0:0:0.0 --> 0:0:6.810  
Meck, Alan L - Mktg Affil-E&FP  
Office phone energy C, so I think we've got the people that we need to at least get started here.

0:0:8.830 --> 0:0:13.200  
Meck, Alan L - Mktg Affil-E&FP  
So let me go ahead and share my screen.

0:0:28.220 --> 0:0:28.730  
Meck, Alan L - Mktg Affil-E&FP  
You know.

0:0:32.350 --> 0:0:32.920  
Meck, Alan L - Mktg Affil-E&FP  
Right.

0:0:44.210 --> 0:0:47.360  
Meck, Alan L - Mktg Affil-E&FP  
In can people see my screen? I can't tell.

0:0:49.170 --> 0:0:52.450  
Meck, Alan L - Mktg Affil-E&FP  
Yes, OK. OK, great. Thank you.

0:0:54.800 --> 0:0:56.670  
Meck, Alan L - Mktg Affil-E&FP  
I just realized I have.

0:0:58.550 --> 0:1:0.780  
Meck, Alan L - Mktg Affil-E&FP  
OK, there we go. Can you guys hear me better now?

0:1:2.960 --> 0:1:3.400  
Sergio Dueñas  
Yep.

0:1:3.150 --> 0:1:10.960  
Meck, Alan L - Mktg Affil-E&FP  
Hopefully. OK good. I thought I was talking into my earpiece, but apparently I was not alright so.

0:1:12.710 --> 0:1:18.80  
Meck, Alan L - Mktg Affil-E&FP  
OK, so this is the first of the phase two work stream.

0:1:19.510 --> 0:1:20.430  
Meck, Alan L - Mktg Affil-E&FP  
I'm workshops.

0:1:24.370 --> 0:1:31.960  
Meck, Alan L - Mktg Affil-E&FP  
Just going to go really quickly over the process where we stand in in the.

0:1:33.290 --> 0:1:34.660  
Meck, Alan L - Mktg Affil-E&FP  
In the whole scheme of things.

0:1:36.570 --> 0:1:42.880  
Meck, Alan L - Mktg Affil-E&FP  
Decision 20 two 06050 ordered us to undertake a series of.

0:1:43.980 --> 0:1:51.950  
Meck, Alan L - Mktg Affil-E&FP  
3 workstreams to work out the finer details of implementing the 24 hour slice slice of day proposal.

0:1:53.450 --> 0:1:58.310  
Meck, Alan L - Mktg Affil-E&FP  
Workstream one dealt with is supposed to deal with.

0:1:59.80 --> 0:2:1.120  
Meck, Alan L - Mktg Affil-E&FP  
Are a resource master database.

0:2:2.380 --> 0:2:2.780  
Meck, Alan L - Mktg Affil-E&FP  
On.

0:2:3.990 --> 0:2:9.140  
Meck, Alan L - Mktg Affil-E&FP  
Under CAISO, the LSE showing tool for tracking.

0:2:9.660 --> 0:2:12.170  
Meck, Alan L - Mktg Affil-E&FP  
Uh load and resources.

0:2:13.960 --> 0:2:15.790  
Meck, Alan L - Mktg Affil-E&FP  
The LCR requirement database.

0:2:17.690 --> 0:2:20.80  
Meck, Alan L - Mktg Affil-E&FP  
And the cost allocation mechanism.

0:2:21.410 --> 0:2:27.60  
Meck, Alan L - Mktg Affil-E&FP  
And then workstream two is determining the PRM and the resource counting rules.

0:2:29.370 --> 0:2:30.170  
Meck, Alan L - Mktg Affil-E&FP  
And.

0:2:31.90 --> 0:2:36.820  
Meck, Alan L - Mktg Affil-E&FP  
Some of the the big topics under that include the obviously setting the exceedance level.

0:2:39.820 --> 0:2:47.630  
Meck, Alan L - Mktg Affil-E&FP  
The counting rules for to the extent that they need to be different for hybrid or Co located and long duration storage resources.

0:2:49.360 --> 0:2:50.50  
Meck, Alan L - Mktg Affil-E&FP  
I.

0:2:51.630 --> 0:2:55.140  
Meck, Alan L - Mktg Affil-E&FP  
Elimination of the maximum cumulative capacity buckets.

0:2:56.540 --> 0:2:58.610  
Meck, Alan L - Mktg Affil-E&FP  
And whether or not that is warranted.

0:3:1.920 --> 0:3:8.290  
Meck, Alan L - Mktg Affil-E&FP  
Test year details. Right now, the decision order to test year 2024.

0:3:11.120 --> 0:3:12.550  
Meck, Alan L - Mktg Affil-E&FP  
The appropriate PRM.

0:3:15.310 --> 0:3:19.920  
Meck, Alan L - Mktg Affil-E&FP  
With a single PRM initially for all months and hours informed by an LOLE study.

0:3:21.100 --> 0:3:27.700  
Meck, Alan L - Mktg Affil-E&FP  
Including NRDC calibration tool and then WORKSTREAMS 3, the Commission validation and compliance.

0:3:30.200 --> 0:3:47.10  
Meck, Alan L - Mktg Affil-E&FP  
Which includes some such topics as confirmed elements of CAISO and commissioned validation and compliance that do not require modification in the near term, identify and resolve administrative changes to the RA program, and both CAISO and the Commission.

0:3:49.310 --> 0:3:57.600  
Meck, Alan L - Mktg Affil-E&FP  
You must offer reporting outage, substitution, things of that nature, and then elimination of the Kaiser's flexible RA requirements.

0:4:0.840 --> 0:4:1.450  
Meck, Alan L - Mktg Affil-E&FP  
Then.

0:4:2.180 --> 0:4:6.390  
Meck, Alan L - Mktg Affil-E&FP  
This is sort of a broad outline of the tentative schedule that we've laid out.

0:4:8.150 --> 0:4:17.560  
Meck, Alan L - Mktg Affil-E&FP  
The Workstream is one through three. We'll be going over that from today until October 22nd, October 2022.

0:4:18.880 --> 0:4:21.280  
Meck, Alan L - Mktg Affil-E&FP  
On to hammer out the details and methodologies.

0:4:22.80 --> 0:4:25.390  
Meck, Alan L - Mktg Affil-E&FP  
And then submit our final proposals by November 15th.

0:4:28.170 --> 0:4:30.690  
Meck, Alan L - Mktg Affil-E&FP  
It's gonna be a very fast turn around so.

0:4:31.420 --> 0:4:33.720  
Meck, Alan L - Mktg Affil-E&FP  
Everyone who is presented is going to be.

0:4:34.550 --> 0:4:42.520  
Meck, Alan L - Mktg Affil-E&FP  
Writing seriously and the facilitators as well. I think we're going to be contributing chapters to that as well.

