the status of the investigation that the Company has undertaken with respect to AMI?

A (Johnson) **[STRICKEN]** *I do not believe so, no.*

A (Freeman) **[STRICKEN]** *No, I agree it is not. I think there is some documentation about the benefits of AMI. But, information about the process and the undertaking of it in New Hampshire, that's not in the record.*

Q Do you think that's the type of initiative that would be well-suited for evaluation within a least cost integrated resource plan?

A (Johnson) **[STRICKEN]** *Yes.*

CMSR. SIMPSON: Thank you. I don't have any further questions.

CHAIRMAN GOLDNER: Commissioner Chattopadhyay, anything else, before we move to

redirect?

CMSR. CHATTOPADHYAY: Just one follow-up.

BY CMSR. CHATTOPADHYAY:

Q So, as I look at the -- let me go to the Appendix A. Just bear with me. Just quickly confirm. So, when you're looking at the Loudon Station basic information, --

A (Walker) Uh-huh.

Q -- that's there, but there are alternatives that you also considered?

A (Walker) "Alternatives", meaning --

Q Meaning the Loudon Station.

A (Walker) Yes. So, in the report, we considered a total of ten alternative combinations. So, it was utility-scale storage; we looked at the combination of energy efficiency and utility-scale storage; energy efficiency, solar, behind-the-meter storage; energy efficiency and solar; energy efficiency and behind-the-meter storage; Combined Heat & Power assets and energy efficiency; and Combined Heat & Power as a stand-alone; Combined Heat & Power, energy efficiency, and mobile generation; energy

efficiency and mobile generation.
Q So, you're talking about NWAs?
A (Walker) Yes.
Q What I'm saying is, did you look at even traditional approaches?
A (Walker) I'll defer to my colleague, Mr. Cosgro, on that.
Q Because I see -- can I just clarify a little bit more, so you can probably answer it very quickly?

So, if you go to Bates Page, in Exhibit 4, Bates Page -- I'm just trying to understand this, Bates Page 055. You talk about there are many other things you looked at. Is that related to the Loudon Street discussion -- sorry -- Loudon Station discussion?
A (Cosgro) That is correct. Those are the traditional solutions that the NWA screening compared to.
Q And did you provide information on the benefit-to-cost ratios, *et cetera*, for those? And I'm just asking this.

And I understand that that's the kind of stuff that should be more clear going forward in here in the future. But trying to get a sense

of whether that, that page, the listing there, the different alternatives there as well, using traditional approaches, did you look at the benefit-to-cost ratios?

A (Cosgro) Yes. So, the cost-benefit ratio, we, I believe, selected the transformer replacement to compare the NWAs against that traditional solution to come up with a cost-benefit analysis. So, that is in Figure 1, on Bates Page 052.

CMSR. CHATTOPADHYAY: Thank you. That's all I have.

CHAIRMAN GOLDNER: Okay. Very good. That completes the Commissioner questions.

Let's move to redirect, and Attorney Ralston.

MR. KREIS: Mr. Chairman, before you do that, and, again, earnestly apologizing for taxing the Commission's patience, but at this point I'm preserving objections on the record for purposes of appeal.

I move that you strike from the record Mr. Johnson's subsequent reply to the question about the "state of AMI in New Hampshire". This is an adjudicative proceeding. It's not "Who

Wants to be a Millionaire?", where you get to phone a friend. He clearly sent an email or something to some other official of the Company, and therefore was able to backfill his answer about the state of AMI. And, by the way, his answer was extremely self-serving.

I mean, if the question is "What is the Company doing about AMI?", there's much to be said about that, and it just isn't fair. At the very least, you should ask Mr. Johnson who he consulted, and why it is okay for him to do that sitting up there on the stand with his computer? That is simply not cricket.

CHAIRMAN GOLDNER: Just a moment please.

[Chairman Goldner, Cmsr. Simpson, Cmsr. Chattopadhyay, and Atty. Speidel conferring.]

CHAIRMAN GOLDNER: So, well, let's start by, I'll ask Attorney Ralston if you have any response to those allegations?

MS. RALSTON: I guess maybe we could start by just confirming whether Mr. Johnson did confer with a colleague, or if he was just

reviewing his own notes? It was not clear to me. And that would probably be helpful context.

WITNESS JOHNSON: I did not confer. But someone sent me a text with that information.

MS. RALSTON: So, I guess, in light of that, it is probably not appropriate to be consulting using technology. But I believe what Mr. Johnson was trying to do was just to provide additional information, you know, while we're all here, for efficiency purposes.

So, I will leave it up to the Commission to give that the weight that it thinks it deserves, or just strike it from the record. But I believe it was an innocent mistake intended to just help the Commission's review.

CHAIRMAN GOLDNER: Okay. Thank you.

So, we're going to -- it's eleven o'clock. We're going to take a brief recess to 11:15. And we'll return with redirect for the Company, and I'll address this issue when we return. Okay. 11:15.

(Recess taken at 11:03 a.m.,and the hearing resumed at 11:23 a.m.)

CHAIRMAN GOLDNER: Okay. Before we

move to redirect, I'll instruct the stenographer to strike from the record Mr. Johnson's replies on AMI, all replies on AMI, from the record.

I'll remind the witnesses that their testimony is their testimony, and their testimony only.

And I will also add a record request, number "24", for the Company to inform the Commission and all the parties of the status of AMI in that record request.

*(**Exhibit 24** reserved for record request.)*

CHAIRMAN GOLDNER: So, let's move to redirect.

MS. RALSTON: Thank you. I will start with a couple questions for Mr. Freeman.

REDIRECT EXAMINATION

BY MS. RALSTON:

Q Mr. Freeman, do you recall a question from Attorney Kreis yesterday regarding whether it is the Company's position that it is no longer required to assess the impacts of supply?

A (Freeman) Yes, I do.

Q And do you also recall that you agreed that the

Company's position is that it is no longer required to assess the impacts of supply?

A (Freeman) Yes.

Q And do you wish to make any clarifications regarding that statement?

A (Freeman) Yes, I do. I would like to clarify that the Company did not include an assessment of supply in the 2020 LCIRP, because there were no identified projects that would impact supply. However, this does not mean the Company would never include an assessment of supply. If there is such a project, if there is such an option, if there is a need to include, we would definitely be happy to do that.

Q Thank you. Do you also recall a question from Attorney Kreis where he pointed you to Exhibit 7, at Bates 010, and asked you what the term "inform" was intended to mean?

A (Freeman) Yes, I do.

Q And do you recall that Attorney Kreis asked you whether "inform" should be interpreted to mean that the working group that the Company has proposed would decide what should be included in the next LCIRP?

A (Freeman) Yes.
Q And, when the Company proposed a working group, did the Company intend for the working group to decide what is included in the next LCIRP?
A (Freeman) No. As set forth in Exhibit 7, at Bates 020, the Company proposed that the working group would develop recommendations that would be approved by the Commission before the Company files its next LCIRP.
Q Thank you. Mr. Cosgro, do you recall a question from the Bench yesterday asking where, in the Company's filing, you had provided breaker-level data, this was a directive from the previous Settlement Agreement?
A (Cosgro) Yes, I do.
Q And, if the Commission -- if it would assist the Commission's review, would the Company be able to provide that data as a supplement? I know that we had discussed yesterday it had been used, but not provided. Would that be something that the Company could provide?
A (Cosgro) Yes. That information could be provided.
Q Okay. Thank you. And then, back to Mr. Freeman.

Do you remember a series of questions from the Bench yesterday asking the Company how its forecasts can be mapped to project identification selection?

A (Freeman) Yes, I do.

Q And do you recall a series of questions regarding inclusion of project analysis information as part of the LCIRP?

A (Freeman) Yes.

Q And could you just explain why the Company has not provided project analysis information for all projects that were identified through the forecast?

A (Freeman) Yes. Happy to. The LCIRP includes a list of projects that the Company identified for the LCIRP at the time period, circa 2020. And those projects would run typically through 2025. Those projects can be mapped onto the forecast via the system study that was conducted using that forecast.

The Company performed a thorough analysis to identify the best project solutions for each identified need. That is also presented. This process can occur over a period

of months or years. The solution analysis is performed consistent with the planning and evaluation policies set forth in the LCIRP.

The necessary time required to complete the project analysis can create, and admittedly, in this case, has created a gap between when the project need is identified and when the project solution analysis is performed. And the solution analysis would determine the alternatives, and then the preferred alternative. So, because of the timing lag between the completion of the forecast for the LCIRP, and the ultimate selection of the project solution, the LCIRP operates as a guidance document.

The LCIRP includes the detailed planning policies that the Company relies on to select project solutions during the LCIRP term. At the time that the LCIRP was submitted, or is submitted, specific project solutions may not be known, because the work to identify the best solution takes time, and cannot all be completed before the filing of the LCIRP. Still, the LCIRP, I think, is useful. It serves as a meaningful compilation of all the policies and

the frameworks employed by the Company. At the time of the filing, it documents the project need, it documents the in-service date for the projects. It simply doesn't document the process to select the alternatives, because of this timing lag. And that's unfortunate.

MS. RALSTON: Thank you. Nothing further on redirect.

CHAIRMAN GOLDNER: Okay. Thank you. I know it's been a long day and a half. I'll thank the Company witnesses, and the Company witnesses are excused. So, thank you.

And we'll move now to the Department of Energy, once we've rearranged things.

[Short pause.]

CHAIRMAN GOLDNER: And, Mr. Patnaude, when you're ready and the witnesses are ready, please swear in the witnesses.

MS. SCHWARZER: And I'll note that our witnesses, two of them are on the screen, and, so, I would ask them also to raise their right hands.

(Whereupon ***Jay Dudley***, ***Ronald Willoughby***, and ***Joseph DeVirgilio*** were

duly sworn by the Court Reporter.)

MS. SCHWARZER: Thank you.

[Court reporter interruption.]

MS. SCHWARZER: Commission, I'm going to qualify each of the witnesses, and then come back to ask questions to the panel.

JAY DUDLEY, SWORN

RONALD WILLOUGHBY, SWORN

JOSEPH DeVIRGILIO, SWORN

DIRECT EXAMINATION

BY MS. SCHWARZER:

Q So, Mr. Dudley, would you please identify yourself for the record?

A (Dudley) Yes. My name is Jay Dudley. And I am employed as an Analyst for the Electric Division within the Department of Regulatory Support for the New Hampshire Department of Energy.

Q Have you testified before the Commission before?

A (Dudley) Yes, I have.

Q How did you happen to come to work on the matters at issue in this docket?

A (Dudley) I was assigned to this docket by the directorship in the Department.

Q So, you are the lead analyst in this docket, is

that correct?
A (Dudley) That is correct.
Q And have you prefiled testimony in this docket marked as "Exhibit 16" and "17"?
A (Dudley) Yes.
Q And did you also prefile a technical statement marked "Exhibit 20"?
A (Dudley) Yes.
Q Was the work done to prepare those filings either done directly by you or under your supervision?
A (Dudley) Yes, it was.
Q Do you have any corrections you would like to make to your testimony?
A (Dudley) Yes, I do.
Q How many corrections do you have?
A (Dudley) I have two corrections to make.
MS. SCHWARZER: Okay. Let's -- I direct the Commission to Exhibit 17, Page 9, starting at Line 5 **[**Line 7**?]**.
BY MS. SCHWARZER:
Q And, Mr. Dudley, I'll just read that into the record: "We further conclude that the Plan generally complies with the PUC's Order in Docket Number DE 19-139."

A (Dudley) That is correct, yes.
Q Is there a correction you'd like to make at this time with regard to that statement?
A (Dudley) Yes, there is. As part of the Settlement Agreement in DE 19-139, one of the requirements that Eversource agreed to provide was a ten-year substation breaker-level loading criteria and forecast.

What we did during our review is we conflated that forecast with the ten-year substation forecast. So, we did not see, nor were we provided with, the ten-year substation breaker-level loading forecast.
Q Mr. Dudley, let's just get your correction clear. So, right now, what correction do you want to make to that explicit statement, that you "conclude the Plan complies with the Order in Docket DE 19-139"?
A (Dudley) Well, our conclusion would be contingent upon Eversource providing that load forecast, breaker-level load forecast, as a supplement in this proceeding.
Q Is there some reason that you believe that load forecast at the breaker level exists?

A (Dudley) My understanding, from Eversource's testimony yesterday, is that it does.
Q So, your proposal is to cure that omission by asking Eversource to submit the breaker study?
A (Dudley) Correct.
MS. SCHWARZER: I would ask the Commission, if it's possible, to ask as a record request that Eversource provide the breaker-level study that they relied upon?
CHAIRMAN GOLDNER: Let's hold that for now, and maybe we can come back to that later. Thank you.
MS. SCHWARZER: Okay.
BY MS. SCHWARZER:
Q Mr. Dudley, if the breaker study is not provided, how would you amend your testimony?
A (Dudley) I would amend my testimony to -- this section of my testimony, which is on Bates Page 013 of Exhibit 16, --
Q I'm sorry, Bates Page 013? I think we're looking -- I'm looking at Bates Page 009.
A (Dudley) All right. Let me just check. So, on Bates Page 013 of Exhibit 16, at the top of the page, we talk about the LCIRP's compliance with

the Settlement Agreement in Docket 19-139.
Q Okay.
A (Dudley) And, so, the correction to that would be that we would agree that the LCIRP is in compliance with the terms of the Settlement, except for the ten-year loading forecast at the breaker level.
Q And would the same correction apply to Page 9?
A (Dudley) Correct. It would, yes.
Q Thank you. I believe you said you had a second correction to make?
A (Dudley) Yes, I do. In one of the attachments to our testimony, at Bates Page 302, and this is Attachment JED/RDW-7, we inadvertently neglected to insert Page 1 of that data response, which is Data Response 5-004. We included Page 2, but we did not include Page 1.
MS. SCHWARZER: Mr. Chairman, if I could approach the witness and provide him a copy of the missing page, and provide it to the Commission as well?
CHAIRMAN GOLDNER: Please do.
MS. SCHWARZER: Thank you.
[Atty. Schwarzer distributing the

document to Witness Dudley and the Commissioners.]

MS. SCHWARZER: And I will represent to the Commission that counsel for the parties here have already been provided with a copy of this missing page.

BY MS. SCHWARZER:

Q So, Mr. Dudley, is this the page that should be inserted ahead of what has been marked Bates stamped "302" in Exhibit 16 and 17?

A (Dudley) Yes.

MS. SCHWARZER: And, for purposes of clarification, I don't know if the Commission would like this marked "301b" or "302a"? I would propose that, because this relates to Exhibit 16 and 17, that perhaps it could be "Exhibit 16a" and "Exhibit 17a", and perhaps Bates Page "301b"? That seems to me the easiest, but I --

CHAIRMAN GOLDNER: That's fine.

(The documents, as described, were herewith marked as ***Exhibit 16a*** *and* ***Exhibit 17a*** *for identification.)*

MS. SCHWARZER: Thank you.

BY MS. SCHWARZER:

Q Mr. Dudley, with those corrections in place, do you feel that your testimony as submitted is complete and accurate?
A (Dudley) Yes, I do.
Q And do you adopt it --
A (Dudley) I do.
Q -- as your sworn testimony?
A (Dudley) Yes.
Q I'm going to go next to Mr. Willoughby. Would you please state your name for the record?
A (Willoughby) My name is Ronald Willoughby.
Q And who is your current employer?
A (Willoughby) I am the Owner and Executive Consultant of Willoughby Consulting. And I'm currently serving as a subcontractor for the River Consulting Group.
Q And you're testifying -- excuse me -- you're testifying remotely today. So, where are you located?
A (Willoughby) I'm located in Apex, North Carolina, which is a suburb of Raleigh, North Carolina.
Q Have you testified before the Commission before?
A (Willoughby) No, I have not.
Q Could you please summarize your professional

background?

A (Willoughby) I hold a Bachelor of Science degree in Electrical Engineering from the University of Missouri-Rolla, a Master's of Science degree in Electrical Engineering, with an emphasis on Power, from Carnegie-Mellon University, and an honorary professional degree in Electrical Engineering from the University of Missouri-Rolla, now called the "Missouri University of Science & Technology"

I am a license Professional Electrical Engineer and a life senior member of the Institute of Electrical and Electronics Engineers, known as "IEEE".

I have more than 45 years industry experience working for companies engaged in the electric utility industry, in particular, working for Westinghouse Electric, Cooper Power Systems, ABB, and KEMA Consulting. Over that period of time, I have published more than 60 industry publications on power systems planning, protection automation and control.

I have one U.S. Patent for improving the reliability of electrical distribution

systems, and that is a U.S. Software Patent.
Q Thank you. Is your CV filed in this docket?
A (Willoughby) Yes, it is.
Q Is it attached to Exhibit 16 and 17?
A (Willoughby) That's correct. It's RDW-1 and RDW-2.
Q And are those Bates Pages 0034 through --
A (Willoughby) RDW-1 starts on Bates Page 034, and RDW-2 starts on Bates Page 041.
Q Thank you. And, if I could just briefly draw your attention to RDW-2, starting on Bates Page 041, you've authored an article entitled "Unbiased 360-Degree DER Evaluations and Assistance" on April 20, 2020, is that correct?
A (Willoughby) That is correct.
Q And --
A (Willoughby) That was an article for *Energy Central*, a publication.
Q And, on Bates Page 035, at the bottom, it shows that you were the "Technical lead for a project commissioned by the U.S. Department of Energy to conduct a comprehensive study across the United States on CVR, including deployment strategies, costs, benefits, barriers, and potential

solutions, through a broad market outreach effort." Correct?

A (Willoughby) That is correct.

Q Are there any corrections that you would like to make to the testimony that you filed in Exhibit 16 and 17?

A (Willoughby) I have no corrections.

Q And did you also participate in the technical statement that was filed an "Exhibit Number 20"?

A (Willoughby) Yes, I did.

Q And do you have any corrections to make to that statement?

A (Willoughby) I have no corrections for that.

Q So, do you adopt that testimony today as your sworn testimony?

A (Willoughby) Yes, I do.

MS. SCHWARZER: At this time, I would offer Mr. Willoughby as a professional expert in electrical engineering.

[Chairman Goldner indicating in the affirmative.]

BY MS. SCHWARZER:

Q Turning now to Mr. DeVir -- excuse me, I cannot pronounce your name correctly. Would you say it

for all of us please?
A (DeVirgilio) Yes. I'm Joseph J. DeVirgilio, Junior.
Q And, Mr. DeVirgilio, would you please identify your current title and employer?
A (DeVirgilio) Yes. I am the Owner and an Executive Consultant at Suncoast Management Consultants, LLC. And I'm currently a subcontractor and Project Manager to River Consulting Group.
Q Have you testified before this Commission before?
A (DeVirgilio) I have not.
Q Have you --
A (DeVirgilio) But I have testified before the New York State Public Service Commission as an executive for Central Hudson Gas & Electric Corp. in a rate proceeding involving gas staffing and productivity.
Q Could you please summarize your professional background?
A (DeVirgilio) Yes. I have a Bachelor's degree in Electrical Engineering from Stevens Institute of Technology, and a Master's of Engineering degree in Electric Power Systems from RPI. I hold an

inactive license as a Professional Engineer in the State of New York. And I have more than 49 years of electrical -- excuse me -- electric and gas utility industry experience; 37 years in various engineering operations and corporate support, staff management, and executive responsibilities with Central Hudson Gas & Electric, and 12 years of consulting experience with RCG.

Q Did you file a CV in this docket?

A (DeVirgilio) I did not.

Q How did you come to work on the matters at issue in this docket?

A (DeVirgilio) As the Project Manager with RCG, RCG was hired to provide engineering support for DOE, and I've been leading a good part of that project.

Q What sorts of work have you performed under the direction of Jay Dudley, the DOE's Utility Analyst?

A (DeVirgilio) I reviewed the Eversource's LCIRP materials, assisted in preparing data requests, participated in several technical sessions, and review Eversource, OCA, and CENH's testimony in

preparation for these hearings.
Q Have you prefiled testimony in this docket?
A (DeVirgilio) I have not.
Q Have you filed supplemental testimony in this docket?
A (DeVirgilio) I have not.
MS. SCHWARZER: The Department would offer Mr. DeVirgilio as an expert engineer.
[Chairman Goldner indicating in the affirmative.]
MS. SCHWARZER: Thank you.
BY MS. SCHWARZER:
Q So, these are questions that I'm going to address to the panel broadly. And, in the first instance, could the panel explain how DOE evaluated Eversource's demand forecast?
A (Dudley) Mr. Willoughby?
Q You would defer to Mr. Willoughby?
A (Dudley) I will defer to Mr. Willoughby, yes.
Q So, Mr. Willoughby, could you please explain how the Department evaluated Eversource's demand forecast?
A (Willoughby) Yes. The objective for our evaluation was to evaluate the process under

which the load forecasting took place. And, so, what I'm going to do is just briefly walk you through the process that was explained yesterday by Eversource, but I just want to do it to highlight what we've reviewed, and so it's clear to everyone.

It's a ten-year timeframe forecast, which is typical. And econometrics models were used to determine historical peak demand as a function of peak day weather conditions and the economy, again, that's typical. Models assumed normal weather conditions based on the most recent ten-year forecast. And then, the models use two different weather variables, a three-day weighted humidity index and then the cooling degree days.

There were two ten-year peak forecasts produced; one was a 50/50, a normal ten-year typical weather forecast, and then the other one was a 90/10 extreme ten-year weather forecast, and that's typical. And, by "extreme", in this case, we're talking about, as we had learned yesterday, humidity and cooling days.

The source of the historical economic

data that was used in the forecast came from Moody's Analytics. And Moody's Analytics is a recognized international economic consulting company that provides this kind of data to the utility industry.

Based upon this, trend forecasts were then developed for bulk substations, and they were developed for each substation. The trend forecasts were then adjusted to account for energy efficiency, distributed energy resources, and large customer loads, and an example of a "large customer load" would be maybe a large commercial development.

Then, behind-the-meter solar and company-sponsored energy efficient programs were then proportionately applied to each substation according to the historical peak demand.

And that concludes the process. And, so, --

Q Well, if that concludes your description, in the panel's opinion, were the Company's processes and methodology consistent with industry standards?

A (Willoughby) We have an expert on the RCG team that's done a lot of load forecasting for

utilities, and actually working for another utility, and that's our expert source of information in this area. And, according to him, the process that I just described is consistent with what other utilities do, and the method upon which those -- the loading was applied at each individual substation, using the econometric models, is consistent and considered industry practiced -- practice, sorry.

Q A standard practice or a leading practice?

A (Willoughby) Actually, he said "leading practice".

Q Does the Department view the Company's load forecasting process as consistent with RSA 378:38 and our criteria in RSA 378:39?

