STATE OF NEW HAMPSHIRE

PUBLIC UTILITIES COMMISSION

January 28, 2022 - 1:17 p.m.
21 South Fruit Street
Suite 10
Concord, NH

DAY 2
AFTERNOON SESSION
ONLY

[Hearing also conducted via Webex]

RE: **DE 20-170**
ELECTRIC DISTRIBUTION UTILITIES:
Electric Vehicle Time of Use Rates.

PRESENT: Chairman Daniel C. Goldner, Presiding
Commissioner Pradip K. Chattopadhyay
Special Commissioner F. Anne Ross

Doreen Borden, Clerk
Corrine Lemay, PUC Hybrid Hearing Host

APPEARANCES: **Reptg. Public Service Company of New Hampshire d/b/a Eversource Energy:**
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I N D E X

I N D E X *(continued)*

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E X H I B I T S

E X H I B I T S *(continued)*

P R O C E E D I N G

(Hearing resumed at 1:17 p.m.)

CHAIRMAN GOLDNER: Okay. We'll continue with the Eversource panel with Commissioner questions, beginning with Commissioner Ross.

SPECIAL CMSR. ROSS: Good afternoon. I have a number of questions. And I would just appreciate it if the Eversource witness who's best suited to answer the question would take it.

BY SPECIAL CMSR. ROSS:

Q Earlier, Mr. Buckley was pursuing a line of questions concerning the various components to your $9 million cost estimate for, as I understand it, upgrading your systems in order to accommodate a time-of-use rate offering.

And I'm going to ask again if you would please give the different components to the $9 million estimate, with either a number or a range for each component, so that we have a clear picture of how you arrived at $9 million?

A (Moore) I think I'm in the best position to answer that. And give me one second, I'll go to the exhibit please.

Q Could you identify the exhibit you're going to?
A (Moore) I think it's Exhibit 4. Let me check please.
Q Yes. I believe it's on Page 10.
A (Moore) Yes. I might have closed it by accident. I apologize. Okay. Sorry about that.

So, in the $9 million, there's cost categories that include the project management, and that's, obviously, the labor that's necessary to do the governance and the oversight, and that would be for most of the years, so, we've got the actual costs broken out --

Q I'm sorry, you broke out.
A (Moore) Sorry.
Q I mean, you broke up. Excuse me.
A (Moore) Sorry. The first cost category is on Page -- if you refer to the -- it's Exhibit 8 *[sic]*, it's Page 3 of 3. It's where we give a cost breakdown of all of the different components in phases.

The first cost category is "Project Management", and that totals 1.635 million over the duration of the project. That's for the oversight and governance and scheduled management

of the overall project.

The second cost category is our "Requirements, Design and our System Development". For that same period, the cost there is 6.933 million. And that's for the labor to actually prepare the requirements that I mentioned earlier, the various design, code development, and the initial unit testing.

And, then, our "Final Acceptance Testing", that cost is about 552,000, is part of that $9.1 million estimate.

Q So, that upgrade included different changes to the system. Some of those changes had to do with the billing components and the data received from the meter, and other changes had to do with the EDI communication with third parties. Is that correct?

A (Moore) Yes. And it also would include other changes, like, as we're bringing in potentially those meter reads where there may be changes we have to make in our downstream systems, like our metering systems, to bring the information in. And, also, we'd make changes to our general ledger reports. So, it's not just the billing

systems themselves, because the core billing apparatus and a rate has to be introduced. But, then, because these are basically additional components we haven't done, we'd have to figure out ways to push the result of that billing to our general ledger systems. All that additional inter -- those interfaces would be changed and tested. So, it also includes any of that work as well.

Q And, then, a final question would be, of the components that you -- well, actually, of the total, your testimony, as I recall it, to Mr. Buckley was that the EDI changes were "substantial". Can you give a percentage of the total that those changes would be costing?

A (Moore) Yes. I think, roughly, in that mix, we're looking at, you know, about a quarter the costs, up to a third, are part of that EDI mix in that estimate. The main driver there is the complexity of which we have to interact with the suppliers and change the components that we send back and forth. Those include all various types of not only, you know, pricing and billing information, but we have to go through adds,

drops, all that regression of activity, along with the changing of those rate structures and communication structures within the EDI.

Q What vendors would you be communicating with through the EDI system?

A (Moore) Well, we actually use, and depending on which jurisdiction it is and which suppliers, we actually use our Supplier Management Team to pick which vendors that are currently serving the customers that we believe will have the most exposure. So, we would choose one of those vendors based on their recommendation. So, it would be one of the third-party vendors who are serving our customers, and potentially would be serving this new EV rate.

Q Okay. Mr. Davis, are you an electrical engineer?

A (Davis) I have an Electrical Engineering degree, and I have had some work experience working as an engineer within the industry. I am not a licensed engineer.

Q I've saved a question for you.

A (Davis) Okay.

Q I'm not an engineer. Would you please explain to me, in language I can understand, the difference

between "kW" and "kVA"?

A (Davis) I'd be glad to. And it's really, if you think about the concept, I was thinking about this after the last call, "kVA", first of all, is just the total power that is needed to perform some -- to run a motor or whatever it might be. "KW" is the portion of that total power that actually does the work.

So, I was thinking about this thing. Now, suppose you had a, I don't know, a cart that you're trying to push up a hill, and it's going to take so much effort. There's a certain amount of minimum effort that you need just to hold it and get it started up the hill. That's that -- it's called "reactive power". It's the portion of total power that is just the pressure you need to just get started to do the work. And the rest of the kVA is the kW, the power that actually does the work. So, if, you know, this cart was on a level, flat level -- it was on the level, and you just had to touch it and it would start moving, your power factor would be 100 percent, meaning all the energy unit you need, the kVA, is the same as the amount of work you're doing. So,

kW and kVA are the same.

If 20 percent of your effort, if you're on that hill, and you're trying to push it up a hill, and 20 percent of all the effort is just to hold it and get it started, then the remaining 80 percent of that power is kW. So, you might have, in that scenario, it takes 100 units of effort, and that would be 100 kVA, and only 80 percent of that is actually doing the work, so, your kW would be 80.

So, that's probably a good sort of conceptual analogy. So, kW is really the portion of your total power that does the work. And our meters measure that using electrical quantities, and they're both measures of power.

Q Thank you. That's actually very helpful. I appreciate it.

A (Davis) Okay. Great.

Q All right. I have a few basic questions, just so I can understand what infrastructure is currently in place. And I'm going to start with a residential customer.

So, if I'm a -- actually, I am a residential Eversource customer, now that I think

of it. So, what kind of a meter do I have and what does it measure?

A (Davis) So, your standard residential customer, we earlier talked about a standard versus a residential time-of-day customer, but a standard customer would have a single AMR-type meter, you know, you've heard about that, of course, and that measures kilowatt-hours that you use over the course of a billing cycle.

So, you read a meter at the beginning and at the end, and the kilowatt-hours that you utilize during that period is what that simple scaler AMR meter captures; record that; and then we have a drive-by van that can drive down the street and pick up, you know, pick up that registered total kilowatt-hour amount, capture it; and then later push it into our billing system.

Q So, it signals through the air to some remote reader?

A (Davis) Yes. We transmit it through the air from the meter to our van that collects that data.

Q And I would assume that, on a minute-by-minute basis, it's measuring power, but it's not

recording those, any of those intervals, is that correct?

A (Davis) That's correct. In fact, to your earlier question, power is just kind of the level of power you're taking. So, if you were to look at your meter, and you had a demand register, it might actually show the demand, as well as the kilowatt-hours. But, at any instant, you could go look at your meter, and there will be these little display items that will tell you how much cumulative kilowatt-hours you've taken, as well as the current level of power that you're taking.

Q Are there any add-ons that can be placed on my meter that would allow for any storage of the data or any interval signaling?

A (Davis) I think, for commercial meters, there might be certain add-ons that can provide pulses and signals like that, and I'm not that close to it. But, typically, not for a residential meter, but for the fact that some residential meters, for example, I might have a survey meter, a load research meter, that will gather interval data. So, while everything I've said is happening for billing purposes, for measuring and recording

your total usage, we may also be capturing and storing the interval data, which is not available at the time of billing, but later we can, through a number of different means, call up and download that stored interval data. But that's just for a subset of our customers, where we're doing load research and surveying and capturing that data.

Q How many total residential customers do you have in New Hampshire?

A (Davis) On the order of 400,000.

Q Of those 400,000, how many of them might have survey meters?

A (Davis) I think it's about 250, perhaps a little more.

Q Okay.

A (Davis) I'm a little stale on the number, because we were trying to get more of those load survey meters out in the field and capture that data.

Q Okay. Well, ballpark is helpful.

A (Davis) Yes. It's about 300, for discussion.

Q If we were to separately -- if I were to install an EV and separately meter it, what type of meter would you be installing?

A (Davis) So, if we were able to use our current,

and I presume you're talking about "residential", Commissioner?

Q Yes. I'm still residential. We'll move to commercial in a minute.

A (Davis) So, we have an existing similar time-of-use meter. So, instead of just single kilowatt-hours for the whole month, it's a two-period meter. So, it would capture, based on how we program the meter, the number of kilowatt-hours during the peak period and the number of kilowatt-hours during the off-peak period for the entire month. And that that, if it's a two-period rate, we could utilize that meter, and, frankly, with practical -- all practical considerations, that's the most efficient way, is to take an existing meter type, and just deploy that, along with some existing rate structure. And, so, under that scenario, a two-period EV time-of-use rate, we would advocate using that type of meter.

But that doesn't preclude us from also utilizing an interval meter, which would be utilized to -- we would then have to, of course, if we have those registers, we can simply just

pick up the peak and off-peak kilowatt-hours, as I just said. If it needed to be more than two periods, we would have to both capture interval data, and then have a special collection process, data management system, and, obviously, it would have to align with what's needed for billing. And, frankly, that's, my understanding, part of what's behind the cost to implement a three-period time-of-use rate.

So, again, if the scenario is a three-period, or anything more than our standard two-period rate that we already have a meter for, we would have to go through those extra costs and steps to implement a more complex time-of-use rate for EV charging.

Q What is the cost of your two-period meter?

A (Davis) The actual -- I think the equipment cost, I apologize, I'll just give you what I recall off the top of my head from our marginal cost study, I think it was like $193, something of that nature.

And that, plus, you know, the cost to install, that, you know, is a materials and handling and installation, becomes our total

installed cost of a meter.
Q Would that add another 100, maybe, or do you have an idea?
A (Davis) I think our current meter is on the order of $50 for the standard residential Rate R customer. And I'm thinking, again, from what's in our study. So, I think the factor was about between two and two and a half times the cost for a residential time-of-day meter compared to a standard meter.
Q So, the two-period meter is roughly two and a half times the cost of a standard meter, is that what you're saying?
A (Davis) Yes. And, again, I don't remember the precise number. I remember it was 2. something.
Q Okay. I'm just looking for a ballpark.
A (Davis) Order of magnitude? Okay. Great.
Q For the interval meters, how would its cost compare for a residential meter?
A (Davis) I actually believe, we earlier had some cross, I think the number that we cited was about $500.
Q That is the number. I wasn't sure whether that

was what we were still talking about here. So, that was for the interval meter?

A (Davis) Yes. Full interval, and, you know, that would be, obviously, deployed the way I described. Where you are then downloading, instead of just several pieces of data, you're actually downloading and capturing for processing of, you know, every interval for the whole month.

Q Okay. Let's move to the commercial customer, and the same question. I'm a small commercial customer or a large commercial customer, do I have basically the same meter? And, if so, what is it?

A (Davis) No, they are different. Small commercial customers, and we do have both the standard and a time-of-day alternative for Small General Service. Those are Rates G and Rates G-TOD, respectively.

So, Rate G, small commercial, it's very similar, it's, I believe, an AMR-type meter, but it captures not only the monthly kilowatt-hours, but also the maximum demand for the month. So, measured in kW, as we talked about earlier.

So, I think those meters have, I

believe, three registers, instead of one. And, so, two of those registers are used to capture total kilowatt-hours for the month and the maximum demand for the month.

The intermediate and large customers, and that would be, typically, under Rates GV or LG, we will have interval recording meters for those. From there, we are now looking at, depending on which rate the customer is on, but we're looking at bringing in interval data. And we typically are looking for, again, depending on the structure, total kilowatt-hours, possibly peak and off-peak kilowatt-hours, as well as total demand and peak and off-peak demand. And, further, we may be measuring those in kW or kVA, depends on the customer. We do have a bit of a mix, particularly under Rate GV. But the rate, you know, it's all part of the rate design, where, if it's kVA, we do one thing; if it's kW, we do something else.

But, really, we're bringing in -- we're utilizing interval data for the entire month, and we're processing that data. So, we have to collect and download that. I believe, and I'm

going to beg off a little on the details, but I believe it's sort of a dial-up or a call-up and download of the interval data. And then, from that, we process that data, and determine all those quantities I mentioned, you know, peak kilowatt-hours, off-peak kilowatt-hours, peak demand, whether measured in kW or kVA, off-peak demand, whether measured in kW or kVA. And, then, we have to use that data in various ways.

Our largest class, Rate LG, has a very complex ratcheted demand formula, that looks at peak and off-peak in the current month, as well as in the prior eleven months. Our intermediate rate, GV, will look at the peak period and the off-peak period in the current month, and process the data, you know, in that -- according to the rate schedule in each of the rate components.

Q So, that rate --

A (Davis) But, generally, -- go ahead.

Q That doesn't have an eleven-month or twelve-month ratchet then? It just looks at it monthly?

A (Davis) That's correct. I will say that those -- both of those rates are used in a slightly different way, when we're looking at using the

rates for other services, such as backup service, as I mentioned earlier. But those typically work off of a contract demand, then we have to further break down the data.

But, really, for our mainstream and the bulk of our customers, everything I described, like you said, Rate GV is really based on current month, and Rate LG is current month, plus a prior month look-back.

Q Okay. I have a -- did you have a chance to look at the comments that were sent in by the Town of Derry? They came in this morning.

A (Davis) I did not yet. But I think one of my colleagues has done that, and maybe, depending on the question you might have, maybe, between the two of us, we can address what the question might be.

Q Well, I guess I would like to ask whoever actually has looked at it, because it was an eyeopener. And I do have some questions relating -- specific questions relating to it, because I'm just trying to understand what I'm looking at in the way of bills.

Sorry. I'm just getting back to the

exhibit.

All right. I have it in front of me. What witness is going to answer these questions?

A (Rice) I have it in front of me as well.

A (Boughan) Yes. It depends on the question.

Q Okay. All right. My first question is, the Town of Derry is talking about some chargers that it has -- that it had installed in the Town for the public's use. And, at the bottom of the comments, it has copies of a couple of bills. And the two bills appear to be priced very differently. And I'm just trying to understand them.

So, Exhibit 1 is an Eversource bill. And, first of all, are these for the same account? Can we tell?

A (Boughan) They appear to be, yes.

Q Okay. The number does seem to match. So, the first bill is for a total use of -- I think it's 1,100 kilowatts and change. And it's -- the cost is "$183.90". And the second bill to the same account, for the following month, is for "818 kilowatt-hours", and the bill is for "$571.92".

And I just would like to understand

how, you know, what drives that change, because it's a lower consumption and, obviously, a much higher cost?

A (Boughan) Sure. My understanding is that the first bill the customer was not on the correct rate. In other words, when the account was established, the incorrect rate was applied. Once that was discovered, that's the second bill, they were put on the rate that would apply to that class, that generated the second bill.

Q So, what was the incorrect rate that was used in the first bill?

A (Boughan) That I'm not familiar with. What the exact rate they were put on that they should not have been on.

Q So, there's no indication on the bill what rate's being applied or what class of customer this is being billed? I don't know how to read your bills.

A (Davis) If I could, I'm just now looking at this, the details. I see "Rate G" listed for both billing statements at the end here.

Q Thank you.

A (Davis) Which is our Small General Service rate.

Q So, again, are you just saying it was just a plain billing error that created the difference? And, if so, how do we know which is correct?

A (Davis) Sorry, I'm not familiar -- go ahead. I'm not familiar with the details of the account history that --

A (Boughan) That's correct. I was just relaying my recollection of the account history. I'm not sure if that's correctly or not correctly reflected in these two particular bills.

Q Could I maybe ask a data request that the Company read the comments from the Town, and then explain what billing categories were used and what corrections were made? Just so that we can understand, because there are very big differences in the cost, and just trying to understand what the charges are for.