0:4:43.880 --> 0:4:45.390  
Meck, Alan L - Mktg Affil-E&FP  
Opening comments on.

0:4:46.70 --> 0:4:53.970  
Meck, Alan L - Mktg Affil-E&FP  
The final proposals, tentatively, I think we're looking at December 1st and then reply comments on the final proposals.

0:4:55.230 --> 0:4:56.400  
Meck, Alan L - Mktg Affil-E&FP  
On December 12th.

0:4:57.330 --> 0:4:58.90  
Meck, Alan L - Mktg Affil-E&FP  
And then.

0:4:58.850 --> 0:5:13.0  
Meck, Alan L - Mktg Affil-E&FP  
PD in the first quarter of 2023, so a various aggressive schedule, but obviously we need to get this done in time for well in advance of 2024 to begin the the test here so.

0:5:16.190 --> 0:5:16.700  
Meck, Alan L - Mktg Affil-E&FP  
Uh.

0:5:17.660 --> 0:5:26.370  
Meck, Alan L - Mktg Affil-E&FP  
Quick overview of the specific workshops that we have planned out. I'm not gonna go over each one of these, but for today, we're gonna be.

0:5:27.0 --> 0:5:27.700  
Meck, Alan L - Mktg Affil-E&FP  
Doing a.

0:5:28.520 --> 0:5:33.940  
Meck, Alan L - Mktg Affil-E&FP  
Click Overview of where we are right now enter DC is gonna be presenting that.

0:5:34.850 --> 0:5:35.760  
Meck, Alan L - Mktg Affil-E&FP  
And then.

0:5:36.460 --> 0:5:41.690  
Meck, Alan L - Mktg Affil-E&FP  
Primarily, the focus for today is going to be resource counting, exceedance for wind and solar.

0:5:44.670 --> 0:5:45.240  
Meck, Alan L - Mktg Affil-E&FP  
And.

0:5:46.190 --> 0:5:48.720  
Meck, Alan L - Mktg Affil-E&FP  
This the rest of the schedule through October.

0:5:51.400 --> 0:5:57.200  
Meck, Alan L - Mktg Affil-E&FP  
And then briefly, just the decision guidance from 2020 from 20 two 06050.

0:5:58.970 --> 0:6:6.320  
Meck, Alan L - Mktg Affil-E&FP  
They adopted the 24 hour slice framework and direct direct three implementation workstreams. Obviously that's what we're doing here.

0:6:7.180 --> 0:6:11.930  
Meck, Alan L - Mktg Affil-E&FP  
On initiates full implementation by 2025, test year, 2024.

0:6:12.870 --> 0:6:20.80  
Meck, Alan L - Mktg Affil-E&FP  
Directs the CEC and CPUC to conduct a dry run for requirement setting and LC allocations in 2022.

0:6:21.490 --> 0:6:25.60  
Meck, Alan L - Mktg Affil-E&FP  
Adopts Exceedance based profiles for for wind and solar.

0:6:27.810 --> 0:6:32.850  
Meck, Alan L - Mktg Affil-E&FP  
Go away. Sorry, getting emails. Direct development of UCAP Lite.

0:6:34.130 --> 0:6:47.500  
Meck, Alan L - Mktg Affil-E&FP  
Ambient derates for dispatchable resources requires LLC's to show excess capacity to charge. Storage maintains existing penalty structure with LCD penalized based on the largest hourly deficiency.

0:6:48.720 --> 0:6:53.990  
Meck, Alan L - Mktg Affil-E&FP  
IRP LOLE to be used in conjunction with RA counting rules to determine the PRM.

0:6:54.960 --> 0:7:2.390  
Meck, Alan L - Mktg Affil-E&FP  
On encourages participation in the IRP process. Request proposals on MCC buckets and elimination of Flex RA.

0:7:3.430 --> 0:7:3.970  
Meck, Alan L - Mktg Affil-E&FP  
And.

0:7:5.280 --> 0:7:7.140  
Meck, Alan L - Mktg Affil-E&FP  
It does not act or.

0:7:7.870 --> 0:7:9.650  
Meck, Alan L - Mktg Affil-E&FP  
I'm leaves open for.

0:7:10.720 --> 0:7:17.470  
Meck, Alan L - Mktg Affil-E&FP  
Later consideration load trading multi year RA hedging and full UCAP.

0:7:18.480 --> 0:7:25.510  
Meck, Alan L - Mktg Affil-E&FP  
And then really quickly, the facilitator list for anyone is interested. They can hit print screen here, but I.

0:7:27.90 --> 0:7:31.610  
Meck, Alan L - Mktg Affil-E&FP  
I wager that this is not terribly interesting for anyone else.

0:7:32.820 --> 0:7:37.210  
Meck, Alan L - Mktg Affil-E&FP  
OK, so let me go ahead and stop sharing that and then.

0:7:37.870 --> 0:7:38.600  
Meck, Alan L - Mktg Affil-E&FP  
And.

0:7:39.360 --> 0:7:42.750  
Meck, Alan L - Mktg Affil-E&FP  
Up first we have NRDC who is going to go over.

0:7:45.910 --> 0:7:51.930  
Meck, Alan L - Mktg Affil-E&FP  
What we've done so far with respect to resource counting and exceedance for wind and solar.

0:7:52.670 --> 0:8:0.80  
Meck, Alan L - Mktg Affil-E&FP  
And that's going to be Nick Pappas is presenting. Nick, do you want to share your version of the presentation?

0:8:2.20 --> 0:8:4.940  
Meck, Alan L - Mktg Affil-E&FP  
Or do you want me to walk through it for you? You talk.

0:8:7.270 --> 0:8:7.550  
Griffes, Peter  
Now.

0:8:4.890 --> 0:8:7.560  
Nick Pappas  
Yeah. Thanks, Alan. I'm I'm happy to share.

0:8:8.880 --> 0:8:9.430  
Nick Pappas  
Ohh.

0:8:7.790 --> 0:8:12.510  
Paul Nelson (CLECA) (Guest)  
Excuse me, this is Paul on behalf of CLECA. I kind of have a question on the schedule.

0:8:14.350 --> 0:8:14.680  
Meck, Alan L - Mktg Affil-E&FP  
Sure.

0:8:15.800 --> 0:8:29.480  
Paul Nelson (CLECA) (Guest)  
So last week, there's a proposed decision regarding some demand response issues and ELCC issues, and they've identified the this RA work stream process to look at.

0:8:30.110 --> 0:8:32.900  
Paul Nelson (CLECA) (Guest)  
Dr Counting for 2024.

0:8:33.860 --> 0:8:34.430  
Meck, Alan L - Mktg Affil-E&FP  
Yes.

0:8:33.850 --> 0:8:41.840  
Paul Nelson (CLECA) (Guest)  
So I'm kind of like where in the detailed schedule and work streams might that fit? Has that been established?