A (Dudley) Yes, we do.

Q I'm going to ask the panel again, if you remember Eversource's testimony yesterday about how they created a violations list, and with regard to that conversation, what is a "PAF"?

A (Dudley) A "PAF", Ms. Schwarzer, is a "Project Authorization Form". It's their form that contains their project analysis and proposal for budget approval.

Q Do alternative approaches appear on a PAF?
A (Dudley) Yes, they do. There are several different sections of the PAF, and that is one of them.
MS. SCHWARZER: Mr. Chairman, my next question will likely require the panel to refer to confidential information, on Exhibit 4, starting on Bates Page 199. So, I would just like to alert the Commission to that concern.
I'm not sure there's anyone in the hearing room not privileged to hear it.
CHAIRMAN GOLDNER: Well, --
MR. CAPLAN: I may not be. You want me to step out?
MS. SCHWARZER: I would ask then that he leave.
CHAIRMAN GOLDNER: Okay.
MS. RALSTON: I actually don't believe the Company has an NDA in place with Clean Energy New Hampshire at all. Eli, correct me, if I'm wrong?
MR. EMERSON: I don't --
MS. RALSTON: I don't think they have ever requested confidential information. It just

hasn't been an issue.

MR. EMERSON: That is correct.

MR. KREIS: They're a party. They're entitled to be in the room when confidential material is discussed.

CHAIRMAN GOLDNER: So, I'm not sure I'm hearing everything. So, Mr. Emerson, can you elaborate on the CENH group that's here today or not here today?

MR. EMERSON: So, I am counsel representing a party, Clean Energy New Hampshire. I have a representative and my witness from Clean Energy New Hampshire.

This is Mike Caplan, from Olivewood Energy, who is a member of CENH, but I wouldn't say he's a representative of CENH, so not a party.

We have not signed an NDA. Although that may have been an oversight, because we -- it certainly looks like we have received confidential information. And I'm happy to sign an NDA at some point. I would like to be able to hear what's being offered.

MS. RALSTON: I think that's a

reasonable solution. So, Attorney Emerson and I can sort out the NDA issue later. But, if Mr. Caplan could just leave the hearing room, while we discuss this information?

CHAIRMAN GOLDNER: Okay. Thank you. And, Mr. Emerson, if you could remind me at the end, we can make sure that we welcome Mr. Caplan back in, once the confidential portion is over.

Yes, Mr. Kreis.

MR. KREIS: Well, I just want to point out that it's very common for intervenors and their key people to sign non-disclosure agreements for purposes of conducting discovery. But, for purposes of participating in hearings before the PUC, every party admitted as an intervenor has the right to be here in the hearing room, and they do not have to sign a non-disclosure agreement in order to do that.

The Commission can issue a protective order, if it wants to, requiring all the parties to treat that information as confidential. I think that's the right way to handle it.

And I see Commissioner Simpson nodding at me. So, I must be right.

CHAIRMAN GOLDNER: So, what do you recommend? How do you recommend proceeding, Mr. Kreis?

MR. KREIS: Well, I'm indifferent to what remains confidential or what doesn't. But, if it is a concern, and I assume it is a legitimate concern, one of the other parties, perhaps Eversource, could ask you to issue a protective order relating to the confidential aspects of the hearing transcripts.

And I think you could probably make a ruling like that right from the Bench, just so that it's clear to everybody that, if we talk about confidential information in the hearing, it is going to be confidential.

MS. RALSTON: So, I think that lands us in the same place. So, perhaps, if the Commission could just issue a protective order regarding the information that the DOE is about to reference, that would be sufficient.

CHAIRMAN GOLDNER: Okay. Very good. I'll do that from the Bench.

So, I think we're ready to proceed.

MS. SCHWARZER: Thank you, Mr.

Chairman.

*** * BEGINNING OF CONFIDENTIAL SESSION * ***

*(Start of the **CONFIDENTIAL** Session, and please note that following the hearing this transcript was reviewed by the Petitioner, and I have been notified that **no confidential information** was mentioned, therefore **no redactions** are necessary within this confidential session of this transcript.)*

BY MS. SCHWARZER:

Q Given the Company's demand forecast, and their list of violations, could the panel please explain how the Department determined that the Company's process of project evaluation was sufficient?

A (Dudley) In order to do that, what we did was we relied on Appendix D, E, and F, in the 2021 Supplement, March 2021 Supplement. And, in those appendices, what you will find is you will find three different forms that cover some of the projects that were on Eversource's violation list.

For example, Appendix D contains the

Initial Funding Request Forms, which actually, just to clarify some confusion that I detected yesterday, in terms of project documentation, covering projects that are three, four, even five years out. I think what people here will find, if they turn to Appendix D, they will find what Eversource titles as the "Initial Funding Request Form".

Q Mr. Dudley, if we could just make sure everyone is with us, it's Exhibit 4, is that correct?

A (Dudley) It's Exhibit 4, yes.

Q It's a confidential exhibit. And do you have a Bates page associated with where you would like us to direct our attention? I believe the report starts at 201, but I don't know if that's the --

A (Dudley) The report starts at 201. Let me just get there, to the appendices. And that is in -- there are two parts to that exhibit. And, so, turning to Part 2, --

Q Exhibit 4, Part 2?

A (Dudley) Yes.

Q I need to open a different exhibit then as well.

A (Dudley) We're looking at over 300 pages here. Almost there, okay.

Q Which Bates page would you like us to be looking at in Part 2?

A (Dudley) Almost there. It's a very big document. Okay. It starts at Bates Page 415. And that would be Appendix D.

Q Thank you. So, please, if everyone is with us, please continue.

A (Dudley) So, the Initial Funding Request Form is, as we understand it, is Eversource's attempt at providing preliminary analysis of projects that they had planned out three, four, even five years.

For example, if you look at Bates Page 415, you will see that this Initial Funding Request Form talks about the "Ashland Reliability Project". And you will see that the form -- the analysis was prepared on February 12th, 2021. However, the "Estimated in-service date" is not until "June 2024".

And, if you go work your way through this appendix, what you will find is you will find projects with in-service dates of 2025, 2023. So, this is Eversource's attempt at providing at least a preliminary evaluation and

proposal for these future projects.

Just as an aside, when we first saw this, we were surprised at this, because we didn't know that such a document existed. And it's our understanding, through discovery, that, since 2020, since the resolution of the last rate case, in 19-057, Eversource has been attempting to improve its documentation process. However, we didn't know that this was going on, we were glad to see it.

But this is part of the information that we reviewed, in terms of projects that are, you know, two or three years out. So, it's not a complete analysis. But it does provide some basis and justification for the projects.

Moving on, to Appendix E, if I can just get there really quickly.

Q Take your time.

A (Dudley) Almost there. Okay. This begins at Bates Page 435.

MS. RALSTON: That's Pdf Page 70, if that's helpful, if anyone is using the electronic version.

CONTINUED BY THE WITNESS:

A (Dudley) And what we see here is what's called a "Solution Selection Form". And this is part of the project development phase, where the analysis becomes much more detailed.

And, again, you will find -- as you look through this, you will find some of the projects that are on Eversource's violation list here. But these -- this analysis is much more detailed. And it's kind of the in-between step between deciding whether or not to include a project in the budget, and actually pulling the trigger on the project and going to actual implementation.

BY MS. SCHWARZER:

Q Is this the form where alternatives appear?

A (Dudley) Alternatives analysis does appear on these forms, yes. For example, the one that we're -- that I'm looking at right now, beginning -- the very first one, this is the "Rebuild of White Lake Substation". And the estimated in-service date is "June 1st, 2023". However, the analysis was first compiled in July 14th of 2020.

And, if you go to -- if you go to Bates

Page 438, beginning there, you'll see a detailed alternatives analysis, and also a cost estimate for the project.

Q I'm almost there myself.

A (Dudley) Again, this is -- this is a new form. We didn't realize it existed prior to reviewing the LCIRP. But we welcome this addition. We think it's a good addition to Eversource's process.

Q Is this form what you referred to previously as a "PAF"?

A (Dudley) This isn't.

Q This is not.

A (Dudley) This form evolves into a PAF, when the final phase of the decision-making occurs. And that can be found in Appendix F. Okay. I'm sorry. Again, a very big document.

Okay. Appendix F begins at Bates Page 459. And here you will find, in this appendix, the actual Project Authorization Forms, which contain the actual justification and additional analysis for the project. And this is what goes -- my understanding is, of Eversource's process, is this is what goes on to the Budget

Committee for approval.
Q And the page you're looking at shows that this particular form was prepared on "April 15th of 2020", is that correct?
A (Dudley) Yes, it is.
Q And the estimated in-service date is "November 1, 2020"?
A (Dudley) Right.
Q So, suggesting much closer to construction and a need for actual --
A (Dudley) Correct. Correct. These forms are compiled, and the analysis are compiled, and then submitted, planning on construction to begin shortly after approval of the Project Authorization Form.
Q Including the initial budgeting document, and the solution form, and the PFAs **[**PAFs**?]**, how many projects would you say DOE reviewed in considering the LCIRP filing?
A (Dudley) We reviewed all of them.
Q Do you know how many projects that was?
A (Dudley) I'm going to say, close to 100.
Q I would ask the other members of the panel if you have any comments on how review of -- the LCIRP

review of projects and alternatives was done?

A (Willoughby) I do have something to add to Mr. Dudley's comments.

The forms that he described are progressive. There are forms at the very beginning, and he showed you the Initial Funding Request Form, all the way through to the Project Authorization Form. And, throughout that process, those forms have different levels of completion. And that's all captured in their capital approval process. And I believe there's a job description, it's one of the attachments for that in the LCIRP.

But what I'd like to draw your attention to is, that paperwork does an excellent job of capturing the details. But I'd like to draw your attention to Exhibit 4, beginning on Bates Page 199. And that's the "2020 Design Violations Summary Report" that we looked at yesterday a little bit.

Q Mr. Willoughby, is that Exhibit 4, Part 1?

A (Willoughby) That would be Part 1.

Q So, let me make sure people can catch up to where you are, including me.

A (Willoughby) Okay.

CMSR. CHATTOPADHYAY: Can you repeat the Bates Page again?

WITNESS WILLOUGHBY: Bates Page 199.

CONTINUED BY THE WITNESS:

A (Willoughby) Now, this particular exhibit doesn't fit all on Part 1, part of it is captured on Part 2. But we don't need the part that's on Part 2. Part 1 -- what we see in Part 1 is enough.

Now, the reason I'd like to go through this just a bit, we're not going to go through the report page-by-page, I just want to go to one example. And then, I'm going to explain how this was used to help us evaluate projects, and whether they were cost-effective or not, whether alternatives were compared. And there was some concern "would we be able to see overbuilds or not?", those kinds of things was what we were looking for.

So, let me just take you to one example here. We can go to Bates Page -- let me blow this up so I can actually see it a little bit, 205. And there's a "Loading and Capacity" chart. And you'll see that --

BY MS. SCHWARZER:
Q Hold on.
A (Willoughby) -- on that chart along the *x* axis --
Q Mr. Willoughby, I'm just going to wait. I'm sorry, I'm not there yet.
A (Willoughby) Okay.
Q And my mouse is a little slow.
CMSR. SIMPSON: So, this is Part 1?
MS. SCHWARZER: Part 1 of Exhibit 4.
WITNESS WILLOUGHBY: Right.
MS. SCHWARZER: Bates Page 205. And if the Commission would let me know when you're ready.
CMSR. SIMPSON: Okay. I'm there. Thank you.
MS. SCHWARZER: Thank you.
BY MS. SCHWARZER:
Q Mr. Willoughby, would you continue please.
A (Willoughby) Yes. This is an example of all projects that are contained in this document. So, we'll look at this one. And then, I'll tell you about the conclusion of what we found looking at the whole document.
So, you see in this chart "Loading and

Capacity", a date along the *x* axis. It goes from "2006" to the year "2029". What I'm interested in looking at right now is the load forecast over a ten-year period beginning 2020. So, in this particular chart, you can see the loading on the year 2020, and those -- and, in this case, the "90/10 forecast" is one color, "Historical" is in another color, and so forth.

I'm going to be looking at two points on this chart for all the projects. I'm going to be looking at the chart at the year 2020, and I'm going be to be looking at the data that the chart tells me on the year 2029.

So, if you had a ruler and you drew a vertical line on those two axes, those are the data points I'd be looking at. Okay. So, keep that in mind.

Then, what I'm also looking at is towards the bottom here, you see these numbers "TB164", "TB191", those are transformer numbers in this particular substation. It shows the year it was manufactured. And you see a "Condition Code". In this particular example, the condition is green, which means it's good, no problems.

Eversource uses a tool called "PTX", to calculate, using data-driven numbers, the Health Index for their station transformers. And that allows them to predict how much life is left in the transformer. And, depending upon the Health Index, this color will change, from green, to yellow, to red.

We see next a "Nameplate" rating. And then we see these abbreviations "LTE", "STE", "LCC". "LTE" is "Long-Term Emergency" rating, "STE" is the "Short-Term Emergency" rating, and then there is nothing for LCC. Well, there is. That's the normal loading.

If we go to the next page, you see in the forecast they have something titled "System Planning Violations & Needs". And you see across the top some conditions, "N-0", "N-1", so forth. The "N-0" is the base case. That means it's normal operating conditions, nothing is out. The "N-1" means there's something out. And they re-run the case to see if there is any violations with something out, and so forth. And then, they'll color code that.

And then -- and then, once they have

decided what the violations are, they then summarize what they propose the solutions to those violations being, and that's what's in this section here, called "Solution - Transformer Replacement". That's the one that was selected.

When System Planning did the study, they ran some scenarios to determine how to -- how to overcome the Short-Term Emergency rating issue, which is the brown color coding there. And, so, they put this down as a suggested solution for that.

And then, they also said that we need to "reconfigure a circuit to reduce loading at Bedford that cause Short-Term Emergency violations at adjacent substations." And then, they have a timetable for this initial funding, and so forth. Again, the Solution Design Committee, and then EPAC, "Eversource Project Authorization Committee", that's all part of the capital project approval process.

And then, they go and they show, you know, what that looks like, in terms of the physical layout. You know, they're trying to show where the substation is, what it physically

looks like, where it's located. Just so they --
Q Is that -- is that Bates Page --
A (Willoughby) And they do this for every project.
Q Is that Bates Page 207 is where that is on?
A (Willoughby) That's Page 207.
Q Thank you.
A (Willoughby) So that, when they say they need to reconductor a particular circuit, you know, this gives you a frame of reference for that.

And then, if -- and that's it. Okay, then we go to the next project. Okay.

So, for each project, we have that kind of information captured. After System Planning did their work to try to determine violations, and said "Here's what we're seeing." This report summarizes the planning studies conducted over that ten-year window, 2020 through 2029 planning period.

And what they're looking for are violations, system violations, like overloads, capacity issues, voltage violations, transformer condition problems. And then, they propose a feasible solution for that.

And they did this for each region. So,

in that report, it's divided up by region, and it's also divided up by bulk transfers and non-bulk transfers, by region. "Bulk" meaning "115 kV and above"; "non-bulk", "anything below 115 kV." So, 12 kV, 24 kV, 4 kV, anything below.

I went through this entire report. And I was able to identify 37 bulk station violations and twelve non-bulk station violations. And then, I said "All right, what kind of violations are we seeing?" And most of them were due to contingency or reliability conditions not being met, which is, you know, a very common issue that a utility company has to deal with every day.

And then, the preferred solutions included things like putting in transformer switches, so that you can make better use of the assets; bus tie schemes, taking advantage of the transfer switches; automation implementation, and that, again, helps the reliability and makes better use of assets. They did selective capacity upgrades. And the way they tempered that is, if they could relieve some of the capacity issues using -- by using -- by transferring the load somewhere else, they did

that, as long as transferring the load somewhere else didn't create a violation somewhere else. And then, when needed, they replaced equipment, if it was due to an asset condition.

But, because of the way they are able to evaluate their power transformers, unless there's an emergency failure that's not predictable, they have all of their transformers with a Health Index assigned, so that gives them time to plan for either some sort of a refurbishment or a replacement of that transformer down the road.

I saw very few projects where only the transformer was replaced. There was almost always some other condition that was being dealt with at the same time.

So, what's the point of this? The reason I'm bringing this up before you this morning is, this is how we evaluated -- one of the ways we evaluated whether we felt like that they were properly dealing with projects, and properly using System Planning to identify violations, overcome violations, and then propose solutions. And we were looking for, like I said,

potential overbuilds, and we didn't find any.

So, at the conclusion of this, it looked like they did a very good job of documenting these projects. And, where they go from here, I didn't evaluate. All I evaluated is System Planning's work and putting this kind of information together in this kind of a report.

Q Did the panel also consider --

MR. EMERSON: Excuse me, could I just interject for a second here? I have a question about this.

So, this is -- seems to be all stuff that could be covered in direct, and was covered in direct. We're now almost an hour into introducing these witnesses. There are other two sets of other witnesses that need to go today.

I'm just -- could I get a little sense of how much longer this introduction is going to take, and what our plan is for being able to get the set of witnesses who are critical of the Plan in front of the Commission?

That's my question. Thank you.

MS. SCHWARZER: Certainly. The Department is interested in just providing some

information to the Commission about why we reached a conclusion that the LCIRP was largely compliant with the requirement of the statute.

And I don't have a lot more questions left to ask. But it is important to us that the Commission understand the rigor of our review, and why we reached the conclusions that we did.

CHAIRMAN GOLDNER: And it's important to the Commission, too. We want to hear the testimony.

Mr. Emerson's point is well-taken, that we need to plan the day, and keep an eye on the clock. And we may have a working lunch ahead of us. But I appreciate your comment, Mr. Emerson, and we'll be sure to get through all the witnesses today.

So, please continue, Attorney Schwarzer. And this is important testimony. So, I don't want you to feel hurried, this is important. Please continue. But understanding that we may have to do something like working through lunch to make it through today, I think. Sounds like everybody is in support. So, please continue.

MS. SCHWARZER: Thank you, Mr. Chairman.

BY MS. SCHWARZER:

Q Would the panel please discuss how you reviewed Eversource's work to consider alternatives, other than traditional solutions?

A (Dudley) As I stated earlier, Ms. Schwarzer, in the Project Authorization Forms, and also in the Solution Selection Forms, there are sections that are devoted to alternatives analysis, and the costs of those alternatives. And that's what's provided in those forms, and that's what we looked at.

Just as an additional point of information, there are a lot of planned projects proposed by Eversource over the next five-year term of the 2020 LCIRP. And, so, what we attempted to do is get Eversource to kind of organize all that information for us. And you will find that in an attachment to our testimony, which is Attachment JED/RDW-12. And that's at Bates Page 312 of Exhibit 16. And --

Q If you wait a moment for us to catch up with you?

A (Dudley) Absolutely. Yes.

MS. RALSTON: Can you repeat that Bates number?

WITNESS DUDLEY: Bates 312.

MS. SCHWARZER: I'm not there yet, but I'm hoping to be there soon.

Okay.

CHAIRMAN GOLDNER: And, Attorney Schwarzer, just while we're pausing there, just a quick time check. Do you think you have maybe ten or fifteen minutes left? The court reporter is --

MS. SCHWARZER: Yes. Certainly, I think fifteen minutes probably would be sufficient.

CHAIRMAN GOLDNER: Okay. Yes, please proceed. Thank you.

MS. SCHWARZER: Sure.

BY MS. SCHWARZER:

Q Mr. Dudley, I'm all set. I'm with you.

A (Dudley) Okay. All right. Thank you. So, we had asked Eversource to compartmentalize these projects for us. And what they did was they provided us with different groupings, as you will see in the data response, Group 1, Group 2, and

Group 3; 4, 5, and 6 comprise the Supplement appendices, which I talked about earlier.

But, anyway, this was helpful in terms of us drilling down on different specific projects. And I just want to point that out, as it is additional information that was included in our testimony.

*** * END OF CONFIDENTIAL SESSION * ***

(Hearing returned to the PUBLIC session.)

BY MS. SCHWARZER:

Q I do want to ask you just broadly about the N-1 standard. But, if you would carve out, as applied to DER, in your response. What is the Department's position about Eversource's use of the N-1 standard, with the exception of as it is applied to DER?

A (Dudley) Well, the Department understands that the N-1 standard is important, in terms of distribution planning and design. But, currently, we have no position on the N-1 -- application of the N-1 standard, in terms of DER interconnection.

Q But, with regard to the other categories, do you support -- does the Department support

Eversource's use of the N-1 standard?
A (Dudley) Our understanding is it is an industry standard. And I will turn to Mr. Willoughby, if he has anything additional on that.
A (Willoughby) That is correct. That is a well known standard.
Q So, with regard to Eversource's LCIRP, with the exception that you just noted, and deferring on the content of the Settlement Agreement, as the Commission has asked us to do, and with the exception of the ten-year report on the breaker-level analysis, in the opinion of the Department, is Eversource's LCIRP, including the supplemental filing, consistent with the requirements of RSA 378:38 and the criteria in RSA 378:39?
A (Dudley) Yes.
Q I do need to ask you whether the panel has heard the testimony about Eversource's proposal for a working group?
A (Dudley) Yes.
Q Does the Department support the use of a working group?
A (Dudley) No, it does not at this time.

MS. SCHWARZER: Mr. Chairman, I have no further direct at this time. Thank you.

CHAIRMAN GOLDNER: You were far faster than ten or fifteen minutes.

Okay. So, in the interest of time, what I would suggest is something approaching a working lunch, give people a chance to go take a break, and perhaps come back at a quarter till, and just keep going, beginning with cross-examination from the Company, then moving to OCA, and CENH.

[Brief off-the-record discussion ensued between Chairman Goldner and the Court Reporter.]

CHAIRMAN GOLDNER: So, the court reporter needs a little bit of additional time. So, that will take us to one o'clock, and then we'll begin again then.

Okay. Let's return at 1:00 p.m. promptly. Thank you.

(Lunch recess taken at 12:28 p.m., and the hearing resumed at 1:07 p.m.)

CHAIRMAN GOLDNER: Okay. Sorry, we're running a couple minutes late there.

Let's pick up with the Eversource cross-examination.

MS. RALSTON: The Company does not have any cross-examination for these witnesses. Thank you.

CHAIRMAN GOLDNER: Okay. We'll move to the Office of the Consumer Advocate.

MR. KREIS: I think I just want to ask one question.

CROSS-EXAMINATION

BY MR. KREIS:

Q And it has to do with the -- this is a question for Mr. Dudley, obviously. You said a few minutes ago, before the break, that the Department of Energy doesn't approve or agree with that "working group" recommendation. I'm curious to know why that is the Department's position?