A (Davis) I think we should take that. And I just want to comment, I'm also seeing different account numbers, different meter numbers. But I guess that will be part of what we can respond to, and, you know, try to --

Q Okay. I was looking at the account number at the top. Are there other numbers? Maybe that

explains some of it.
A (Davis) Yes. I think it's the same service reference, but the meter numbers are different. So, we can -- we can dive into this and get a full explanation.
Q Okay. Thank you.
A (Davis) Glad to do it.
Q Okay.
A (Davis) Yes.
SPECIAL CMSR. ROSS: Okay. And what exhibit would that be? What number?
CHAIRMAN GOLDNER: It would end up being "31".
SPECIAL CMSR. ROSS: That would be "Exhibit 31".
(**Exhibit 31** *reserved as placeholder.)*
CHAIRMAN GOLDNER: Well, I'll repeat it at the end, too.
SPECIAL CMSR. ROSS: Yes. We'll go over that at the end. I just wanted to assign a number.
BY SPECIAL CMSR. ROSS:
Q Okay. I think you may have been asked this question earlier, but I'm going to ask, just to

make sure I got it.

Do you have any idea how many vehicle chargers are installed in your residential customer population today?

A (Rice) I don't specifically know that. But I don't know if Mr. Boughan has an estimate?

A (Boughan) Yes. I mean, we have an estimate of the number of electric vehicles in our service territory. But we don't have visibility to how many of those have a home charger.

Q What do estimate the number of electric vehicles are?

A (Boughan) Approximately 5,000, about half of which are fully battery electric vehicles and half of which are plug-in electric hybrids.

Q And do you have any idea, in your commercial classes, how many electric vehicle charging facilities are in the service territory?

A (Boughan) So, for DC Fast Chargers, yes. That's the nine locations serving, I think --

Q Nine locations?

A (Boughan) -- that's the exact number. Correct, of DC Fast Chargers. Of the Level 2 locations, I would need to look up.

Q Is that readily available? Could you get it later in the hearing or --

A (Boughan) Yes. Absolutely.

Q Okay. Maybe we can just come back to that. Rather than making it a data request, if you can locate the data before the end of the hearing, that would be helpful.

A (Boughan) Of course.

Q My next question is on your per customer usage or consumption level. Over the last five years, have you seen any growth in your per customer usage in your Residential class?

A (Davis) Boy, I know it was -- I want to say it came down a little bit, but I think, during the pandemic, it increased. So, prior to that, we were seeing one trend, but I think it's come up. And I haven't -- actually, I should look at it again, you know, after 2021. But I would expect it's higher now, for residential.

Q Can you give me an order of magnitude percentage? Percentage drop? Percentage increase?

A (Davis) I just don't -- I think we're around an average of about 625 prior to that. And I can certainly get a read-in, or, you know, see if I

can get something to provide the update.
Q So, you're saying "625 percent increase annually"?
A (Davis) I'm sorry. That was the usage per customer, for a residential user.
Q Oh, I'm sorry, "625 a month". That was your average usage. Got it. Sorry.
A (Davis) Yes. It might be slightly higher, but on that order. But I can find out how that --
Q Okay.
A (Davis) -- what that is last year. And I can try to get that, you know, right away, while we're conducting cross here.
Q And the only reason I'm asking is I'm wondering whether the presence of electric vehicles on your system is driving any increased consumption in the Residential class? I'm just kind of curious. I know you probably can't separate it, because you haven't been able to identify where they are or how many chargers there are. But, if you assume for a minute that at least half the people who own electric vehicles charge at home, you might have 2,500 chargers out in the system. And it would be interesting to know whether they have

caused some increase in the load or the consumption.

A (Davis) I mean, that might be anecdotally, by looking at individual customers, if we knew, for example, earlier we had an exhibit we referred to that had a -- I think, after her home charging assumption, we had I think it was like 280 kilowatt-hours. So, if you think about 625, and someone adds an electric vehicle and does substantial home charging, I think those chargers are on the order of 7 kilowatt demand levels, and that, times "X" number of hours in a month, certainly is going to increase the annual -- the monthly consumption well above 625.

Q Does your system have --

A (Davis) As far as the --

Q -- any way to flag a customer, if a customer's patterns change? Is there anything that --

A (Davis) I don't know. I mean, we certainly can evaluate bills. And it's a bit of an effort, you know, to pull down the database of a billing and trying to evaluate that, you know.

But, beyond that, I'm not sure we have any flags, *per se*. But, you know, if we know of

a specific account, that's something we typically are able to do, is kind of do a usage history on a given account, and, you know, maybe it doesn't give you a robust set of data, but it might give you anecdotally what that impact might be for somebody who has added an electric vehicle.

Q Okay. Thank you. The reason for my questions was just to try to establish where we are now. Because we're, you know, we're developing rates that may not be used for a while, or may, depending on what the *status quo* is.

A (Davis) So, would you like us to do some follow-up or just continue the discussion for a moment?

Q I guess what I would like, if you can do it even during the day today, I don't really want to make another record request, but if can get your per customer -- the average per customer usage data for your Residential class over the last five years, I think that might be an interesting data point.

A (Davis) Okay. Great. Well, we'll pursue that. Thank you.

Q Now, I just have a few questions on the

back-office system that you've been talking about. And these go somewhat beyond this particular docket. You gave us a timeframe for New Hampshire of maybe in the next five years that you'd be looking at some sort of overall or replacement of the back-office system. And it sounded like it might be connected with upgrading meters as well. Is that correct?

A (Moore) Yes. One of -- the speculation and we're on record of, one of the drivers could be our advanced metering strategy, which would push us towards replacement of our back-end systems, including our customer billing system.

A (Rice) I just want to --

Q I can't hear you.

A (Rice) Can you hear me now?

Q A little better.

A (Rice) I'll just add to Mr. Moore's response, because this is, I think, an important issue to be very clear on. So, I don't think it would be correct to say that we expect to have advanced meters in five years. So, I don't want the Commission to have that assumption.

The Company did agree, in the

Settlement Agreement in its last rate case, to conduct a feasibility study into advanced metering. And my understanding is that is in progress.

So, we certainly recognize the industry trend is towards advanced metering. And there is a high likelihood that PSNH will have advanced metering at some point in the future. It just -- it may not -- it may follow deployment of a CIS in five years, and not necessarily coincide with that.

I just don't want to communicate any incorrect expectations.

A (Moore) And you're correct, Brian. Typically, when we're looking at the advanced metering deployment, we typically would stage the deployment of our CIS ahead of it, because we can't install the meters, and then change our systems. It's kind of a chicken-and-egg relationship. You have to have those systems in place, like an advanced head-in *[sic]*, a CIS system that can handle that meter, because, during the transition, old to new, you've got to be able to keep the billing for those customers

ongoing as you make the transition into the new advanced metering.

Q What does "CIS" stand for?

A (Moore) "Customer Information System". It's a common term that's used to call together the billing system and the CIS system that typically provides the billing capabilities we're talking about today.

Q I want to also suggest that there are several other pending dockets that potentially will place new demands on your CIS system. One of them is the data platform docket.

A (Moore) Yes.

Q Others might involve the net metering rate dockets. And one of the concerns I have, especially as we're looking right now at time-of-use rates, is that you might not take into account all of the different trends that are taking place, not just in New Hampshire, but in the region. And it would be a shame to pick a CIS system that wasn't scalable and wasn't flexible enough to accommodate some of those new approaches to managing your distribution load. So, --

A (Moore) Yes. Absolutely, we can share that. So that, when making a decision on the CIS system, we can and have chosen, you know, a leader in that space that is providing the type of services we believe that will be here in the future, or be scalable to address the needs of the future. So, absolutely, those are big concerns of our selections of our systems. And, also, we measure those systems against, you know, the future capabilities we know of at this point.

And, you're right, those are -- those are items that we're aware of.

Q You've had some questions during this proceeding about your activities in other jurisdictions. And what I don't understand is why you would have different CIS systems in each of your justifications. So, can you help me with why you wouldn't be moving to some sort of a uniform platform across your affiliates?

A (Moore) I think your latter statement is absolutely true. That's our road map, is to consolidate. Like most large utilities, there's been M&A activity that brought companies together that were -- obviously, had different systems,

and, over time, may tend to consolidate into standard offerings as the right financial and customer drivers appear.

So, just like, currently, we have two legacy CIS systems. One was part of the legacy NU Companies, which included New Hampshire, Western Mass., and Connecticut Gas & Electric. And we also have a CIS system for our customers who are in Eastern Mass., and that also is a legacy system. And, through a merger and acquisition, we were going to inherit another legacy system, but we decided, you know, it was time to move forward on a new CIS platform for the future. And, instead of bringing in a third legacy system, we have now started to lay the foundation of the new CIS system with this latest acquisition.

SPECIAL CMSR. ROSS: All right. Thank you. Sorry for the wide-ranging questions. I don't have anything further.

WITNESS BOUGHAN: Commissioner Ross, if I may, I do have the number of Level 2 ports in our service territory?

SPECIAL CMSR. ROSS: Oh, thank you. Go

ahead.

WITNESS BOUGHAN: There are 116 sites, totaling 200 ports. And at no site is there more than four ports.

SPECIAL CMSR. ROSS: Thank you.

CHAIRMAN GOLDNER: Thank you. Commissioner Chattopadhyay.

CMSR. CHATTOPADHYAY: Good afternoon. So, feel free to choose whoever is appropriate to answer my questions. In cases where you have to team up, that's fine, too. I'm going to be moving all across the board. And, so, I may jump from one topic to another. So, there is no specific sort of, you know, order in my mind who is going to answer first and who is going to answer next.

BY CMSR. CHATTOPADHYAY:

Q So, before I forget, because Special Commissioner Anne Ross was asking questions about, you know, the number of vehicles that are out there, and the Company had estimated it's roughly 5,000 right now.

Can you give me a sense, how did you estimate that number?

A (Boughan) Yes. So, this is Kevin Boughan. In the beginning of last year, the Department of Environmental Services provided a list with a number of registered EVs by town in New Hampshire. I think that has been submitted as an exhibit. So, we took that number and estimated a growth rate for this year. So, at that time, it was just under 5,000. And we would estimate this year it would be just over 5,000.

Q So, it's not really like you're looking at their usages and sort of -- and estimating that this residence has an EV vehicle there. I mean, it's just based on some data that you had from some other source, and that's what you --

A (Boughan) Yes.

Q -- you relied on to get the updated estimate?

A (Boughan) Correct.

Q Okay.

A (Boughan) So, we had an exact number from the New Hampshire Division of Motor Vehicles provided in January 2021. We estimated the number additionally this year. And, then, to get the overall, you know, estimated kilowatt-hours from those vehicles, we used an average. We don't

have an exact usage number from those vehicles.

Q Okay. As a corollary, I think, to the questions that were asked by the Commission previously, is it possible to sort of provide how, over the last few years, and it could be five years, because we already said that, over the five years, how the usage for Residential class has changed, in terms of the distribution?

So, can we get a sense of, like, maybe because there are more electric vehicles right now, so, there are more customers that are well above 625 kilowatt-hours per month. And, so, is it possible to get the distribution for the last five years and how it has changed?

A (Davis) I don't know if that's something that can be done readily. I assume you want some kind of a frequency distribution in the question?

Q Yes. Yes.

A (Davis) Yes, that might take a bit of work, because, actually, we have to just source the data, and then conduct a statistical analysis. So, I'm not sure that's readily available. I do understand we're about to receive, and I can provide, the average usage across the class. I

can do another inquiry to see what we can do readily, versus sort of the bigger picture. I can check on that and get back to you shortly, if that would help?

Q Yes. That would be extremely helpful.

A (Davis) Okay.

Q So, another question I have, and I'm sort of changing the topic a little bit, not "a little bit", quite a bit, actually. For the load management kind of approach, is that already in place? And I'm not talking about EV, because I thought I understood that that's not in place for EV at all. But I'm trying to understand whether you have residential customers, for whatever purpose, some sort of load management, you know, offers that are already being exploited?

A (Rice) Is that question for Massachusetts or all of Eversource's -- or, excuse me, New Hampshire or all of Eversource's operating territories?

Q Since you clarified, I think I want to know about New Hampshire, as well as about the rest of the jurisdiction in New England.

A (Rice) So, my understanding is the answer for New Hampshire is "no", we haven't yet had opportunity

to offer the types of demand management programs that are similar to the Managed Charging proposal.

We most certainly have deployed demand management programs elsewhere, in Massachusetts around Connecticut, including in those states, at least Massachusetts, we do have an EV Managed Charging offering presently, I believe.

But I'll ask Mr. Boughan to correct, if I've misstated anything.

A (Boughan) No. That's correct.

Q And is it -- is the data readily available? Can you share what the situation is in Massachusetts and Connecticut? And just to get a sense of, you know, again, if you can provide how, if you have those programs in those states for a while, I would like to know what kind of growth has taken place for that section, for that, you know, kind of offering?

A (Rice) Sure. So, would providing customer -- annual customer enrollment for each state, and in each respective demand management offering, be responsive to what you're interested in?

Q Yes. But can you also describe what those load

management programs are? I mean, just to give us a sense of how they might be different across different states.

A (Rice) Yes.

Q So, --

A (Rice) That is going to --

Q Go ahead. Sorry.

A (Rice) That is going to take some time. So, we would want the opportunity to respond to that through a record request.

CHAIRMAN GOLDNER: I'll make that "Exhibit 32".

CMSR. CHATTOPADHYAY: Okay. Thank you.

CHAIRMAN GOLDNER: We'll make that "Exhibit 32".

***(Exhibit 32** reserved as placeholder.)*

BY CMSR. CHATTOPADHYAY:

Q I'm just trying to confirm, because I don't know much about the technicalities of these, the devices that are used for load management. But I just want to confirm that these do not require additional utility meters. There are -- if any metering is there, it must be embedded, if at all?

A (Rice) That's correct. Our demand management programs that are similar to what we're proposing for the EV Managed Charging Program are intended to operate without the need for additional revenue grade metering, and instead utilize the embedded capabilities of customer-owned devices. That may not be necessarily, you know, capabilities that are akin to metering, in terms of having registered -- recorded data, but they utilize the capabilities of the devices.

Q When you are talking about devices that are going to be associated with the EV, you know, facilities in EV Load Management offering in New Hampshire, do you expect the meters -- sorry, not the "meters", the devices to be very similar to the ones that you have in Massachusetts and other -- and in Connecticut?

A (Rice) Yes. We expect them to be similar. With respect to our ability of our existing or planned distributed energy resource management systems to communicate with those devices. So, we expect that we'll be able to communicate and control a customer-owned EV charger, in the same way, for example, and using the same types of resources,

that we use to control a networked thermostat.
Q Okay. Are there multiple companies providing those devices or, so, you have like just a few that are in that business?
Let me put it differently. Are there a lot of companies that are involved in providing those devices or do you have just a few?
A (Rice) I don't know what would constitute "a lot" or "a few". There are certainly multiple.
Q Yes. How about anything less than five or inclusive of five is "few", and more than that is more, you know, "quite a bit"?
A (Rice) I don't know the specific number. I expect, though, if you wanted us to provide more information, again, through a record request, we could provide you counts of the quantity of vendors that provide devices that we're able to utilize in our programs.
Q Is it possible for you to provide the specifications of those devices, you know, at least for the ones that are commonly used? So that we have a better sense of what those devices do, including whether they can actually also handle measuring the -- the use of

kilowatt-hours, rather than just sort of having the ability of, I think you used the term somewhere, "throttling" and "scheduling", maybe I don't fully understand it, but is that like "on and off"? Is that what you meant there?

And, so, what I'm trying to understand is, can we get specifications on the devices? And they should be complete, meaning they would also let us know whether they can be adjusted to have kilowatt-hours measured as well.

A (Rice) Yes. We'd be happy to look for or pull specific technical data on the devices, if that's what you want?

I will say, and I'm comfortable saying, with respect to EV chargers, I do expect that most of the equipment in the market, and the types of devices that would be able to participate in our program and be turned on and off, based on a dispatch signal from the utility, would also collect and kind of save charging data on an interval basis. And ChargePoint, earlier in the week, certainly indicated that their chargers have that capability. So, I expect the answer on that kind of specific capability

specification would be "yes".

Q And you may not know the answer, but I'm going to ask anyway.

CHAIRMAN GOLDNER: Sorry, Commissioner. I just want to make sure I have the record request.

CMSR. CHATTOPADHYAY: Sorry. Go ahead.

CHAIRMAN GOLDNER: I just want to make sure, are you asking for just the EV charging meters or interval meters or kind of the standard meters? Is it the whole array you're looking for or just the EV?

CMSR. CHATTOPADHYAY: I think it's obvious -- I would stick with just the EV.

CHAIRMAN GOLDNER: Okay.

BY CMSR. CHATTOPADHYAY:

Q Is it -- does the Company know, and I'm not sure whether you would be able to answer this, but, with the additional ability to measure kilowatt-hours interval, you know, based on intervals, do you have a sense of what those -- what the costs are, relative to what you have in mind or what was proposed as what you're going to be offering as part of the load management

scheme?

A (Rice) So, is your question, have we estimated the costs to utilize third-party chargers in lieu of utility-owned metering to bill a EV time-of-use rate?