0:8:40.970 --> 0:8:58.750  
Gannon, Jaime Rose  
So hey Paul, this is Jamie Gannon from the energy division. Let me just hop in. That is a proposed decision the Commission has not yet adopted it and so therefore I think it's a little premature to put that in the schedule yet.

0:8:59.890 --> 0:9:24.220  
Gannon, Jaime Rose  
The decision or the proposed decision also calls for energy division to facilitate and schedule that workshop, and I think the plan is to maybe, you know, welcome party stakeholder, you know, party input on on what dates would be appropriate for that workshop. But I think you know, it's premature to include it here. Preliminary thinking would be like, you know, after the decision boats out.

0:9:26.60 --> 0:9:32.640  
Gannon, Jaime Rose  
Which would be the the 25th of August. We we could get a workshop scheduled maybe for early September sometime.

0:9:35.670 --> 0:9:36.990  
Gannon, Jaime Rose  
Ohh hopefully that.

0:9:35.140 --> 0:9:38.290  
Paul Nelson (CLECA) (Guest)  
OK. Thank you, Jamie. That helps. Yeah.

0:9:40.460 --> 0:9:41.280  
Meck, Alan L - Mktg Affil-E&FP  
Thank you, Jamie.

0:9:44.260 --> 0:9:45.560  
Meck, Alan L - Mktg Affil-E&FP  
Alright with that?

0:9:45.850 --> 0:9:48.400  
Meck, Alan L - Mktg Affil-E&FP  
I'm. I'm gonna hand it over to Nick.

0:9:49.440 --> 0:9:52.370  
Nick Pappas  
Great. Thanks all. And let me just confirm, can you hear me OK?

0:9:54.230 --> 0:9:54.670  
Meck, Alan L - Mktg Affil-E&FP  
Yes.

0:9:55.480 --> 0:9:59.720  
Nick Pappas  
Perfect. Alright, let me go ahead and share my screen when pulling this up.

0:9:59.780 --> 0:10:0.310  
Nick Pappas  
Uh.

0:10:1.460 --> 0:10:31.380  
Nick Pappas  
Alright, good morning, everybody. So I'm Nick Pappas. I'm a consultant to NRDC. It's a lovely to see everybody again. I miss you all since January. Excited to kick this back off. I I know I'm not alone and my excitement there. I'm gonna talk a little bit as Alan mentioned about how we got here starting with a refresher on what is exceeding what are we talking about, what sort of the purpose of this exercise and then providing a little bit of color commentary on some of the options that have developed, what the decision directed and.

0:10:31.510 --> 0:10:33.470  
Nick Pappas  
Where we can go from here over the next few months.

0:10:34.570 --> 0:11:5.860  
Nick Pappas  
I wanna emphasize one thing up front. The data that you're gonna see is not. I chose to use the clean system power tool data as something that's publicly available, illustrative, and has, you know, resource and demand profiles. This is not data that I would recommend using for the final calibration. We're gonna see results later today, I believe from PG&E and energy division that are more aligned with the type of data we would want to use for this. But I think this data set is hopefully helpful for understanding sort of the the methodological and policy choices.

0:11:6.120 --> 0:11:7.800  
Nick Pappas  
That we need to consider as we go forward.

0:11:9.210 --> 0:11:16.970  
Nick Pappas  
So quick disclaimer, we offer this for discussion and policy development purposes. Of course, our positions you know, may evolve over the next few months, but.

0:11:18.110 --> 0:11:22.570  
Nick Pappas  
We are happy to continue to to work with stakeholders to to develop this as we go forward.

0:11:24.90 --> 0:11:26.20  
Nick Pappas  
Key takeaways for today.

0:11:27.260 --> 0:11:37.650  
Nick Pappas  
First up refresher what is exceedance? Why are we doing it? What's the purpose? How do we think about the methods and sort of what we wanna align from a policy and and outcomes perspective?

0:11:39.120 --> 0:12:9.120  
Nick Pappas  
We're supportive of PG and E's Peak Day proposal. We're gonna see a much deeper dive on that from PG&E later today, but I wanna talk through some of the potential alternatives that could be used either to help with that calibration process or could become alternatives to the extent we have issues sort of finalizing different different peak day profiles either for different resources or different periods. And I wanna emphasize and this is a callback to a lot of the discussion in the last workshop series, which is perfection is not what we're seeing here.

0:12:9.210 --> 0:12:39.220  
Nick Pappas  
And we should strive for accuracy and precision. But in any exercise like this, we're converting complex stochastic data into sort of simplified vector profiles and intended to approximate reliability value. I think that's scared a lot of folks in the last workshop series, but I want to emphasize that the whole purpose of the PRM calibration exercise is to test whether the portfolio effect of these resources and portfolio effect of the full suite of resources, including thermal and other resources, is intended to meet.

0:12:39.300 --> 0:12:58.850  
Nick Pappas  
Be reliability need. That's been calibrated through an LOLE study, so I've I've linked to workshop here. I do. I should mention there's been a few asthetic updates to these slides, and I'll recirculate this after I finished today, including this link. But the content and page numbers show the substance with content and the page numbers is the same.

0:13:0.460 --> 0:13:30.570  
Nick Pappas  
So a quick refresher on what is exceedance. Why are we here? So when we think about the slice of day construct, we need to take a lot of really complex data, and for each month and each hour convert it into a representative profile that we can use for resource counting. So on the left you're seeing. Again, this is illustrative data from the Clean System power tool. All of the observations for August. There's 31 days in the CSP. That's the colored lines and then overlaid on top of that.

0:13:30.670 --> 0:14:1.300  
Nick Pappas  
In the and black dashed is the exceedance results for 70% and on the next couple slides I'm going to talk through what that means. But assuming we need to use exceedance or we have some method, we overlay this exceedance value into slice of day and use this as the the counting value for solar or wind resources and on the right you can see the results. Very simplified illustration here overly to show how this sort of translates into.

0:14:1.580 --> 0:14:2.960  
Nick Pappas  
The slice of day framework.

0:14:4.940 --> 0:14:33.770  
Nick Pappas  
As we'll discuss later, the decision directed the use of PGE Peak Day methodology for calibration and I'll I'll talk through that in a few slides. But First off, what is exceeding, so let's kind of go back to basics here. So Exceedance is, it's a statistical analysis intended to show what level of output you that could be in percent of nameplate capacity or megawatts of a resource that can be expected a specific percentage of time. So here we're using 70% for illustration purposes.

0:14:35.150 --> 0:14:53.520  
Nick Pappas  
So when we think about this on the left hand side, we're seeing lots of different observations, lots of different days. And what we're doing with Exceedance is determining for any given hour, how much can we expect that resource to produce 70% of the time or more. So visualizing this, hopefully you all can see my cursor.