A (Dudley) Because we have no idea as to the composition, the subject matter to be considered, or what's to be discussed or what the process is. We don't know any of that. And, so, we're not in favor of it.

MR. KREIS: Thank you. Mr. Chairman,

that's all I had for the Department's witnesses.

CHAIRMAN GOLDNER: Okay. Very good. And we'll move to CENH.

MR. EMERSON: Attorney Kreis just took my only question. So, we don't have anything. Thank you.

CHAIRMAN GOLDNER: Very good. And we'll move to Commissioner questions, beginning with Commissioner Simpson.

CMSR. SIMPSON: Thank you, Mr. Chairman. Thank you for being here, Mr. Dudley, --

WITNESS DUDLEY: Yes.

CMSR. SIMPSON: -- Mr. Willoughby, and Mr. DeVirgilio.

BY CMSR. SIMPSON:

Q So, I'm going to proceed similarly as I -- when I was asking the Company's witnesses some questions, I'm really focused on identifying the elements of statutory compliance. And I think your joint testimony was organized in such a way that you stepped through that process.

And I recognize that the Department has reviewed in detail the very vast record, and

feels that what the Company has submitted substantially complies with the statute, absent the breaker-level data.

So, as we were walking through the statute and the subsequent requirements with the Company yesterday, you know, my questioning was focused on the Company's demand forecast, and then, from that demand forecast, the issues that they have identified with their system to meet that demand forecast, and then, through those issues, an analysis of projects or options to address those problems.

Is that similar to your view of what the statute intends and what it requires?

And let me back up, I guess. I don't want to ask you legal questions, because I recognize that you're not an attorney. And, again, I welcome Attorney Schwarzer, if at any point she feels I'm asking any of the witnesses a question of law to interject. But more so with just compliance with the mechanics of the statute and the elements of the statute complies -- or, requires for compliance?

A (Dudley) Yes. Yes, we believe it complies.

Again, I'm not an attorney, and I'm approaching this as an analyst. But we believe that it complies with the plain language in the statute, yes.

Q And just -- I'm really interested in your thinking here, that, when you look at everything that's in the record, you know, the demand forecast, and then all of the various projects that are described, how did you approach a review of those projects, and then square that with the various elements for options that the Company must consider under the statute, given that different issues with their systems might lead to an appropriate analysis of different types of options?

MS. SCHWARZER: Commissioner, just a moment, if I could just jump in. I know we're not supposed to discuss the Settlement Agreement. So, your question does not have to do with the NWA thresholds?

CMSR. SIMPSON: Not at this time, no.

MS. SCHWARZER: Great. Thank you. I just wanted to clarify, sir.

BY THE WITNESS:

A (Dudley) Yes. Thank you, Commissioner Simpson. As I stated earlier, we considered the violations list, and also the planned investments list, and we went down through it. And Eversource provided us with a lot of project documentation, as I said earlier, and we've studied that.

And what you will find on a lot of their documentation is they consider a lot of the things that you see right here in 378:38. They consider, well, for example, Ms. Schwarzer asked me earlier about alternatives analysis, which goes to the heart of least cost. They do perform some alternatives analysis in their project reviews. We did cite them, we looked at that. They also cost out those alternatives; we look at those as well.

Sometimes Eversource doesn't always choose the least cost, but they do choose what we would consider the reasonable approach. They also consider environmental conditions at the individual sites, and what is needed for mitigation of those environmental conditions.

And, so, that's what we relied on, is we relied on the Company's own reporting, own

review, and own analysis, and we took it as we found it. And we looked to see if there was any digressions at all. We didn't find many, except, you know, in a few cases there may have been a lack of information.

But, you know, on the whole, for the most part, we found that they were compliant with the elements of the statute.

BY CMSR. SIMPSON:

Q And, when you were reviewing the record, were you able to identify a specific list of issues, or that -- that came from the Company's demand forecast? We're very focused on I think it was Bates Page 091 of Exhibit 3 yesterday, just a moment.

A (Dudley) Yes. Let me just get there. Did you say "Exhibit 3", Commissioner?

Q I did. Just a moment. Yes. So, Exhibit 3, Bates Page 091, the planned projects.

A (Dudley) And I'll just get there. I should know it by heart, because I've been there many times, but --

Q Well, there's many pages. So, --

A (Dudley) Yes. Okay. Yes, I'm there.

Q Now, in your view, there are -- or, are there other projects that are part of this overall plan than this list that the Company has put into their LCIRP?
A (Dudley) They did include other projects, yes.
Q So, are you aware of a list of projects that encompasses all projects in the LCIRP?
A (Dudley) Well, what they did was they submitted lists, like this one, of different areas that they were looking at as part of their project planning.
Q Uh-huh.
A (Dudley) A grand list, no. That is why we send out the data requests in our Attachment Number 12, --
Q Uh-huh.
A (Dudley) -- was in hopes of, you know, compiling and organizing all of that information.
Q Yes. And that was what I wanted to ask you.
A (Dudley) Yes.
Q When you engaged in that process, you were trying to identify what the specific --
A (Dudley) Yes.
Q -- issues and projects were?

A (Dudley) Correct.
Q Okay. And then, when you went to review the projects that were proposed, you know, we were yesterday, when I was asking questions of the Company, we were looking at the three categories of assessments, demand-side management programs, assessment of supply, including DER, and an assessment of distribution and transmission requirements.

What's your view on how those requirements should be applied to the projects that the Company identifies in their LCIRP planning process? Do you feel that, for each project, they need to say "We assessed demand-side, we assessed supply, we assessed distribution/transmission." Do you think that needs to occur on a project-by-project basis, or do you think it's at a higher level than that?
A (Dudley) It can be on a project-by-project basis. It depends on the project, of course. We know that -- we know, from our past experience with Eversource, in their project analysis, is that they do consider transmission issues and impacts on transmission in some cases, if, for example, a

substation -- a large substation project does have an impact on the transmission system.

We have not seen any project authorizations that specifically address DER. And, in terms of their load forecast, of course, their load forecast drives their projects, in terms of replacements, in terms of asset condition, to come up with a plan, a graduated plan, over a number of certain years, as to when these improvements or replacements need to be made.

And, certainly, if a project -- one thing we did discover is, if a project is demand-driven, or has been flagged for them in their demand forecast, then they will state that in their Project Authorization Form as part of their analysis, and as part of their justification for doing the project.

Q Do you think it's appropriate for projects that are not demand-driven to be included within the utility's LCIRP?

A (Dudley) Well, the -- of course, one of the elements we look at are planned investments. And it's basically, you know, "How does the utility

intend to build out their distribution network over the five years, over the next five years?" And, so, we think that's valuable. We think we need to know that, and we think the Commission needs to know that.

And, so, should it be in the plan? Yes, absolutely.

Q Were you involved in the Company's last LCIRP, in 2019?

A (Dudley) No, I was not.

Q Are you familiar with the terms of the Settlement that we just discussed briefly yesterday, where that Settlement Agreement stated that "These LCIRPs are becoming more of a distribution planning exercise, and that more granular information is necessary, in order for the Commission to successfully review and understand a company's LCIRP"?

A (Dudley) I do recall that, yes.

Q So, I'm curious about your view on the distribution planning element of that. That, you know, we're in a -- we're a restructured state now, and the statute has evolved over the years. And, now, generally, the utilities don't own

generation, with, you know, the exception of RSA 374-G options and DERs.

A (Dudley) Correct.

Q Why do you think distribution planning is important for the utilities to explain and demonstrate their forward look in their least cost integrated resource plans?

And I open -- I welcome Mr. Willoughby or Mr. DeVirgilio as well to respond to that, given their engineering expertise, in addition to your expertise.

A (Dudley) Sure. Well, it's important for us, in terms of whether or not they are serving the customers reliably, and that they're doing that in a cost-effective and a prudent manner, and we need to look at that.

I've stated many times in rate cases that the biggest driver for a rate case are capital investments. That has the largest impact on rates. And, so, we need to look at that very carefully and very closely.

In terms of granularity, I think Mr. Willoughby did a pretty good job earlier walking us through how they perform their demand-side

analysis.

Q That was helpful.

A (Dudley) Yes. And, so, parts of the LCIRP like that are a little more granular than what we've seen in the past. Whether we need to see more, well, you always need to see more.

Q Uh-huh.

A (Dudley) But, yes, we consider that important, and absolutely a must in this.

And I'll defer to Mr. Willoughby, if he has anything to add to that.

A (Willoughby) Yes. Thank you, Mr. Dudley. I have a couple of things, maybe I can add to it.

We've encouraged Eversource to include on every Project Authorization Form, and I believe they agreed to do this, status regarding NWA, okay? And the reason I bring that up is that's part of the demand-side management piece of --

MS. SCHWARZER: Excuse me, Mr. Willoughby. I just want to caution you, and this is a somewhat unusual situation, but I believe the Commission asked us to defer discussion of NWA until Day 3 for the Settlement Agreement.

Although, I'll, of course, defer to the Commission on that.

CHAIRMAN GOLDNER: No.

MS. SCHWARZER: I did not ask questions about it for that reason.

CHAIRMAN GOLDNER: Excuse me, sir. We didn't defer discussion of NWA, we deferred only discussion of the Settlement. So, NWA and N-1 are on the table for discussion today.

MS. SCHWARZER: Okay. Thank you very much.

CONTINUED BY THE WITNESS:

A (Willoughby) Yes. And, yes, that was good. Thank you. Yes, actually, I'm not talking about anything other than, in the normal course of business, you're going to be looking at that, the NWA solution. And, when you do that, you're going to make a judgment call on whether it's applicable or not. And they told us about the tools yesterday on how they do that with the NWA framework tool. Well, that's part of the demand-side management. So, that should be reported, and that should be reported on every project that's evaluated. And that's why I bring

it up. And that's an important reportable item. Because, if you don't do that, it raises a question immediately, "Did you consider NWA or not?" Okay?

The other comment I would make is with respect to the supply-side options, that's Item Number III on 38. There are two load scenarios that are investigated that they keep track of, scenario-based planning keeps track of. One of them is "high load scenario", and that means peak gross load models. So, when Planning does their work, they're looking at the highest peak, with minimal contributions from any distributed generator. But the second scenario, called the "high distributed generator scenario", is just the opposite. They're maximizing what they think the distributed generation should be, and that would then impact how much more of the load they have to pick up elsewhere, okay?

Those two scenarios, scenario-based planning, as part of the supply option, would be important to report the results of that, I would think. And, so, that's just -- I'd like to offer that comment for your consideration.

BY CMSR. SIMPSON:
Q Thank you. How do you think, Mr. Willoughby, that distribution planning should evolve moving forward, in terms of the forward looks that we see through these least cost integrated resource plans? What do you think is important for regulators to see?
A (Willoughby) My expectation, for my utility suppliers, that, when I flip the wall switch, the power is always going to come on. And, if it doesn't come on, I immediately blame the utility. Okay?

So, what the utility's primary -- one of their primary missions is making sure that light switch, when I flip it on, the light comes on. That's the reliability piece.

But I'm also concerned that my equipment in my house operates properly. And, so, the voltage has to be stable, it can't be varying around. That's the power quality piece.

So, the utility has to worry about reliability, has to worry about power quality. And then, the third item is they have to deal with safety. And, so, they put a lot of time and

effort into protecting people and equipment against issues that might damage either. And that's where the system protection comes in.

When we're talking about the distribution system, and we're talking about integrating distributed energy resources, you have to recognize that the distribution system was never designed to handle that. And, so, what the utility has to deal with is "how can I upgrade my existing system, in a systematic manner, without breaking the bank?" And what I mean "it was never designed to handle that", the distribution system was designed such that the load is supplied from the substation, to your house, the power goes from the substation, to your house. And that's the only direction it ever goes.

But with the -- with the distributed energy resource model that's now coming out, the power is allowed to go the other direction, for which the distribution circuits were never designed. Now, what that immediately does is it poses a protection problem. So, that's a safety issue and an equipment issue. But it also could

compromise the capability of that distribution line. It may not -- the wire size might not be big enough.

And, so, the utility planner has to be able to deal with those issues when he's planning. So, he has to know, when the DER is being connected, are you going to allow the power to go both directions or only one direction? He has to know that. If you're going to allow it to go both directions, he has to plan for that in his simulations, and that incurs -- it could incur additional cost.

Where automation comes in is, automation comes in, Mr. Johnson mentioned that he's replacing electromechanical devices with microprocessor. And what that allows him to do is he has at least the ability to communicate with that device. And, so, it can then communicate back to the state. But it also gives him more flexibility, in terms of protecting that distribution circuit, either manually or automatically. And that saves him time, and it also can save -- it can minimize the part of the system that's damaged, should there be a fault.

So, automation, it's very important on the distribution system. So, the first thing the distribution system evolved -- had to come to grips with is distribution automation. And then, about twenty years ago, or something like that, is when distributed generation came in. And IEEE formed a working group called "1547", and it's still in effect today, on how to deal with that. So, a long time ago, it was a challenge for the utility on how to integrate distributed generation.

Where it's evolved now, though, is we're becoming even more distributed. Because now people want to put solar panels on their house, and they want to put battery systems, either on their house or they want to put in a larger system.

Again, think about what I said before, if you install those devices, and allow the power to go back into the utility, that poses a challenge for that distribution circuit. So, the utility planner has to plan for it. So, that's where grid automation comes -- or, grid modernization comes from. The grid needs to be

modernized to be able to handle that type of change and that type of use on distribution circuits that were never designed to be that way in the first place.

Does that answer your question or does that help at all?

Q Oh, absolutely. That's very helpful. Thank you. You know, we take the deployment of microprocessor-based relays as an example. Can you explain the type and maybe frequency of data that arises through the deployment of those types of devices?

A (Willoughby) When -- I used to work for a manufacturer, Cooper Power Systems, and we developed the controls for those devices. And very important, when the control is developed, is the quality of the sensor that goes along with the control. So, if you install a device that has a high-quality sensor, then it can read in real-time the voltages and currents, and that can either be interrogated by an engineer back at some central office, or it can be sent back automatically, depending upon what kind of communication system you have in place.

When a recloser operates, it typically would operate three times. And you'll see it blink at your house twice, and then, the third time it -- you lose your power if it does again. And, so, you're only talking a few seconds in between. So, what a recloser is trying to do when it does that is, if you had a temporary fault, it would prefer not to interrupt the circuit. It would prefer the fault clear, and then it will automatically close back in, and the circuit is restored, and that's it. You don't have to do anything else. And it will try that, and if it fails, it will try again. And, if that fails, it stops. And the reason it keeps -- it tries it a few times, just to make sure that there really is a fault. You don't want to keep closing into a fault, because that creates equipment problems.

So, what a recloser can do, it's part of -- an important part of an automation system, it's an important part of a protection system. It can serve as a very important sensor, like Mr. Johnson was discussing. But, in terms of protection, it serves a very important role,

because it can automatically do things without human intervention.

Q And those two features of that type of device are what I'm interested in exploring a little bit further. That there is a protection device, that an electromechanical relay, for example, replaces a legacy -- or, excuse me, a microprocessor-based recloser or relay replaces a legacy electromechanical relay, that provides protection system benefits from the most traditional sense.

But would you say that it also provides a new source of data that the Company can leverage for other applications?

A (Willoughby) Absolutely. It provides a new source of data, and it also provides an automation point, those two things.

A (DeVirgilio) Mary, Attorney Schwarzer, may I interject here?

Q Please.

A (DeVirgilio) And I'm not contradicting Ron, but there's an important piece here. As you roll out these, and I see exactly what you're talking about, data, that there's a piece here that you

have to understand, and that's the communication aspect of this. You can put all these electro -- excuse me -- microprocessor-based relays and controls out on reclosers and put all of this distribution automation, the capability out there. But, as you get more and more out into the system, away from the substation, where most of the utilities have concentrated their high-speed communication, once you go out into the network, the limitating factor there is communication. Whether it's by radio waves or it's by a cellular network of some sort or another.

And we've just got to keep that piece in mind. In many cases, the -- for lack of a better term, the cable company or the communication company out there in the rural areas does not have the capability to support this type of stuff.

So, it's a combination of two pieces. The technology on the utility side is advancing pretty quick. But the ability to communicate with these devices out beyond the substation is usually the limiting factor.

A (Willoughby) And that's a very good -- that's an excellent point about the communication. And here's what I've seen utilities do, and here's what they would do when they would buy equipment from Cooper. They would buy a microprocessor-based recloser, even though they may not immediately have the capability to communicate with it like they would like to, because they're planning for future use. And they will eventually have the communications in place that will use that. So that they don't have to then go back and replace that piece of equipment again, they will already have it in place.

And that would, you know, so, very rarely would they replace in kind for something like that. And the reason I say that is, we also sold the old electromechanical devices and reclosers, and some people still wanted them. But, most of the time, people would almost always get the -- companies would buy the microprocessor-based for future planning, even if they couldn't use it right away.

Q Okay. So, I'm interested in the state of

real-time locational and temporal data that exists on the system today. How those quantities are further granularized on the system, more granular on the system, as these types of microprocessor-based devices are deployed? And if you have suggestions, in a long-range view, when we consider these types of plans, the long-range views, how to best develop a strategy so that, if it isn't available today, we deploy a device that's capable of it, but then we have a plan for gathering that real-time data in a meaningful way, before that device reaches end of life?

A (Willoughby) One of the most important things that needs to be ordered with that device is a high-quality current and voltage transformer. Those are the sensors that the device uses to collect -- to collect the data that's then transmitted back. And the quality of those sensors can vary. So, it would be important, depending upon how you plan to use the data, to buy ones with high-quality sensors, that would be number one.

Number two is, it would be important

that the controls be upgradable, such that, you know, just like computers, the control is a computer. So, you need to make sure that you have something that, once you install, it can be upgraded to meet the need. And a lot of times that can be done wirelessly. It may require somebody to actually go to the device, but not necessarily.

And all of the vendors, I believe, today, that I'm aware of, offer those features. And I believe Eversource probably is buying that kind of equipment now. Most IOUs that I'm aware of do that.

A (DeVirgilio) I could also add, and Eversource testified that they do have sensors, they're placing sensors out onto their distribution line, which can be either -- the data collected there, either wirelessly, directly wirelessly, or by a drive-by, you know, someone driving by and picking up the data.

But, in the bigger scheme of things, and that was your original question, Distribution SCADA, the whole concept of grid modernization, the recognition of the distribution circuits

moving from the old radial-fed to more of a network approach. Now, keep in mind, a lot of utilities have experience with controlling a network, because many of their underground systems in an urban area are networks.

Q Uh-huh.

A (DeVirgilio) So, it's applying some of that, what I would call "older" style analysis, to what the future may look like for a fully interconnected distribution system. And that's, when you look at the big picture and where things are going, essentially, and driven by reliability, as Ron had started this, essentially, you're going to have a distribution system with multiple ties out on the system, with automation capability of moving load around, not only for reliability, but moving load around based on distributed generation, whether it's on or off, same with solar, whether the solar panels are on or off, based on the conditions due to storms. All of that, the future in the utility business, on the distribution side, is all focused on that aspect of it. With this upgrading of all these electromechanical devices to microprocessor or

electronic approach is all the building blocks to ultimately get to that long term, when the system is smart enough to be able to adjust to whatever impacts, whether it be distributed generation, whether it be storm trouble, or just day-to-day load-moving operations.

Q And, in your review of -- oh, were you going to add something, Mr. Willoughby?

A (Willoughby) Just to add something real quick here.

Q Please.

A (Willoughby) Just a quick example that utilities look at to make the best use of the assets. Let's assume you have two distribution lines, and they're within reasonably close distance physically, let's say. And, right now, they're not connected to each other, they're independently radial. But what you'd like -- but you've got load growth that's different on one or another, or you would like to be able, if -- should there be a fault on one, you'd like to use the other one maybe to pick up some of the load. Well, the way it's designed now, you can't do that.

But, if, down the line, you install a smart switch, like a recloser, should there be a need to switch load from one line to another, you have an option. If you don't have the smart switch there, you don't have the option. I mean, you could have a dumb switch, which means there's no automation on it at all, manually it would have to be closed. But we're talking about automation.

So, that helps make better use of the existing assets, and, at the same time, provides you another point to collect the data that you're asking about as well.

Q So, there's a reliability benefit and an economic dispatch benefit, in addition to more of a data benefit?

A (Willoughby) Exactly. Exactly right. Yes.

Q Okay. Thank you. And my last question is, in your view, what are the foundational technologies that need to be deployed first, in order to build off of? And, in your review of the Company's Plan, do you see a focus on these foundational technologies, if so?

A (Willoughby) Well, let me start, and then Mr.

DeVirgilio maybe can add to this. Did I say that right?

A (DeVirgilio) You got it right.

A (Willoughby) Mr. Johnson mentioned that he was deploying as he could, he's replacing electromechanical devices with microprocessor devices. And he's doing that as he can. And then -- all right, so, that's one piece of infrastructure that needs to be done. But, in conjunction with that, like Mr. DeVirgilio mentioned, you have to have the communication.

So, those two have to hand-in-hand, before you can really take advantage of automation, or some of the benefits of this additional data.

What the utility would really like to have is a visibility all the way down to the meter on your house. That's what they would like, because that gives them the best dataset for being able to make decisions. And they have to approximate less, if they have that kind of visibility. But that kind of visibility requires sensors, and it requires communications.

Q And then, I guess I have one, one more final

question. When we reach a point where that data exists, what are your thoughts on how best to share it and aggregate it, at a system level, so that customers have more insight into their own energy use, system conditions, how they might change their behavior, operate more efficiently, reduce their energy use, shift it?

What are the considerations there? Recognizing that there's security/reliability concerns at play, cybersecurity? You know, what -- do you have any thoughts on that?

A (DeVirgilio) Ron, let me take this one.

A (Willoughby) Okay.

A (DeVirgilio) My own experience having -- with Central Hudson Gas & Electric, and also my current experience down here in Florida with FPL, if you're just looking from a data standpoint and what your question is asking, there's a huge amount of opportunities out there. One -- but not only for the utility, but for I'll call it those that are attached to the utility's system, whether it be a customer, distributed generation, even industrial customers, there's huge -- there's -- I'm going to say there's huge benefits

to them, but let me rephrase that as "there's huge opportunities" for all of those constituents.

The reality of it is, from my experience, both down here and listening to I'll call it my neighbors and customers and whatnot, and our experience in beginning to roll out smart meters at Central Hudson were, that customers hear you, but they don't, other than what I'll call the "fringe one percent" who would absolutely, you know, they're data-driven, they're data junkies, they really want all of those opportunities, the customers -- most of the people that are definitely interested in this are usually those who are connecting to the utility's system and seeking to do some form of commerce via that, meaning distributed generation, or both solar, wind, or some other methodology, they like to know that from the standpoint of their ability to dispatch, they want to know what the customer usage are, that type of stuff.