Q Well, it could -- yes, we are going there. But I'm just -- first, I want to understand whether just having a meter from a third party -- sorry, not a "meter", a device that allows you to go off or on only, as opposed to having that same third-party provider provide a device that also allows measuring kilowatt-hours for intervals, is there a cost differential between those devices? That's the first level of question I have.

And, then, the second one, that, I mean, obviously, would require some assumptions. So, I'd like to, since you already mentioned it, I would like to know, and that was the one of the questions I had later, but I'm not sure how to frame it fully.

So, I would say, because we have mentioned it already, let's think in terms of two-period TOU, okay, and I would like to distinguish between, and just correct me if I

have this wrong, for New Hampshire, the OTOD, right, I'm trying to understand, you had -- so, the energy piece isn't, you know, time-variant, right? Just isn't that correct?

A (Davis) That's correct. Yes.

Q Okay. So, what I would like to have a sense of is, you know, whether you can -- what kind of cost you would be incurring if you went for that approach, with two-period TOU, without the energy being variant, as well as an alternative or a sensitivity where you have even the energy piece is time-variant? And I'm only focusing on EVs, so that's understood, because that's the discussion that I'm in right now. And can we get a sense of the cost?

So, this might also require a little bit of time, should I guess that?

A (Rice) Yes. I think there are a number of questions on the table. So, I'll do my best to address them one at a time. And my colleagues may help me.

So, to start with, I understood the first question to be whether a charger that can record and save and transmit interval data is

more expensive than a charger which might only have the ability to be turned on or off by the utility? And I think we can address that in the prior record request, where we've been asked to provide information on the specifications of that equipment.

But my expectation is that there is not a cost difference, because the majority of devices presently on the market already do both.

And, then, the -- so, is your next question getting at what the incremental cost to offer a two-period separately-metered rate, following a similar structure as the Residential OTOD rate would be? Again, just having time-varying generation and -- or, excuse me. Maybe I guess I'll ask you to clarify your understanding of which rate components would be time-varying on a two-period structure?

Q I was just reacting to what I understood. So, for the New Hampshire, as I understand it, the time-variant components are transmission and distribution, and correct me if I'm wrong. So, I'm saying I want to see that.

But, then, I'm also going for another

sensitivity, and I can call it a "variant", but that term, I've been using it for other purpose, so I don't want to confuse folks. And, then, you can also do the same thing, but have the energy piece also be, you know, variable for the two periods. And that's what I meant, that that required some sort of assumption going in, and, you know, sort of how you were going to do it. That would be good for me at this point. That may not require -- it's not about cost, it's more -- you know, so, I want to get a sense of the cost of it, and the ability to do it. So, your answer might end up being "Doesn't matter which TOU approach you choose, the cost to implement them would be similar." But I'm just trying to get a sense.

A (Rice) And, so, I think what we've tried to previously explain, and these are great questions, and Mr. Davis and Mr. Moore may have a perspective as well, but we talked about two other examples that the Company currently offers across New England.

The first example is the Residential OTOD rate in New Hampshire, which you described

correctly. The other example that we talked about is Rate 7 in Connecticut, which also has -- is time-varying with two periods, peak and off-peak. But that example, it is the supply and the transmission rates that are time-varying.

A (Moore) Yes.

A (Rice) Correct, Ed?

A *(Witness Davis indicating in the affirmative).*

A (Rice) And the distribution component remains fixed. So, with both rates, they're both two-period. They both vary some, but not all, rate components. And we've indicated that an EV time-of-use rate modeled on either of those examples would be the lowest cost for the Company to implement at this time, you know, if the Commission, you know, hypothetically, wanted to make some EV time-of-use rate option available, and had a desire to the use the lowest cost solution that could be implemented.

Making, I think, the next leap is having a peak two-period varying, a peak/off-peak rate, that, unlike the two prior examples, had time-varying pricing for all rate components, is something that would be, you know, the next step

up in costs to implement.
Q Okay. So, and based on my reconciliation, you had initially, in the morning, there was some discussion about the enterprise system and, you know, at the back-end, what kind of stuff needs to be done. So, what I understood was that adding the third piece, and I wasn't clear for which example, but adding the third piece, probably the energy piece, is going to add a whole lot of cost.

And, so, regardless, I'd like to have an estimate from the Company what the cost would be?
A (Rice) Understood. And I think we'll have to answer that through a record request.
Q Okay.
A (Rice) Correct, Dennis? Mr. Moore?
A (Moore) If I understand the question, once again, we provided an estimate as it relates to having a complete three time-varying rate structure, inclusive of the supplier piece. Is there a -- what's the difference in this request, so I can just mete out the question a little further? What's the difference between that and the

original $9.1 million estimate we provided?
A (Rice) I understand the difference is that it would be just peak and off-peak, instead of peak, mid-peak, and off-peak.
Q Right. So, that was -- I wasn't sure whether you understood that aspect.
A (Moore) Okay. So, peak --
Q So, it's going to be still peak, off-peak, and then what would be the cost to implement the rates? I think I heard "Rate 7", that's there in Connecticut, I'm assuming, and then what you have in New Hampshire, OTOD Residential, that kind of structure, you know, with the components being those. And the third one, I don't -- I mean, I just want to know what will happen if you were tweaking the New Hampshire approach to also have time-variant energy component? Okay? That's my question.
A (Davis) And let me jump in please. I want to just -- so, on that last segment, --
Q Yes.
A (Davis) -- it looks like the end game is to get to a -- we already covered the three-period time-of-use. But, for a two-period, peak and

off-peak, the objective is "what would it take to get to the two-period time-of-use rate, where distribution, transmission, and generation are all time-variant?" And there were two paths that we've discussed. One is take the Connecticut, which has transmission and energy supply already time-varying, and then you would have to modify the distribution to get to that objective. Or, take the current New Hampshire Rate R-TOD, which is transmission/distribution currently, and modify the generation piece to get to the same objective.

Q Correct.

A (Davis) And, to clarify, one caveat is, and for the generation piece, we talked about this earlier, are we looking at just so-called "default service" for the generation piece, as opposed to competitive supply?

Q I would be satisfied just with the default service right now.

A (Davis) Okay. And that's a critical piece of information.

A (Rice) I also just want to provide one additional piece, a perspective. So, the cost estimate that

we filed for the three-period separately-metered rate of $9 million, approximately, in our initial filing, we developed that by, you know, having our IT personnel go through a high level, but still fairly robust, requirements process to generate robust estimates.

We're not in a position, it would be a tremendous amount of work to replicate that for three additional potential solutions. And, I mean, the Company has indicated these are other approaches that are out there. We have not, you know, we didn't ask our personnel, we didn't use our staff to price out these additional estimates at this time, because, frankly, I think Eversource recognized that the impact to the customer is likely to be the same in all three scenarios. Some are going to be less expensive, some are going to be in the middle. But our understanding, just based on the rate design, is you're still left with an outcome, in all of these four scenarios, in which, you know, it's likely that most EV customers may not realize a significant amount of savings by rolling in any of these rates that we might offer.

So, that's why the Company kind of hasn't yet gone through the process of pricing out a bunch of different scenarios. We're happy to do so for the Commission. But I think what would -- the only thing that we can provide back are going to be order-of-magnitude estimates. So, I just want that to be clear.

Q The way we look at the data, I think I would be elated if I get even order-of-magnitude data. So, I mean, it's -- so, I would urge you to respond at least keeping that in mind. So, I'm not seeking -- I'm not trying to make things difficult here. I just want to get a sense of what those options mean, because, yourself, has -- at least the Company has indicated in the testimony that the cheapest option, if you go to TOU, would be two-period, you know, for those two alternatives that you have discussed in your testimony.

So, I'm just trying to get a sense of what that means, in terms of costs for the ratepayers.

CHAIRMAN GOLDNER: Commissioner, before we move on, let me just make sure I've captured

this. And I'll repeat this back at the end, too.

So, this will be "Exhibit 33". And I want to make sure that I've captured your request. So, if you could repeat it back, and making sure that we're clear on whether these are two-period or three-period requests. If you want to repeat it back, I'll write it down.

SPECIAL CMSR. ROSS: I think it's 34.

CHAIRMAN GOLDNER: No, I crossed out the prior, yes.

SPECIAL CMSR. ROSS: Oh. Okay.

CHAIRMAN GOLDNER: I included it in 29.

CMSR. CHATTOPADHYAY: So, do you want me to repeat it now?

CHAIRMAN GOLDNER: Yes, please.

CMSR. CHATTOPADHYAY: Okay. And my thinking has evolved a bit because, from the back-and-forth, it's helped me to reach some other conclusion.

So, the Commission would like to get the cost estimate for implementing the Rate 7 TOU two-period approach, okay, as well as the R -- sorry, the Residential R-OTOD approach? So, you know, we all know that though the components are

looked at differently for those two, but I'm just trying to get an estimate for the cost there.

Number -- and, then, there's a variant that I'm looking for, which is what happens if we also allow the energy component in the New Hampshire approach to be variant as well, but I still want to look at the two-period TOU cost estimate?

CHAIRMAN GOLDNER: So, Commissioner, I just want to make sure I have this. So, to Rate 7 TOU two-period, Rate OTOD, is that a two-period or three-period?

CMSR. CHATTOPADHYAY: That is a two-period as well right now.

CHAIRMAN GOLDNER: Two-period. And, then, the final one was the New Hampshire time-variant, default service, two-period?

CMSR. CHATTOPADHYAY: Yes.

CHAIRMAN GOLDNER: Okay. Got it.

*(**Exhibit 33** reserved as placeholder.)*

CMSR. CHATTOPADHYAY: For the last one, it's an add-on on what is already there for the Residential OTOD.

Okay. So, can I proceed?

(Chairman Goldner indicating in the affirmative.)

CMSR. CHATTOPADHYAY: Yes. Just bear with me, I have to -- my computer has to turn on again. It will be quick.

CHAIRMAN GOLDNER: And, while you're getting back online, Commissioner, these were sort of order-of-magnitude requests. So, you know, they will be something less than 9 million and something greater than zero kind of thing, right?

CMSR. CHATTOPADHYAY: Correct. Yes.

CHAIRMAN GOLDNER: Okay. Very good. I'll make a note.

BY CMSR. CHATTOPADHYAY:

Q So, if you go to Exhibit 4, it's Bates Page 008, Lines 18 through 20. So, I'm going to go there as well.

So, you discuss, you know, you say "There are also additional factors that would likely prevent the Company from replicating the quality, accuracy and security of billing data from utility-owned metering with alternative third-party devices."

I think you do describe some things later, but it wasn't 100 percent clear to me whether those were exhaustive, or did you have other factors that you haven't mentioned, but you want to share them? So, that's a question for you.

A (Rice) Yes. At the direction of Commission Staff, Eversource did outline all the steps and criteria that we felt would be appropriate to comprehensively assess the feasibility of an alternative metering solution. We talked about one previously, which is compatibility with the Company's interval data management system. But, if you go to -- let me pull up the right -- it's Exhibit 13, Bates Page -- Bates Page 020 through 021, outlined the other factors that we believe are important to consider. I think we kind of talked about meter communications and compatibility with MV90, and it's important for that.

Q Yes, you're fading away a little bit, but I can see the listing there. So, that's helpful.

A (Rice) I think, is that better? I think I may have inadvertently had my hand over the

microphone.

Q Slightly better.

A (Rice) Okay. I'll shout to the computer.

Q Way better. Way better now.

A (Rice) Okay. So, meter quality is one. You know, we've talked about examples at other utilities that have implemented solutions that utilize charger data, Baltimore Gas & Electric and Xcel Energy, in Minnesota, are two of those examples. I will note that, in both of those cases, the utilities did have to get waivers from existing metering rules to implement those solutions. And Eversource would likely have to do the same in New Hampshire, with respect to the PUC's 300 rules. It's our understanding that they would -- that the available chargers, even if they comply with NESC standards, they may not comply with the ANSI requirements for revenue grade metering, which are included in the PUC's 300 rules, as well as potentially other requirements.

And, then, the meter access and data integrity is an important one. You know, I'm not a -- we have people smarter than I who know a lot

more about meters. And one thing that I appreciate, when they talk to me, is, when we don't necessarily have the same ability to access the data -- or, the device, particularly when we don't necessarily have the documentation or the firmware for the device, because it's not a device that we own and operate, it can create troubleshooting and resolving issues more challenging. And the customer calls us up, they don't think their bill is right. You know, we go to do that investigation, we're now not just investigating, you know, company-owned equipment and systems and an end-to-end solution. You're introducing another piece of equipment into that solution, which we don't have as much experience with, we don't have as much access to or insight into, and that can create in troubleshooting those issues more challenging.

Q Thank you. And I'm not sure whether it's the utility, or maybe something like maybe ChargePoint might be able to better answer this question, because I don't have an EV personally, I just want to understand. Let's say somebody is interested in buying an electric vehicle. So,

they're going to go to some dealer, and maybe it's not a dealer, Tesla I heard that they do it themselves. So, what happens from the beginning, like from -- I'm using "dealer", within quotes, you go to the dealer, you buy a car. They give you a device. Just want to understand what the process is, to ultimately have the device put in your home that helps them charge the car?

So, if you are -- if you think that this is not your wheelhouse, then I'm going to ask that question to others. But it would help me if somebody responses and gives me a sense.

A (Rice) Mr. Boughan is probably familiar with the process, as a result of being involved with some of the Eversource make-ready programs, where we're installing that type of infrastructure for customers.

A (Boughan) Sure. So, it really depends on which OEM and what they're selling with the vehicle. But, in general, if you were to buy an electric vehicle, most of them today come with a dumb charger, so, a basic Level 2 connector. You would still need, at that point, to get an electrician, most likely, unless you already have

one in your garage, to still a 240 volt plug or to hardwire a smart Level 2 charger, which you would need to purchase, and they're available for purchase at Home Depot.

That's the basics of what would need to happen. They all come with a non-smart device, which you could plug into any 240 volt plug that you'd likely, again, need to get an electrician to install that in your garage, unless you already had it. I hope that answers.

Q Yes. That's good. So that -- but that L2 device, if it's a smart device, how is it different from the other one that you said, you know, it's not smart? So, what I'm trying to get at is, do those devices allow, you know, electricity going both ways? And probably that's way too much at this point, but I'm trying to understand. What do they do?

A (Boughan) Yes. Sure. So, at this point, bidirectional charging is limited to a single electric vehicle. It's really -- the Nissan Leaf is the only vehicle that can really do bidirectional charging at this point. It would be exceedingly rare for someone to have -- well,

I guess the Ford F-150 is the latest one that I guess can also do bidirectional charging. For the most part, they're not available on vehicles. And, for the most part, most residential customers would not have a bidirectional charger installed in their home.

The difference between a, you know, smart charger and a dumb charger is that the smart charger, as we discussed, can measure kilowatt -- kilowatt-hour usage, can be scheduled, you can program it to schedule your vehicle whenever you'd like it to, versus a dumb charger is really just a plug into a wall.

Some vehicles you can do the same functionality that's available on the smart charger from your vehicle. So, that's vehicle telematics. So, you could schedule the charging through your car on a dumb charger. But the difference between the two types of chargers is a smart charger and a not smart charger.

Q Thank you. That helps. So, on deploying load management, I want to understand, like you have, you know, customers who are willing to be part of that program. Now, when you are trying to manage

peak hours or peaks and you're trying to reduce the cost, do you sort of choose which customer you're going to now ask to go off? Or, is it like all of them will be going off, and on? I'm trying to understand that.

A (Rice) I think, initially, the expectation is that all customers would likely be curtailed at the same period, for eight hours, you know, every day in the summer. And that period would likely overlap with the peak periods that the time-of-use rates are seeking to encourage customers to shift charging away from.

You know, as the program -- as we learn more, and if the program gets larger, and we feel that there are opportunities to further optimize that load management, by, you know, having some customers in one tranche and another customers in another tranche to kind of stagger charging, to potentially target a secondary peak, then we would seek to do so. But, initially, yes, I think it's fair to assume that we would start with curtailing all customers at roughly the same period.

Q Do you agree that there might be some localized

situations where it would be great to have the ability to say "okay, herein I'm not going to now allow them to charge, because it's going to cause problems for the grid, but I'm going to let others who are in the rest of the part of the grid, you know, that they could still continue doing it"? Can that kind of flexibility be introduced in the future? Is that something also you have thought about or at least you have in mind?

A (Rice) Absolutely. Yes. You know, if we found opportunities, we would take advantage of having the flexibility to address them.

Q So, if you go to -- just a moment. I'm just looking at the list of my questions. Some of them, I have to admit that Department of Energy's questions were excellent. They helped me get the answers to a lot of them. So, anyway, I'm thinking through it. Just bear with me.

So, if you go to Exhibit 13, I think it was 13, let me go there. And I'm guessing it was Bates Page 023. Yes. You're all there?

A (Davis) Yes.

Q So, you know, you mentioned all of these models,

EVSE models, "VE Supercharger" -- sorry, "V3", "V2 Supercharger", and then "Express 100", and then "Express 100" again.