0:14:54.550 --> 0:15:26.340  
Nick Pappas  
You see, 70% of the observations are above our exceedance threshold. This black line, they're all kind of bunched up here. These are the sort of normal blue sky days. And then we have 30% of observations down here below the exceeding threshold. Now this is useful in concept to understand. Generally speaking, how much can you expect from a resource? But it doesn't necessarily tell you how does that align with the days where you have reliability risk or your, you know, essentially concerned about the specific attributes of these resources.

0:15:26.430 --> 0:15:52.750  
Nick Pappas  
And I'm gonna talk through some of the tools, including the peak day approach that we can use to try to get exceedance calibrated to address that reliability piece. A quick comment on data needs, you can do exceedance on anything, as I've done here. You can do it on the clean system power tool, which is really not that useful for anything other than sort of lucrative purposes. You can use it on historical datasets, model datasets. You're definitely gonna benefit from larger data sets that capture more weather variability.

0:15:54.290 --> 0:16:26.420  
Nick Pappas  
And I think you know, depending on the the years you choose, you really wanna make sure that the weather you're concerned about may be an extreme heat event is captured in that data. You don't necessarily need 30 years of data, but certainly several years is very beneficial. You can also use model data, but what's really critical about this is ensuring that the model data actually accurately captures the real world distribution of whether and how that impacts resources and load, including how that is going to change with climate change. I know that's an ongoing workstream for energy division around.

0:16:26.520 --> 0:16:32.100  
Nick Pappas  
The LOLE modeling I think should be very much central to our thinking as we think about how to calibrate these.

0:16:33.920 --> 0:17:3.950  
Nick Pappas  
So one other way to observe or to to visualize exceedance. Here we're narrowing into one specific hour hour ending 18, so each of these dots on the graph is one day that we've observed here and on the left you can see the same thing just each day is listed as a row in this column, and what we're doing with exceedance is simply saying 70% or more of the OR 70% of the time we're seeing production at or above this line right here, this yellow line. And of course, this would change.

0:17:4.30 --> 0:17:9.960  
Nick Pappas  
You you picked a different exceedance value. It would go upward down based on kind of what you want included or excluded.

0:17:11.420 --> 0:17:15.150  
Nick Pappas  
Alright, so let's talk a little bit about calibrating exceedance.

0:17:16.10 --> 0:17:46.350  
Nick Pappas  
So I've been talking about exceedances of 70%. It's something number that means something, but at the end of the day there's a there's a level of arbitrariness to any percentage and you need to use other tools to think about how you integrate reliability, risk and sort of expected performance. On days of concern into the EXCEEDANCE framework. So on the left hand side, you can see six different exceedance profiles for solar. Again, these are illustrative with the climate system power tool, but you can see that as you change the exceedance threshold.

0:17:46.440 --> 0:17:54.590  
Nick Pappas  
From 50 to 90%, you're inherently reducing the resource value. You're getting more conservative estimates of output.

0:17:55.800 --> 0:18:24.650  
Nick Pappas  
So how do we know what the right value is? I think PGE frame as well and their pet day proposal essentially saying we want profiles that reasonably represent the expected output on days of concern, days of grid stress. So on the next few slides, I'm gonna talk about the peak day methodology proposed by PG&E and again, I think they're gonna go into this in much greater depth in their presentation as well as the worst day and LOLE informed proposals that NRDC put forward that maybe complementary as we think about the calibration process.

0:18:26.310 --> 0:18:56.780  
Nick Pappas  
So the peak day peak Day proposal and I I welcome Luke and Peter to to jump in if I'm mischaracterizing this is essentially taking a sample of peak days through the data set. I think that the most recent proposal shifted this to I think 5 days per month per year over multiple years and aggregating the production profiles from those peak days and using that. So in this case this peak day dotted line is just from the CSP tool.

0:18:57.130 --> 0:19:27.820  
Nick Pappas  
And it is not that more robust data set that that PGE described, but then taking that in comparing that to different exceedance options and then selecting an exceedance parameter that gets you a similar magnitude in shape to what you're looking for in terms of that worst day or that peak day production. So I think directionally this is definitely the right approach of trying to integrate that peak day risk into the methodology and but one area where I think that we may need to develop further and I'll discuss on.

0:19:27.900 --> 0:19:59.270  
Nick Pappas  
On further slides are months or resource types where that peak day shape may not line up well with any specific experience parameter and P and has a lot of great data on this in their presentation. But thinking about how you might pick this sort of purplish line for the the evening, but it may misrepresent what's happening in the morning hours, so again, we're not talking about orders of magnitude of difference and this will be captured in the PRM, but I think there may be some options for us to think about how to address this.

0:19:59.920 --> 0:20:2.930  
Nick Pappas  
I'm using some of these other other methodologies.

0:20:5.170 --> 0:20:11.150  
Nick Pappas  
So let's take a look back at that same graphic looking at our ending 18. So here I've overlaid.

0:20:12.390 --> 0:20:42.260  
Nick Pappas  
Are colored in the worst three days in red and yellow. The actual worst day is here in yellow, and so let's assume we're calibrating it to our ending 18. We might wanna calibrate to our ending 20, but it's not very interesting for solar. So our ending 18 shows up about a 30 ish 31% peak day value. So we would try to figure out what is the exceedance threshold that matches that where this gets tricky is what if that exceeding the special old is very different for hours ending 18.

0:20:42.440 --> 0:20:44.210  
Nick Pappas  
And 19 or our ending 8.

0:20:46.160 --> 0:21:10.90  
Nick Pappas  
So just a a quick preview and I'm gonna breeze through this. In the interest of time. This is just from the CSP looking at how the peak day shapes align with all the observations. I think the CSP is is intended to be very weather correlated and it's profiles, but I'm not an expert on that data set. But again this is really kind of for illustrative purposes and I think from a weather perspective we wanna be thinking about, let's say February, might we have?

0:21:11.0 --> 0:21:18.630  
Nick Pappas  
Reliability, risk days or Peak Day risks where the weather the resource output is very different from what we might expect and and it exceedance profile.

0:21:20.90 --> 0:21:29.220  
Nick Pappas  
For wind, this whole whole different beast, a lot of variability, and these shapes can vary a lot even on peak days, and I think they're gonna hear a little bit from.

0:21:29.970 --> 0:21:33.80  
Nick Pappas  
From ACP, about some of the the options and challenges for wind.

0:21:34.360 --> 0:21:54.50  
Nick Pappas  
Alright, so quickly let me talk about the worst day methodology again, this is I think potentially complementary to the peak Day proposal, but sort of a one, one step different. So the worst day methodology goes through the same exercise PG&E proposes to assess what's happening on those peak days, but instead of.