However, the customers, from my experience, have been very reluctant and are very squeamish about somebody knowing about what their

usage is, when they use it and whatnot. And FPL, I believe, down here has a program where customers have the opportunity to opt out of having a smart meter on their home.

So, the opportunities are there. Let your mind go wild relative the ability to control and in-house controls of your usage and whatnot. But, just keep in mind, the customer adoption of this stuff, and their trust of it, today, is very, very limited.

A (Willoughby) I would say one -- one benefit, regardless of what happens behind the meter, customers really don't care much for you estimating what the power bill should be. So, if you have a smart meter, if they allow you to connect a smart meter, the estimated meter readings, you don't have to do that anymore. They will have ready access to those meter readings when they need them. And I would say that would be a benefit, even if the -- as long as they allow you to connect the meter, even if they didn't take advantage of the other data-rich features that they would have available to them.

CMSR. SIMPSON: Okay. Well, thank you

to all of the witnesses from the Department. I appreciate your testimony here today.

I don't have any further questions, Mr. Chairman.

CHAIRMAN GOLDNER: Thank you, Commissioner Simpson. We'll move to Dr. Chattopadhyay.

CMSR. CHATTOPADHYAY: Good afternoon.

WITNESS DUDLEY: Good afternoon.

WITNESS WILLOUGHBY: Good afternoon.

WITNESS DeVIRGILIO: Good afternoon.

BY CMSR. CHATTOPADHYAY:

Q So, I think, because you are directly with the DOE, maybe I should ask this question to you.

So, let's go to Exhibit 16, Bates Page 012. And let me know when you're there.

A (Dudley) Okay. Yes.

Q So, beginning Lines 15 through -- and then ending at Line 19, it says "Given that Eversource's LCIRP does not specifically address the criteria in RSA 378:39, the Department finds that the Plan is not fully compliant with the statutory requirements and recommends that the Company provide a supplemental filing that complies with

the expectation expressed in the Commission's Order in Docket DG 17-152."

So, I just read it. You don't have to respond yet. But, then, as I go to Exhibit 20, which is the technical statement, thereafter, having received the supplemental filing, if you go to Bates Page 005 of that exhibit, at the end, says "Therefore, it is the Department's recommendation that, with DOE recommendations summarized above, the Commission should approve the 2020 LCIRP, inclusive of the 2020 LCIRP Supplement, as consistent with RSA 378:38 and :39 requirements."

So, I know that, you know, I'm assuming none of you are lawyers, but you ended up providing the testimony about this. So, just out of curiosity, you know, in the first filing, you said "it is not fully compliant." I want to understand whether, with all of the supplemental filing, and now you're using the term "consistent", are you still saying "it's not fully compliant", and yet you're okay with it?

A (Dudley) No, I believe we're saying "it is fully compliant."

Q Thank you.

CHAIRMAN GOLDNER: Excuse me, Mr. Dudley, less the breaker-level forecast issue, correct, just to clarify?

WITNESS DUDLEY: Yes, just to clarify. Thank you, Mr. Chairman, yes.

BY CMSR. CHATTOPADHYAY:

Q Okay. So, you're saying "it's fully compliant, except for that"?

A (Dudley) The Plan itself, we're speaking of compliance in two different issues. We're talking about compliance of the Plan with 378:38 and 378:37, and then we're also talking about compliance with 378:39.

Q And let us just focus on 39, because --

A (Dudley) Uh-huh.

Q Okay.

MS. SCHWARZER: Excuse me, if I could just interject, I believe, because the Settlement Agreement has been deferred, my witness may be forgetting that that issue is out there. So, the Department's position would be that absent the Settlement Agreement, there is an NWA issue. But we're assuming that the Settlement Agreement in

evidence, it's just not being discussed today, to qualify his answer.

Thank you.

CMSR. CHATTOPADHYAY: But the technical report, it came out before the Settlement document was drafted, right? I know -- I don't want to go there, but just is that true?

MS. SCHWARZER: Yes. The technical statement does refer to an ongoing concern that was later addressed in the Settlement Agreement.

BY CMSR. CHATTOPADHYAY:

Q Okay. So, what I'm trying to understand is, when you use the term "consistent", and here you have used "fully compliant", you're using them, you know, as --

A (Dudley) Interchangeably, yes.

Q Interchangeably, yes.

A (Dudley) Yes.

Q Okay. Going to your Exhibit 16 again, I'm trying to get to the right place, so please bear with me.

Go to Bates Page 024. And Lines 3 through 6, you say "Surprisingly, it does not appear that Eversource intends to implement that

recommendation since Loudon is still earmarked as a part of the Company's System Planned Projects for transformer replacement."

Can you just -- do you know what the status is currently?

A (Dudley) Yes. As far as we know, Commissioner Chattopadhyay, the -- then there were three candidates. There was the Dover candidate, Monadnock, and then also Loudon Substation. Dover and Monadnock did not screen, they were kicked out of the screening. However, Loudon was able to progress. And the suggested solution was to have a generator located at that site, to provide additional power for the additional load that would come on, you know, during the racing season, when the speedway is -- the speedway is the big draw there in that particular location.

However, Loudon Substation also is on Eversource's hit list for eventual transformer replacement. And our understanding, at this point, is that Eversource is probably going to go with a transformer replacement, due to an asset condition.

CMSR. CHATTOPADHYAY: Okay. That's all

I have. Thank you.

CHAIRMAN GOLDNER: Okay. I just have a few questions, and then we'll move to redirect.

BY CHAIRMAN GOLDNER:

Q So, Mr. Dudley, I'll direct this question at you. Can you provide the Department's perspective on the process in this particular docket? We have four parties in the proceedings, we have lots of delays, we have what appear to be significant gaps.

Can you maybe just shine a light on the docket and what's transpired here?

A (Dudley) Well, one of the gaps that I'm aware of, and it was fairly significant, was that the three Staff members, who were the primary Staff members on this docket from DOE, left, either due to retirement or other opportunities. And, so, temporarily, we had no one left to work on the docket.

Q It slowed you down, it sounds like?

A (Dudley) Yes, it did, significantly. COVID also came into play during that timeframe.

But the decision was made to hire an engineering consultant, which we did, and because

we lost our Staff engineer, was one of the people that we lost in that transition. And there were a few other complications that I don't recall.

But, at any rate, that was one of the major contributors to a delay in the docket. There are -- of course, other interests came in, for example, the N-1 contingency regarding DER, that issue came up.

But, at this point, if you're asking me if the Department is considering how to speed up this process? Yes, we are. We're looking at it. We're discussing it right now. We haven't come to any conclusions yet, but it is a topic of conversation.

Q Thank you, Mr. Dudley. Just a couple more, and I guess all my questions are directed at Mr. Dudley, a couple more questions.

So, you were able to capture the utility capital plan, which I alluded to yesterday, in a record request. It's Bates 136 of your testimony. And there's no need to look at it, I can just quote the numbers.

A (Dudley) Okay.

Q It shows almost 20 percent, 19 percent more

utility plant in 2026 than 2020. And, when you compare that to the customer growth, I think we talked about it yesterday, the customer growth is pretty flat in that time period. So, I just wanted to understand if the Department was comfortable with that disconnect between the capital and the customer growth?

A (Dudley) Well, I don't know as I -- I can't say as we're "comfortable" with it. We realize this is a plan, and just a plan. And the utility, Eversource, is laying out for us what they would like to do, and what they intend to do.

As you know, Mr. Chairman, when the rubber hits the road is in a rate case, and that's when we really drill down on it. What we have noticed, from all of our utilities, is that a lot of that expenditure is being dedicated to what we've just been talking about, which is distribution automation, and also the upgrading of substations to accommodate distributed energy generation. And it's a fairly big undertaking, and we understand that.

But the question for us is, and, again, we tend to look at it in a rate case, because we

have better information in a rate case or more current information, is "is this occurring too rapidly, and is it occurring at a reasonable cost to the ratepayer?"

And, so, I guess my short answer is, we're cognizant of the issue. We're not totally comfortable with it. But where we really drill down on it is in the next rate case.

Q And we talked today earlier with the Company about the different technologies that are coming on line. And, you know, again, my encouragement for future, whether it's rate cases or LCIRPs or what have you, is to incorporate that into the forecasting, so we can all have visibility, in terms of that technology.

And it wasn't a trick question I was asking, but, to the extent that capital growth is different than the customer growth, there has to be a reason for that. And right now, I can tell you, from a Commission perspective, we lack a lot of information on this conflict and this disconnect. So, we'd be looking to close that in the future.

Just one last topic, and it's a general

question. I'm trying to understand, and I know you didn't propose this, Mr. Dudley, it's just a question for understanding, why utilities would own DER resources, as opposed to the consumer? Some construe that as sort of a backdoor way for the utilities to get back into power generation. Do you have -- does the Department has an opinion on this topic?

A (Dudley) We don't, really, at this time, although we are looking at a project right now that's utility-owned. You know, and you can guess at what the logic is for doing that. But this is the first one that we've seen so far. Do we anticipate growth in this space? I don't know. I don't know. We're looking at it.

As I said, we've received our first project for review. But I don't think that we've reached any real conclusions yet as to where it's going.

Q Do you feel like, on the other side of that question, with sort of customer-owned DERs, do you feel like there's a path forward to integrate those into the system? Do you feel confident in that path forward?

A (Dudley) We do. We hope so. Yes.
Q Okay. Okay. Those are two different answers, by the way. Like, "you hope so" or "you do", you know?
A (Dudley) Oh, I'm sorry. Hope springs eternal, right? Yes, we do.

CHAIRMAN GOLDNER: You do. Okay. Very good.

That's all the questions I have. I'll return to the Commissioners to see if there's any follow-up?

[Cmsr. Simpson and Cmsr. Chattopadhyay indicating in the negative.]

CHAIRMAN GOLDNER: Okay. We'll go to redirect, and Attorney Schwarzer.

MS. SCHWARZER: If I could have just a moment?

CHAIRMAN GOLDNER: Of course.

MS. SCHWARZER: Thanks.

[Atty. Schwarzer conferring with Mr. Toscano.]

MS. SCHWARZER: Mr. Chairman, before I do redirect, I can't really consult with my team. Could I maybe have ten minutes to do that, or

five minutes to do that?

CHAIRMAN GOLDNER: Sure. We can take a brief recess till 2:10.

What I'll say is, after redirect, we'll move quickly to the OCA's witnesses and begin that immediately after you're done, Attorney Schwarzer.

MS. SCHWARZER: Thank you very much.

CHAIRMAN GOLDNER: Okay. We'll start back up at 2:10.

(Recess taken at 2:02 p.m., and the hearing resumed at 2:12 p.m.)

CHAIRMAN GOLDNER: Okay. We'll continue with the hearing with Attorney Schwarzer.

MS. SCHWARZER: Thank you, Mr. Chairman. Just a short question.

REDIRECT EXAMINATION

BY MS. SCHWARZER:

Q Mr. Dudley, are you aware of RSA 374-G:4, which says "Investments in Distributed Energy Resources", and discusses how utilities may own them?

A (Dudley) Yes. I am.

Q And, in your recent comments about whether or not utilities should own DERs, you are not unsupportive of the statute?

A (Dudley) No, I am not unsupportive of it.

MS. SCHWARZER: Okay. Thank you.

CHAIRMAN GOLDNER: All right. Very good.

So, let's -- we'll excuse the witness -- witnesses. Thank you, all.

And we'll pause for a second while the witnesses change locations, to the extent that they need to. And we'll start up again with the OCA witnesses when they're ready.

[Short pause.]

CHAIRMAN GOLDNER: And, Attorney Kreis, please proceed when you're ready.

MR. KREIS: Thank you, Mr. Chairman.

[Court reporter interruption.]

CHAIRMAN GOLDNER: Oh, I'm sorry. Let's swear in the witnesses, Mr. Patnaude. I'll blame that on you.

(Whereupon ***Tim Woolf*** and ***Ben Havumaki*** were duly sworn by the Court Reporter.)

MR. KREIS: Okay. Thank you. Sorry

for jumping the gun there.

What I'd like to do is introduce each witness separately, have them adopt their testimony, and then ask them a couple of brief questions, and then turn them over to the crowd.

TIM WOOLF, SWORN

BEN HAVUMAKI, SWORN

DIRECT EXAMINATION

BY MR. KREIS:

Q Mr. Woolf, let's start with you. Would you identify yourself by name and -- yes, would you just identify yourself? Thank you.

A (Woolf) Yes. My name is Tim Woolf. I'm a Senior Vice President at Synapse Energy Economics.

Q And have you ever testified at the Commission before?

A (Woolf) Yes, I have.

Q So, then, I don't need to introduce you to the Commission, I don't think. Are you one of the authors of what has been marked for identifications as Exhibit 18, the prefiled testimony of the Office of the Consumer Advocate?

A (Woolf) Yes, I am.

Q And do you have any corrections or updates to

that testimony?
A (Woolf) Yes, I have a minor correction. And it is on -- it's really a typo, but it's important just to avoid confusion. It's on, I think, Bates Page 016, that's the Original Page 14, under Section 5, Section 5.1, Line 19 refers to "Section 6.4", it actually should be "6.5". Line 22 refers to "Section 6.3", it actually should be "Section 6.4".

And then, on the next page, Line 1 refers to "Section 6.1", and that should be "6.2".
Q Thank you. Mr. Woolf, subject to those corrections, if I asked you all of the questions in Exhibit 18 live on the stand today, would your answers, under oath, before the Commission live, be the same as the ones written in Exhibit 18?
A (Woolf) Yes, they would.
Q And, therefore, would you say that you -- do you adopt Exhibit 18 as your sworn testimony in this proceeding?
A (Woolf) Yes, I do.
Q Okay. Mr. Havumaki, would you briefly identify yourself for the Commission?

A (Havumaki) Sure. Hello. I'm Ben Havumaki.
[Court reporter interruption regarding the use of the microphone.]
BY THE WITNESS:
A (Havumaki) Hi. I'm Ben Havumaki. I'm a Senior Associate at Synapse Energy Economics.
BY MR. KREIS:
Q And is this your first time testifying at the New Hampshire PUC?
A (Havumaki) Yes, it is.
Q Therefore, I would invite you to offer a one-sentence elevator speech introduction to yourself, making perhaps liberal use of a semicolon.
A (Havumaki) Certainly. I have a Master's degree in Applied Economics from the University of Massachusetts; I've been a Senior Associate at Synapse for approximately five years.
Q And I suppose it's fair to say that you agree with the corrections to Exhibit 18 that Mr. Woolf just offered?
A (Havumaki) I do.
Q And, so, if I asked you all of the questions in Exhibit 18 now live, would your answers to those

questions be as they are represented on Exhibit 18?

A (Havumaki) Yes, they would.

Q And, so, therefore, do you adopt Exhibit 18 as your sworn testimony in this proceeding?

A (Havumaki) Yes, I do.

Q Okay. Mr. Woolf, would you kindly provide the Commission with a very brief summary of the key points in your testimony?

A (Woolf) Sure, I would be happy to. I want to focus on two central themes here.

The first theme is that the 2022 **[**2020**?]** LCIRP simply does not comply with the LCIRP statute. The statute is very clear that LCIRPs must include, among other things, an assessment of demand-side resources, an assessment of supply options, including capacity market procurements, renewable energy, distributed energy resources, an assessment of the plan's long-term and short-term environmental, economic, and energy price/supply impacts on the state. You're familiar with this.

As we articulate in our testimony, Eversource's LCIRP does not include assessments

of these resources. The LCIRP is essentially a description of the process that the Company uses to make resource investment decisions. But it does not actually include any assessment of those options.

And it's important to understand what I mean by "assessment". An "assessment" would include presentation of multiple resource options, an articulation of the costs and benefits of those options, and an optimization of those options.

The consideration of multiple options is critical here. The Company has said several times, in its filing and also in the hearings today, that they analyze distribution system projects on a project-by-project basis in some detail, which is great.

But the analysis is only meaningful and complete if it considers the full range of alternatives. Without considering alternative solutions, it's not a meaningful or a useful analysis.

Q That was the first theme. What was the second one?

A (Woolf) Yes. The second thing we want to get across is that Eversource has a responsibility to manage the costs and emissions associated with the power plants that are used to provide electricity resources, electricity to its customers.

The Company argues many times over that it has no responsibility to evaluate or optimize the generation associated -- the generation costs and emissions associated with the wholesale power market, because it doesn't own any power plants. And we wholeheartedly disagree with this whole concept. Just because the utility doesn't own power plants, and instead purchases power from competitive suppliers for default energy services, doesn't mean that they're powerless to help customers reduce the costs and emissions from those power plants.

And, so, when I first read this argument, I was stunned. I was just shocked to hear it, because it's so inconsistent with what I've seen everywhere else in the industry. It's widely understood throughout the industry that distribution utilities can manage generation

costs and emissions through a variety of initiatives, even if they don't own their own power plants, even if they're just distribution only.

And you know what these initiatives are. They're distributed energy resources, and they're demand response, they're procuring long-term contracts for renewables, and different ways to optimize default energy services, and grid modernization as well.

We work in many states with restructured electricity markets, and none of them use this logic to excuse the utilities from the responsibilities of managing generation costs and emissions. Every state that I've worked with recognizes this. That utilities, first of all, can manage them, and that they have a responsibility to do so.

So, this is kind of central to what we're trying to get across in our testimony.

Q Mr. Woolf, I think it's safe to say that Eversource has gone to some pretty lengths to explain how its LCIRP is compliant with the LCIRP statutes. There's Appendix A, in the original

filing, Exhibits 1 and 2. Then, there's a supplemental filing dedicated to making that argument again, Exhibit 8. And then, of course, there's all the testimony that we've heard at the hearing thus far.

Are you convinced by all of that?

A (Woolf) No, I am not. Eversource has said many different times the different ways that it complies with the statute. And, you know, it talks about many good things that it does do, things that we support. But, if you look just a little bit below the surface of the Company's arguments, you realize that they're really not in compliance with the statutes.

The supplemental filing refers to many ways that each distribution project that the Company looks at, it complies with the environmental rules, for example, and it accounts for local emissions. But it doesn't in any way account for the potential to reduce emissions or costs from power plants. And this is -- power plants are the greatest source of environmental impact in the electricity industry, and they're completely ignoring that.

Further, Appendix A, in the supplemental filing, includes references to several initiatives the Company is undertaking to reduce generation costs and emissions. Initiatives, such as procuring offshore wind resources, implementing utility-scale solar, energy storage projects, EV infrastructure, and more.

The trick is, these references, almost all of them, are to undertakings that they have, initiatives they have in Massachusetts and Connecticut, but not in New Hampshire. The information simply confirms that the Company can manage generation costs and emissions, but the fact is that they haven't. The Company has implemented these in other states, but they have chosen not to do it here.

So, furthermore, in the supplemental filing -- excuse me just a second here, lost my notes. The supplemental filing begs the critical question "Why is Eversource responsible for managing generation costs and emissions in Massachusetts and Connecticut, but not in New Hampshire?"

Q At the risk of answering your question, rather than asking you another one, I guess I'll just ask you, isn't that because managing generation and managing emissions are required by the energy policy of Massachusetts and Connecticut, but not the energy policy of the State of New Hampshire?

A (Woolf) That's a great question. In fact, that is the right question. You know, "What is the policy of the state?"

And the thing is that the statute is clear, that it shall be the energy policy of the state to meet energy needs at the lowest reasonable cost, and to protect the safety and health of the citizens and the physical environment of the state.

So, it's very clear that it, in fact, is a part of New Hampshire policy. It's, in fact -- and the LCIRP statute refers to that very policy.

So, the supplemental filing that we've gotten from Eversource, and things we've heard, it really doesn't justify why Eversource can manage these costs and emissions in other states, but not in New Hampshire.

Q Mr. Woolf, I think I'm going to go a little off script here for just a second. Hopefully, you won't mind. You just heard Mr. Dudley's testimony, did you not?

A (Woolf) I did.

Q And did you hear him respond to I think it was the Chairman's question about how the Staff -- or, how the Department of Energy evaluated the Company's plan for capital spending? Do you remember that question?

A (Woolf) I do recall that question, yes.

Q And do you recall that Mr. Dudley said "Well, where you really drill down on that", I think this is a reasonable paraphrase, "where you really drill down on that is in a rate case." You remember Mr. Dudley saying that?

A (Woolf) Yes.

Q Do you agree with that perspective? And, if so, or not, why?

A (Woolf) Well, I will say that a rate case is, obviously, a very important place to consider capital investments, and that goes without saying. However, the LCIRP is also a place to do that. In fact, the LCIRP is designed as the

forum in which the Company should put forward its capital plans, the stakeholders can comment on it, and the Commission can make findings on it. And then, those feed into the rate case. And, in fact, the statutes even not -- they don't just imply that, they require that. Because, I think it's either 49 **[**39**?]** or 40, that says that the Company can't raise rates unless they have an approved plan. So, that, clearly, the Legislature made a connection between the planning that we need in the LCIRP, and then what goes into the rate cases.

Q Thank you. Well, given all those concerns, Mr. Woolf, how do you and Mr. Havumaki recommend that the Commission resolve the question, the ultimate question here, of whether to approve the Integrated Resource Plan submitted by Eversource?

A (Woolf) So, first, I want to point out that, in its rebuttal testimony, and also throughout the hearing, Eversource has agreed to address many of the OCA's concerns in the next IRP. The Company has offered to have stakeholder workshops, and use these workshops to discuss and address many

of our concerns. And, of course, we appreciate that. That's great. And the Company has demonstrated that they're willing to really embrace some of the points we raised.

However, this is the next IRP. They have been kicking this can down the road for a long time. We think it's important that the Commission reject the LCIRP that is before it.

We recommend that the Company commence stakeholder meetings as soon as practicable, to prepare a LCIRP that is compliant with the statute, and addresses the issues that we and others have raised, so that we can get a meaningful IRP in place as soon as practicable.

Q Okay. I want to make sure that this recommendation is crystal clear to the Commission. Because it seems like it sounds a lot like what Eversource is recommending, both the OCA and Eversource are recommending that there be stakeholder workshops to develop a better and more comprehensive LCIRP.

So, why do you recommend that the Commission reject the Eversource LCIRP?

A (Woolf) We think rejecting -- rejecting the LCIRP

at this time is important. First, it's not compliant with the statute. That's plain as day. And it's bad precedent and a dangerous precedent to approve something that doesn't comply with the law.

Second, it's important that the Commission send a message to Eversource, not to mention the other utilities and other parties that are engaged here, of the purpose of integrated resource planning in New Hampshire.