So, is it possible to give us the specification of those models? And I'm also curious whether, in Massachusetts and Connecticut, the universe of the models is larger? And, so, there might be other models that are also important when you think in terms of expanding the use of, you know, charging going forward.

So, I'm trying to -- so, my question, and this is going to be a record request, I would love to see the specifications associated with those models, including the ones that are commonly used in Mass. and CT.

SPECIAL CMSR. ROSS: Just a clarification. I thought you requested the specifications in the earlier record request?

CMSR. CHATTOPADHYAY: I actually did. I did. So, thank you. I had already -- that's one of the record requests.

SPECIAL CMSR. ROSS: I think it's "Exhibit 29" now.

CMSR. CHATTOPADHYAY: Okay.

SPECIAL CMSR. ROSS: And it should -- it should include the commonly used equipment in New Hampshire, as well as in the surrounding New England states.

CMSR. CHATTOPADHYAY: So, I think what you are clarifying here is that it's possible in that list something get -- drops out, and you want to make sure that's included, if it's in New Hampshire. That's what you're saying?

SPECIAL CMSR. ROSS: Yes.

CMSR. CHATTOPADHYAY: Yes. Thank you.

WITNESS BOUGHAN: So, just to clarify, you previously asked for the specifications for residential chargers.

CMSR. CHATTOPADHYAY: Okay. So, that's why there is a difference. So, this is an additional --

WITNESS BOUGHAN: Yes.

CMSR. CHATTOPADHYAY: Okay.

WITNESS BOUGHAN: Now, you're asking for Level 3 chargers that are --

CMSR. CHATTOPADHYAY: Yes. I'm asking for -- sorry.

WITNESS BOUGHAN: You're asking for commercial? Sorry.

CMSR. CHATTOPADHYAY: Yes.

WITNESS BOUGHAN: Okay. And I'm sure it's coming. Are you asking for the specifications for Level 2 chargers that are commonly used by commercial customers?

CMSR. CHATTOPADHYAY: No. As I thought through it, of course, I've been asking questions on different aspects, so, I lost the thread. But these are really for the high-draw facilities.

WITNESS BOUGHAN: Okay.

CMSR. CHATTOPADHYAY: So, that's what I want to know. So, this is an additional record request.

BY CMSR. CHATTOPADHYAY:

Q Just quickly, explain what is "throttling" and "scheduling"? Is that the "on" and "off"?

A (Boughan) So, Brian, I can take this one.

So, "throttling" would be if you want to reduce the power that the charger is drawing. So, for example, if a residential Level 2 home charger could take, say, 6 kilowatts, you would throttle it down so that it could only take 3.

Q Okay.
A (Boughan) "Scheduling" is where you know that the car needs a certain charge by 6:00 a.m. But the driver is indifferent to the time in which that battery gets filled. So, you could either charge it from 9:00 to 12:00, or 12:00 to 3:00, or 3:00 to 6:00, or you could charge it for an hour at 9:00, an hour at 12:00, an hour at 3:00. And "scheduling" means you can optimize across all the assets that you have visibility in, to make sure that you're achieving your end goal, whatever that is.

So, whether it's to have a smooth charge across the entire system or to have a specific, you know, target for, say, a neighborhood. So, that's "scheduling".

Q So, is that possible in the Load Management proposal that you have right now? Is throttling and scheduling possible with the load management -- go ahead. Sorry.
A (Rice) Yes. We believe it will be possible.
Q Are you -- is your proposal that you're going to use it?
A (Rice) If there are opportunities to use

throttling and scheduling to add value, then, we will -- yes, we will execute those opportunities.

Q But that would still be implemented for all of the, you know, participants at the same time?

A (Rice) Not necessarily. I think, when you get into those solutions, they're intended to create opportunities to maybe optimize a certain portion of the distribution system, where there may be a certain portion of the total number of participants.

Q Yes. My question was, like you had explained a while ago that, initially, you're, you know, sort of proposing that the program, the Load Management Program, could be something that's going to be on and off for everyone at the same time. And this sounds like you are open to the considerations that I had raised previously. So, I'm trying to address the grid situation in local areas, and sort of using throttling and scheduling to the advantage of running a more efficient grid.

A (Rice) Absolutely. Yes.

Q Okay.

A (Rice) That is our ultimate goal. I just want to

be clear, you know, we need information to do that effectively that we don't have right now. And we won't even have probably on day one.

Q Okay.

A (Rice) But, on day one, it's most likely that you're going to be, you know, putting all -- you're going to be treating all customers similarly. But, as you get more information, and you identify more opportunities, then you start to execute those more sophisticated solutions.

Q Very quickly, if somebody knows. Just out of curiosity, I can also spend some time later and figure this out, but what is the current on-peak/off-peak ratio associated with the Residential OTOD offering?

A (Davis) Give me a minute. I'll give it to you just in a second.

MR. BUCKLEY: I can note that, at Exhibit 13, Bates Page 011, it shows that, the kilowatt-hour at least. You can deduce the ratio.

CMSR. CHATTOPADHYAY: Okay. You said "Exhibit 13", Page what?

MR. BUCKLEY: Bates Page 011, I think.

CMSR. CHATTOPADHYAY: Bates Page 011, okay. Thanks. That's all I have for now. Thank you.

WITNESS DAVIS: Hey, this is Ed. I wanted to respond to the two earlier questions about the five years of data.

And, so, I can provide -- readily provide the average usage per customer for each of the last five years, this is residential. And we believe, with a few days' effort, we should be able to pull together a frequency distribution around those amounts.

CMSR. CHATTOPADHYAY: Excellent.

WITNESS DAVIS: I don't know of the timeframe of this, but maybe that's a procedural thing later, but would you like us just to read those in, the five averages? Or, what's your preference at this point?

SPECIAL CMSR. ROSS: I would appreciate the five averages now. That would be helpful.

WITNESS DAVIS: Okay. So, I have 2017 through 2021. And this is a little unusual, but the average is -- the average residential usage is as follows, respectively: 592, 621, 598, 629,

and 628.

I also note, there is growth in customers each year by about 1 percent. But these numbers, they kind of go up, and then drop, and then go back up again. But what you're really seeing is -- I think is a bit of an anomaly with 2018. But, on average, you saw a pretty significant increase in 2020. It went from about 600 to about 630, and stayed there for two years. So, I think that's sort of the impact largely of the pandemic, and higher, as I would expect, residential usage. Because I think it was trending down a little bit, or at least at a lower level, it was, on average, there at a lower level, and then it jumped, you know, over 5 percent, and stayed there for two years.

SPECIAL CMSR. ROSS: Thank you.

WITNESS DAVIS: And, then -- you're welcome. And, then, I think the frequency distribution will give a better insight into, you know, what's happening. And we're going to do -- I think we're trying to do 100 kilowatt-hour blocks, so that should give you a good story of how that distributes around those averages.

CMSR. CHATTOPADHYAY: Yes. That was the intent. So, thank you.

WITNESS DAVIS: Okay. You're welcome.

CHAIRMAN GOLDNER: Okay. Just from a time perspective, I think what we'll do is I'll go through a questions from the Chair, and then we'll move to Ms. Chiavara for redirect, and then take a break. I don't have too many questions.

BY CHAIRMAN GOLDNER:

Q So, first, I'd like to go to Exhibit 4, Bates 028. There's a very nice table there, Table 1, that talks about the budget and enrolled customers for the Load Management Program.

And I would just like to confirm or maybe get the Eversource ask. You know, what is your ask? Are you saying that, in order to implement the Load Management Program, you need between a million and a million four, plus 200K in EM&V, and that's what you need to sort of launch this with a five-year time horizon? Is that correct?

A (Rice) Let me just get to the table myself.

Q Sure. It's on Bates 028, Exhibit 4. I'm looking in the blue box in the lower right-hand side,

under "Total", for the five-year total.

So, in that box, it says it's between 985K and 1.4 million. And, in the footnote, it talks about "EM&V costs", which above are estimated at about 200K. I just want to --

A (Rice) Yes. Just to --

Q Yes. I'm just trying to validate your ask. That's all. Go ahead.

A (Rice) So, just to quickly clarify, while on the subject of EM&V costs, we're actually not proposing to conduct EM&V for this program. So, we -- our proposal wouldn't be to recover that 200K. But that is unusual for these types of programs. Usually, they're executed within the context of a energy efficiency program, and EM&V would apply and would be recommended.

But, because we're really proposing it here as an alternative to a separately-metered time-of-use rate, we felt it reasonable to omit the EM&V component just as a cost containment measure.

So, the ask is correct, you know, for -- if we were to -- if you wanted us to implement this as a means of encouraging

customers to shift charging activity, the ask would be for us to be able to defer and ultimately recover on the --

[Court reporter interruption due to audio issues.]

CONTINUED BY THE WITNESS:

A (Rice) Okay. The ask would be to defer these costs and --

[Court reporter interruption due to audio issues.]

CONTINUED BY THE WITNESS:

A (Rice) Okay. The ask would be to be able to defer these administrative and incentive costs and recover them at a later point, following the Company's next rate case, is generally how it would work.

BY CHAIRMAN GOLDNER:

Q Okay. Very good. I was responding to Exhibit 4, Bates Page 013, and that clarifies what it says there. You talk about that these "EM&V activities may be appropriate but are not included in any budgetary estimate at this time."

So, I didn't know if that meant that it would be included when it flipped on line or

whether you were going to exclude it? And it sounds like you're going to exclude it. So, thank you for the clarification.

So, going back to the table, I just wanted -- am I reading that correctly, that's your ask today, is if you get between a million and a million four, you could proceed with this program?

A (Rice) That's correct. And, again, we're proposing this because we actually think this is the most effective way that we can get the highest volume of EV customers to take actions to shift their load in the near-term. You know, we could spend our money instead to make EV time-of-use rates available. It would be a lot more than this, as we have noted, for a three-period EV time-of-use rate. It could potentially be less than this for a different type of EV time-of-use rate structure. But a concern that Eversource has is, regardless of how much money we spent to implement some sort of separately-metered EV time-of-use rate, we may not ultimately have a high number of customers that enroll in it.

We do think, if we were able to offer this, we would have customers enrolled, and we would be able to get them to change their charging activity.

Q Yes. Understand. Thank you. So, I just want to do some quick cost-benefit analysis. So, I took something between a million and a million four, and let's call it a million two, divided it by a thousand, the number of customers, and quickly determined we're talking about $1,200 per customer. So, that part is easy.

But, you know, I couldn't find in the filing anywhere, and maybe it exists and I just didn't see it, can you point me to the quantified benefits, you know, the lowering of peak load, *etcetera*? Is that anywhere in the filing? Can we compare the cost to the benefit anywhere?

A (Rice) We didn't include it in our initial filing. But I will save you the question, and we'll freely admit that, if we were to compare the costs to any benefit estimate, just for this program and these 1,000 customers, our expectation is the costs would be greater than the benefits. But we put this forward as an

option for the reasons that we already discussed previously. Because we don't necessarily think that a separately-metered EV time-of-use rate, if we looked at the costs and benefits, would be any much -- much better. Maybe the costs would be lower for a basic rate. But, if you didn't have customers enrolled in it, you wouldn't really be able to attribute many benefits to it either.

Q Okay. Don't worry, I have some ideas for cost savings.

If you look at the "Administrative Costs" and the "Software/Vendor Costs", which we talked about a little bit earlier, you know, those are highlighted in there, and I don't know if there is any opportunity there, but my thought was immediately that, if Massachusetts and Connecticut are implementing and have implemented this already, understanding that your system is not one that is -- you don't have a unified system, so, I do understand that. But I was hopeful that, upon rescrubbing, there could be some cost reduction, given the progress that you've made in Massachusetts and Connecticut. Can somebody address the scrub level of these

numbers, and if there's some opportunity there, given the status in those other states?

A (Rice) Sure. So, the reason that ranges are provided here is because, you're correct, that the ultimate cost allocated to New Hampshire would likely vary, based on what Eversource is doing in other jurisdictions. You know, we assumed that we would have opportunities to, you know, offer a similar program in Massachusetts and Connecticut, which seems to be a safe assumption. After we filed this, we did get an order in Connecticut, indeed directing us to launch that program.

I mean, to the extent it's of interest to the Commission, we'd be happy to go back and scrub these numbers, and come up with an allocation based on the most recent data. I don't -- I don't know if that would get you to a greater-than-one benefit-cost ratio. But this is somewhat stale data, a lot is happening in this space. And we wouldn't be opposed to going back and scrubbing these numbers.

Q Okay. Thank you for that. And that's very helpful.

[Chairman Goldner and Commissioner Ross conferring.]

CHAIRMAN GOLDNER: Yes. That's a good idea. Yes, let's make that a record request. And it will end up being numbered "34". Bear with me while I write here.

(**Exhibit 34** *reserved as placeholder.)*

CHAIRMAN GOLDNER: And, so, we'll add that to the exhibit, I'll repeat it back at the end.

But you may also want to look at the customer incentive. You applied the $150 to every single customer for all time periods, and I'm not sure everyone will be that cooperative. So, you'll probably have some decrements there. You know, that may change the answer a little bit as well.

But, okay. Thank you for that. We'll move onto the next section.

BY CHAIRMAN GOLDNER:

Q You mentioned, Mr. Boughan, about, you know, Ford F-150s and Leafs earlier. I think the Ford F-150 has an inverter in the truck, doesn't it?

A (Boughan) I'm not an expert on the Ford F-150

specs.
Q Okay.
A (Boughan) So, I'll take your word for it.
Q Does the Leaf? Do you know if the Leaf does? I mean, if they're doing bidirectional charging, doesn't that mean that they have to have an inverter to transfer from AC to DC?
A (Boughan) Yes.
Q I think that's right. So, and I'm just, you know, again, I'm always very interested in future-proofing, to the extent possible. But, if you've got an F-150 or a Leaf that has an inverter, so you can transfer from AC to DC, life is good, or you have a wall-hung battery, you know, I'm just kind of curious, and I realize there's multiple dockets here, and, so, you know, trying not to cross dockets. But I don't know why you're not calling for power during peak, as opposed to just stopping charge. If you have availability, whether it's a wall-hung battery or a bidirectional F-150, why wouldn't you be going in the other direction?
A (Boughan) So, you know, one of the hesitations of automakers to make bidirectional charging

available is that the frequent or -- yes, the frequent rapid charging and discharging takes a toll on the battery life, and, you know, could have warranty implications and cost implications for the automakers. So, for the most part, they have been hesitant to make the cars capable of doing that.

Q Interesting. That's a very good data point. Thank you for that. I did not know that.

Okay. So, I'm going to just continue with a few more questions, following up on Commissioner Ross and Commissioner Chattopadhyay's questions on the Managed Charge Initiative. I'm not quite clear on a couple pieces of the physical implementation, and that's why we have the record request, because it's a little bit hard to comprehend if you don't have pictures. And I would encourage, in future filings, to make, you know, make visuals as available as possible, to help the Commission and the Parties.

But, so, you know, how does a customer know if power is available? So, I understand, if you have a dumb charger, you plug it and power is

available. But what if you shut it off? How does he or she know that they're not getting power because of the, you know, because of the program?

They might be upset, if they come home at 5:00 from work, they plug in, they want to go shopping, their battery is low, they want to go shopping in a couple of hours, and it never charged when they get back out to their car. I'm just wondering how they -- how do they know if it's charging or not, that you shut them off?

A (Rice) Yes. I may be getting ahead of myself and suffering the limitations of assuming testimony on this one. But, you know, when I used to talk to Mr. Goldman, who originally sponsored this testimony, we have notifications that go to customers. I think, at enrollment, we'll explain how the program operates, and they will have some indication on when they can expect to be curtailed.

Again, you know, as we described, for initial deployment, it would be an eight-hour period, and every day in the summer. We will probably be providing them an indication of when

that eight-hour period is.

And, then, as you get more sophisticated, and, you know, when we have scenarios when we're targeting, you know, more dynamic peaks, we have push notifications to customers. So, they will get maybe a text message or some other communication a day in advance, saying "Hey, you know, tomorrow we're going to be, you know, operating a demand response event. You're not going to be able to charge between the hours of X and Y."

Q Okay. And you have some sort of active system to do the reverse. So, somebody comes in, they need power for some reason, their car is out, they're parked in the garage, they're at 1 percent, they need power. They come home in the summertime, and they plug it in, "Oh, oh."

But I understand from your testimony that there is a way to still access the grid even in those situations. Would that be -- how would that work? Is that a phone call to Eversource? Is that something you do from your smartphone? How do they turn it back on?

A (Rice) Yes. I mean, they certainly have the

ability to override a curtailment. And, to be honest, again, because I'm not the guy that runs these programs, I just talk to him a lot, I don't have the specific answer to that. But I don't know if Mr. Boughan does?

A (Boughan) Yes. I'm not sure of the mechanics of the opt-out. So, we could follow up with that. But it's -- an immediate override, I think you can just plug in and begin charging, and that's your override.