0:21:55.60 --> 0:22:25.690  
Nick Pappas  
Instead of going back to exceedance, the worst day of methodology proposes just developing a profile specifically from that subset of worst days, and I think, and I wanna get Andrew Divisions input on this. My read of your presentation today, I think you included this as this version of the Peak Day methodology where you're averaging the worst day profiles, but would love to discuss that once once we get there. So the benefit of looking at worst day is you may be capturing.

0:22:26.470 --> 0:22:37.680  
Nick Pappas  
Interesting shape effects that are happening on extreme weather days in the either historical or modeled data set that may not align well in shape to any specific exceedance profile.

0:22:39.230 --> 0:22:45.170  
Nick Pappas  
So kind of reorienting this chart, this is the same data but instead of, you know just a.

0:22:45.250 --> 0:23:13.540  
Nick Pappas  
Uh, phonological, X axis. We're looking at this by demand, so I'm gonna assert here. So from left to right, we're going days with less demand to days with more demand. And I'm gonna assert in this exercise that all of this stuff over here on the left hand side below 45,000 megawatts really doesn't have much of a role in informing what the exceedance value is. And I think that's really directionally the intent of the peak day approach, that worst day approach. And then this this final approach I'll speak to in a moment, which is the LOLE informed approach.

0:23:15.920 --> 0:23:31.30  
Nick Pappas  
So the LOLE informed approach is conceptually similar, but thinks about how do we try to take data from the LOLE modeling exercise that's going to be done for the PRM calibration regardless, as well as you know for IRP and other other things.

0:23:32.200 --> 0:24:2.990  
Nick Pappas  
And thinking about, you know, we've gone through a great deal of whether correlation and stress testing of this LOLE modeling, how can we use the the outtakes of those results to inform our profiles. So this is purely illustrative data, but I basically made an assumption that there were four days in the August data set that had LOLE events in the servant modeling. Again, purely conceptional illustrative here and the concept here would be to take the profiles that you're observing on those model runs.

0:24:3.320 --> 0:24:12.790  
Nick Pappas  
And use this to make a synthetic profile. And because we're doing this calibration on a monthly basis, we're going to be or sorry, because the LOLE the servant modeling.

0:24:13.510 --> 0:24:44.230  
Nick Pappas  
Has you know, monthly analysis? We're gonna be having LOLE observations within each month that we can we can draw from here and the the real benefit of this is to identify whether there may be days that don't fit the the peak or net peak criteria, but present reliability risk based on the modeling. So the intent here you could do a simple average, what I proposed here is a weighted average where you look at some metric within the LOLE modeling, it could be, you know hours or.

0:24:44.350 --> 0:25:5.100  
Nick Pappas  
Energy unserved or something like that, and use that to weight these profiles to develop a synthetic profile that tracks the LOLE modeling and my suspicion is that this is not going to be super interesting for summer months, but maybe increasingly important for non summer months as we think about days that are not peak load days but may present some reliability risk over the next let's say 10 years of analysis.

0:25:7.70 --> 0:25:20.90  
Nick Pappas  
Alright, I'm think I'm just about out of time here, so let me wrap this up. This is in the notes. There's a table kind of describing the options here and some of the benefits and pros and cons of each one, as well as the data needs.

0:25:21.390 --> 0:25:50.660  
Nick Pappas  
So our recommendation is really tracks the key takeaways here. I think from our perspective from Energy C perspective, we should continue to develop the peak day calibration effort that was directed by the Commission and the decision and it absolutely direction. We should go in. But to the extent that we find months or resources where that proves problematic to align the results of that with exceedance profiles, we support continuing to explore some of these other options. And even if these are not used in the end, they could be very helpful for calibrating.

0:25:50.880 --> 0:25:53.660  
Nick Pappas  
And sort of corroborating the the Peak Day analysis approach.

0:25:55.100 --> 0:26:22.970  
Nick Pappas  
Again, we don't need to go for absolute perfection here. There is no perfection in in this space we're going to, I think, have to seek precision and then use the PR on calibration tool to address any gaps through stochastic LOLE modeling any gaps between the counting rules and the portfolio need that has been determined by that LOLE study. And then a final recommendation is I think we'll all benefit over the next couple of months if we're using common data sources.

0:26:47.870 --> 0:26:48.480  
Alexander, Maggie (she/her)  
Nick.

0:26:23.890 --> 0:26:48.860  
Nick Pappas  
So there's been a number of data sets from from CAISO. I think it would be also very beneficial to get access to the servant data if we wanna pursue this LOLE focused approach as well as modeling from other stakeholders, particularly I'll call out Gridlab and Grid path. We've done a lot of analysis around whether correlation and extreme weather events. So with that, I think I'm over time, let me hand it back to you, Alan and.

0:26:50.230 --> 0:26:51.240  
Nick Pappas  
Yeah, I'm sorry.

0:26:50.30 --> 0:26:52.100  
Alexander, Maggie (she/her)  
We have a question from Paul Nelson.

0:26:53.160 --> 0:26:54.580  
Nick Pappas  
Perfect. Great. Go ahead, Bob.

0:26:56.60 --> 0:27:1.830  
Paul Nelson (CLECA) (Guest)  
Alright, this is Paul Nelson on behalf of CLECA. On your LOLE informed profiles.

0:27:3.670 --> 0:27:11.400  
Paul Nelson (CLECA) (Guest)  
From the using the SERVUM data, the Energy division performs their calibration and surfacing, whereby they remove resources.

0:27:12.90 --> 0:27:13.690  
Paul Nelson (CLECA) (Guest)  
So would you utilize?

0:27:14.510 --> 0:27:18.760  
Paul Nelson (CLECA) (Guest)  
This data before, after the calibration and surfacing.

0:27:19.870 --> 0:27:42.100  
Nick Pappas  
Yeah, I think it would. You know, the the process I've described I think would only work based on the sort of final output of that modeling, which would be after you've removed those resources and calibrated it to .1. I think that you, Paul, you raise a good question about all of this monthly analysis, which is how does that resource removal really play into reliability risk and how should we be thinking about that and non peak months.

0:27:45.390 --> 0:27:45.700  
Paul Nelson (CLECA) (Guest)  
It.

0:27:44.0 --> 0:27:59.950  
Nick Pappas  
Yeah, I don't have a great answer for you. I think this is a problem for us more into sort of the late twenty 20s, early 20 thirties. The extent we see a lot of retirements and need to be thinking about kind of non summer months. But yeah totally agree with your perspective and as as an area to explore further.

0:28:1.10 --> 0:28:2.320  
Paul Nelson (CLECA) (Guest)  
Alright, thank you.

0:28:4.500 --> 0:28:4.810  
Meck, Alan L - Mktg Affil-E&FP  
Alright.

0:28:3.630 --> 0:28:5.230  
Nick Pappas  
It's he, Noah. Ohh.

0:28:3.650 --> 0:28:6.200  
Alexander, Maggie (she/her)  
Nick, we also have a question from now, Yep.