The LCIRP should not be just a paper exercise where the utility simply describes its process that it uses to implement different resources. Instead, it should be a meaningful exercise that fully considers all the options available for managing distribution, transmission, and generation costs, and emissions. The LCIRP should include concrete estimates of the costs and benefits of a variety of resources. And, forgive me, and it should include a discussion of which resource options are most cost-effective and will best serve the customers and meet New Hampshire's energy needs.

Q Okay. I think this might be my last question. I

think everybody is aware that there is a whole pile of open Commission dockets that are investigating various aspects of electric service in New Hampshire. There's the default energy service procurement docket, there's net metering, there's storage, even the NHSaves Energy Efficiency Programs were just subject to an investigation, and new adjudicative proceedings in July.

Couldn't all of these issues just be left to those proceedings?

A (Woolf) Great question. No. The existence of these parallel dockets in this Commission should not be like a reason to downplay the LCIRP or somehow undermine its ultimate goals. In fact, the opposite is true. The LCIRP should be the one place where all the Company's investments and programs are considered holistically, so that the utility can assess, and the stakeholders and regulators can provide guidance on, how all the pieces fit together. This is the only way to ensure that utility initiatives, as a whole, are meeting the key goals of providing safe, reliable, low cost, clean electricity resources.

For example, if I were in your shoes as Commissioners, I would want to know, "Okay, how do the costs and benefits of, for example, additional demand response programs compare with the costs and benefits of additional distributed generation or additional procurement of renewable energy or, you name it, whether it's CRV or anything else?" "CVR", excuse me.

The LCIRP is the place where all those options can be put forward, and their costs and benefits can be weighed, so that the Commission and others get a sense of how they all fit together. And that's critical. Without that, you're going to have a balkanized and sort of an inefficient way of addressing all these resources.

So, if the Commission were to approve the 2020 LCIRP as it stands, it would condone the continuation of this sort of unorganized approach to meeting these key goals, and would clearly be to the detriment of utility customers.

So, as a result, we think it's important the Commission reject the LCIRP.

MR. KREIS: Thank you, Mr. Woolf. I

think that's all I have by way of direct examination. And, so, I would be happy to make the witnesses available for cross-examination.

CHAIRMAN GOLDNER: All right. Let's begin with CENH, and Attorney Emerson.

MR. EMERSON: I have no questions.

CHAIRMAN GOLDNER: All right. Very good. Let's move to then to the Department of Energy, and Attorney Schwarzer.

MS. SCHWARZER: Thank you. Just one question.

CROSS-EXAMINATION

BY MS. SCHWARZER:

Q Did the OCA file any data requests in this docket?

A (Woolf) Not to my memory, no.

Q And, to your memory, did you or the OCA participate in the technical sessions or raise these concerns other than through your testimony?

A (Woolf) Not to my knowledge. We were taking guidance on that from our client.

MS. SCHWARZER: Thank you.

CHAIRMAN GOLDNER: All right. Thank you, Attorney Schwarzer. We'll move to the

Company, and Attorney Ralston.

MS. RALSTON: I have no questions for the witnesses. Thank you.

CHAIRMAN GOLDNER: All right. Moving right along, we'll move to Commissioner questions, beginning with Commissioner Simpson.

CMSR. SIMPSON: Thank you, Mr. Chairman. Thank you for both being here today.

BY CMSR. SIMPSON:

Q And, I think, Mr. Woolf, you noted "if you were a Commissioner", at one point you were, correct?

A (Woolf) Yes.

Q In Massachusetts?

A (Woolf) Yes.

Q Very good.

A (Woolf) And I just would add, I work in many states where commissioners ask the very questions that I was posing. It's not just myself, but it's what I've seen in the industry as well.

Q And does Massachusetts have a similar planning statute?

A (Woolf) Well, what's interesting is, every state is dealing with this differently, unfortunately. I don't think anyone has figured out the ideal

way to do it.

Massachusetts has a very rigorous way to address many of these elements. They have got their own net metering thing, they have got their energy efficiency thing. The closest that they come to this is the grid modernization planning process, which has been in the works for the past seven years or so, and they're still, and maybe even Eversource can tell us more about that, but they're still in the process of some of those plans being, you know, proposed, reviewed, implemented, and so forth.

But I would say that they actually don't have a place where all this can be pulled together into one spot. Grid modernization is the closest they come to that.

Q So, in your opinion, this New Hampshire statute actually pulls a lot of the issues together in a way that's more insightful?

A (Woolf) Ideally, yes, if it were applied properly.

And I will just add, if I may. I do a lot of work in Rhode Island, for the Consumer Advocate in Rhode Island. And I can't tell you

how times we've been asked the question, you know, "How does energy efficiency compare to renewable energy? How does the distributed energy resources or the demand response program compare to...?" And they don't have any answers. And I keep arguing "You've got to put all this together somewhere." It's not as commonly done as it should be.

I will say, with one exception, in states that are fully integrated, they have integrated resource plans where they do consider these things more holistically. And some states are on the leading edge of that, California. Hawaii, they have -- in Hawaii, they would call it the "Integrated Grid Plan", the "IGP". And there, they put everything in one place. And they really try to cover it. And they've gone -- and they're like further ahead than anybody I know, because they have to be with their context.

So, there are places where there's a comprehensive look at all of this. So, it depends upon where you are.

Q And we had some conversation with some of the other witnesses about the LCIRP somewhat evolving

into more of a distribution planning exercise. Would you elaborate on that, offer your thoughts to us?

A (Woolf) Well, that's exactly what's happening in the industry. So, you know, ten or twenty years ago, all you heard about was LCIR -- IRP or least cost planning or LCIRP. And that was where, like, all the action was.

And, in the past ten years or more, it's become apparent to everybody that that's not sufficient. That we need to go to beyond just the power plant level and to the transmission level, and down to the distribution level. And we need to be looking at distributed energy resources, partly because they can help reduce costs and emissions from power plants, but also they can help reduce distribution system costs, as we know. So, it's all -- it's relevant to all of that.

And I think it's probably fair to say that some states are struggling with, you know, how to bring it all together, like, because the -- as you witnessed in these hearings, there's some very detailed requirements that need

to be met for distribution system planning. And it's not an easy job to do that, and also factor in all of the other options that are available to reduce distribution costs. But it's necessary, it's a necessary requirement, to make sure we're really providing services at the lowest cost.

Q And, continuing on with the importance of going deeper into the distribution system in a more granular way, from a planning perspective, one of the possible outcomes that I think you mentioned at the beginning of your testimony was the ability to manage generation emissions more effectively.

What types of programs or investments would you expect to see in a LCIRP that enable that type of active management?

A (Woolf) Yes. First, I will clarify. First, it's not just emissions, but it's also costs. And, so, you know, in the wholesale markets that we work within, there's not that much that the Company or the Commission or the stakeholders in this room can do to lower the price of the wholesale markets. I mean, there's some things. But, with the way the market's going now and the

global effects, there's not that much you can do. But there's a lot that the Company can do and this Commission can do to lower the amount that's purchased and the type of purchases. The Company doesn't have to just purchase all of its wholesale supplies for default energy at one point in the year. It doesn't have to do that. And it could potentially reduce those costs significantly with a more thoughtful management of those costs. So, there's that.

And, to your question, which was, you know, "how can I manage them?" Anything that the Company can do to cost-effectively reduce load, will reduce the volume of purchases from the wholesale markets. And, as they reduce the volume of purchases, then they also reduce the emissions from the power plants.

Q You know, I think something that the Commission is interested in when we review LCIRPs is a forward look, so that we can understand what the Company's strategy is, in terms of deploying capital investment, what their focus areas are, in terms of technology, and enabling different types of programs and services. And we had some

testimony from the Company with respect to grid modernization, and how other states have a specific rider or a specific program, that's been directed to them either through the Legislature or through a regulatory order.

I'm curious to hear from you, as a former regulator, what's your -- what are your thoughts on that tension that exists between telling a utility what they have to do, versus receiving their expertise and plans that are forward-looking, and that suggest to the Commission an approach, that say "this is what we view as our strategy, this is where we want to go, this is why we think these are important investments to make"?

A (Woolf) So, that tension absolutely exists. And I agree that that's a challenge for utilities. And Mr. Havumaki and I have reviewed various grid mod. plans around the country. And what we saw as one universal theme is that companies, understandably, are unwilling to invest millions of dollars, without getting some sense from their regulator that they're going to be able to recover those costs. And I don't blame them for

that. And, so, the question is "Well, what's the right way to make all that happen?"

And, you know, there's different models out there. And, in some cases, utilities are looking for almost like "pre-approval of the investments", which I think is a little too much. I think -- I like to use the term "guidance", like, that you can provide regulatory guidance.

But the way that it can work out in any state, and I think it should work out here, is that the utility comes forward, prior to making the investments, with some sort of a plan, and a plan that is meaningful and robust, and really compares the alternatives, and shows benefits and costs, and demonstrates that they're a net benefit to customers.

And then, with that, the Commission can send different levels of guidance. You know, they can say "This plan is fine, but it means absolutely nothing for the rate case." They could, on the other end of the spectrum, say "We approve this plan, and, when it comes into a rate case, we'll approve the costs as well." I tend to prefer something somewhere in the middle,

where the Commission says, you know, "We think these investments are sound, they make sense. We'll give" -- you know, the company has a responsibility to make sure that they execute the plans properly. So, if their plans say they're "going to spend $10 million", and they spend 15, well, then that additional $5 million might be questionable. But the $10 million, it has sort of a -- I wouldn't say that it's -- anyways, this can be -- there's an important nuance between "approval" and sort of "support" from the regulators. There are ways to say that "it's conditional upon X, Y, Z", or whatever.

Q And thinking about the relationship between LCIRPs and rate cases, as it exists here in New Hampshire, the statute for Least Cost Integrated Resource Planning specifically says that "The commission's approval of a utility's plan shall not be deemed a pre-approval of any actions taken or proposed by the utility in implementing the plan", where it seems to enable alignment with the rate cases that direction. Would you agree with that?

A (Woolf) I would.

Q And I want to look at some of the specific conclusions that you reached in your testimony, or as detailed in your testimony. I'm looking at Bates Page 006, which is Page 4 of your written testimony.

So, you note that, in your view, the LCIRP "does not evaluate incremental energy efficiency and demand response resources beyond those provided through NH-Saves."

What type of evaluation would you expect to see in an LCIRP of those types of resources, energy efficiency, beyond our NHSaves programs and demand response resources?

A (Woolf) Yes. So, one of the underlying themes of IRP, in general, is this integration of demand-side and supply-side resources. And I've been reviewing these plans since the late 1980s, they're done all over the country. And in every one of them, there is at least some variation in the amount of energy efficiency that could be implemented.

So, for example, at a minimum, you'll see utilities put in a base case energy efficiency, you know, set of programs, a high

case and a low case. And that's at the bare minimum. That's at one end of the spectrum.

The other end of the spectrum, you have -- you can have some very complicated IRPs, where they integrate each program, you know, with all the supply-side resources, and they're really going to town about figuring out how to optimize energy efficiency.

But, in all cases, there's a very clear-cut comparison of baseline efficiency, more efficiency, or less efficiency. And, in that, there is almost always some benefit-cost analysis that's clearly laid out, that tells you what the benefits are, what the costs are, and what the impacts on customers are. Those kind of key elements are essential, and they're missing in this IRP.

Q And then, looking at the next bullet, "incremental distributed generation resources beyond net metering" resources?

A (Woolf) It's the same thing. It's the opportunity for the Company, you know, the Company has done a great job, as far as I can tell, to understand how distributed generation is

going to affect its load forecast, because that's critical, and glad that they're doing that.

But there's another question, which is "Well, what if the Company were to promote more DG? How would that result in benefits and costs to the customers, and what does that imply overall?" That's the part that's missing.

Q Okay. And then, "storage, building electrification, electric vehicles", you know, those types of distributed energy resources, why do you call attention to those specifically?

A (Woolf) Well, partly because they're now becoming widely adopted in the industry, and they're becoming more and more cost-effective. But, even in 2020, some of these options were cost-effective.

But it's more than that. It's that, you know, the Company has said over and over again, we've heard from DOE as well, that this is where the industry is going. That these are the kind of resources that we're going to see a whole lot more of in this industry, and I totally agree. And the question is, is the Company just going to passively sit back and monitor how much

its customers do, with the foundation that it sets? Or, is it going to actively go out and try to promote more of those resources to reduce costs to the customers?

And, actually, if you don't mind my digressing a little bit?

Q Please.

A (Woolf) There's a point I meant to make earlier. Which is, and we shared this in our testimony, the default energy services now represents about half to two-thirds of the customer's bills. So, to suggest that the Company can just ignore that, and do nothing, is irresponsible.

And, so, the -- what that means is, there needs to be like an active approach to DERs. Where it looks, and this is getting to your question, it looks at all these options, the shortage, electrification, electric vehicles, and it actively identifies the level that's optimal, not just, you know, what the customer is going to do, but what is optimal from the utility, and their utility customers' perspective as a whole.

Q And what types of analyses do you think would be appropriate for focusing on how to reduce default

service procurements?
A (Woolf) Yes. So, that's a broad question. But I'll try to parse it out into chunks.
Q And maybe, let me clarify a little bit. Because, if you have an individual customer, they have their usage. That is grouped within the Company's overall default service procurement. So, all else being equal, the individual customer's usage not changing, but actions by the Company that could reduce the overall default service procurement.
Am I understanding what you're suggesting correctly there?
A (Woolf) Well, I'm not sure what you're referring to in terms of my "suggestion". Maybe I can just take a stab at default energy services in general?
Q Okay.
A (Woolf) So, there's several dimensions to that. One is, you know, the less a customer consumes of default energy services, the less they have to pay. So, you know, efficiency and distributed generation and others will help with that. But, even more so, I mean, and as you know, of course,

there's a whole docket to look into this, and the OCA has put in comments there, and I can echo some of those here.

There are many ways that the Company can reduce the amount of power purchased there. For example, in addition to reducing loads through energy efficiency or demand response, they could procure power from renewable resources, using purchase power agreements. A lot of states in New England are doing that now, a lot of states in the Northeast are doing that now. It's a way to get a stable, predictable, a fixed-priced low-emissions or no-emissions contract, that then offsets the need for default services.

And going further, there's different techniques that can be used, in terms of the RFPs that are issued, to solicit bids from competitive suppliers. Different ways of bundling the products, and organizing the solicitations, so that they're a little bit more appealing, maybe, to the competitive suppliers, so you get additional bids. Oh, and then, of course, there's things like laddering, which can be used

to not only reduce the volatility, but, in some cases, laddering can actually reduce the cost as well.

So, there's a long list of things that can be done on default energy services, and none of those were mentioned here.

Q And just so I understand the "PPA" piece, are you referring to the utility having a portfolio to serve their default service customers, where part of their consistent provision of energy service is served through a PPA, and then also through a traditional RFP process, like they conduct today, and maybe other options as well?

A (Woolf) Yes. The term that's use for this is "portfolio management".

Q Okay.

A (Woolf) And it's a lot like "portfolio management" in the financial world. Where you want a diversity of resources, to make sure you're optimizing across them all, you're not missing anything, and that you have, you know, hedges, so, when one thing goes south, you've got something else that's kind of covering you. So, that's what it's all about, is like a whole

diversity.

And what the Company is doing now for default service is like almost the opposite of diversity, that you couldn't get any more extreme, in terms of just taking one point in time and getting all your services from that. That's, in my mind, extreme.

CMSR. SIMPSON: Okay. Thank you both for your testimony.

I don't have any further questions for these witnesses, Mr. Chairman. Thank you.

CHAIRMAN GOLDNER: Okay. We'll move to Dr. Chattopadhyay.

BY CMSR. CHATTOPADHYAY:

Q Just staying with the discussion that Commissioner Simpson was having with you right now.

As far as portfolio optimization is concerned, what is your opinion about, yes, there are ways to create a portfolio that will have long-term contracts, *et cetera*, but is there also appetite for leaving some of the purchases to the spot market?

A (Woolf) Could you elaborate on what you mean

by --

Q So, when you create a portfolio, --

A (Woolf) Yes.

Q -- you can have long-term contracts, you can have medium-term contracts, short-term contracts. But, as recently witnessed, you know, some of the utilities weren't able to procure all of the, you know, energy that they need through the process that we have in New Hampshire.

A (Woolf) Right.

Q So, they were exposed to, in the ISO-New England market, being, you know, the last resort, really.

A (Woolf) Yes.

Q So, I'm trying to get a sense of what is your opinion about, as far as that is concerned, in a portfolio optimization, is there a place for letting some of the energy being supplied in the spot market?

A (Woolf) Thank you for clarifying. Yes, I do follow your question. There is a place for that. I think you want to keep purchases in the spot market to a minimum, because it is volatile and risky. But the more diverse the portfolio is, the less you need to do that.

So, I wholeheartedly agree with the concept of short-term, medium-term, and long-term, and you can define them differently. I'm thinking of "short-term" as maybe quarterly, but not -- not spot market, and maybe some procurement through PPAs, where that again. And, so, with that whole variety, then, if you fall short in any one particular bid, you're not subject to like the entire default energy service as having to rely on the spot market.

So, I don't rule out the use of the spot market, in some situations we need it, but you want to try to keep it to a minimum.

Q Do you have any experience, I'm not talking about you, personally, but do you know whether, in other states, something like that has been, you know, implemented?

A (Woolf) When you say "something like that", --

Q Meaning, where you also had some room for -- leaving a little bit for the spot market, the rest of it is all being contracted.

A (Woolf) Well, I'm aware of states that have a much more sophisticated approach to procuring default services than what New Hampshire uses, in

terms of laddering and, you know, different types of contracts, different lengths, and so forth.

I can't say that I followed that issue of reliance on the spot market so much that I can really add anything to it.

Q Okay. That's helpful. So, I have -- have you looked at the Exhibit 4 in good details?

A (Woolf) Remind me of which one that is.

Q So, it's --

A (Woolf) Oh, I have it here.

Q So, let's make it easier. Let's go to Page -- just a moment. I think I already forgot who was going through it, maybe the DOE witness. And, so, let's go to Bates Page 438.

A (Woolf) Okay. Almost there.

Q My question would be pretty general. I'm just trying to understand how much the OCA has delved into. So, if you look at this --

MS. SCHWARZER: I apologize, I'm sorry. Is it Part 1? Exhibit 4, Part 1, or Exhibit 4, Part 2?

CMSR. CHATTOPADHYAY: Oh, sorry. I should have -- sorry. Let's go to Part 2.

MS. SCHWARZER: Thank you.

CMSR. CHATTOPADHYAY: And Bates Page 438. My bad.

BY THE WITNESS:

A (Woolf) So, I'm looking at a page, and the top of it says "Alternatives Considered with Cost Estimates".

BY CMSR. CHATTOPADHYAY:

Q Yes.

A (Woolf) Yes.

Q So, here, Eversource is discussing, if you keep scrolling down the pages, there's "Alternative 1", "Alternative 2", there's "Alternative 3", and then there is "Alternative 4". And I'm trying to understand, did you go through this kind of detail?

A (Woolf) We did not go through this exhibit in that kind of detail to look at every single one of these options. We looked at it to see the extent to which they were considering alternatives to traditional distribution investments. That's kind of the lense that we used in reviewing this.

Q In your testimony, you said, you know, that we have -- the other alternatives were not looked at

properly. And, when I say "alternatives", let me be clear, I'm talking about "non-traditional alternatives".

A (Woolf) Okay.

Q Do you have any opinion, if you -- after you look at this, and maybe it's not possible to give a quick reply right now, but I'm just curious whether going through something like this would have satisfied the OCA, talking about specific projects?

A (Woolf) No. Based upon what I can see here, no. If they did not consider demand response, they did not consider storage, they did not consider storage paired with distributed generation, then my answer is that that's not sufficient. And I'm not saying that those resources will magically be the answer in every case, but I'm saying they have to look at it. That's the key thing.

Q If you recall the conversation I had with other witnesses, we were going back and forth on the Loudon Station with --

A (Woolf) Yes.

Q And have you looked at that in details?

A (Woolf) Yes. And I noticed also in the

discussion this morning that there was a presentation of a vendor cost analysis, a table with vendor cost ratios, yes. That was like the one example where I noticed, yes, they were looking at it there.

Q So, I think what you, and just confirm if I understand you correctly, so, you're essentially saying "They have looked at some, but they really needed to do a better job in looking at even more alternatives"? Is that what you're saying?

A (Woolf) I'm saying that they really did not look at some key resources that they should have looked at. I've listed them already, I'll go through them again. But, without looking at additional, by "additional", I mean above what they're already required to do, additional distributed generation or efficiency, that's the part that I'm pointing to as being insufficient.

And, if I may, you're touching upon a point that I think it's important to clarify. Many times over, throughout the filing, the supplemental filing, the hearings the past couple of days, and also from the DOE, a lot of focus on non-wires alternatives, which is great. I'm all

supportive of non-wires alternatives. But the concept is, my understanding, those are, as Attorney Kreis said, geo-targeting. You identify a location, in fact, the Company has specific criteria for defining where they can apply those. And great, I'm all for that.

But my point is, that there are so many clean distributed energy resources that they can do outside of a non-wires alternative. And the fact that there's so much focus on that, and so much promise that that's going to be the solution to all of the questions we have, is wrong. They should be looking at distributed energy resources, improvements to default services, whatever they can do, a procurement of long-term renewable contracts, they should be looking at those, in addition to non-wires alternatives.

Q And, really, I'm not trying to raise trick questions or anything, I'm just trying to understand.

I think what you're saying, and if I've gotten you wrong, please let me know, you're essentially saying "Yes, you may identify some issues with your systems, you know, it's not

about simply trying to figure out how to solve that. It's also about overarching, you're looking at everything holistically, and sort of saying, if we do other stuff, there may be a more global, you know, optimal approach."

That's what you're trying to point out?

A (Woolf) That's exactly what I'm saying.

CMSR. CHATTOPADHYAY: Okay. Thank you. That's all I have.

WITNESS WOOLF: If I may just elaborate on that?

CMSR. CHATTOPADHYAY: Sure.

CONTINUED BY THE WITNESS:

A (Woolf) The Company has explained, in the filing and in hearings, how they look at photovoltaics, distributed generation, and energy efficiency on their loads, right? And they look at -- and they do the -- I think they even do this thing where they just kind of reduce the load, based upon the existing efficiency programs, and the amount of efficiency they expect to get there. So, what that suggests is, if they were to, just pick a number, if they were to double their energy

efficiency, then they could double those reductions in load.

And that's like exactly what I'm getting at. Is just because you have a particular need in this one place where the thresholds are all met for a non-wires alternative, the fact that you can reduce demand across the system, reduces the pressure, not just in the next couple years, but long term, on all those substations and all those distribution needs.