Q Okay.

A (Boughan) But we can double-check on that.

Q Yes. That would be -- that would be important, if you had that situation.

Let's see. I had a couple more, and then I'll wrap up.

So, you know, you highlighted situations earlier where you're putting in, over the next five or six years, a new IT system, a new -- holistically, trying to combine different acquisitions, different components of your company. That's a noble cause.

How do you -- how do you decide how much gets charged to New Hampshire versus

Massachusetts versus Connecticut versus wherever? How is that algorithm determined? Who gets what?

A (Rice) So, the Company has a Cost Allocation Manual that outlines the basis for allocating costs on a variety of methods, for some -- subject to confirmation. But, for something like a billing system, if that's used enterprise-wide, typically, the costs would be allocated on a prorated basis, based on the number of customers that each utility has.

So, you know, I think, if PSNH has approximately, you know, 500,000 customers, out of 3 million Eversource-wide, they would receive, you know, one-sixth of the cost allocation, if it was based on customer count. There can be other methods for allocating costs as well, which would produce different ratios.

Q I'm looking at Mr. Buckley, because we're a vacation state, that may enter in your algorithm. Right? If you have Massachusetts -- if you have people with a lot of summer homes living here, and you do a customer count, you're going to get maybe a different answer than if you did it on the total load, right?

A (Rice) I mean, in some cases, we allocate based on total load. But, you know, our billing system is ultimately, you know, supporting the issuance of bills to all those customers, whether or not they're in the summer or not, I guess.

Q Is it fair to assume, this happened before I joined the Commission, but was this algorithm approved by the Commission in a prior rate case?

A (Rice) Yes. We typically file the Cost Allocation Manual in every rate case. Because, ultimately, it's the basis for a lot of components of the cost of service that are evaluated in a rate case.

Q Okay. And would you have any advice for the PUC or New Hampshire, in terms of when you're implementing the software and you're upgrading your system and you're looking at new programs, would you advise us, from a cost perspective at least, to be followers or leaders to the other states? My sense is that, if Massachusetts and Connecticut are implementing new programs, and New Hampshire perhaps wisely follows, that that could be in New Hampshire's best interest to lower the total cost?

A (Rice) I think so. I mean, every case is going to be unique. So, I don't want to say that's generally always the case. And there may be unique reasons why New Hampshire would want to tread its own path in certain areas.

But, certainly, in this scenario, you know, we've, you know, in our initial testimony, we described the upgrades that would be necessary for a three-period rate. That would be custom work that would only be done for the benefit of New Hampshire, where, you know, we kind of talked about, if we were to copy a rate that was already in existence in another jurisdiction, that could be done at lower cost.

So, I think your -- I think your sense is right. There are a lot of occasions where, trying to work within the capabilities that have already been developed for the Company to serve other justifications across the enterprise, means that New Hampshire would just be allocated a piece of that, rather than being charged 100 percent of something that was just undertaken for the benefit of New Hampshire.

Q Thank you, sir. That's extremely helpful. I

just have one last question. I saved the toughest for last.

So, in this business of the three-period time-of-use rates, we spent a full day earlier this week talking about the two utilities that were going to implement that. And I have to admit, as a new Commissioner, being surprised that Eversource, the largest New England supplier, was the one with the least capability. Would anyone care to address that?

A (Rice) Well, I'll take it just from a business standpoint, and Mr. Moore might be able to offer more specifics.

But I think one thing that Mr. Moore talked about earlier is, you know, Eversource actually tries to avoid, you know, spending money when we don't need to. You know, so, we've been effectively serving pretty much all of our 500,000 customers with the billing systems we have now. Those were installed in about 2008, I think we said. So, I mean, I don't know the exact depreciation of it. But, a lot of times, IT equipment like that, it's depreciated within 10 years. So, we're kind of in a situation now

where we have these systems that customers have pretty much already paid for, at least their original install cost, and we're able to continue utilizing them to serve customers. So, that's a good -- a good outcome, we think.

We can't do that forever. Eventually, things change. And we talked about all the changes that, you know, are coming down the road, with things like the data platform, definitely with new rate structures, with new types of net metering. So, eventually, we're going to have to change.

But, from a business standpoint, the longer that you can push that change out and use what you have now, is a good way to minimize costs. So, that's what we're doing. And, you know, I think we just think it's, in the long run, most efficient to, instead of kind of patching our current systems, to do one thing that might be nice to have now, if you defer that just a little bit longer, and tackle it as part of, really, a comprehensive enterprise solution that does lots of things, it can be a more cost-effective way of managing our systems.

CHAIRMAN GOLDNER: Thank you, Mr. Rice. So, that concludes my questions.

I'll move back to Commissioner Ross and Commissioner Chattopadhyay, to see if there's any follow up?

CMSR. CHATTOPADHYAY: No.

CHAIRMAN GOLDNER: Okay. So, that completes Commissioner questions.

We'll move to redirect from -- and I'll recognize Ms. Chiavara.

WITNESS DAVIS: Chairman Goldner?

CHAIRMAN GOLDNER: Yes.

WITNESS DAVIS: Sorry. This is Ed Davis. I just wanted to respond to Commissioner Chattopadhyay's question regarding the rate differential?

CHAIRMAN GOLDNER: Go ahead.

WITNESS DAVIS: And, particularly, I think Mr. Buckley referenced Exhibit 13, Page 11. So, I figured I'd just go to that and respond.

So, there is a -- if you just take the price ratios from stated rates, it's about, I think, 2.4 between peak and off-peak. But I do want to emphasize, those are highly distorted

pricing, you know, left over from legacy from restructuring. Distribution pricing, peak/off-peak is, first of all, everything is on a 13-hour peak period. You know, the ratios there are really left over from unbundling rates. So, just a word of caution. And they happen to be rates in effect August of 2020 in that table.

But you're on the order of about, roughly, two to two and a half, depending on the generation supply price. But that gives you sort of a benchmark, if you will. If you just take 2.6 cents, divided by 10.8, you know, that will give you that ratio, just doing the quick math.

CHAIRMAN GOLDNER: Thank you.

WITNESS DAVIS: Okay. Thank you, Chairman.

CHAIRMAN GOLDNER: And Ms. Chiavara?

MS. CHIAVARA: Yes. Thank you, Chair. I heard you mention that, after redirect, we were going to take a short break. And I was wondering if you'd be open to the idea of taking a short break now, so that I can confer with my clients before redirect? Would that be all right?

CHAIRMAN GOLDNER: Sure. That would be

perfect. How much time would you like?

MS. CHIAVARA: Five minutes is fine.

CHAIRMAN GOLDNER: Okay. Let's take five minutes. And we'll reconvene at -- let's just reconvene at --

[Chairman Goldner and the court reporter conferring.]

CHAIRMAN GOLDNER: The stenographer -- yes. Let's take ten minutes. And we'll reconvene at, I think that's -- what time is it? Is it 3:35? Okay. Let's come back at 3:35. Thank you.

MS. CHIAVARA: Thank you.

(Recess taken at 3:24 p.m. and the hearing resumed at 3:41 p.m.)

CHAIRMAN GOLDNER: Okay. Ms. Chiavara, are you ready to go?

MS. CHIAVARA: Yes, I am. Thank you very much.

CHAIRMAN GOLDNER: Okay. Thank you. I'll recognize Ms. Chiavara. Go ahead.

MS. CHIAVARA: I only have a few questions. The first being for Mr. Rice.

REDIRECT EXAMINATION

BY MS. CHIAVARA:
Q The Department of Energy, during cross-examination, described a hypothetical situation by adding certain variables to the time-of-use rate scenario, to ask if time-of-use rates could generate at-scale changes to demand and charging behavior.

My question is, what would it take to see the type of at-scale demand and behavior shifts that the Department was previously discussing?

A (Rice) I think you would need a scenario in which a high enough volume of EV customers was enrolling in rates, and shifting their charging behavior accordingly, as the rates were intended to encourage them to do. And I think Eversource has kind of been clear in this proceeding that we don't feel that would happen today with the time-of-use rates that are for residential customers on a separately-metered basis that are being considered at this time.

It doesn't mean that that will be a permanent scenario. Certainly, as, you know, more customers drive EVs, you might have, you

know, start having multiple EV households, you know, that will create likely more opportunities for customers to realize savings. And, I think, as we have indicated, we're optimistic that, you know, we'll be able to more effectively offer more rate options to customers in the future through updated systems.

So, I expect that the Commission found that time-of-use rate designs are appropriate for EV charging, we completely agree, that that's the case in the right situation. We just don't see the EV market today as creating those conditions.

So, while we're recommending a different initial step through managed charging, to start encouraging those customers that can to shift their load. And we hope that that's something we can build off going into the future. We really see that kind of those conditions for at-scale load-shifting through rate design to be something that would more likely materialize in the future, rather than today.

Q Okay. Thank you. And I would like to turn to Mr. Davis for a moment.

Mr. Davis, could you look at

Exhibit 8, on Bates Pages 013 and 014. It's Testimony of Dr. Sergici on behalf of the Department of Energy.

A (Davis) I'm there.

Q And there's a passage of testimony there where Dr. Sergici is discussing Eversource's rate design, including the customer charge?

A (Davis) Yes.

Q Okay. Would you say that, from that passage, that Dr. Sergici both understands the calculation of Eversource's customer charge, and agrees that both the design of the rate and those calculations were sound?

A (Davis) Yes, I do.

Q Okay. Thank you. And, then, back to Mr. Rice for my final question.

Mr. Rice, the managed charging programs that are currently offered by Eversource, in both Massachusetts and Connecticut, are those offered along with EV time-of-use rates or are they offered as stand-alone EV customer solutions?

A (Rice) They're offered as stand-alone EV customer solutions for residential customers. And I think we indicated earlier in the day that, even though

Connecticut and Massachusetts both have, you know, explicit EV adoption goals, they haven't, at this time, directed utilities to implement separately-metered EV time-of-use rates for residential customers.

The Connecticut Public Utilities Regulatory Authority concluded an investigation last year, in the middle of last year. They looked closely at this issue, and they even issued preliminary straw proposals that contemplated that utilities would, you know, provide both a managed charging solution and a separately-metered residential rate. But, upon further investigation, they ultimately declined to require the utilities implement both.

But still found, you know, very definitively, that it was critical that the utilities offered a managed charging proposal to encourage optimization of EV charging activity.

MS. CHIAVARA: Thank you. Thank you, Chair. That is all I have.

CHAIRMAN GOLDNER: Thank you. The witnesses are released.

So, next on the agenda is City of

Lebanon, and after this we have CLF and CENH, and also public comment.

Mr. Below, how would you like to proceed?

MR. BELOW: To adopt my testimony.

CHAIRMAN GOLDNER: Okay. Thank you.

MR. BELOW: Would you like me to take the witness booth?

CHAIRMAN GOLDNER: Yes, please.

MR. BELOW: Okay.

CHAIRMAN GOLDNER: All right. Mr. Patnaude, would you swear in the witness.

(Whereupon ***Clifton C. Below*** was duly sworn by the Court Reporter.)

CHAIRMAN GOLDNER: Thank you. And I believe that Mr. Buckley had agreed to do direct.

MR. BUCKLEY: Yes. Thank you, Mr. Chair.

CLIFTON C. BELOW, SWORN

DIRECT EXAMINATION

BY MR. BUCKLEY:

Q Councilor Below, can you please state your name, position, and who you are representing in this proceeding for the record?

[WITNESS: Below]

A My name is Clifton Below. I'm a City Councilor and Assistant Mayor in the City of Lebanon, who I'm representing in this proceeding.
Q Thank you. And can you please describe the nature of your participation in this proceeding thus far?
A Well, I have participated throughout, in the technical sessions, the settlement discussions, and also prefiled testimony.
Q And that prefiled testimony you mentioned, is that the testimony we now have premarked as "Exhibit 9", I believe?
A It is.
Q And, if I asked you the same questions that are posed in your testimony today, would you have the same answers?
A Yes, I would.
Q And do you now, here today, adopt that testimony?
A Yes.
Q And do you have any other comments that you'd like to make?
A Well, just generally, the City doesn't oppose the Settlement. I think it would be more proper to characterize that we're just not that

enthusiastic about it.

I think that the overall time-of-use rate design for Liberty and Unitil is actually a pretty sound methodology overall. I had some concerns, primarily about how it was calculated, in terms of revenue neutrality. But, actually, as I've taken a closer look at that, I'm not sure that that is that big of a problem. I'm somewhat concerned about retaining the half demand charge.

From the City's point of view, I am not sure it's something that I should say, as I did in my testimony, the City, under the direction of the City Manager, is looking to electrify its fleet of -- fleets of vehicles over time. We only have one Nissan Leaf and we have one Ford F-150, all electric, on order. But we're starting to follow what's happening and see what's available for police, fire, DPW vehicles, and so forth. So, the main thing we're focused on is our physical infrastructure, so we're prepared, because this is going to take some number of years.

And a lot of our sites that have -- that we see as potential charging locations, we

have some degree of solar on those sites. And, so, I'm not sure it would -- and, in most cases, they sometimes occasionally export to the grid, mostly they are consumed on-site.

But the fact that this would be a stand-alone rate, which is the whole proceeding anticipated, as we thought about it, it's less -- potentially less valuable, when we've already got an existing electrical infrastructure.

So, ultimately, I think we're interested in time-of-use rates, time-varying rates that access, particularly, for transmission and distribution, because, through the market, you can recognize the energy component.

But also believe that those do you need to be cost causation related. And I believe that, if you think about it on sort of a entire class basis for the whole system, if we design to achieve revenue neutrality, based on class average load shapes or even the whole load shape of, say, residential or C&I customers, if you design on that basis, then what the time-of-use rates, if they're cost causation based, would reflect the probability of having -- of causing

costs.

So, for transmission, for instance, it's based on a single hour of coincident peak demand each month. So, if you were exposed to that fact, you would maybe voluntarily look at ways to avoid contributing to the monthly peaks or the annual peak for the Forward Capacity Market. And I think that's what the design of time-of-use rates does. It says "what is the probability that you're going to have a transmission peak in these different periods of time?" And there's almost no chance that they're going to occur during the off-peak times, because, historically, they haven't. And a high chance they'll concur during the on-peak. And a little bit of a chance they might occur mid-peak. So, if you put that cost in those time periods, then you're sending an appropriate price signal. And I think that's the key to economic efficiency, in terms of sending those appropriate price signals.

So, just to conclude, you know, I think that this is going in the right direction. Maybe the Settlement is incremental progress. But,

again, there's just -- there's a bit of muddling by adding back in the demand charge. And, as much as I think that the -- the well-designed time-of-use rate actually reflects the probability. So, if you're only way down at one or two percent utilization, to some extent it's reflecting the probability that you're going to have a significant impact on the capacity of the system at times when it's most strained.

So, I'll stop there. Thank you.

MR. BUCKLEY: Thank you, Councilor Below. No further questions on direct.

CHAIRMAN GOLDNER: Thank you. We'll open up to cross-examination. Liberty Utilities?

MR. SHEEHAN: I have no questions. Thank you.

CHAIRMAN GOLDNER: Eversource?

MS. CHIAVARA: No questions for this witness. Thank you.

CHAIRMAN GOLDNER: Unitil?

MR. TAYLOR: Unitil has no questions for the witness. Thank you.

CHAIRMAN GOLDNER: Clean Energy New Hampshire?

MR. SKOGLUND: Clean Energy New Hampshire has no questions for the witness.

CHAIRMAN GOLDNER: Thank you. CLF?

MR. KRAKOFF: No questions of this witness.

CHAIRMAN GOLDNER: New Hampshire Department of Environmental Services?

[No verbal response.]

CHAIRMAN GOLDNER: New England Convenience Store and Energy Marketers?

[No verbal response.]

CHAIRMAN GOLDNER: The Office of Consumer -- I'm sorry, the Office of Consumer Advocate?

MS. DESMET: Thank you. Nothing from the OCA.

CHAIRMAN GOLDNER: All right. Thank you. The witness is released. No, I'm sorry. No. Commissioner questions. My fault, I've never had a *pro se* witness before. So, bear with me. Sorry. Commissioner Ross?

SPECIAL CMSR. ROSS: No.

CHAIRMAN GOLDNER: Okay. Commissioner Chattopadhyay?

[WITNESS: Below]

CMSR. CHATTOPADHYAY: I don't.

WITNESS BELOW: It occurred to me, I had one more thought I'd like to share, if I may?

In thinking about this, and why I think time-of-use rates are also appropriate for C&I, if the City installs probably, most likely, Level 2 charging, because most of our vehicles don't travel that far, with some exceptions, they could charge overnight.

And, absent some price signals, there will be a tendency to just plug them in at the end of the shift, 4:00 in the afternoon, say. And they may well be fully charged up by midnight, but you could also charge them between midnight and 6:00 a.m., perhaps. And, if there's no particular price signal in the rates, then there may not be that incentive.