0:28:13.480 --> 0:28:14.990  
Nick Pappas  
No, I can't hear you if you're.

0:28:13.20 --> 0:28:15.290  
Meck, Alan L - Mktg Affil-E&FP  
Go ahead, Noah. I think you're me. Would you did?

0:28:18.290 --> 0:28:19.140  
Nuo Tang  
Sorry, can you hear me now?

0:28:20.130 --> 0:28:24.590  
Nuo Tang  
Mm-hmm. OK. Hey, this is Noah Town from Middle River power can.

0:28:25.500 --> 0:28:30.250  
Nuo Tang  
Can we go back to sort of the the beginning here on the peak and the worst day?

0:28:31.230 --> 0:28:45.650  
Nuo Tang  
A methodologies should have. Traditionally I'm in my mind exceedance has 30, you know 30 days worth of data plus the five years or three years. But under Peak Day it's sounds like there's only one.

0:28:46.370 --> 0:28:49.40  
Nuo Tang  
Data point per year, per month per hour.

0:28:50.480 --> 0:28:51.220  
Nick Pappas  
Uh, yeah.

0:28:50.130 --> 0:28:51.760  
Nuo Tang  
What would that be? Correct so essentially?

0:28:53.90 --> 0:28:54.390  
Nuo Tang  
You'll be cutting down.

0:28:52.950 --> 0:28:55.240  
Nick Pappas  
No. Let me. Yeah, let me parse this out a little bit.

0:28:56.290 --> 0:28:56.710  
Nuo Tang  
Yeah.

0:28:56.60 --> 0:29:27.730  
Nick Pappas  
There's a good a good question I think. I think. I invite Peter and Luke to jump in here as well, but essentially in the CSP data set we only have one month, 31 days. I think we certainly should be using multiple years and probably historical data for most of this. So we'll have multiple years of data, say maybe 150 observations per month. That informed the exceedance thresholds. And I think the latest proposal from PG and please Peter and Luke jump in here I think was five days per month per year.

0:29:28.50 --> 0:29:42.320  
Nick Pappas  
That would go into that aggregated peak Day proposal. So if that's five years, that's 25 observations and then those are compared against the exceedance profiles. So that I think the reason you're only seeing one data point here is just because the CSP is still limited.

0:29:43.870 --> 0:30:6.400  
Nuo Tang  
Right. Right now I think I understand the on the CSP limitation side. I I'm starting my mind just trying to understand whether or not it's a we we're only essentially picking the data point of an entire month, one data point from an entire month versus 31 data points or for you know, for purpose of August be in an entire month.

0:30:7.530 --> 0:30:12.840  
Nick Pappas  
Yeah. Let me maybe pull up this graphic one more time, but I I think in the latest proposal it's it's 5.

0:30:18.420 --> 0:30:19.420  
Nuo Tang  
OK, OK.

0:30:20.480 --> 0:30:21.30  
Nuo Tang  
Got it.

0:30:13.650 --> 0:30:41.870  
Nick Pappas  
Per month per year, so multiply that by as many as many years as you have so I don't. It wouldn't be one, but I think essentially what what's happening here is we're the kind of conceptual response to this is we shouldn't care about what's over here on these non peak days and we really wanna dial in on what's happening over here and kind of how much is in or out of that peak day data set I think is a a good area for discussion to kind of dial that in. But conceptually we should be focused on these people days.

0:30:57.200 --> 0:30:57.590  
Nick Pappas  
Sure.

0:30:59.40 --> 0:30:59.520  
Nick Pappas  
Yeah.

0:30:43.180 --> 0:31:13.950  
Nuo Tang  
That, that's helpful. I'm, I'm not so sure whether or not we should exclude the other 26 days at this point yet, but can you talk about sort of the your understanding what the difference between peak day and the worst day is you you said it was complementary. I I don't under I don't have that understanding yeah and actually this graphic may be the right place to start here know but essentially in Pnes proposal can invite Peter and Luke to jump in and correct me here they're looking at these days.

0:31:14.230 --> 0:31:25.590  
Nick Pappas  
Building a profile based on these days and then taking a final step of saying how does that profile compare to results of an exceedance analysis? And let's pick an exceedance percentage based on.

0:31:27.200 --> 0:31:56.890  
Nick Pappas  
Based on how that compares to these, the speech day profile and the only difference between that and the worst day proposal that we put forward is to not take that final step and just say let's just build a profile based on the peak days or to the extent we're concerned about netspeak or some other concern. But like, let's just take those observations and do some kind of either averaging or weighted averaging or some other method to build a synthetic profile strictly based on on those days. So they're they're very similar. And I think the kind of directional intent.

0:31:56.960 --> 0:32:8.570  
Nick Pappas  
On my part is to recognize that the results you may get from exceedance, lining them up from 6:00 to 8:00 PM may get your results that don't look right from 10:00 AM to 2:00 PM.

0:32:9.560 --> 0:32:14.150  
Nick Pappas  
So you you get kind of a different, potentially a different shape if you just go directly from those profiles?

0:32:17.330 --> 0:32:19.80  
Nick Pappas  
No, did that. Did that answer your question?

0:32:18.70 --> 0:32:19.380  
Nuo Tang  
Yeah, I.

0:32:20.230 --> 0:32:24.920  
Nuo Tang  
I I'm not sure I'm. I'm still understanding the difference between peak and worst day.

0:32:30.830 --> 0:32:31.260  
Nick Pappas  
Sure.

0:32:27.370 --> 0:32:31.370  
Nuo Tang  
Let let me, I'll I'll let someone else ask for go.

0:32:34.230 --> 0:32:34.500  
Meck, Alan L - Mktg Affil-E&FP  
Alright.

0:32:33.580 --> 0:32:34.970  
Nick Pappas  
I see Scott murtishaw.

0:32:41.410 --> 0:32:45.880  
Scott Murtishaw  
Yeah. My question is just whether what you're describing is the worst day.

0:32:46.660 --> 0:32:53.950  
Scott Murtishaw  
I methodology that sounds really similar to me to the CALVIA proposal.

0:32:54.630 --> 0:32:56.590  
Scott Murtishaw  
Is there something I'm missing or?

0:32:59.780 --> 0:33:0.280  
Nick Pappas  
Yeah.

0:32:57.750 --> 0:33:1.780  
Scott Murtishaw  
Would you agree that this is similar to what they call the effect that load reduction?

0:33:2.410 --> 0:33:35.940  
Nick Pappas  
It's a really, really good question, Scott. I I don't wanna prejudge this before seeing Dariush's presentation later today. But my understanding from the last workshop series was conceptually they're similar in that we're trying to identify these these peak load hours or peak load days. My impression last summer was that you ELRP took a much broader swath. So something like the highest 30% of load for the whole year or maybe for some period. And then I thought there was sort of a blockier application where that wouldn't necessarily produce the same kind of hourly dynamics.