CMSR. CHATTOPADHYAY: Okay. Thank you.

CHAIRMAN GOLDNER: All right. I just want to make sure I understand your statutory concerns to start off with.

BY CHAIRMAN GOLDNER:

Q I think you said at the outset, Mr. Woolf, and I hope I don't misquote you, I think you said that your objection to the LCIRP was "the lack of assessments", and you went through the statutes requiring an assessment.

Is that a fair summary of your objection to the LCIRP or would there -- is there more to it that I missed?

A (Woolf) Yes. But, as I said at the outset, one of the key themes is that the Company seems to think you can ignore the costs and the emissions from the power plants, and that's another area where I disagree with their approach.

Q Okay. I'll touch on that one in a second, too. And my question, maybe as a follow-on to Attorney Schwarzer's question, did you or your -- or the OCA, in general, ask the Company about this? Did you discuss the "assessment" piece, say "Where is this? Why isn't it there? You could improve it in this way." Was there any discussion on that topic?

A (Woolf) In terms of discovery, we didn't feel we needed to, because it was fairly apparent, from the filing and supplemental filing, you know, what was happening here. So, we didn't feel the need to dig down any deeper.

Q So, would it be -- would it be fair to say that, from the Company's point of view, this was -- this would be the first time that they have heard that you're concerned about their lack of assessments, or would they have heard about it before?

A (Woolf) Well, they certainly got an earful with our testimony that we submitted, back in August, was it?

I don't know if the OCA has, in other forums, in other dockets, for other utilities, made similar points. I suspect that they have, knowing the OCA.

Q Okay. Thank you. That's helpful. I do want to get back to your other objection, I think here, I'll skip ahead a little bit.

So, I genuinely don't understand your point about the utility's "responsibility", I think was the word that you used, for generation that they don't produce. And you mentioned Massachusetts and Connecticut, and how things are done differently in different states.

But I'm just trying to make sure I understand as best I can your case. So, it's a distribution utility. They're not -- they're not producing electricity, they're just the purchaser of electricity. And I want to make sure I understand your point.

Again, I'm not able to follow why they have responsibility in the generation space?

A (Woolf) To be clear, they don't have responsibility for managing the power plants themselves or for, you know, making changes at the wholesale market to, you know, improve the gen *[sic]*.

What they do is they have a responsibility to manage their own resources and to help their own customers, to either reduce the amount of high-cost default energy services, or to reduce the cost of those energy services.

So, I'm not sure if I'm fully answering your questioner or just repeating myself.

Q Yes. I think there were some environmental concerns that you mentioned that I was going to. So, you know, an electron is an electron, they're purchasing electrons. So, I'm trying to grasp the environmental concerns that you have relative to energy supply purchase?

A (Woolf) Yes. So, having looked at environmental implications of the electricity industry for 40 years, I've learned that, by far, the most significant impacts are from air emissions from the power plants. It's true that transmission lines and distribution substations, and so forth,

have their own environmental impacts on like a project site-by-site basis, and those are important to address and, obviously, comply with environmental laws.

But, in terms of the magnitude of the impacts, and the costs that are borne by the state, the power plant impacts dwarf all the others by far. And, to suggest that the Company just can't do anything about that, it's just flat-out incorrect, it's just wrong. They can. It's a matter of whether they should. That's, you know, up for the statute and for the Commission to ultimately decide.

Q And I'm sure, I know you're very familiar with the laws here in New Hampshire, and Massachusetts and Connecticut, so, the RPS piece of the equation. So, there's already statutory requirements for the utilities to perform I think what you're describing, and inside a statute, which they, of course, comply with.

Is that -- can you help me with that piece of it?

A (Woolf) Yes. So, in many other states, and I know it's, for certain, true in Rhode Island,

Massachusetts, Connecticut, the utilities will go out, and Eversource itself, will procure long-term contracts with renewable power sources above and beyond what's required in their RPS. Sometimes those procurements actually are used to comply with the RPS, but sometimes they go above them or beyond them. So, there's nothing stopping the utility from going beyond the statutory requirements. And that's my concern about their whole IRP, is like everything is like the bare minimum. They do as little as they possibly can, because they're required to by law. But, after that, they're done. They wash their hands.

Q And I think that's because they're making an effort to be in compliance with the state energy policy, which I have in front of me, which I know you're familiar with. I don't think it's in the record here, but your familiar with the state's energy policy. And I think they're just trying to be in compliance there.

So, these contracts, you referred to "PPAs" and so forth earlier, I think they would be remiss if they weren't looking at PPAs,

potentially, if it was lower cost than the alternative. If it was higher cost, whatever the power source would be, then I would question whether that's in compliance with the state's energy policy.

So, my follow-on question for you is, you have a lot of experience in other states. Do you see PPAs with lower, you know, supply costs than default service?

A (Woolf) Yes. I've seen a variety of PPAs. Some of them cost more than what you might expect, or more than what you would get elsewhere from the market, some of them would cost less. It depends upon what the type of resource it is.

And, in most cases that I'm involved with, the utilities have to put forward a case with a benefit-cost analysis demonstrating that the procurement is cost-effective, however that's defined. My problem is, we don't even have that information, because the Company hasn't done any such analysis.

Q I see your point. And I do have a follow-on question on this topic.

If you look at the data, and we've gone

back five years looking at the data in the public domain, and you look at the day-ahead cost for electricity, and you compare that to the default service rate in New Hampshire, across all the utilities, including the Co-op, those rates are significantly higher than the day-ahead rate, on average, if you integrate under the line over that time period.

So, I think what's happening is that, in the default service process here in New Hampshire, and I think your case is it can be improved, that, basically, what's happening, when the utility purchases their power every six months, that they're effectively having -- it's effectively an insurance policy, right? They're purchasing from somebody else who is taking on the risk, and there's a cost to the insurance policy. And we'll look in other dockets at the amount of that insurance policy, but let's just -- I think we can agree it's significant.

So, I want to get your opinion, because I know you have a lot of experience in this space, why wouldn't you encourage the utilities to purchase in the Day-Ahead Market by setting a

proxy price, and then just truing it up every six months, so that you could have the stability and the lowest cost?

A (Woolf) I suppose that is one way to proceed. It seems awfully risky to me. Because, as we know, the day-ahead spot prices can be pretty volatile.

But that gets to my point earlier about how I wouldn't rule out the potential for using that as one piece of the whole portfolio. But, I don't know about you, but, with my retirement accounts, I've got them very well diversified. I don't just put all my stock in a particular project -- company. And, so, the more diversity you have, I think the safer it is.

And there may be a role for doing just what you suggest. I haven't looked at the numbers enough to know that that's going to be a great outcome. But I wouldn't rule it out. It's worth looking at.

Q Yes. And I haven't looked back beyond five years. So, I might be quite surprised at what I find 25 years ago, and it would have been a huge issue. But, at least in the last five years, the dataset, my encouragement would be to look at

that data. And I think we'd be very interested over time in your opinion on that topic.

A (Woolf) Yes. If I can add one more thing? So, I agree with what you're getting at is, when you go out to procure from competitive suppliers, they add a risk premium, right, to their -- and there are many risks. It's not just the prices, but it's also customer migration and all the rest.

And there may be ways to minimize the amount of risk premium that the company pays by alternative sources. And one of them is the spot market, but another one is a long-term contract with renewables, and so forth, DERs that can lower your load. Those are all ways to kind of offset that risk of a risk premium.

Q I see your point. Thank you. I also wanted to take the opportunity to leverage some of your experience in dealing with other parties across the country.

When you look at benefit-to-cost analysis, and I'm thinking here of energy efficiency types of things, have you seen any, you know, closed-loop analysis? You know, one of the things that, when you look at the forecast

for benefits and costs, costs are pretty easy to estimate, right? That happens next year, it's not that difficult to estimate the costs. The benefits are more challenging, right? You're estimating ten, twenty, thirty years into the future the benefits.

Have you seen any closed-loop analysis that comes back on "Hey, we're really confident in these benefit-to-cost numbers, and, thus, we're getting what we think we're getting"?

A (Woolf) Well, if what you're getting at by "closed-loop", meaning like a retrospective review of how the forecast fared --

Q Yes. "We thought it was going to be this, and it turned out to be this."

A (Woolf) I've seen some of those, I've conducted some of those. And, you know, as we all know, the forecasts end up being wrong. And, so, it's often a matter of how wrong. And I found that they don't necessarily, you know, those kind of retrospective analyses might give you insights on how to do your forecasting better in the future. But you're still, in the end, left with the challenge of forecasting.

Q And do you see a bias? Is it usually a low-side bias? High-side bias? Is the bias itself in a particular direction? Or, is it just sort of random? Sometimes it worked out better than you thought, sometimes it's worse than you thought.

Do you have any -- do you see any -- do you have any experience with that?

A (Woolf) Well, it depends on the analysis and who's doing it.

Q Right.

A (Woolf) But one thing I've seen lots of is forecasts, like load forecasts, and they're called "porcupine graphs", because they show forecasts that were done over different years. And you can imagine, you know, the first year, maybe ten years ago, it looks like this *[indicating]*, and then another later year it was actually a little bit lower, and then it was lower. And the next thing you know, you've got a porcupine. And the actual one was much, much lower than that. Now, I'm not faulting whoever did that, but you see that a lot.

And you also see analyses where, you know, the gas prices going like this

[indicating], and then the forecast is like this *[indicating]*, right? We know that's not true either.

So, what that gets to is, a robust benefit-cost analysis will not only get the best forecast it can get, but it will also do sensitivities, and say "Okay, well, what if gas prices are higher? What if they're lower?" That's the kind of thing that should be in an IRP, in fact, often is in an IRP, to test the assumptions you're making to get a sense of how robust your results are. It's critical.

Q Yes. I agree. I don't recall seeing a sensitivity analysis in the IRP. Did you see a sensitivity in there?

A (Woolf) Nothing even --

Q Okay.

A (Woolf) Well, they do have two load forecasts. It's the same idea.

Q Yes, the 90/10 and the 50/50.

A (Woolf) But I'm talking about something much, much -- well, I don't think I even saw a forecast in there of wholesale market costs. So, if there's no forecast, then you can't do a

sensitivity on it.

Q Right. That seems very fair. Okay. Just a few more questions. Let me just reorient myself.

MR. KREIS: If I can just leap in and say, in his previous answer, Mr. Woolf referred to something that "looks like this, and then like this", and he made a gesture with his hands, that I don't think the court reporter was able to capture.

I just wanted to see if maybe he wanted an opportunity to describe his hand gestures, just so the record may be complete.

WITNESS WOOLF: I'm happy to. This is in regards to the "porcupine graph", especially where the first year, you might see a very high forecast, and a line that goes, you know, it grows fairly significantly; the subsequent year the forecast is lower, the entire line comes down; the next year you've got a third forecast, and you've got another line, and that goes down; and so forth. So, it looks like a porcupine.

And, you know, not all forecasts have that shape. I'm referring to several load forecasts, where you -- you asked about a "bias".

You know, there might be some cases where utilities forecast on the high side, because they have got an important job. They want to make sure that things are reliable. But it turns out, over time, maybe they over-forecasted.

But, you know, kind of the concept about "forecasts being off" really applies to all sorts of forecasts.

CHAIRMAN GOLDNER: Yes. We used to joke "The forecast is wrong before the ink is dry." So, I'm familiar with the problem, yes. It's hard.

Just a few more.

BY CHAIRMAN GOLDNER:

Q There's a discussion on Bates 021, I don't think there's a need to turn to it in your testimony, talking about "grid modernization". And I was hoping to, you know, it's unclear to me at this point whether that increases costs or decreases costs, just in looking at the testimony.

Is it really, in your mind, a tradeoff of costs or reliability? Or, do you think that there's actually cost reductions embedded in the grid modernization scope?

A (Woolf) Grid modernization, as you know, covers a broad range of technologies. And, in the plans we've reviewed, there's a whole list of benefits that utilities tend to describe for grid mod. Reliability is usually the first one. We actually did a nice chart showing, of 20 studies that we looked at, you know, which benefits were described as a part of their plan.

And it is also, like, safety, and resilience, and so forth. Reducing cost is one of them -- oh, also, interconnection DERs is a big benefit of grid mod. And that itself, if the DERs are cost-effective, leads to cost reductions.

So, I would say that there is a variety of benefits associated with grid mod., many of them which are very important. And, in order to know whether the benefits exceed the cost, you have to do a benefit-cost analysis. And I don't mean to be a broken record.

But I will just add that Mr. Havumaki and I did a report for the Lawrence Berkeley National Lab on exactly this issue, and we described the importance of doing a benefit-cost

analysis in grid mod. I think we might have cited it in our testimony. But, if not, we can get that to you.

Q Thank you. And I think, I don't mean to paraphrase you, so please correct me if I paraphrase you incorrectly, I guess I am paraphrasing you, in the aggregate, there's the possibility that grid modernization could make costs come down. In this forecast, we can't see it, because we don't have the data.

In other jurisdictions, have you seen -- have you seen grid modernization result in lower costs, or is it sort of early days and there's not enough data yet other justifications?

A (Havumaki) Sure. Yes. I think it is true that it's, broadly speaking, early days. But I think there's also an issue of measurement *post facto*, and just a retrospective measurement. So, to the extent that jurisdictions have pursued grid modernization, it's much common to have an accompanying, you know, robust set of metrics that are really trying to get at whether those savings are materializing.

So, that's something that we have kind

of stressed in our practical guidance. You know, the importance of, you know, if you're going to make ambitious, big investments that promise ambitious, big benefits, then you have to also implement an ambitious set of metrics to track.

And then, there's a potential for, you know, accountability also, depending on, you know, depending on whether the benefits materialize. And that's, obviously, a jurisdiction-by-jurisdiction determination.

Q Okay. Thank you. That's very helpful. Yes, I think that's a very sensible -- very sensible approach.

Just a couple more quick ones. You highlighted on Bates 021 the importance of operating costs, in addition to capital costs. I actually asked the Company a similar question.

But what have you seen successful utilities do, in other jurisdictions, to reduce or control their operating costs? Do you have any advice for the Company on this topic?

A (Woolf) Well, that's -- there's a lot of them. that's a broad question.

Q The top three will do.

A (Woolf) Yes. So, you know, I don't mean to be a broken record or to be, like, tunnel vision on DERs, but, you know, they can reduce operating costs, in addition to capital costs.

And I will also add that there's a movement around the country, something that Mr. Havumaki and I are engaged in in lots of states, to promote performance-based ratemaking to get at this very issue. As you probably are well aware, most utilities have an incentive to actually increase their capital costs, because they get a return on those, and they have, you know, to sort of contribute to their earnings. And, so, there's a move to try to mitigate that, so the utilities can, without heavy oversight from the Commission and others, to optimize and make those decisions.

But I'm not really in a position right now to sort of list a lot of things that utilities can do to do that. But one thing I will just add, and, again, it's repeating, but I think it's important. You're referring to the operating costs and the capital costs that are in, like, base rates. And, don't forget, that's

just a portion of the whole bill. There's half to two-thirds that's power plants.

CHAIRMAN GOLDNER: Absolutely. We have an open docket on that topic, and we did explore that a little bit today. But we acknowledge that that's a very important topic.

And, yes, today it's two-thirds, last year it was half. And, hopefully, it will go back to half. But, certainly, today, it's much higher.

Okay. Do the Commissioners have any follow-up questions for the witnesses?

CMSR. SIMPSON: No, I don't.

CMSR. CHATTOPADHYAY: No, I don't. But I wish you hadn't used the example of a "porcupine", because my dog had -- Rishi got quilled recently. And the Consumer Advocate made you go back to it, that gave me jitters.

CHAIRMAN GOLDNER: Dr. Chattopadhyay is traumatized by his favorite dog got quilled. So, he's having a bad afternoon.

We'll turn it over to Attorney Kreis for redirect.

MR. KREIS: Well, thank you. And let

me just thank the three of you for your thoughtful questions of our witnesses. It leaves me very reassured.

I'm very sorry to hear about Rishi and his encounter with a porcupine. Let me just assure everybody that the beaver, and not the porcupine, is the totem animal of the Office of the Consumer Advocate.

I just have a couple of things to pin down with my witnesses by way of redirect.

REDIRECT EXAMINATION

BY MR. KREIS:

Q Mr. Woolf, do you recall that Commissioner Chattopadhyay, even though he's been thinking about porcupines, actually asked you to take a look at Page 438 from the second part of Exhibit 4? And you don't have to go back to that.

I just want to basically clarify, we did not, meaning the OCA did not, ask you or Mr. Havumaki to go through all of those individual projects that are laid out in detail in Exhibit 4?

A (Woolf) Correct.

Q And, so, if I told you, subject to check, that the page that Commissioner Chattopadhyay asked you to look at, involving alternatives, concerned a particular substation in the Eversource service territory, their White Lake Substation, you would say that was sort of more granular than the scope of the inquiry that we asked you and your colleague, Mr. Havumaki, to undertake?

A (Woolf) That is correct.

Q Would it also be fair to say that, in contrast to, say, Mr. Dudley, who is an employee of the Department of Energy, and therefore the State of New Hampshire, the Office of the Consumer Advocate is paying you and Mr. Havumaki by the hour?

A (Woolf) That is correct.

Q And would it also be fair to say that, as the OCA manages your work for our office, you and I are in fairly regular conversation about managing the hourly billings of your firm, so that we make prudent use of the resources that are available to the OCA?

A (Woolf) Also correct.

Q So that then would account for the fact that we

asked you to confine your work to what I think Commissioner Chattopadhyay referred to as a kind of a "global approach" to least cost planning?

A (Woolf) That's also correct.

Q There were a few questions from the Chairman that had to do with "risk premiums", in the context of default service procurement. And, even though we are talking here about "least cost planning", would you agree with me that, in general, residential utility customers actually place a pretty high value on price stability, such that they might be willing to suffer a little risk premium in their rates, in exchange for a certain and predictable price?

A (Woolf) That has been my experience, yes.

Q And, finally, at the very beginning, in your colloquy with Commissioner Simpson, you were sharing your insights about what you know about integrated resource planning in various jurisdictions around the country. And, if I'm remembering correctly, at one point, you were drawing a distinction between what you called "integrated companies" or "integrated utilities", and other kinds of utilities, do you remember

that?
A (Woolf) I do.
Q And, when you referred to "integrated utilities", you meant "vertically integrated utilities"?
A (Woolf) Yes. A different use of the term "integrated" than least cost integrated plans.
Q Right. I wanted to make sure that was clear. And I think I heard you say that, in jurisdictions where the utilities are still vertically integrated, that there is a great deal of very robust integrated resource planning that happens in those jurisdictions?
A (Woolf) Oh, yes. In fact, my company makes its living off of getting involved in those dockets, and trying to make them robust, yes.
Q Glad to hear it. I just wanted you to clarify, though, it isn't your testimony that, in jurisdictions like ours, where electric investor-owned utilities have been restructured, and generation assets have been divested, it isn't your testimony that, in those jurisdictions, integrated resource planning is either impossible or not useful?
A (Woolf) No, that is not my position at all.

MR. KREIS: I think that's all I have by way of redirect.

CHAIRMAN GOLDNER: Okay. Very good.

I just want to, before we take a quick break, I want to check in with Attorney Emerson on his plans to proceed when we come back from break. How would you like to proceed, sir?

MR. EMERSON: If you're referring to the surrebuttal, I think we'll just plan to do as we had originally planned, and not save anything for a settlement hearing at a later date. So, --

CHAIRMAN GOLDNER: Okay. So, you'd like to put your witness on the stand, and proceed that way, am I understanding you correctly?

MR. EMERSON: Correct. I would introduce him, and his exhibit, and then just give him a nice kind of sort of introductory question to set him off on his surrebuttal testimony. And then, he would be available for cross-examination.

CHAIRMAN GOLDNER: Okay. Very good. Mr. Patnaude, how long would you like?

MR. PATNAUDE: Till twenty of.

CHAIRMAN GOLDNER: Twenty of, okay. Okay. Let's return at twenty of.

MR. KREIS: Before you take the break, could you possibly excuse my witnesses formally, in case they would like to head on the road, down to the Commonwealth from whence they came?

CHAIRMAN GOLDNER: I see. That's an excellent point. I thought I wouldn't make them sit there through the break either. But, yes, the witnesses are excused. Thank you for coming down today.

WITNESS WOOLF: Thank you.

CHAIRMAN GOLDNER: Or, coming up.

WITNESS HAVUMAKI: Thank you.

(Recess taken at 3:28 p.m., and the hearing resumed at 3:43 p.m.)

CHAIRMAN GOLDNER: All right. We'll go back on the record.

Mr. Patnaude, if you could please swear in the witness.

(Whereupon ***Christopher Skoglund*** was duly sworn by the Court Reporter.)

MR. EMERSON: Okay.

CHRISTOPHER SKOGLUND, SWORN

DIRECT EXAMINATION

BY MR. EMERSON:

Q Do you mind stating your name for the record?

A Yes. It's Chris Skoglund.

Q And could you identify your position and the company you work for?

A Yes. I work for Clean Energy New Hampshire. And I'm the Director of Energy Transition.

Q Could you just take a brief few seconds to explain what Clean Energy New Hampshire is, and who are the types of entities that are members?

A Yes. So, CENH is a statewide nonprofit organization dedicated to strengthening New Hampshire's economy, as we transition to a clean, affordable, abundant renewable energy economy.

While our membership does include over 20 solar developers, including Mike Caplan, from Olivewood Energy, who is here today, it also includes residential, commercial, industrial, and utility-scale projects for these, but we also represent the interests of hundreds of residential, business, and industrial, as well as nonprofit members across the state.

We are in the process of enrolling our

35th municipal member, and we would be then representing more than 350,000 New Hampshire citizens, nearly one-quarter of the state's population. All of these entities are looking for affordable clean energy, particularly at this moment in time.

Furthermore, all three of the state's utilities are Clean Energy New Hampshire members.

Q Thank you for that. Have you testified before the New Hampshire Public Utilities Commission before?

A I have.

Q Okay. Do you have before you what has been marked as "Exhibit 19", and is titled "Direct Testimony of Christopher J. Skoglund", and dated "August 19th, 2022"?

A Yes, I do.

Q And did you draft that document or was it drafted at your direction?

A Yes, it was.

Q Do you have any corrections to that testimony today?

A No.