So, I think my only point is that, although some people traveling interstate on a trip may have very little flexibility when they charge, because they need a fast charge, there will likely be large quantities of fleet vehicles, as well as employees who come to work and can recharge over the course of their shift,

that will have some flexibility when they charge, which is why I think it's important to get the price signals -- the temporal price signals out early in this area.

Thank you.

CHAIRMAN GOLDNER: Thank you, Mr. Below. I have no questions. The witness is released. Thank you.

WITNESS BELOW: Thank you.

CHAIRMAN GOLDNER: Okay. Any other matters, before we have the next witness sworn in for CLF and CENH?

[No verbal response.]

CHAIRMAN GOLDNER: Okay. Very good. Let's proceed with the witness. Mr. Patnaude, would you please swear in the CLF/CENH witness.

(Whereupon ***Christopher R. Villarreal*** was duly sworn by the Court Reporter.)

CHAIRMAN GOLDNER: Thank you. Mr. Skoglund or Mr. Krakoff, who will be leading off?

MR. KRAKOFF: I will be leading off for CLF.

CHAIRMAN GOLDNER: Okay. And both of you will be participating?

MR. KRAKOFF: I think just I had questions. I don't think Mr. Skoglund has questions of Mr. Villarreal.

CHAIRMAN GOLDNER: Okay. Thank you. Please proceed.

MR. KRAKOFF: Okay. Good afternoon.

CHRISTOPHER R. VILLARREAL, SWORN

DIRECT EXAMINATION

BY MR. KRAKOFF:

Q Could you please state your full name?

A My name is Christopher Villarreal. V, as in "Victor", -i-l-l-a-r-r-e-a-l.

Q And, Mr. Villarreal, could you please state who you work for?

A I work for Plugged In Strategies.

Q Okay. Are you the Principal of that, at that consulting company?

A I am the Principal, President, and only employee.

Q Okay. And you previously worked for the -- for a couple of public utilities commissions, correct?

A Correct.

Q Okay. Now, I'd like to start with what has been identified as "Exhibit 6". Is Exhibit 6 your -- what's been marked as your prefiled testimony?

A Yes.
Q Okay. And do you have any changes or corrections that you would like to make to your testimony today?
A I do not have any changes or corrections.
Q Okay. And is your testimony true and accurate to the best of your knowledge?
A It is.
Q And do you adopt the testimony, which has been identified as "Exhibit 6", as your sworn testimony here today?
A I do.
Q Thanks. Now, could you just briefly describe the current state of EV adoption in New Hampshire, in your view?
A Sure. In my view, the state of EV adoption in New Hampshire is relatively low. And, so, it's a prime time, as a result, to have these conversations on EV rate design.
Q Okay. And the other day we heard about EV charging, particularly charging at public charging stations. But, for owners of EVs, where does most charging occur?
A For owners of EVs, most of the charging occurs at

their homes. Since they are all largely private vehicles at this point in time, the optimal place for people to be charging them is at their residence.

Q Okay. Now, in your testimony, you stated that "the Commission should consider EV adoption a priority." Could you briefly describe the benefits of making EV adoption a priority in New Hampshire at this time?

A Yes. So, considering EV adoption as a priority for a state like New Hampshire, it means that it imbues the goals of EV adoption throughout their consideration. So, for things like distribution investments, having EV adoption as a goal of the state will help influence and identify areas of the distribution system that may be better suited or in need of supporting EV adoption.

So, things like areas of the system that might be better suited for clustering Level 2 chargers or locating DC Fast Chargers, without having it be a stated goal, rolling out programs to support the distribution investments to support EV adoption may not be realized.

And, so, as the utility looks to deploy

infrastructure, without looking at the impact of EV adoption on that infrastructure, you may be either investing in the wrong areas, investing in the wrong technologies, and may result in a slightly far more inefficient system as a result.

Q So, just to summarize what you just said, are you suggesting that there are certain efficiencies related to making EV adoption a priority now, as opposed to waiting down the road, when there's more EVs on the road?

A Certainly. So, if a state waited for a higher penetration of EV adoptions, being at whatever level it is, it takes time for the utility to make the plan for investments to put in the system. Then, it has to put it into a filing. And, then, it goes through a regulatory process. And the Commission has to review it and issue an order approving the investments. And, then, it goes back out to be installed. So, that's several years, in which case, you know, adoption continues to grow.

And, so, by putting it up front, and being proactive and planning for the growth of EV adoptions in a state, the Commission and the

state, therefore, can be put on a path of -- can implement and integrate EVs on a much smoother basis than if we waited until adoption hit a certain level.

Q Now, a little while ago, I think it was Chairman Goldner that said that "New Hampshire is a tourist state", a lot tourists visit here. And I think, when we go home tonight, we'll see all these tourists on I-93 outside.

But does encouraging the development of an EV charging network have an impact on tourism in the state?

A I certainly think it does. As people come and spend their time and their money in New Hampshire, if there's not an adequate infrastructure in place to support electric vehicle charging, then that's lost opportunity, right? So, towns and communities where people would come to visit, without adequate infrastructure for EV charging, may be less interested or spend less time in the towns and communities that do not have this infrastructure.

Q Now, in your testimony, you stated that, in this docket, it's your view that the Commission should

consider issues beyond just cost causation and designing rates for EVs. You know, we heard a lot the other day from DOE about cost causation.

But, in your testimony, you stated that, to achieve the public policy priority of increased EV adoption, the Commission should consider, you know, the principle of diffusion of benefits in developing rates. What exactly does that mean?

A Sure. So, I think, first and foremost, rate design is an art and a science. And, so, looking at rates in a vacuum of, you know, just looking at them in the short term, ends up missing other components and other benefits that could be realized if looked at more broadly. So, things like "diffusion of benefits" means that, with the appropriate rates in place that support development of EV infrastructure across the state means that people will go and leverage or know that there is going to be charging where they go. And, so, that means people will come and spend more money there.

I know that, for example, in other states, big box stores, like Targets, have noted

that, where they provide charging infrastructure for their customers, their customers tend to stay parked longer, and, as a result, they spend more money. So, that's more money that goes into local communities.

Furthermore, by planning for and including societal benefits or considering societal benefits, you know, we have other air emission benefits. So, fewer gasoline-powered vehicles are on the road, which results in cleaner air, which then has associated environmental benefits.

So, you have a wide variety of additional benefits that can be realized and accrued to the state and to communities, and to other developers and other industries, with appropriate supporting policies to enable the growth of electric vehicles.

Q And, so, why might it be beneficial for the New Hampshire Public Utilities Commission to sort of think about some of these other benefits at this time, rather than strict cost causation in this docket?

A Sure. So, all rate design includes a form of

social consideration. So, with the wide variety of principles espoused by Professor Bonbright, cost causation is an important one, revenue neutrality is also an important one, but so is affordability, so is certainty, so is, you know, meeting other societal benefits that cannot be captured in, you know, the cold light of day of looking at rate design only through the lense of revenue neutrality or cost causation.

Certainly, we don't want to lose sight of cost causation or even revenue neutrality. But, you know, solely relying upon one principle to rule them all, so to speak, does not then support the longer term role that things like EV infrastructure can provide and support.

Q And one question I have for you is, you know, with greater adoption of EVs, it's going to increase the amount of electricity used. Does that have the potential to decrease rates for all ratepayers?

A It certainly does. It would increase the efficiency of the system. It would -- and, certainly, through selling more electrons, it would allow for, you know, greater diffusion of

benefits, so to speak, through rate base, by more appropriately and efficiently in the system spreading out those kilowatt-hours to more kilowatt-hours, and to more users of the system. So, that would really only enhance the system's value to more and more people, and uses, perhaps more importantly.

Q Now, you said in your testimony that the usage of DCFC chargers, public chargers, is unlikely to be elastic. Why is that?

A So, the purpose of a DC Fast Charger is really to allow the EV driver to get a fast charge, so they can continue to be on their way. They might have a place to go, they have an appointment, they are looking just to get home, or get to work, or get to where they need to be. And they just need a quick boost, so to speak, of electricity to fill up the battery, to get them from where they are to where they need to be.

And, so, as a result, since it's on an as-needed basis, it becomes much more difficult to manage, and it's going to become less -- it's going to be difficult to plan around, because we don't really know when they're going to be used,

because, like I said, it's going to be used in an as-needed basis.

Whereas Level 2 charges, we kind of know where they are. We know their usage profiles. They're mostly, at this point in time, going to be used at home, or perhaps in fleets. They're largely going to be stationary. And those are much easier to manage than the DC Fast Chargers would be. So, as a result, since they're less elastic, they're less able to respond to prices. Putting them on certain rates that sort of then penalize, at this point in time, that inelasticity doesn't do much to support the growth and adoption of DC Fast Chargers.

Q So, I mean, in your testimony, you spoke, you know, about the benefits of time-of-use rates, and especially for residential users. But, you know, you stated that you thought it might be inappropriate for time-of-use rates for DCFC public charging stations.

I mean, I think you just explained that. But is there anything else you want to elaborate on there?

A The benefit of time-of-use rates is that it provides a price signal to the end-user. And the price signal is really important, generally, to ensure that charging is accomplished at times when it's lower. So, that would encourage managed charging, that would encourage the consumer to better -- to avoid a higher price, if they can charge over the middle -- over overnight hours. And ensuring that there's a price signal for residential chargers, and for other types of charging infrastructure, other than that DC Fast Charging, I think it is really important to ensure that DC -- that, excuse me, that EV demand does not exacerbate any peaks, especially if we can avoid them through the -- through the sending of a price signal. So, TOU rates do a really good job of accomplishing that and send that price signal to consumers.

Q Now, in the Settlement proposal, you know, the Settling Parties propose this commercial rate and time-of-use rate, you know, it's a single commercial rate for all commercial users. You know, and that includes DCFCs and Level 2, you know, regardless of the type of charger. You

know, and it proposes a time-of-use rate for all these types of public chargers.

Is there any benefit to sort of thinking of Level 2 charger users differently from users of DCFC chargers?

A I think there would be a benefit to considering treating Level 2 and DC Fast Chargers differently. I think, if you look at adoption rates around the country, because most charging occurs at residential homes through Level 2 chargers or through public charging, again, through Level 2 chargers, and since the impact on the system can be better managed and be responsive to price signals, putting it on a TOU makes a lot more sense than putting a DC Fast Charger under a TOU rate, again, because of the vagaries of when the DC Fast Charger will actually be used.

So, it might -- it would be worthwhile to consider treating the DC Fast Charger at this point in time, because they are -- again, there are some few of them anyway, treating them -- perhaps considering them as a separate rate might be a worthwhile consideration. That way you can

minimize any cross subsidies and at least track the costs more discretely inside a separate stand-alone network.

Q Now, you said in your testimony that demand charges can play a significant role in EV infrastructure rollout, especially at low utilization rates. Could you please explain why demand charges can be detrimental to the economics of public EV charging.

A Sure. So, I think it's important to remember that, at the end of the day, the bill has to be paid by an end-use customer. And, to the extent that an end-use customer is interested in putting a DC Fast Charger or charging infrastructure on their location, that will have an impact on their budgets and the ability to pay their bill to the utility.

And, so, to the extent that there's a rate design that, in effect, penalizes the consumer or the end-use customer from installing this infrastructure, that will not do much to encourage the development and growth of charging infrastructure across the state.

If the end-use consumer is looking at

the demand charge being responsible for 70, 80, up to 90 percent of their bill, then there's not going to be much adoption rates.

But the letter that was received from the Town of Derry, so, regardless of whether it's Level 2 or, you know, stand-alone or what have you, it shows the effect of a demand charge on their willingness to maintain at least a Level 2 charger, where the demand charge was responsible for 74 percent of that meter's bill. Which then resulted, as the Town of Derry's letter noted, resulted in them, you know, pulling out their Level 2 charging infrastructure.

So, again, while we can sit and talk about rate design sort of in a vacuum, at the end of the day, people have to pay for this. And, to the extent that New Hampshire is interested in growing an EV infrastructure, the people who pay the bill have to be able to afford the infrastructure and the EV charging infrastructure that they want to put in the system. If it doesn't provide them a benefit, then they aren't going to provide it.

Q And can demand charges -- can they cause bills to

rise substantially? You know, is that kind of what we saw or what Town of Derry is saying in their comment letter?

A Yes. That's how I read the letter. Additionally, other research done be Rocky Mountain Institute looked at the effect of demand charges in some DC Fast Charging infrastructure in California, and saw that, under demand charge rates, especially at low adoption, it could account for up to 90 -- or, up to 90 percent or more of the bill. And because demand charge -- because DC Fast Chargers are hard to plan around, that just results in that end-use consumer, who would want to put a DC Fast Charger, having no real reason to do so, if it's going to be such a large component of their own operating expenses.

And, so, in thinking about how the demand charge impacts consumer bills, especially to that end-use consumer, I think is an important consideration to think about.

Q Now, the other day, it might have been Unitil or DOE, that, you know, kind of minimized -- tried to minimize, you know, how much demand charges affect bills, you know, and suggesting that it's

really just a distribution rate component, and, you know, it's not that large of a component of the overall bill. Do you agree with that?

A I do not. So, looking back, again, over the RMI paper on demand charge impacts, I was looking over Southern California Edison's rate, in fact, just the other day. Southern California Edison's demand charge also only applies to the distribution portion of the rate. And, as RMI found, even in that circumstance, it could still be upwards of 80-90 percent of a consumer's bill. So, even if it is only applying to the distribution portion of the bill, it clearly still has a significant -- can still have a significant impact on that customer's bill.

Q Okay. So, the Settlement proposal -- the Settlement Agreement proposal, that includes a demand charge reduction of 50 percent for the commercial EV rate classes that are being proposed. Do you think that this 50 percent reduction is sufficient to resolve some of the issues with high-demand charges for public charging stations, and those high-demand charges affecting the viability of public charging

stations, which you just discussed?
A At this time, I don't think it does, for a couple reasons.

First and foremost, again, because there are so few of them out there, and they are then used relatively infrequently, that end-use customer has fewer kilowatt-hours, so to speak, to spread those costs across, fewer uses of the infrastructure to spread the costs across. So, if a user subject to a 50 percent demand charge has one charging session a month, that one time, and that has a significant impact on the bill.

Secondly, you know, again, look at Southern California Edison's example. Southern California Edison, as well as other utilities across the country, have designed a sliding scale, so that, as utilization starts from zero, where the demand charge has a significant impact on the customer bill, because the sessions are so limited, as utilization rates increase over time, then you can see an increase of the demand charge, again, as you balance out usage and kilowatt-hour and kW rates, it becomes a more -- the rate -- the end-use consumer can then better

balance how these rates will impact their bill.

So, even in a state like California, and Southern California Edison, which has a -- has implemented a ten-year demand charge holiday, after year 10, the max demand charge is still 60 percent of the otherwise applicable demand charge. Whereas here, in this Settlement, New Hampshire is starting right off the bat at 50 percent, without any associated alignment to utilization rates, regardless of whether that end-use customer has one or 100 sessions, it's starting right at 50 percent.

Q So, do you think that -- strike that. Now, the other day I asked Unitil's witness a few questions about Unitil's commercial EV rate proposal in Massachusetts, and they have a demand charge alternative there. And you just mentioned the sliding scale approach for -- yes, I think it was a California utility. Is there also a sliding approach being proposed in Massachusetts by Unitil?

A Yes, there is.

Q And could you just briefly describe what that is?

A Sure. I do describe it in my testimony. So, if

you just give me one second, so I can remember. Oh, I'm sorry. Yes. So, I describe it in my testimony. The sliding scale is based upon a range of load factors, which I'll also loosely translate as "utilization rates". So, as long as the load factor is from zero to 5 percent, there's no demand charge; from 5 to 10 percent, the demand charge would be reduced by 75 percent; from 10 to 15 percent, the demand charge is reduced by 50 percent; and above 15 percent of load factor, the full demand charge would apply. And that's over a ten-year period.

So, in other words, as utilization rates of the DC Fast Chargers increase over a ten-year period, once they hit 15 percent or so utilization, then a full demand charge would be applied to that location.

Q Do you think that Unitil's Massachusetts proposal would be more likely to solve some of the issues with -- some of the issues with demand charges acting as barriers to EVSE deployment than the proposal in the Settlement Agreement here?

A Yes. It would certainly give those end-use consumers more time. And it would support the

deployment of DC Fast Charging, knowing that the end-use consumers would not be hit with any significant demand charge while they're trying to grow the marketplace for DC Fast Chargers and EV adoption across the state.

Q And is it your understanding that that Unitil proposal in Massachusetts, that was designed to be revenue neutral?

A Yes.

Q So, do you think that -- do you think that the demand charge alternative proposal in the Settlement Agreement here is in line with some of the other demand charge alternatives that you discuss in your testimony that, you know, can help -- that can help solve some of those barriers to EVSE deployment from demand charges?

A No. The Settlement, as I read it, with imposing a 50 percent demand charge on day one, would not be consistent with the demand charge rate design considerations going on across the country.