0:33:36.80 --> 0:33:47.50  
Nick Pappas  
But would just sort of apply that that 30% and above to wind across some period. But I again I wanna wait and see Dariush's presentation. So I think the intent is similar. Let's let's align.

0:33:48.100 --> 0:34:0.390  
Nick Pappas  
Peak load net peak reliability risk with the data set we're using to build these profiles, but I think the the method and sort of I would say this approach is maybe more narrowly defined in terms of what we're looking at and what we produce.

0:34:4.960 --> 0:34:5.440  
Nick Pappas  
Brian.

0:34:5.160 --> 0:34:5.450  
Scott Murtishaw  
Thanks.

0:34:6.400 --> 0:34:7.60  
Nick Pappas  
Thanks Scott.

0:34:8.990 --> 0:34:36.900  
b3c1ec56-a0ac-4619-b60f-c60a28fdc163  
Yeah. Thank you, nick. Uh, Brian Thacker with Middle river power. I have two. What I hope for short questions that the first is that this focus on peak days really constricts the sample set are are we confident that focusing on a narrow set of peak days will work because there is a very strong correlation between peak load between load and dependable value of resource output values or.

0:34:37.480 --> 0:34:53.660  
b3c1ec56-a0ac-4619-b60f-c60a28fdc163  
But I'm just. I'm struggling a little bit to to understand the kind of the hyper focus on peak load it it. It just seems there would have to be a very strong correlation between load and these values in order for a method to like that to be truly dependable.

0:34:54.870 --> 0:35:16.860  
Nick Pappas  
Yeah. Thanks, Brian. I think this is a really good question and I think this is core to like all of the LOLE modeling we do, which is how well do we understand the weather, how good are our data sets on the weather, how how good is our understanding of how that impacts resource performance and demand and to what degree can we think about correlation or even kind of archetypal extreme heat days or other reliability risk days and I think.

0:35:17.730 --> 0:35:46.440  
Nick Pappas  
This couple couple thoughts on that. One is I think if we have a long enough data set and we pick several peak days as pijani as proposed, I don't think we are really that constrained. If we have, let's say 25 observations per hour, I think we probably have enough to make an informed judgment. And this is where we might want to do some pressure testing and think about are there weather days during these months that might not be well represented here. That's we're gonna have to kind of do some some thinking and inform this technical analysis with human judgment.

0:35:47.570 --> 0:35:59.220  
Nick Pappas  
But one of the things that I like about the LOLE informed approach is it leverages the work that's already been done. You know, bias drop and energy division and others to to build this weather correlation into the base modeling.

0:35:59.850 --> 0:36:8.40  
Nick Pappas  
And really think about how strong is that correlation? What really is happening on these days where in the modeled results we're getting?

0:36:8.740 --> 0:36:37.0  
Nick Pappas  
Sort of the the performance that we think we are and you know inherent in that is having a lot of faith in the model itself and ensuring that whether correlation really is well done and we should continue that process. I think year after year as as the climate changes. But I think that is a useful tool set to leverage more data, more model data and the efforts that have already taken place to answer the kind of base part of this question, which is how much do we know about the weather and how can we translate that into reliability data.

0:36:38.660 --> 0:36:38.960  
b3c1ec56-a0ac-4619-b60f-c60a28fdc163  
OK.

0:36:38.100 --> 0:36:40.850  
Nick Pappas  
Ryan, that might have been a bit round about that answer your question.

0:36:40.580 --> 0:37:4.510  
b3c1ec56-a0ac-4619-b60f-c60a28fdc163  
The yeah. Thank you. I think I appreciate that discussion. My my second question is more focused. I wanna understand what you mean by the term calibrate when you use that term or you talking about selecting an exceedance threshold value or are you talking about ensuring that that that the the capacity values that result from that particular exceedance value get us to 0.1 LOLE.

0:37:5.560 --> 0:37:39.950  
Nick Pappas  
Yeah, it's really good question. So there's there's kind of two uses of calibrate in this presentation. So the first is calibrating the profile itself and if we take the peak Day proposal, it's literally calibrating that exceedance percentage to a profile that we think fairly represents the expected contribution. And I think the next step and I think this is where the the kind of really critical leap happened in the last workshop series was understanding how that's going to interact with the PRM setting and thinking about the portfolio of resources. So when you think about, you know, PRM and LOLE analysis and how we.

0:37:40.60 --> 0:38:11.570  
Nick Pappas  
You think about how to define the RA program. It's all whether it's ELCC or slice of day. It's all based on these assumptions we've made around what the portfolio will look like 1-2, three years out and having processed that portfolio through stochastic LOLE modeling. And it really doesn't matter that much if you're using ELCC or slice of day. If you have that indicative profile, you want your counting rules to sum up in ways that get you the portfolio that you think you're gonna receive. You know based on that LOLE study that portfolio that's been predetermined. So there's this.

0:38:11.660 --> 0:38:13.110  
Nick Pappas  
Meeting is where the calibration effort.

0:38:13.720 --> 0:38:43.590  
Nick Pappas  
Becomes really critical. It's thinking N + 1 years. Here's how much preferred resources we think we're gonna have online. What is the kind of PORTFOLIO ELCC effect of that? And what is that apply about the sort of residual need we're going to have from dispatchable or from resources. And there's kind of this is an aside, but I think there's an inherent challenge in this whole process that we don't have perfect foresight. Resources can get delayed, et cetera, et cetera. And one of the benefits of slice of day is representing explicitly.

0:38:43.940 --> 0:38:52.650  
Nick Pappas  
The hourly characteristics of these resources so that if there is substitution in that year, we at least approximate getting the right attributes that we're looking for.

0:38:55.730 --> 0:38:56.240  
Meck, Alan L - Mktg Affil-E&FP  
Alright.

0:38:55.520 --> 0:38:57.810  
b3c1ec56-a0ac-4619-b60f-c60a28fdc163  
OK. OK. Yeah. Thanks, nick.

0:38:59.60 --> 0:39:7.110  
Meck, Alan L - Mktg Affil-E&FP  
And so we need to to move along. Michelle, I see your hand up. I'm sorry. Can can you hold your question?

0:39:9.930 --> 0:39:10.710  
Meck, Alan L - Mktg Affil-E&FP  
Thank you.

0:39:10.400 --> 0:39:11.210  
Nick Pappas  
Thanks everybody.

0:39:12.430 --> 0:39:13.520  
Meck, Alan L - Mktg Affil-E&FP  
Alright, great present.

0:39:12.440 --> 0:39:14.220  
Nuo Tang  
I I like. I like to hear Michelle question.

0:39:16.30 --> 0:39:17.520  
Nick Pappas  
I think it could be a good one.

0:39:19.650 --> 0:39:20.50  
Meck, Alan L - Mktg Affil-E&FP  
Alright.