Q Is it true and accurate to the best of your

knowledge?
A Yes, to the best of my knowledge.
Q Is it the testimony that you would give here today live?
A Not from memory, but, yes.
Q Thank you for that clarification. And do you adopt that as your testimony live today?
A Yes, I do.
Q So, you read the rebuttal and supplemental testimony of Eversource filed in this docket?
A I did.
Q And that testimony addressed the N-1 standard as applied to distributed energy resources?
A Yes, it was.
Q And you also reviewed discovery responses from Eversource that address the same topic?
A Yes, I did.
Q I will give you the opportunity to respond to both the rebuttal, supplemental testimony, and the discovery responses, which are exhibits in this docket.
A All right. Thank you very much. And I will be brief, well, relatively brief.
So, over the past year, Clean Energy

New Hampshire and our members have noted, as have we all, that default energy supply rates have skyrocketed in response to the dynamic global energy markets. They have affected ISO-New England, they have affected our default energy supply prices, and these are correlated with high national and international gas prices.

So, the most powerful policy that New Hampshire has to dampen these rate shocks, and provide long-term relief, is to reduce the overall demand for energy. And reducing demand will contribute to achieving the lowest cost electric rates. RSA 378:38 clearly recognizes that by focusing so much on energy demand.

The second most powerful tool that Clean Energy would put forth is local distributed energy resources, otherwise known as "DERs", primarily solar photovoltaics, or "solar PV". DER and renewable energy development represent the least-cost source of energy generation that can be constructed currently and rapidly.

And this is reflected in the fact that ISO-New England's interconnection queue was approximately 95 percent renewable resources and

battery storage. Now, not all of these projects will be built. But the levelized cost of energy and the speed with which they can be built is what's contributing to that 95 percent interconnection rate -- or, queue.

Solar PV is the fastest source of low-cost electricity generation that can be built to meet New Hampshire's current growing needs for clean, affordable power, capable of providing insulation from power market forces.

Further, this resource can benefit all of our members and all of New Hampshire, whether residents, businesses, local governments, and manufacturers, and it can improve the cost-effective -- sorry -- competitiveness of the entire state.

Studies have forecast that the clean energy grid that maximizes distributed energy projects throughout the United States is one way that we could collectively save $88 billion in energy spending by 2050.

As an important consideration, I believe it was Gerhard who noted that we would be expecting the grid to increase by nearly double

in size. And, so, these distributed energy resources will be a significant component of that.

As a result of rising energy costs and the effectiveness of solar PV, solar energy developers, working at residential, small-scale commercial, large commercial, and utility-scale projects, have seen an explosion of interest. However, throughout this docket, Clean Energy New Hampshire has noted that Eversource, and as we explored yesterday, and today, has begun applying a new unapproved DER interconnecting standard to projects, which is raising the overall project's costs. These increased costs can impact the financial viability of projects, and, therefore, the state's ability to deploy greater electric generation at the precise time when it is needed most.

Now, Clean Energy New Hampshire takes no issue with the N-1 reliability standards applied by Eversource; far from it. Our members derive great economic and health benefits from the delivery of high-quality, uninterrupted service. But we do take issue with how the

Company has chosen to assign costs for DERs, without notice or approval from the PUC or consultation with stakeholders.

Eversource has attempted to address this concern in their rebuttal and comments during technical sessions. In their response, Eversource Energy focused on the reliability justification for the interconnection. However, they did not address the concerns related to the adoption of their standards, without review and approval from the PUC.

Eversource noted that applying a longstanding reliability standard, and using traditional cost allocation methodologies, that they were applying these methodologies. However, Clean Energy New Hampshire would note that DERs are not like historical infrastructure projects that lead to an increase in demand and consumption on the distribution network and transmission system, and increase impacts on infrastructure, while only benefiting a single or cluster of end-users.

Instead, these DERs can provide economic value to the project developers, as well

as possibly to ratepayers. In the case where DERs may increase the overall supply of energy available on the grid, they can help stabilize or possibly even lower energy costs in the near term, as well as impact electric generation and transmission costs for the state. The allocation of costs to developers through the N-1 interconnection standard may not properly allocate costs across all beneficiaries in New Hampshire.

And, so, New Hampshire's -- or, CENH's solar members are reporting that, or at least some of them, that the application of these standards are resulting in the delay or outright cancellation of solar projects. And this is restricting the deployment of low-cost energy at this time of historical high prices.

Therefore, the N-1 interconnection standards, and the reliance on the cost-causer principle, may be reducing the benefit to all energy customers. And CENH would ask that these interconnection cost allocation standards be suspended, pending New Hampshire Department of Energy's investigation into interconnection, I

believe it's IP 2022-01 **[**22-001**?]**. Once that is concluded, and we have full costs and benefits for a variety of interconnection approaches fully vetted, that would be the appropriate time to be applying these standards, or different standards, to the state.

Thank you.

MR. EMERSON: Mr. Skoglund is now available for cross-examination.

CHAIRMAN GOLDNER: Thank you, Attorney Emerson.

We'll turn to the Office of the Consumer Advocate, and Attorney Kreis?

MR. KREIS: Much as I would like to deliver a withering cross-examination to Mr. Skoglund, I don't have any questions for him.

CHAIRMAN GOLDNER: All right. Very good. Attorney Schwarzer?

MS. SCHWARZER: Mr. Chairman, might I defer to Eversource going first?

CHAIRMAN GOLDNER: If Eversource is agreeable?

MS. RALSTON: Yes. I may just need one minute, just in light of the new testimony, just

reorganizing myself.

CHAIRMAN GOLDNER: Okay. Yes. Take your time, please.

MS. RALSTON: Okay. Are you ready, Mr. Skoglund?

WITNESS SKOGLUND: I am.

MS. RALSTON: And just bear with me, I'm just reorganizing, --

WITNESS SKOGLUND: Nope. That's all right.

MS. RALSTON: -- in light of your testimony.

CROSS-EXAMINATION

BY MS. RALSTON:

Q So, I think I heard you say a minute go that Clean Energy New Hampshire has no issue with the N-1 planning standard, in general, is that correct?

A That is correct.

Q Okay. So, would Clean Energy New Hampshire agree that the N-1 planning standard has reliability benefits to the system?

A As I'm sworn to tell the truth, I don't actually -- I can't confirm that, nor deny.

Q Okay. So, would you also not be able to confirm or deny that, if the Company did not apply the N-1 standard, there would be a reliability impact associated with that?

A I can't confirm, nor deny. But, during technical sessions, we talked about alternative -- and not during settlement, but during technical sessions, we did talk about alternatives where potential projects could -- whether they could opt not to make those upgrades, but instead be tripped or come off-line during these N-1 events? And we were informed that that was not the case.

So, there seemed to be a requirement that it was all or nothing, on the part of the Company, and, therefore, project developers wouldn't be in a position to be able to take risk associated with managing the costs associated with interconnection.

Q Okay. Maybe we should take a step back. Do you think you could explain to me, in your own words, what the "N-1 standard" is? That might be helpful.

A So, it's my understanding that, if a primary path were to be disconnected, due to some sort of

event, whether it's a tree falling, or some sort of infrastructure failure, that there is a backup path, so that there is -- that electricity or load can still move along within the distribution network.

Q So, you would agree then that a distribution system that meets the N-1 standard is a system capable of maintaining normal operations in the event of a single contingency event, such as an unplanned loss of a transformer or other electrical facilities, that that would not cause a customer outage?

A Yes. That would be my understanding.

Q Okay. So, if the N-1 standard is dropped from the Eversource system, with respect to DER interconnection, then the system would not be capable of maintaining normal operations in the event of a single contingency event, isn't that correct?

A So, I think it depends on how we are phrasing that and framing that. If it is being applied, and there are -- our issue is primarily with how the benefits are being assigned and how the costs are being assigned. So that there are multiple

beneficiaries, not just the project developer. But, because we are applying all of the costs to that interconnection upgrade, if N-1 condition upgrades are required, that does not seem fair to us.

However, in an alternative, if a company were to want to interconnect into the grid, and were to want to opt not to be making those investments that the Company was saying were required for N-1, but was instead opting to be disconnected during N-1 events, and stay off-line, therefore, not overloading the system or putting the system at risk, that option is not allowed under your interconnection standards.

Q Right. I'm not sure you exactly answered my question. Maybe I'll try it one more time.

A Sure.

Q So, if the Company stopped applying the N-1 standard for the purpose of DER interconnection, then its system would not be planned to be capable of maintaining normal operations in the event of a single contingency event, is that correct?

A It sounds correct, but I sense a trap.

[Laughter.]

BY MS. RALSTON:

Q It's not a trap. You made it more complicated in your first answer. This is just a question.

So, then, when you're -- so, in that instance, the system is not capable of maintaining normal operations, that would mean that customers would be exposed to outages, is that correct?

A Only if the developer were put in a position where they could not be brought off-line to maintain the N-1 condition. So, for the N-1 that you are requiring the interconnection, you're assuming that there is no loss of load, but there is also no loss of the generator being -- continuing to provide power.

Q Okay. So, would you agree that Eversource has an obligation to provide reliable service to customers?

A I do.

Q Okay. And is it your understanding that Eversource can construct its distribution system, knowing that, in the event of a single contingency, the system would fail, causing

outages for those customers?
A Yes. But I think alternative design is potentially possible.
Q Have you conducted any study to determine the magnitude of outages that would occur without the N-1 standard that's in place for interconnected DER?
A I have not.
Q And have you conducted any study to determine the frequency of customer outages, in the event of equipment failure, associated with DER interconnection?
A I have not.
Q Can you refer to Exhibit 15, at Bates Page 001.
A One second.
CMSR. SIMPSON: Can you repeat the Bates page, Ms. Ralston?
MS. RALSTON: Yes. Sure. Page 1.
CMSR. SIMPSON: Thank you.
BY THE WITNESS:
A All right. Yes.
BY MS. RALSTON:
Q Okay. And, so, the last sentence of the second paragraph of this response states: "Maintaining

operational flexibility on lines and substation equipment that are intentionally designed to pick up customer load and generation during outages resulting from N-1 contingencies at the station is especially critical to ensuring reliability and service continuity for all customers." Do you see that?

A I do now.

Q Okay. And, so, is it your position that the equipment required to meet the N-1 standard, in relation to interconnected DER, is superfluous, because the substation should just pick up the load in the event of a single contingency elsewhere on the system?

A I don't quite understand the question. Or, maybe I misunderstood the question.

Q So, the Company is -- so, when we're referring to Exhibit 15, this is the Company's response to a date request --

A Yes.

Q -- from Clean Energy New Hampshire, correct?

A Yes.

Q And would you agree that the Company is explaining that maintaining reliability is

essential, and that's part of why they applied the N-1 standard? I'm summarizing.

A Yes. I would agree with that general assessment.

Q Okay. I don't want you looking for a specific page.

So, when you're arguing that the N-1 standard shouldn't be applied to DER interconnection, are you essentially saying that that reliability -- that the DER product should be treated differently, they shouldn't be required to make -- to facilitate the --

A So, maybe it's easier to make -- there's potentially two arguments that we are making. One is that, if they're interconnecting, they -- and we're keeping N-1 reliability at all times, but there's no option for them to interconnect while being tripped. So that they're not running during N-1, unless that upgrade is made. If they, for price or cost reasons, opted not to pay for that, Eversource wouldn't let them interconnect.

The other contention is that, to make that upgrade for N-1 contingencies where they would not be tripped, only the project developers

are paying, but there's no alternative analysis that's being done or proposed that would spread the costs for that interconnection across all the beneficiaries. It's treating the project developer as the sole beneficiary of that project.

Q Okay. That is a great segue into my next question.

A All right.

Q So, I was going to turn to your testimony, which is Exhibit 19, at Bates 027.

A All right. I am there.

Q And, starting at Line 18, and this is consistent, I think, with what you just testified to, but you say: "Based on the experience of these CENH" --

A Can I interrupt you for a second?

Q Yes.

A You said -- oh, you said "Bates Page 027". I'm sorry. Okay.

Q Okay. Are you there?

A Now, I'm ready.

Q Okay. And I'm starting on Line 18.

A Yes.

Q You state that: "Based on the experience of

these CENH business members, this change can result in a 300 to 400 percent increase in interconnection costs, with one example reported to be an increase in costs to approximately $5 million using Eversource's proposed policy versus $1 million using the currently published policy submitted in its LCIRP filing." Is that an accurate --

A That is as it is written in the testimony.

Q Okay. And, so, in that sentence when you say -- use the phrase "this change", you're referring to the application of the N-1 planning standard in DER interconnection projects, correct?

A Yes, the change in Q4 of 2020.

Q Okay. And, so, consistent with our earlier conversation, it's accurate to state that Clean Energy New Hampshire's main concern with allocation of N-1, is with respect to the cost incurred when a system upgrade is necessary, based on the N-1 planning standard analysis?

A When that cost is associated with not tripping, in order to interconnect, yes.

Q Okay. And then, can you turn back to Exhibit 15, at Bates Page 006?

A Yes. I am there.
Q And do you see the last sentence of the first paragraph, it starts with "However"? And it says: "However, it must be noted that in most situations where DER can connect without paying for system upgrades (because there is sufficient hosting capacity), the cost of that system capacity was borne entirely by rate payers or a previous DER project that proceeded with an interconnection upgrade."
A Yes.
Q So, is it your testimony this afternoon that it's more appropriate for customers to bear the cost of an interconnection upgrade on DER projects?
A No, that is not. What I'm suggesting is, it's not been studied to evaluate what is the proper allocation of those costs. If we are to keep projects interconnected, up and running during N-1 events, that it is not just the DER project that is benefiting from this, but there are transmission and other system impacts that can reduce total energy costs. But those haven't been evaluated. And, so, the costs are being passed only onto the DER project, and, therefore,

that is causing those projects not to be built, or be delayed. And that this is reducing the amount of new energy supply that is coming on line.

MS. RALSTON: Thank you. No further questions.

WITNESS SKOGLUND: All right. Thank you.

CHAIRMAN GOLDNER: Attorney Schwarzer.

MS. SCHWARZER: Thank you, Mr. Chairman.

BY MS. SCHWARZER:

Q Mr. Skoglund, is it your proposal that all charges be suspended, did I hear correctly, until after the Department's IP 22-001 docket is completed?

A With respect to this new standard that was adopted in I believe it was Q4 of 2020, related to the N-1, the interconnection for DER projects.

Q Well, I'm going to -- I'm going to take your assumption, I'm not sure it's a "new standard" as applied to DER projects, and there was testimony on that on Day 1.

But I'm not sure, where would you point

to in the LCIRP statute that the statute authorizes suspension of costs consistent with what you're requesting?

A All right. I think this goes back to some of what was talked about with the Commissioners and Mr. Woolf. And it was under RSA 378:38, III, "An assessment of supply options including owned capacity, market procurements, renewable energy, and distributed energy resources."

In my read of that statute, Section III clearly articulates that the Company should be evaluating how it can be enabling renewable energy and DER resources, in order to reduce the total system costs, consistent with RSA 378:37.

It seems that this application of this standard was done in such a way that it did not fully evaluate the cost allocation to bring these new renewable energy and/or DER projects on line.

Q Even assuming, for the sake of argument, that that fits under III, where do you see the power to suspend all costs within the LCIRP statutes?

A I'll be honest, I don't know that I can reference -- I cannot reference that right now.

Q Okay. And you are participating in the

Department's IP 22-001 docket?
A Yes. We are aggregating comments on behalf of our members.
Q And, so, these issues have been raised in that other docket?
A They have, yes.
Q And why is it that Clean Energy New Hampshire wants to raise them in both, the Department's docket and this LCIRP docket?
A We had first proposed these in our August testimony, because the investigation into interconnection by the Department had not been opened. But we, at the same time, knew it was forthcoming, because Senate Bill 262, I believe, had been passed.

But we would have still made this same argument, even if that study had not been adopted.

MS. SCHWARZER: Okay. Thank you. I don't have any further questions.

WITNESS SKOGLUND: Okay. Thank you.

CHAIRMAN GOLDNER: Okay. Let's move to Commissioner questions, beginning with Commissioner Simpson.

CMSR. SIMPSON: Thank you, Mr. Chairman. Thank you for being here, Mr. Skoglund.

WITNESS SKOGLUND: Thank you, Commissioner.

CMSR. SIMPSON: So, I want to focus on a handful of areas. And starting with the load forecast, and your testimony pertaining to the Company's load forecast.

BY CMSR. SIMPSON:

Q So, in your view, what would the Company's appropriate load forecast include? What would be the granularity? What would you be looking for from that load forecast?

A So, thank you for the question. What's driving my answer is that I interpret RSA 378:37 through :40 as not being a snapshot in time, but being a look forward as to what the Company can be doing to reduce total energy costs for the energy system. And those costs can be including energy supply costs, distribution costs, and transmission costs. And my answer is then informed by planning for the New Hampshire Climate Action Plan, New England Governors

Eastern Community and Premieres Climate Plan, as well as several other plans, that looked at how all of the different elements play off one another and interact, in order to have a effect on the entire energy system, and the goals that are, you know, were articulated in that.

RSA 378:37 clearly articulates that a utility should be pursuing the development of an integrated plan that pursues the lowest cost, inclusive of several -- consideration of several other factors. But, in order to do that, it is our belief, or my belief, that a modeling of where the load is going to be, what's driving that load, what's influencing it, with new technologies that are coming on line. And, in our testimony, we had noted several dockets where some that were contemporaneous with the filing of this, some that were prior, have been raising the notion of the energy transition, and how it would be growing energy consumption.

So, looking at, you know, what is heat pumps and their deployment rates? What is the expected deployment rates for electric vehicles? What might be hot water heater or geothermal heat

pumps? That's a little repetitive. But, looking at how technologies could change, but knowing that it will be incorrect. To Mr. Woolf's point, you know, we'll have the porcupine. But those forecasts can be illustrative -- not "illustrative", but directionally correct, and inform our understanding of what future consumption and demand can be.

The importance of that, though, is that, rather than be identifying projects, the Commission could be evaluating individual projects to reduce costs, but also what are additional programs that go above and beyond legislatively mandated energy efficiency programs, the solar net metering programs, RPS, or the RGGI requirements. Those, in our mind, are just floors, they're kind of the minimum requirement that the state needs to meet for its energy goals. But that, as the market evolves, as new technology comes on line, as new energy supply costs come down, we might be able to change the trajectory of energy consumption and demand forecast through the implementation of new programs, and not just projects.

Q You mentioned that "more granularity is important", in your view. Can you elaborate on that? What elements of the load forecasts or of the load forecast the Company has put forth in their LCIRP, is too high-level and not granular enough? What are you -- what specifics do you think should be included and evaluated there?

A So, in that respect, it's perhaps not in their forecasts, the evaluation, I believe it was just the 50/50 forecast and the 90/10 forecast. And they were providing an output, rather than a view of what the inputs are and what the assumptions are. And, without a view of those more granular assumptions and inputs, it's hard to understand whether their forecast is accurate or not, or too conservative.

But what also, and I think we're sharing Mr. Woolf's contention, that there should be an alternative assessment of "Where can we get that demand?" "Where can we get that load?", if we were to be investing in other programs or projects.

The LCIRP statute appears to be written broadly enough as to be encouraging the utility

to look beyond just traditional infrastructure investments, but can they be making investments in energy efficiency, supporting the interconnection of renewable energy projects, so that they can change the amount of infrastructure we might need in the future.

So, I guess what I'm hinting at is that non-wires alternatives are not just projects that might occur alongside large infrastructure. But, actually, as I noted in my footnote on Bates Page 015, Navigant Research defines "non-wires alternatives" very broadly, and that it could be viewed as all energy efficiency, all DERs, all renewable energy.

But, without a detailed forecast of saying where we're going, and then an assessment of what are the alternative projects and programs, we don't know whether we can get to a different state more cheaply.

Q And you mentioned several categories there that either Navigant's definition are grouped within non-wires alternatives or are different types of DERs, like electric vehicles, you mentioned thermal heat pumps, energy storage.

How would you suggest that the Company, and, really, any electric utility in the state, approach developing forecasts for those types of technologies that you mentioned in this testimony? What data sources, methodologies would you suggest should be leveraged?

A So, at a minimum, ISO-New England releases the Capacity, Energy, Load, and Transmission forecasts on an annual basis. And just, I think it was last week, for instance, they released updated data on what EV penetration is expected to be for each of the different states, and all of New England, between 2023 and 2032.

And much like was expected, you know, describing the porcupine again, those forecasts came in much higher than had been from the year before. I think there was a 300,000 vehicle increase by the end of the decade, compared to prior. So, 1.5 million vehicles are expected in 2031, in the new assessment, it was closer to 1.8 million. But the forecast in the year before was still directionally correct, and was at the state level, indicating how much demand we -- not "demand", but how many electric vehicles we might

see owned and operated in the state.

That level of granularity is also important to look at, not just for the state, but for the entire region, because we may see many EVs coming into the state from out-of-state drivers. So, making sure we're looking at not just our information, but also what are the forecasts in surrounding states that might impact ours, so that it is truly an integrated plan is important.

But ISO-New England has a significant body of work that could be leveraged. But I also feel like, for a plan that is done every five years or so, using that as just simply the base case would be the minimum.

Q And is that the type of work that Clean Energy New Hampshire embarks on or is your expectation that the utilities, and Eversource, in particular, here, would embark on that effort themselves?

A It would be work that they would do on the part of Eversource, it's their plan. Like Clean Energy New Hampshire would be more than happy to support it, and provide feedback on assumptions

that go into that, leveraging our own network. But that seems like something that would be appropriate to either using in-house or a consultant that has more analytical capacity than we do.

Q Okay. Turning to the grid modernization discussion in your testimony, Bates Page 020, just so I fully understand.

Are you somewhat equating the term "smart grid" in the statute with "grid modernization"? Are you treating that term equally or those terms equally?

Because you say "A requirement that was considerably overlooked was the section on the "smart grid"," and you reference the statute later in the sentence, "and other features that are consistent with "grid modernization"." Are you trying to make a distinction there between the two terms or are you --

A Sorry to interrupt you, Commissioner.

Q Please.

A But what Bates page are you on?

Q Twenty.

A Oh, okay. Now, I'm with you.

So, in that, yes. Equating "smart grid" as another way of describing, or it's consistent with "grid modernization", but "grid modernization" I think is a broader term. Smart grid can be a piece of it, but it can also be, you know, not just that the meters we're using, not just the monitoring that was described by some of the other witnesses, but it could also be programs that can speed the adoption of certain technologies. It could be innovative rates.

So, just to give an example, I have an electric vehicle. I have solar panels. There could be, through the use of innovative rates, signals that would encourage me to deploy my panels at home, while the Sun is out, but only charge at night. Right now, there is no incentive for me to not charge my car during the middle of the day, but instead soak up the rays whenever it's available. I actually charge it overnight, because I'm a nice guy.

But my neighbor, who is on a completely different net metered electric rate, actually has an economic incentive to charge during the day, because they are on net metering 2.0. They don't

get the full retail electric rate when they discharge onto the grid. So, when the Sun does come out, literally, they run out and charge their electric car.