In fact, the testimony, as initially filed by Unitil here, already noted that demand charges can be barriers to deployment, deploying DC infrastructure. The RMI report was pretty

clear that demand charges can be a barrier to infrastructure.

What has gone on in other states, like in Massachusetts, for example, have identified demand charges as a barrier to the deployment of infrastructure. And, so, what is common across those other considerations, looking at, again, looking at demand charges at low utilization, treating them not as barriers, and allowing the market and customer adoption rates to grow over time, and then to allow demand charges and to grow with the adoption of DC Fast Chargers, and not act as a barrier.

Q Do you think that the 50 percent demand reduction -- I'm sorry, the 50 demand charge still serves as a barrier?

A Yes.

Q Now, there's also been some suggestions by the Settling Parties that a high volumetric rate can be a bigger concern for public charging station operators than demand charges. Do you agree with that?

A I do not. Again, if you sort of just peruse the letter from the Town of Derry, the kilowatt-hour

prices, you know, first was only a very small portion of the overall bill.

Secondly, again, I think it's important to think that TOU serves a different purpose, which is to ensure that the cost to serve, as it applies to the actual cost to serve, are appropriately sent, so that the end-use consumer has an idea of when things need to be charged and when they cannot charge.

For DC Fast Chargers, what I suggest in my testimony is that neither a demand charge, nor, at this point, a TOU rate, better thinking around how those two work together, they need to be considered. Because, at the end of the day, the kilowatt-hours that are being charged still need to be reflecting the costs, but how they impact the end-use consumer's bill I think still need to be determined. So, I don't think a kilowatt-hour rate -- a higher rate is going to dissuade a consumer from installing a DC Fast Charger to any level that a demand charge would.

Q Okay. Thank you. And are volumetric charges generally more predictable than demand charges?

A Yes. TOU rates, as proposed, for example, in the

Settlement, come with defined peak, shoulder, and off-peak periods. The demand charge is passed at the highest -- the greatest demand in any given period. So, that highest demand could occur at 3:00 in the morning, which, you know, otherwise would be a time of low demand across the system, which is when you would, frankly, want most charging to occur. And, so, the demand charge, by definition, can occur at any point in time. And, so, it becomes very -- it becomes much more challenging for that end-use consumer to plan for when that will occur and how much that will be.

Q Okay. Now, while you -- while you're not supportive of the Settlement proposal's provisions regarding commercial EV rates, do you have an opinion on the Settlement proposal's provisions regarding residential TOU rates?

A So, I think, again, generally speaking, residential rates -- residential TOU rates make a lot of sense, provided that the differential is reasonable. It seems to me that a three-to-one residential rate differential is reasonable, or at least affordable.

On the commercial rate, I think

probably a differential between off-peak to peak is a little great.

But, otherwise, I think the structure itself is largely supportable.

Q So, you think, for the residential, though, the structure is supportable?

A I probably should not use the word "supportable" in this context. Because I know that I'm otherwise not -- we're not otherwise supportable of it. But I believe that the residential TOU rate makes sense as designed.

Q Okay. Now, just a couple more questions. Briefly, I want to turn your attention to Eversource's proposal -- or, Eversource's position here. DOE has argued that Eversource should and could adopt a two-period time-of-use rate. Do you think that Eversource should adopt a two-period residential time-of-use rate, and that that rate would be preferable to the Managed Charging Program they're proposing?

A So, I would agree with Department of Energy, that, with the current capabilities of Eversource's meters, a two-part rate is implementable. Furthermore, I think that

leveraging the EVSE metering component is also an option that could be leveraged by Eversource to fill in any gaps or use those -- use the EVSE infrastructure to do the two-part rate. And, so, I think, looking at the variety of options for how metering can be accomplished, considering where they are in their metering deployment, is something that could also be continued to look at -- looked at.

MR. KRAKOFF: Okay. Thank you. I have no questions for Mr. Villarreal.

Let me just double-check with CENH to make sure they have no questions?

MR. SKOGLUND: No. CENH has no questions at this time.

MR. KRAKOFF: Okay. We have no further direct questions for Mr. Villarreal.

CHAIRMAN GOLDNER: Thank you. We'll move to cross. Liberty?

MR. SHEEHAN: No questions. Thank you.

CHAIRMAN GOLDNER: Eversource?

MS. CHIAVARA: Eversource has no questions. Thank you.

CHAIRMAN GOLDNER: Unitil?

MR. TAYLOR: I'm going to ask an indulgence from the Commission. If the Commission could run through the other parties, just to give me a moment to determine if am going to have any questions, based on what Mr. Villarreal just said, it would be most appreciated?

CHAIRMAN GOLDNER: Sure. Sure. ChargePoint?

MR. VIJAYKAR: ChargePoint has no questions. Thank you.

CHAIRMAN GOLDNER: And I apologize for missing you before.

MR. VIJAYKAR: That's all right.

CHAIRMAN GOLDNER: My apologies. City of Lebanon?

MR. BELOW: No. No questions.

CHAIRMAN GOLDNER: Thank you. Office of Consumer Advocate?

MS. DESMET: No additional questions. Thank you.

CHAIRMAN GOLDNER: And Department of Energy?

MR. BUCKLEY: I have just one or two

quick questions for Mr. Villarreal.

CROSS-EXAMINATION

BY MR. BUCKLEY:

Q And it relates to who the customer is for, generally, for high-demand draw DC Fast Chargers. We saw a list of nine locations in New Hampshire earlier today, where Eversource knows that it has DC Fast Chargers.

I happen to know that Mr. Villarreal does a lot of work all over the country, he's kind of a renowned expert in this space. But I know, in your testimony, you talk about having done work in Connecticut recently. And I have included here, in Exhibit 13, at Bates Page 004, a document I found in a Connecticut proceeding that I was directed to by Eversource, that identifies the results of its Connecticut public charging rate.

And I just want to clarify that the rate Eversource has proposed in Connecticut is very different from the one it has proposed in the other docket in New Hampshire. It's actually, I think, the one in New Hampshire is better than the Connecticut one. Though, I still

have my misgivings about it.

But here I see, listed as customer, in the second to the left column, it's largely "Tesla". Is that a representative sample of those, of just generally charging station deployment? Tesla is maybe, I don't know, 80 percent of DC Fast Chargers out there?

A For around the country, I don't know if that's -- I don't know. What I do know is that the type of locations that may look to install DC fast charging can run across very different types of customers. It could be city and municipal buildings, especially to support transit opportunities. They could be, you know, especially with the passage of the infrastructure bill last year, it could be other public or government locations along interstates, that would be perhaps state property. They could be businesses that want to install fast charging to support areas inside a local community.

There were some proposals last year, in the State of Nevada, by Engie Energy, that would look at putting fast chargers in areas -- perhaps underserved areas, paired with libraries or

shopping malls. So, again, looking towards the future of where the role of DC fast charging could sit, it could be many different places.

I think one of the impacts of Tesla, for example, is that Tesla has taken upon themselves to invest their own money in rolling out these Supercharger areas to support the Tesla network itself.

But I guess the short answer to your question, Mr. Buckley, is that I don't believe Tesla is representative of the types of DC Fast Charging customers around the country. It just may be unique in certain states, if there are not so many DC Fast Chargers in a given state.

Q And, so, it looks like maybe Connecticut is one of those states, just judging by this chart, or at least was in 2020 or so, is that right?

A *(Witness indicating in the affirmative).*

Q My last question for you is, how do we know that the customer of record, who is sometimes receiving something of a break from these demand charge alternatives, how do we know that they're going to pass them through to drivers?

A So, I don't -- I don't have any -- I haven't

given any testimony or know anything in particular about the end-use consumers, or, I guess, the site host charging patterns that they will pass on to the end-use consumer -- to the user of the DC Fast Charger. So, I don't have any real position or evidence or answer to that question. I think that really becomes a different issue than what is the rate being charged from the utility to the site host.

Q That's fair. And you would suggest, probably, that there are applications where the direct customer of record is not the Teslas of the world, like we saw in the other nine locations, there were customers of record that were not generally the charging station owners, is that right?

A Right. So, what I would -- how I would answer that is, the site host, who has the EVSE and is paying the bill to the utility, they're the ones being paid -- who are subject to the rates. After that, whatever the site host does, whether it makes it free or not, that is a separate determination that I'm not certain how or in what way this Commission would manage or regulate

that. And I don't know if it should be regulated, but I don't know how this Commission then would address that.

MR. BUCKLEY: Okay. That's very helpful. Thank you, Mr. Villarreal. No further questions from the DOE.

CHAIRMAN GOLDNER: Thank you. Commissioner Ross?

SPECIAL CMSR. ROSS: I have no questions for this witness. Thank you.

CHAIRMAN GOLDNER: Commissioner Chattopadhyay?

CMSR. CHATTOPADHYAY: I'm going to ask a question about, you know, affordability that you just sort of mentioned.

BY CMSR. CHATTOPADHYAY:

Q Have you done any research on the affordability of electric vehicles, you know, as you see currently, relative to, you know, conventional vehicles? Have you done any research on, you know, so, like when customers buy it, you know, what kind of people buy electric vehicles? Their incomewise, you know, where do they fall?

So, I'm just trying to understand

whether affordability is a -- can be an issue even with electric vehicles.

A Thank you for the question, Commissioner. Looking at what has happened in the past, you know, certainly, and as it happens with any technology, you know, first round of technology is going to be more expensive as you have to recover your costs. And, over time, as efficiencies and economies of scale are realized through, you know, more sales of EVs, more development of EVs, as more money is then devoted towards development of EVs, you're able to bring the cost of the vehicle down. And I think that's one of the things that we're seeing is overall decline in the cost, as well as the variety of costs for EVs.

I, personally, have not done any research or reporting looking at the cost of the EVs. Only to note that, you know, adoption rates around the country, in particular, certain states in the country, adoption rates are growing. And we also do know that there are going to be more EVs available over the coming years from vehicle manufacturers, which would tend to support the

declining cost of those vehicles as more and more are made available.

So, all of that is to say that, as more vehicles are available, both new and used, so, I should point out that used vehicles are also going to be increasingly available, used electric vehicles are going to be available, the cost should become more affordable. And, then, if you combined any additional associated state or federal policy around supporting EV, the purchase of the vehicle, as well as the installation of EV charging infrastructure, or any, you know, the addition of plugs into locations, will also bring down the costs, the overall cost of the vehicle.

And, on the flip-side side of that, of course, is that the EV has far less maintenance that needs to be applied to it. So, you don't need to worry about oil changes anymore. And, so, there is costs on both sides that are declining, and they should continue to decline over time.

Q Just one more question. On the environmental benefits issue, for batteries, for lithium batteries, do you think there are considerations

that would lead to sort of a situation where too many lithium batteries could also create environmental problems?

And I don't know much, but I'm asking this question, given that you spend so much time on these issues, do you have -- do you have any opinion on that?

A So, I have an opinion, and I'll try to keep it brief here. What I do know is that there is likely to be a secondary market, and there already is a secondary market for used EV batteries. Because one of the things that, what I understand, is that the EV batteries, for the purpose of the EVs, pretty much stand at 50 percent usage. So, there's another 50 percent lifespan for these batteries. And they're certainly capable of being either recycled or used for other things, like as a storage device.

You know, so, an enterprising demand response provider or an EV provider, or what have you, can take these batteries and continue to leverage the remaining, you know, 50 percent of the battery lifespan, pack them together and use it as a broader grid service or additional

batteries, battery service.

Those are certainly all capabilities that could be realized in the future. And, I mean -- I'll leave it at that. Those are certainly capabilities that be used in the future.

Q Have you -- sorry. Have you conducted any analysis to give us a sense of the diffusion of benefits and, you know, in terms of quantifying it, rather than just simply talking about what they could be? Are there studies that already look at, you know, quantifying those things as well?

A I am certain there are studies. Off the top of my head, I don't have them, I don't have any at the top of my head. But, you know, certainly, there are studies that have been done by EV manufacturers and EVSE providers, as well as other advocates around the country that have looked at the benefits -- the, you know, the soup-to-nuts benefits of going to EVs, and the final benefits of it.

I don't have any one in particular off the top of my head that I could point to you

right now. And, again, I, personally, have not done the research, but I am confident the research has been done. I just don't have one off the top of my head.

CMSR. CHATTOPADHYAY: That was my last question. Thank you.

CHAIRMAN GOLDNER: Thank you. The Chair has no further questions.

Is there any redirect from Mr. Krakoff or Mr. Skoglund?

MR. KRAKOFF: Yes. Just briefly.

REDIRECT EXAMINATION

BY MR. KRAKOFF:

Q Mr. Villarreal, Commissioner Chattopadhyay asked you some questions about the -- some of the environmental -- potential environmental issues with lithium batteries. And I think we're all aware of some of the greenhouse gas reduction benefits of further EV adoption.

But, you know, beyond that, are there sort of environmental benefits associated with less particulate matter and less, you know, less -- or, fewer emissions, just in general, with EV adoption?

A Certainly. You know, you're not, you know, pumping up oil to make gasoline. So, there's a bunch of delivery emissions that are avoided in that regard. Leveraging electricity is far more efficient way to propel a vehicle than using gasoline is. So, there's a whole slew of both distribution and transportation benefits, as well as more efficient use of the fuel, so to speak, in supporting transportation. And, as a result, there's going to be less overall emission reductions due to the transition to electric vehicles from the use of gasoline or diesel.

Q So, would there be fewer emissions of particulate matter and other pollutants?

A Yes. And I should note that this applies not only to, you know, vehicles. But it's important, I think, to also recognize that, as transit -- as the buses transition from diesel to electric, that the local air quality would also then have a tremendous benefit, because you no longer -- the buses are no longer burning diesel into the local air, as the bus passes by in a local community, they are now using electricity, so, there should be no local -- then, therefore, then no local

emissions generated from transit systems.

MR. KRAKOFF: Thanks. I have no further questions.

CHAIRMAN GOLDNER: Thank you. We'll now open it up to public comment.

I believe, Mr. Moulton, you were -- we'll make the time available to you. If you could keep the comments to five minutes, the Commission would appreciate it. Thank you.

MR. MOULTON: Okay. You know, if anyone has any questions on the letter that we sent out last night, we're glad to take those.

But, basically, we set up these four Level 2 chargers in our municipal parking lot that's adjacent to our downtown area, to promote tourism into the downtown for restaurants and stores, as we're pretty close to Route 93.

And, initially, we had a very slow take rate for the first couple months. But it started building up over the months, until, say, in late 2020, we were getting, on average, of four to five users a day. And most of those users were coming in during the evening, when you would expect them to come utilize the downtown area.

As we had shown on the paper, we were averaging about 16 cents a kilowatt-hour for usage of this meter. And we did put in the meter as a separate meter from our building, because we really wanted to study the usage, and which did give us a lot of visibility.

But, unfortunately, when Eversource changed the billing on us at the end of 2020, they added the demand charges, which they claim they should have been added in from the beginning, but it increased the price per kilowatt-hour up to close to 70 cents, which made it uneconomical for the Town, and we disconnected them.

But, to the point that Chris Villarreal made, when you have your bill that constitutes almost 80 percent is demand charges, it's really a showstopper for an introduction of a new technology like this. Because you're going to get a slow ramp-up in demand, it's just the way, you know, the economy works.

So, I think somehow you need, especially for Level 2 chargers, you need to figure out a way to have an introduction with

either none or very low demand charges that makes it more economical for the users. Otherwise, they're just not going to come to New Hampshire. They will come to Maine or Massachusetts, Vermont, wherever they feel they have a better deal and where they can get a more economical charge.

I mean, for ourselves, we have a fairly big commercial fleet in town, a lot of trucks and vehicles. And we are planning to convert those to electric vehicles over the next few years. But this has made us kind of stop and say "Okay we got to rethink how we're going to do this."

If we had, these first four, if we had put these on the building, on the municipal building, and used the existing meter, we would have seen no demand charges that would have been incurred due to the charging. Because the building itself uses over 500,000 kilowatt-hours a year, and has demand charges of 50 to 75 kilowatts. So, this would have been lost in the noise. This charging also would have been done during evening hours, when the building isn't used as much.

So, I mean, what this is causing us to do and to rethink is where we're going to put Level 2 chargers in the future is adjacent to our buildings in town, that have demand charges that are at or greater than what we would see from the chargers, and we will get the lower rate.

I don't know if, you know, from a municipality, we can do that. That I think we can do it, but, I mean, I don't know about other commercial applications. I don't know about the rest of the state.

And my concern is for the average ratepayer, and the average -- and for tourism in the state. That the things that were talked about today by Eversource are not going to help us attract or continue to attract tourists to this state.

The EV market is starting to explode. There's trucks coming on the market this year, SUVs. And I think this is kind of the new models that will attract a much wider adaptation for folks.