So, in our view, grid modernization can be inclusion of not just technology, but also the application of programs, policies, and price signals, that can encourage people to be using energy differently, which then might use existing infrastructure more efficiently, and, therefore, reduce costs for all.

Q Okay. That's helpful. So, the "smart grid" element, in your mind, is really the technologies, the types of capital investments that the utilities might put forth in their LCIRP?

A Yes.

Q Okay. Thank you. That's helpful. Okay. Let's jump to interconnection.

So, is there a threshold of system size, in your view or in your experience, where you're encountering concerns with interconnection standards and hurdles for deployment of distributed energy resources, likely,

specifically solar PV?
A In terms of utility-scale, commercial-scale?
Q Yes. Like in terms of kilowatt or megawatt.
A So, if we just use the term "interconnection" broadly, we are seeing interconnection increases all across the board, and, specifically, with Eversource. However, when it comes to residential and commercial-scale, are actively working with Eversource staff to resolve those. And, as was mentioned, they have the PowerClerk Program, they're rolling that out. To us, that's actually consistent with grid modernization, and it's not smart grid, but it allows them to manage things more efficiently, so that programs and solar can get interconnected.

As we go up in size, we start to trigger more and more infrastructure concerns and questions. So that, primarily, we've been talking about this N-1 issue, but there has also been, not as -- not included in our testimony, concerns more recently raised about "How far down the line are we updating reclosers?" I do not fully understand that. But it's not just at the first point of interconnection that a recloser

might be updated, but there might even be a second or a third recloser that is being required for these updates.

Our members are bringing this to our attention as part of the interconnection study. So, I don't have too much more -- I don't have any other detail on that.

Q Okay. Just so I understand, you have a member that wants to interconnect a system, and they enter into the queue, Eversource's queue. And, when the Company performs their initial assessment, one example of a delay or a cost, --

A Yes.

Q -- and correct me, that you've seen is that, in order to successfully interconnect that resource onto the system, the Company has told that interconnecting customer, or future interconnecting customer, that we need to modify the reclosers that are on that circuit. Is that -- am I understanding that correctly?

A That is my understanding. And then, when -- I bring that up, because you mentioned "scale". In that case, it's, I believe, hundreds of thousands of dollars that they're looking at, in terms of

new project costs, verse the mentioned 1 to $5 million change for a larger, like N-1 bulk system update that is being incurred.

Q And the type of cost that that order of magnitude would -- is your understanding that that's an infrastructure upgrade that the Company has to do, as opposed to changing a setting?

A Yes. It's my understanding that it is an infrastructure upgrade.

Q Okay. Thank you. And then, on performance-based regulation, performance-based ratemaking, if you might enlighten us further on why you feel that that is appropriately addressed within an LCIRP?

A So, I think, again, Mr. Woolf mentioned an "infrastructure bias". I think one of the challenges for the way that LCIRPs are looked at, not just by Eversource, but by the industry in particular, is because it, in the past, was more akin to or part of like a capital improvement plan. So, looking at how to increase the plant and property that they own, and then that's put into rate base, they get a recovery on that, and that benefits their shareholders.

That's my understanding of there's an

infrastructure bias. Because the more that they can get built, and this is not just Eversource, and then approved by the PUC, the more value they're generating, and their officers are under a fiduciary responsibility to provide that benefit to the shareholders. That's not Eversource, that's just how corporations work.

But, with performance-based ratemaking, which was first brought to my attention during the Liberty rate case, Docket DE 19-064, performance-based ratemaking was raised as a means to determine "How do we align the business proposition or the profit motive of a utility, with that of something that reads pretty much like our LCIRP?"

"How do we deliver the best value, the lowest overall system costs, with the highest social, environmental, and economic benefits to the entire state, but also providing that shareholder value?"

Performance-based ratemaking is something that is being explored by Liberty Utilities now in a working group. And raised it in this docket as something that should be

considered also by Eversource, as a means to lower -- so that they can be delivering lower cost service, but at the same time getting at that perverse incentive that they might have to build.

Q Okay. Thank you. And my final question is with respect to your recommended path forward.

So, you've recommended that the Company resubmit its LCIRP. And you have a few items here that you suggest would be included in a resubmission. An expanded analysis of the statutory requirements, you know, more detail on distribution system management planning, a change of direction on their interconnection study approach. And I guess you say "propose development", but I'll say "evaluation of a performance-based ratemaking mechanism" within their resubmitted LCIRP. Am I understanding that right?

A Yes. This section on Bates Page 036 is really just a summary of --

Q I'm on 36.

A -- my four main points. And recommending that any resubmission would include and address all of

these. So that it fully is an integrated plan, that takes into account where we are headed, but where could we go instead, to deliver the lowest cost -- lowest overall energy system cost.

Q So, from a procedural perspective, how might you suggest furthering this recommended path forward?

A Well, under our recommendation, it would be to deny the approval, and ask them to resubmit. Understanding that we're several years in.

But I think the point in the denial, there's a substance compared to -- a substantive difference, compared to just approving this and asking they do a new one. We have multiple utilities, gas and electric, that need to be submitting LCIRPs. And having this order for them to resubmit would send a signal that we are expecting them to be all filing forward-thinking, forward-looking, comprehensive plans, that can deliver real benefits to the state, and that aren't kind of "checking the box", as I feel that they have done with this existing submittal.

Q So, the Company stated earlier that they were -- they were putting forward the suggestion of filing a supplement to this LCIRP. You're not

supportive of that? Am I understanding that correctly?

A I guess, yes. And I get caught up when we're talking about "integrated", "comprehensive", these sort of terms, they need to be done altogether. So, if you're submitting a supplement, it's inherently on the outside. It's accessory or extra, but it's not kind of like built into the whole system, and not done altogether.

So, unless they were to do that supplement, where they basically resubmit all of the analysis, the development of new programs, I'm not quite sure that it would address, but it could address our concerns.

CMSR. SIMPSON: Okay. Thank you, Mr. Skoglund.

Mr. Chairman, I don't have any further questions.

CHAIRMAN GOLDNER: Okay. We'll turn to Commissioner Chattopadhyay.

CMSR. CHATTOPADHYAY: All right. It's 4:30 already. So, I'll keep my questions short. But I still need to create the context for it.

And I'm not an electrical engineer, so I may -- that's why I hesitate to use terms like "reclosers" and all of that.

BY CMSR. CHATTOPADHYAY:

Q So, when a DER developer pursues interconnection, right now, you know, if there is any change that needs to be happen to allow them to be part of the mix, they're required to pay for the cost -- the additional cost, right, or are they not?

A So, under the current situation, they are being required to pay the costs for these upgrades.

Q Under the current situation, they're required to pay the costs?

A Yes.

Q And your point is that, once that happens, as long as you are talking about the N-1 standard, and this DER is not tripped when such a situation happens, there are benefits that others also accrue?

A Yes.

Q But there is a -- but has there been any study done to that effect?

A No. And that's precisely why we would encourage a delay, to understand what is the benefit. And,

so, what is the appropriate cost allocation, it may not be, and I realize I'm cutting you off, it may not be uniform. There may need to be a formula that is assigned.

Q Who is going to pay for the cost of that, that study? I mean, are you expecting that that would be done by the utility, or is a developer willing to pay for such a study?

A And maybe now, we've switched. When you said "study" before, I misunderstood and was thinking of the investigation into interconnection that is being hosted by the Department of Energy. You're looking at a interconnection study.

Q Yes.

A I do not have an opinion on that.

Q Okay. And, so, you're saying you haven't even thought about that?

A It is a new question. And, to be honest, for some of these things, we are relating concerns that have been raised by our members that we, again, agree with.

Q And there is nothing that you can share, in terms of what you've heard from others, as to what happens in other jurisdictions?

A I cannot.

CMSR. CHATTOPADHYAY: Okay. Thank you. That's all I have.

WITNESS SKOGLUND: Okay.

CHAIRMAN GOLDNER: Okay. I'll just pick up with a few questions, and then get it back to Attorney Emerson to take us home.

So, just following up on Commissioner Chattopadhyay's question.

BY CHAIRMAN GOLDNER:

Q Does CENH sponsor any studies of any kind? Is that something that CENH does to, you know, provide more information on various topics?

A The closest we can get is we're looking to develop a statewide energy analysis, as there's not been one that has been comprehensively done, at least on the state. And, so, that information would be vital.

But we do not have anything published.

Q Okay. So, that's something you're looking at sponsoring?

A Yes.

Q And, eventually, maybe publishing the data potentially?

A Yes.
Q Okay. Really, just a couple issues, and I guess we're all talking about sort of the same thing here. I'm on Bates Page 027 of your testimony. And I'll let you get there, but --
A I am right there.
Q All right. In the second paragraph, you're talking about "primary and secondary paths", and a "three (300) to four hundred (400) percent increases", and the "1 to $5 million" issue you mentioned earlier.
A Yes.
Q Can you just maybe take a minute and help us understand your position on secondary paths? Are you saying that Eversource should not pursue secondary paths period? Or, I'm just trying to -- I didn't quite grasp your position.
A Okay. Yes. And thank you for asking a clarifying question. I can speak in circles.
We have no issue with the N-1 standard applied across the entire system. When it comes to the interconnection of these specific DER projects, where an N-1 upgrade could be required in order to manage what they describe as "low

load conditions", where there can be, you know, backfeeding onto the bulk transmission system. There is no alternative. You either make the upgrade in order to interconnect, but there is no option for the new generator to voluntarily come off line, so that they don't overwhelm the existing infrastructure. So, there's no -- like, the generator can't take the risk of being off line. It's not something that they can take as their own business risk. So, that's a problem.

But, if there is an upgrade, where they do stay on line, there may be benefits, because that generation is providing additional energy supply, especially now, during times of high energy price, the developer isn't the only one getting benefits from that energy project.

So, we have concerns that putting all of the projects, interconnection projects, upgrade costs on their shoulders, unfairly spreads costs to them, rather than spreading costs across the full beneficiaries of the projects.

Q Okay. Let me see if I can repeat that back.

A Yes.

Q So, the secondary path, as far as the -- I'm call it "the grid", in New Hampshire, for Eversource, you're fully supportive of a secondary path on the grid.

A Yes.

Q When they install a DER, and there's investment being made in that DER in order to put it on the grid, when there's a secondary path that needs to be added, that wasn't there already, you're suggesting that the developer not pay 100 percent of that, but something less, based on the utility that, and I don't mean that word in the sense that we're using it today, the benefit would be -- would be not 100 percent to the -- or, zero percent to the developer, if you know what I'm trying to say? It's late in the day for all of us.

A Yeah, yeah. No. I think there's -- certainly, the developer should be paying the benefit that are accrued to them. But, if there are benefits going to others, they should be bearing additional or portions of that costs, so that they are allocated equally, or fairly. "Equally" may be an inappropriate term.

Q I understand. I just did the same thing. Thank you, sir.

Let me see if I -- I might have one more question for you. Yes, one more.

Your concerns, when I read through your testimony, seem to be -- seem to me to be that the Eversource forecast is potentially too low. They haven't taken into account various things. I think you mentioned transportation load, building sector, grid modernization, *et cetera*.

So, is that a fair statement? Are you suggesting that Eversource is underspending?

A Underspending on their modeling?

Q Underspending on their investment. So, they're not investing enough in the distribution?

A I think this is an important point. So, the modeling that they're doing may result in them under-investing in distribution, because they haven't evaluated other options, other investments they could make. These, and I'm not reading off anything, I'm in my head, the additional investments that modeling and program development could result in may result in higher distribution costs. But, ultimately, it could,

therefore, enable new DERs, new renewables to come on line, reducing transmission costs, potentially. It could result in energy efficiency projects that allow, you know, total energy consumption to go down, total demand to go down.

So that, even if distribution costs were to rise, perhaps we see energy supply costs and energy transmission costs go down by a greater margin, resulting in a total reduction in energy system costs. Because they've only got one analysis, it appears the 90/10, there's the 50/50, we don't have the counterfactual of what could they push the system to with greater investments on the distribution side, that would enable new energy supply, new demand response, and just the overall evolution of the grid in an affordable direction.

CHAIRMAN GOLDNER: Okay. Okay. Thank you.

Okay. That is all the questions that I have for the witness.

Do the Commissioners have any follow-on questions?

CMSR. CHATTOPADHYAY: No.

CHAIRMAN GOLDNER: Okay. Very good. Attorney Emerson, we'll turn it back over to you for redirect.

MR. EMERSON: May I have one minute --

CHAIRMAN GOLDNER: Of course.

MR. EMERSON: -- to discuss with my witness? It may eliminate a question that I have.

CHAIRMAN GOLDNER: Of course, yes. Please take your time.

[Attorney Emerson conferring with Witness Skoglund.]

CHAIRMAN GOLDNER: Mr. Emerson, are you ready?

MR. EMERSON: I am all set. Thank you.

CHAIRMAN GOLDNER: Thank you. We're ready, too. Thank you.

REDIRECT EXAMINATION

BY MR. EMERSON:

Q A few times during your testimony on the stand, you, and I'm going to paraphrase, that you have said that "Clean Energy New Hampshire does not take issue with the N-1 standard." I think if

you could just clarify what you mean by "not taking issue with the standard", as opposed to an endorsement of the standard, say?

A So, if I'm understanding, when we're "not taking issue", I would go back on some of my earlier responses to Attorney Ralston. We are not electrical engineers, and, therefore, aren't in a position to take issue with that standard.

Q And I think you were asked whether or not you'd seen any -- whether Clean Energy New Hampshire or yourself had done any cost-benefit analysis of the N-1 standard, and you answered "no" to that question?

A That is correct.

Q So, have you seen any cost-benefit analysis related to the N-1 standard?

A I have not.

Q Another, the Department of Energy's investigation into the interconnection standards for DER has been mentioned a couple of times. Could you just discuss your concerns about both the end result of that investigation, and the timing, and how that may or may not resolve the specific issue with regard to the N-1 standard that Eversource

has implemented for DER?

A Yes. I hadn't articulated those. One of the concerns is that there is no -- that, when the study is complete, it is just a study. That it does not result in regulatory action on the part of the PUC, and it does not necessarily result in an automatic adoption of a rule or statute. It's still going to just inform a policy process within the State of New Hampshire.

But it is a critical step in that process, in that it allows a more public vetting of the opportunities, the costs, the benefits associated with this, as we are seeing more DER penetration in the state.

The trouble is, as we've seen with other proceedings, like the grid mod. proceeding, that started in, like, 2015, and just concluded. So, some of these studies can go on for a considerable amount of time.

If I go on, I'm going to start talking about the Settlement Agreement. So, yes.

Q And I guess, just -- so, assuming that that process takes time, what's the impact on interconnecting entities in the meantime, as that

docket progresses?

A Yes. Thank you for that question. We do have concerns that it will have a chilling effect on investment in New Hampshire. There may be companies that already have ownership of land, they already are in the process of developing a project. But, without knowledge of what the interconnection final determination will be, they may not move forward, which then extends their costs over time.

There may be other projects that people just don't move forward on in the State of New Hampshire, because of the uncertainty related to this. And we already face considerable policy uncertainty, because the RPS is under -- is legislatively massaged every -- every year. And, so, the more policy uncertainty we insert into the New Hampshire economy, the less we'll see projects get developed, resulting likely in less local energy developed, but also just having an overall negative impact on our economy.

MR. EMERSON: I have no more questions.

CHAIRMAN GOLDNER: Thank you, Attorney Emerson.

Okay. Well, let's --

MS. SCHWARZER: Mr. Chairman?

CHAIRMAN GOLDNER: Yes.

MS. SCHWARZER: I don't know if it's possible, just for a point of information. The report that the Department will ultimately write will be, in the IP 22-001 docket, will be submitted to the Legislature, who, by statute, directed it to create the report.

So, I just -- had that information been testified to on direct, I might have followed up in a different way. And I am not asking to do that now. But I just wanted to make that point.

Thank you.

CHAIRMAN GOLDNER: Okay. Yes, thank you. I think we understand that.

Okay. Just kind of wrapping up on administrative issues, before we break. Did the parties want to propose a hearing date for the continued hearing or would you prefer the Commission to issue a date in the future?

MS. RALSTON: I think that the parties were hoping maybe to confer after the hearing. It was a little bit difficult to coordinate in

the moment. And, if the Commission has dates in mind, we maybe could take those back and confirm the best date for the parties?

CHAIRMAN GOLDNER: We do.

MS. RALSTON: Okay.

CHAIRMAN GOLDNER: The earliest date that we have is April 6th. Then, the week of the 25th -- Oh.

UNIDENTIFIED SPEAKER: Sorry.

CHAIRMAN GOLDNER: That's okay. The week of the 25th, it works well. So, 25, 26, 27 are all currently open, is what we're showing at the moment.

MS. SCHWARZER: Mr. Chairman, I know one of our witnesses is not available on April 6th.

CHAIRMAN GOLDNER: Yes. I captured that earlier. But, just in case something changes, that would be the earliest date that we have.

Okay. So, that we'll await -- we'll await your feedback on that. Would tomorrow be okay to get back with us, because we're going to issue the PO?

MS. RALSTON: That's fine with me. And I'm happy to be the party, I can take responsibility for reporting back to the Commission.

CHAIRMAN GOLDNER: Thank you.

MS. RALSTON: I do have one other item to note. Mr. Walker is going to be out of the country I know in April. But he has thought that if a date, if it works with his schedule, he could participate remotely even while he's away.

CHAIRMAN GOLDNER: Okay. Great.

MS. RALSTON: So, we could file a formal request. But I just wanted to highlight that issue.

CHAIRMAN GOLDNER: If you're going east, we'll do the meeting in the morning. So, you won't be up at 2:00 a.m. in the Commission meeting. I'm guessing you're plus six, just a guess?

MR. WALKER: Yes. That's accurate.

CHAIRMAN GOLDNER: Okay. Very good. That sounds good on that front.

So, I'll just mention that we'll issue a PO after we hear back from Eversource and the

parties on the hearing date.

We'll also, today, ask for a record request, 23, 24, and 25. I have -- we'll put it in the PO.

(***Exhibit 23***, ***Exhibit 24***, and ***Exhibit 25*** reserved for record requests, and the description of those record requests provided in a Procedural Order dated March 10, 2023.)

CHAIRMAN GOLDNER: But -- oh, thank you. And we'll excuse the witness. I'm sorry, I always forget to do that.

MR. KREIS: Mr. Chairman, if I might?

CHAIRMAN GOLDNER: Yes.

MR. KREIS: I apologize for belaboring things and keeping us here longer than necessary.

But I would like to note, for purposes of the record and potential appellate review, that the OCA objects to those record requests. The applicable rule is Puc 203.30. And it clearly says, these are "late-filed exhibits", I know they are commonly referred to as "record requests". But what we're really talking about here are "late-filed exhibits". And Paragraph

(c) of that rule says that "In determining whether to admit a late-filed exhibit into the record, the Commission shall consider (1) the probative value of the exhibit; and (2) whether the opportunity to submit a document impeaching or rebutting the late-filed exhibit without further hearing shall adequately protect the parties' right of cross-examination pursuant to", and then it quotes Section 33 of the Administrative Procedure Act, Paragraph IV.

In my respectful opinion, these record requests meets neither of those two tests. And the reason is, and I said this before, that, essentially, the Commission is indulging an effort by this utility to backfill its integrated resource plan.

And, you know, earlier today Commissioner Simpson asked me if I could identify a sentence in the statute that tells the utility it can't do that, or maybe tells the Commission that it can't accept an integrated resource plan that's, you know, cobbled together, based on filings and submissions and testimony and late-filed exhibits. And there is no sentence in

the statute that says "you can't do that." But that does not end the inquiry with respect to what the Legislature expects of the Commission in this regard.

And, you know, there are any number of arguments that can and will be made by me about the meaning of the words in the statute, such that the lack of a specific sentence that I can quote chapter and verse does not end the inquiry.

So, the exhibits are of no probative value. The subjects of inquiry are interesting, and I don't fault the Commission for its interest in those topics. But they can't be probative of what this Company has done by way of integrated resource planning.

And, to the extent they are probative, then, obviously, there needs to be an opportunity to conduct cross-examination about those exhibits, and we're not contemplating that either.

So, I would respectfully request that the Commission not issue those record requests and not receive any late-filed exhibits.

CHAIRMAN GOLDNER: Okay. I

acknowledge, Attorney Kreis. I will just say that, in the PO that's being contemplated to be issued after we hear back on the date, it would be "Exhibit 23", which was Commissioner Chattopadhyay's request; number "24", which was the status of AMI; and then, number "25", which was suggested by the Department of Energy as the ten-year breaker-level forecast.

So, we will, of course, consider everything that you stated, Attorney Kreis. But, if we do issue a PO, that's what it will look like.

Okay. So, I'll just say we will continue this proceeding as discussed on the date that we reach here in the next day or so. This may provide an opportunity for additional discovery regarding the Company/DOE proposal. We will expect all necessary witnesses to attend the continued hearing to provide testimony regarding the Settlement Agreement.

Is there anything else that we need to cover today?

MS. SCHWARZER: Mr. Chairman, I don't want to discuss this at length. But it's not

clear to me that the procedural rule cited by the OCA, "203.30", "Reopening the record", is applicable to record requests. It may not be. And I just wanted to make that point at this time.

CHAIRMAN GOLDNER: Okay. Thank you, Attorney Schwarzer.

Attorney Emerson.

MR. EMERSON: I'm sorry, I'm jumping back to the additional hearing.

Is it your anticipation, it would just be witnesses for the Settling Parties that would be on the stand at that additional hearing, and not --

CHAIRMAN GOLDNER: That's what I'm anticipating. Let me look at my counsel for a moment, though.

Yes. And then, of course, everyone would be afforded cross.

Does that answer your question, Attorney Emerson?

MR. EMERSON: Yes, it does.

CHAIRMAN GOLDNER: Okay. Thank you. I can't see you behind Attorney Kreis. So, I

was -- I could only see part of you.

So, okay. Very good. Is there anything else that we need to cover today?

Thank you, Attorney Kreis. Now, I can see Attorney Emerson.

[No verbal response.]

CHAIRMAN GOLDNER: All right. Well, again, we'll thank everybody for the long --

MS. SCHWARZER: I'm sorry. Mr. Chairman?

CHAIRMAN GOLDNER: Yes.

MS. SCHWARZER: The Department had offered a supplemental page. And, so, we will file those exhibits.

CHAIRMAN GOLDNER: Thank you. Thank you. And I'll thank everyone for coming today, the excellent testimony. And thank you for two long days of excellent information. So, thank you. And we are adjourned.

(Whereupon the hearing was adjourned at 4:55 p.m., and the hearing to be resumed on a date to be determined.)