And, then, you got the car companies themselves that are investing billions of dollars

to redo their product lines, to develop battery lines. And, so, the trend is coming. And we can either get ready for it, and embrace it, and have the right rate structure, or the people are going to go elsewhere.

That's, basically, my comments. I'll take any questions.

CHAIRMAN GOLDNER: Okay. Any questions for Mr. Moulton?

[No verbal response.]

CHAIRMAN GOLDNER: Any other public comment?

MR. SKOGLUND: If I could ask a quick question of Mr. Moulton? This is Chris Skoglund, from Clean Energy New Hampshire.

I appreciate the point that you are making about collocating the chargers with facilities that already had a certain amount of demand charge that had already been triggered. That kind of got to the point that Dr. Sergici had been speaking about in her own remarks.

But something that we were seeing at the -- at the State, when I was there, was questions of "whether putting public charger or

even charging for State vehicles next to buildings, could that trigger buildings to see new demand charges or demand charges for the first time?"

Is that something that you might have to factor in when you're looking at locating some of your buildings? So, it's not like we can just put them up next to any commercial facility and assume that demand charges won't apply.

MR. MOULTON: Yes. We have waste and water works, where we have significant demand charges. So, we envision the Public Works' trucks and vehicles would be set up for charging in that area. The municipal building, a lot of the Police and Fire Department and other vehicles could be located there. And, then, even the Police Department has, we feel, enough demand on its current load that we could probably put in Level 2 chargers over there also.

But, yes. It's not -- well, again, I mean, we really would prefer a separate meter. We'd like to see what's going on, we'd like to measure the usage, and, you know, know the economics. By putting it into the building

meter, it kind of gets lost in the noise, and we won't be able to track the usage as much. But it's a trade-off, but --

MR. SKOGLUND: Sorry to interrupt. So, one of the points you were making, and that sounds like a really elegant use case for charging up municipal vehicles as they switch over to being electrified. But could you see an appetite for municipal staff having the public visit those sites, and kind of attracting, like, the -- having tourists that you were saying might bypass our state, would visiting municipal lots and occupying those sites, is that something that you could envision as being useful?

MR. MOULTON: That was the original intent, was a dual purpose. And we weren't charging for it, at least we didn't plan to initially, to get folks to come in to our downtown area to help our local businesses. But the Town Council didn't feel that was an economical decision, when the demand charges got introduced. So, --

MR. SKOGLUND: Oh, yes. So, sorry to keep you on the spot, I do appreciate you

providing the data that you got from your building.

But what I, I may not have asked this clearly, but could you see the wastewater treatment facility, the drinking water facility, the fire station, or the police station, whichever site has significant demand charges and could host charging without incurring additional demand charges, could you see them being interested in also hosting sites where there's public charging? Where there would be visitors from out-of-town pulling up? Or, alternatively, would it even make sense for visitors to be charging at those locations, relative to commercial areas within your town?

MR. MOULTON: Yes, I'm not sure how many people want to visit our waste and water plant, or even the Police Department.

But the Municipal Building, and maybe a couple of the other buildings downtown, might be appropriate. But I'd say the majority of them are not appropriate for dual use.

MR. SKOGLUND: Okay. All right. Thank you very much for your time.

MR. MOULTON: Sure.

CHAIRMAN GOLDNER: Thank you, Mr. Skoglund. Thank you, Mr. Moulton.

We'll move on to the exhibits. A couple of notes that I have here is that Carleton Simpson's testimony in Exhibit 2 was withdrawn by Unitil. That we'll take administrative notice of DE 16-576.

(Administrative notice taken of DE 16-576.)

CHAIRMAN GOLDNER: And, then, without objection, we'll strike ID on Exhibits 1 through 26, and admit them as full exhibits.

And I'll make a couple of notes. And that is that Eversource filed a redline in Exhibit 11. Exhibit 12 was augmented by Exhibit 26, with the corrected Page 26, as it turns out.

And, then, we have the late-filed exhibits from the Town of Lebanon, in Exhibit 25, and was it Exhibit 7? No.

Mr. Below, the exhibits were 25, and I'm not seeing the other one?

MR. BELOW: Exhibit 9 was my other, --

CHAIRMAN GOLDNER: Nine. Thank you.

MR. BELOW: -- was my testimony here.

CHAIRMAN GOLDNER: Thank you.

MR. BELOW: Yes.

CHAIRMAN GOLDNER: So, we'll include those in the exhibits. So, without objection, we'll strike 1 through 26.

MR. TAYLOR: Commissioner, just -- this is Patrick Taylor, from Unitil. I just had one point of clarification.

You noted, I believe what I heard you say, was that "the Company had withdrawn the Testimony of Carleton Simpson." And, just to be clear, the Company withdrew Mr. Simpson as a witness, but the testimony itself, which was co-sponsored by Mr. Simpson, Cindy Carroll, and Carol Valianti, was adopted in its entirety by Cindy Carroll and Carol Valianti.

So, the testimony itself, no portion of that testimony has been withdrawn. We just withdrew Mr. Simpson as a witness.

CHAIRMAN GOLDNER: Okay. Thank you for the clarification. Any comments before we strike ID?

[No verbal response.]

CHAIRMAN GOLDNER: Okay. Let's keep moving.

So, we'll move on to the record requests and redlines. So, I'm just going to read through the notes that we collected over the last couple of days. Bear with me, it's a page. So, I'll read slowly for the stenographer.

So, I had, as the redlines, I had Exhibit 24, Page 16. And the Commissioner had requested to provide the redline page after correcting the Summer Off-Peak Transmission component for both Unitil TOU-EV-D and Liberty D-12 EV classes.

All right. The next redline was Exhibit 24, Pages 20 and 21. And the redline was to submit the pages redlined with the corrections to mid-peak, peak, and off-peak volumetric rates amended per the discussions in the hearing on 01/25.

And the final redline was Exhibit 12, Bates Page 029. To provide the redlined page with the changes discussed in the hearing on 01/25.

Okay. That's it for the redlines. If there's no questions?

[No verbal response.]

CHAIRMAN GOLDNER: Okay. We'll move on to the record requests.

Starting with Exhibit 27, which is based on Exhibit 24, Bates Pages 020, 021, and 022. For both Unitil and Liberty, maintaining revenue neutrality, please provide similar analyses of the volumetric rates for Commercial EV TOU classes for both summer and winter, assuming that 60 percent of the demand charges are recovered through volumetric rates, *ceteris paribus*. Provide the information in live Excel format, as well as summarize the TOU rates and demand charges in a tabular manner for the different classes, as appropriate.

*(**Exhibit 27** reserved.)*

CHAIRMAN GOLDNER: Exhibit 28 is based on Exhibit 24, Bates Pages 020 through 022, so the same exhibit, same Bates pages. For both Unitil and Liberty, maintaining revenue neutrality, please provide similar analyses of the volumetric rates for Commercial EV TOU

classes for both summer and winter, assuming that 75 percent this time, 75 percent, not 60, of the demand charges are recovered from volumetric rates, *ceteris paribus*. So, a similar request, with 75 substituted for 60. Providing in live Excel format, and summarizing the TOU rates and demand charges in a tabular manner for different classes, as appropriate.

So, 27 and 28 are the same request, with one, the first, was 60 percent and the second was 75 percent.

*(**Exhibit 28** reserved.)*

CHAIRMAN GOLDNER: Okay. Moving to Exhibit 29 record request. So, this is for all utilities. And we're asking for here the utilities' physical implementation plans for any meter involved in EV charging. So, that's both residential and commercial. And the record request is to include a picture, description, spec sheet, cost, and capability for utility meter implementations in this docket. For implementations that use a customer-installed meter, providing the physical implementation with the diagrams, descriptions, cost, and capability

summaries.

Let me check my notes here. And this includes Eversource, if moving to TOU, for a two-period meter. So, obviously, that's a subject of this docket.

*(**Exhibit 29** reserved.)*

CHAIRMAN GOLDNER: All right. Moving to Exhibit 30 record request, this is a record request for ChargePoint. Assuming the Settlement proposed rates for the two utilities for high-draw EV facilities, please conduct a payback period analysis for the most commonly used L2, L3, and DCFC charging devices, respectively, in live Excel format, and clearly list the assumptions in the underlying analyses.

*(**Exhibit 30** reserved.)*

CHAIRMAN GOLDNER: We had talked about this earlier today, and we had aligned on a Tuesday target to complete this request. I'll just mention here that, for the rest of the requests here, we'll ask for a due date of February 4th, and this is in the spirit of providing the order as quickly as possible.

There are additional record requests,

though, that I captured today. Those were from the prior, for the most part, hearing. We're moving on to today's hearing.

I have Exhibit 31, which I have down here as from the Town of Derry filing, to review the standard rates versus the TOU rates.

Commissioner Chattopadhyay, do I have that correct?

CMSR. CHATTOPADHYAY: Yes.

*(**Exhibit 31** reserved.)*

CHAIRMAN GOLDNER: Okay. Exhibit 32, I have the annual enrollment for Massachusetts and Connecticut, the Load Management Programs and program descriptions.

*(**Exhibit 32** reserved.)*

CHAIRMAN GOLDNER: For Exhibit 33, I have, again from Commissioner Chattopadhyay, the cost to implement Rate 7 TOU two-phase, the Rate OTOD, I'm calling it "two-phase" here, but, yes, "two-period", I should say, two periods, and then the New Hampshire time-variant Default Service, two-period. Those were all "two-period", not "two-phase".

*(**Exhibit 33** reserved.)*

CHAIRMAN GOLDNER: All right. We're getting to the finish line. I have -- I have an opening on 34. Commissioner Ross, Commissioner Chattopadhyay, did you catch one there before we got to the cost-benefit analysis on Exhibit 4?

SPECIAL CMSR. ROSS: I did have the request for the -- we got the consumption, the average consumption, by rate, per customer, over the last five years. And the Company had also agreed to try to give a distribution as additional data on that five-year period. So, a customer distribution, in terms of load level, on customers.

CMSR. CHATTOPADHYAY: How the -- if I may? I have how the distribution for residential customers has changed over the five years. And, so, give the data annually for the five years.

CHAIRMAN GOLDNER: Thank you.

*(**Exhibit 34** reserved.)*

CHAIRMAN GOLDNER: And the final record request was from the Chair, which was the -- in Exhibit 4, Bates 028, the table, to look at that cost-benefit analysis and scrub the administrative, software costs, reimbursement

costs, and provide feedback on what the cost would be with a fresh -- a fresh lense and a sharpened pencil.

*(**Exhibit 35** reserved.)*

CHAIRMAN GOLDNER: So, I'll pause there and see if there's any questions on the exhibits?

MS. CHIAVARA: Chair Goldner, that last one, that's Exhibit 35, and it's referencing Exhibit 4, Bates Page 028. Is that correct?

CHAIRMAN GOLDNER: Correct. So, I'll just repeat that back. So, the Exhibit 35 is sourced from Exhibit 4, Bates 028. It's Table 1.

MS. CHIAVARA: Thank you very much.

CHAIRMAN GOLDNER: Uh-huh. Any other questions?

[No verbal response.]

CHAIRMAN GOLDNER: Okay. So, the only other item is that written closings will be due February 4th. So, one week from today.

(Brief off-the-record discussion with Chairman Goldner and the Court Reporter regarding receipt of transcripts.)

MS. CHIAVARA: And, Chair, how would you like those submitted? Should those be, I

mean, just submit it to the docket? Or, would you like those to have exhibit numbers as well?

CHAIRMAN GOLDNER: Just a moment. Let me confer.

[Chairman and Commissioners conferring.]

CHAIRMAN GOLDNER: They can just be submitted to the docket.

MS. CHIAVARA: Thank you.

MR. TAYLOR: Commissioner, another item. ChargePoint has requested some extra time to submit their analysis. And, when we had spoken about this on Tuesday, we were going to have an opportunity to respond to those, to that analysis, if we had any comments on it, by the 4th.

Should we still plan on doing that or will there be a corresponding extension of time to respond to those to the following Tuesday?

CHAIRMAN GOLDNER: Yes. Let's make a corresponding extension. So, the following Tuesday, which I believe would be the 9th **[**8th**?]**, if I've done the math right.

Mr. Taylor, you can check my math. Is

that right? I think, yes, seven plus -- okay, yes. February 9th **[**8th**?]**, yes, the corresponding next Tuesday.

MR. VIJAYKAR: Chair Goldner, this is Nikhil Vijaykar, on behalf of ChargePoint. Just a question, and this might be better directed to the Clerk's Office, and you can let me know if so.

But is there a way to expedite the transcript availability in this proceeding? You know, to the extent that we're going to be using that for our written closings?

CHAIRMAN GOLDNER: The stenographer is shaking his head "no".

Let me pause for a second and confer. Hold on.

[Chairman, Commissioners, and the court reporter conferring regarding transcript turnaround time.]

CHAIRMAN GOLDNER: See, so, normally, I think we'd obviously be doing closings right now, at 5:10. But, given that we -- the Commission could be flexible with the timeframe. We were trying to be respectful of getting feedback as

quickly as possible. But, if the parties would prefer -- excuse me -- if the parties would prefer to wait for the transcript, and then provide closing, the Commission is open to that. Obviously, it pushes out the final order.

So, we're open to that, though, if you'd like to confer or discuss.

Oh, sorry. The stenographer mentioned it will be about three weeks before the transcript is available.

MR. TAYLOR: Commissioner, this is Pat Taylor, from Unitil. I realize that we are but one voice among many in this proceeding. I will note that there was something of an unusual procedural posture in this case, in the way that it interacted with Unitil's pending rate case, in DE 21-030.

And there was -- not to just sort of recap everything, but the PUC Staff, now the DOE, had sought to remove the EV TOU portion of the rate case over here. That motion was denied. But the procedural schedule in this case was configured such that this case would be resolved prior to the resolution of the rate case. The

idea being that the resolution of this case would inform the outcome of that case.

And, so, I would have a concern about pushing it out too far, although I do see the value in having an opportunity to look at a transcript.

So, that's my concern about pushing it out three weeks, plus another, you know, week or so for people to do comments, it could really stretch things out.

CHAIRMAN GOLDNER: Mr. Buckley or Ms. Desmet?

MS. DESMET: I come from the world that I don't have a benefit of a transcript when doing closing arguments. So, I'm happy to go with what the parties feel is best, but I could write something up without it.

CHAIRMAN GOLDNER: Mr. Buckley?

MR. BUCKLEY: And I am in kind of a funny position here, because I do think there is benefit in having the transcript. A lot has been said here today.

That being said, this, today, is my last hearing at 21 South Fruit Street, after five

years of hearings here. And, so, if I do wait until transcripts are available, it will actually be a colleague of mine writing up the closing statement of the Department of Energy.

So, I think we would likely endeavor to complete some sort of a closing on the initially expressed timeframe, the February 4th. But maybe that is -- I do see the wisdom in waiting for transcripts to some degree.

So, I can't give you a straight answer right now, is what I mean.

CHAIRMAN GOLDNER: I think I see the wisdom in your answer, too. So, any other comments on the screen?

MR. KRAKOFF: Yes, I would just like to make a comment, CLF.

You know, I mean, closing statements are not evidence. And, so, I don't see the need for a transcript here. You know, I think we can all make a statement about, you know, how the Commission should decide without benefit of a transcript.

And, also, I think Unitil raised a great point about their parallel Unitil docket.

CHAIRMAN GOLDNER: Okay. Any other comments? Sorry, Mr. Krakoff, you're both on the screen and in the room.

(Laughter.)

CHAIRMAN GOLDNER: So, my apologies.

MR. VIJAYKAR: I guess I just have a question, Chair Goldner. And I understand the merits of not waiting, if it's going to be three weeks, not waiting until then to submit closings. But maybe this is just a procedural question in that regard.

That, if the transcript were to be available in three weeks, does the Commission anticipate that there would be an opportunity for briefing in this docket or is that not something that the Commission anticipates?

CHAIRMAN GOLDNER: Just a moment.

[Chairman and Commissioners conferring.]

CHAIRMAN GOLDNER: Okay. We're ready to rule on the transcripts -- or, on the closing statements.

So, we can be flexible, if the parties need the weekend, but let's not wait for the

transcripts. That would push things out too far, and I don't think it's necessary.

So, if, Mr. Taylor, you or others would prefer the 7th to the 4th, we can certainly do that. Otherwise, let's just lock down on the 4th. Do you have a preference, Mr. Taylor?

MR. TAYLOR: We'll be ready to go on the 4th. We don't need to go to the 7th. I don't think it makes a big difference. So, I'll defer to the others. We can do either day.

CHAIRMAN GOLDNER: Okay. Well, let's lock down on the 4th then, and make written closing arguments due on the 4th, for the stenographer to get that sorted.

And I'll thank everyone. And, particularly, Mr. Buckley, we'll be sorry not to see you in here again, beard or no.

And we'll take the matter under advisement and issue an order. We are adjourned. Thank you.

MR. BUCKLEY: Thank you.

(Whereupon the hearing was adjourned at 5:14 p.m.)