0:39:19.880 --> 0:39:22.570  
Nuo Tang  
I mean I it's a workshop. We think we should continue to discuss.

0:39:25.60 --> 0:39:45.400  
Kito, Michele  
Alright, go ahead. Michelle. Hey. So this is Michelle from the PC Energy division. So my, my, my mine is more of a comment rather than a question. So with regard to solar aren't what we really looking at is how much energy you get to count during the middle of the day because those profiles all sort of end at the same place. So for net.

0:39:45.480 --> 0:40:8.290  
Kito, Michele  
P peak purposes, we won't be counting the solar, so I don't think it has a huge impact on reliability other than the fact that we aren't necessarily counting it for the net peak period. The more important thing that we're examining here is how much energy folks get to count for the middle of the day, which is less of a reliability concern. But it's more of an energy sufficiency concern.

0:40:9.30 --> 0:40:13.20  
Kito, Michele  
For energy, I think wind is different, but I just wanted to raise that point with regard to solar.

0:40:14.730 --> 0:40:44.890  
Nick Pappas  
Michael, I really agree with that. And I think one metric that I I haven't really thought too much about are are as a as a specific quantitative metric is thinking about how the cumulative energy output for each of these methods aligns in the same way we might be thinking about different hours. I do wanna call it. I think there may be some sort of mid summer months where the solar is extending deeper into the evening where it may may matter more or less. But I think that your your overarching point is very correct and that's it's certainly for sort of the August, September time period. I think it's a good.

0:40:45.140 --> 0:40:47.170  
Nick Pappas  
Mental framework to to take into this.

0:40:49.440 --> 0:40:49.940  
Kito, Michele  
Thanks.

0:40:51.720 --> 0:40:52.660  
Nick Pappas  
Alright, thanks everybody.

0:40:51.810 --> 0:40:53.90  
Meck, Alan L - Mktg Affil-E&FP  
Alright, thank you, Michelle.

0:40:54.600 --> 0:40:55.310  
Meck, Alan L - Mktg Affil-E&FP  
Thanks nick.

0:40:57.90 --> 0:41:3.0  
Meck, Alan L - Mktg Affil-E&FP  
Well done. I did not think you were gonna get through 23 slides and you're a lot of time, but you managed to do it. So good job there.

0:41:5.0 --> 0:41:8.840  
Meck, Alan L - Mktg Affil-E&FP  
Alright, Next up we have Luke Nickerman from PG&E.

0:41:9.750 --> 0:41:10.740  
Meck, Alan L - Mktg Affil-E&FP  
Luke, are you here?

0:41:14.420 --> 0:41:18.370  
Nickerman, Luke  
Yes, I am I and I'm trying to get my camera on but.

0:41:19.860 --> 0:41:20.690  
Nickerman, Luke  
Let's see.

0:41:24.130 --> 0:41:24.690  
Meck, Alan L - Mktg Affil-E&FP  
There you are.

0:41:24.80 --> 0:41:28.660  
Nickerman, Luke  
There it is. OK, great. Alright. So let me pull up the presentation here.

0:41:34.390 --> 0:41:54.740  
Nickerman, Luke  
OK, great. And I was wanna thank Nick actually for a really good, but his presentation was a great way to kind of ground us on what we're gonna see today. And I think for the most part, he did it, pick a job of characterizing PG and ES proposal. So. So Nick, I didn't feel like I needed to jump in to make any major corrections.

0:41:57.20 --> 0:42:10.750  
Nickerman, Luke  
OK, so I'm gonna take things a little bit deeper on what the PGE proposal is. I think Nick did a great job of kind of giving you an overview of multiple proposals. I'll take you a little bit deeper on this one.

0:42:12.930 --> 0:42:30.760  
Nickerman, Luke  
So we'll we'll go into the the PGE proposal, like I said, we'll also touch towards the end on kind of out of the proposals compare and get into a little bit more detail there. And then also kind of tips Lim key questions and issues.

0:42:33.460 --> 0:42:40.650  
Nickerman, Luke  
OK, so before I jump in I these are the principles from last summer's decision.

0:42:41.250 --> 0:42:56.140  
Nickerman, Luke  
I in phase one, we had had projected these at the beginning of February kind of workshop as a way to kind of ground us on what are we trying to get to. And I think there's still relevant and particular for this one.

0:42:57.20 --> 0:43:5.930  
Nickerman, Luke  
I or for this topic, you know, reliability and advancing environmental goals and then simplicity are are ones that kind of popped out for me.

0:43:9.200 --> 0:43:22.350  
Nickerman, Luke  
OK, so can at the highest level PG's approach is an exceedance based methodology for solar and wind that uses solar and wind performance on stressed grid days to determine appropriate exceedance level.

0:43:24.220 --> 0:43:40.570  
Nickerman, Luke  
However, I'm just gonna caveat this that in this presentation, you're not going to see, you know, specific recommendation for an exceedance level. And the reason for that is that we think the final levels really should be determined as part of the PRM modeling process.

0:43:41.740 --> 0:43:48.170  
Nickerman, Luke  
In in calibration process that Nick touched on a little bit and we'll talk a little bit more during the course of this resentation.

0:43:49.700 --> 0:43:53.310  
Nickerman, Luke  
Alright, so parameters starting with data.

0:43:54.180 --> 0:44:0.430  
Nickerman, Luke  
So we used several years of data, 2015 to 2020, which is actually six years of data.

0:44:0.990 --> 0:44:15.400  
Nickerman, Luke  
I'm not 5, but we're kind of open to other thoughts on this and we think it's reasonable. You can make a reasonable case that anything from 3 to, say, 10 years worth of data could be.

0:44:16.520 --> 0:44:20.410  
Nickerman, Luke  
You could be included and we're also waiting all years equally.

0:44:21.620 --> 0:44:23.600  
Nickerman, Luke  
But are also open to discussion on this as well.

0:44:24.800 --> 0:44:32.610  
Nickerman, Luke  
A good example of a different approach is the hydro methodology, where the worst year receives a greater weighting.

0:44:34.330 --> 0:44:41.50  
Nickerman, Luke  
So that's something that could be explored as well, but I also keep in mind that it's very easy to identify bad hydro years.

0:44:42.150 --> 0:44:47.40  
Nickerman, Luke  
Which is somewhat unique to hydro and and maybe not as applicable to solar and wind.

0:44:48.980 --> 0:44:52.250  
Nickerman, Luke  
And then simplicity, we think we should.

0:44:53.290 --> 0:44:58.300  
Nickerman, Luke  
Probably keep the exceedance level constant across all hours in months.

0:44:58.900 --> 0:45:8.490  
Nickerman, Luke  
And it's I and. And So what does that mean? Well, we don't think that some hour should have let's say 50% exceedance level and others have 75% exceedance level.

0:45:9.260 --> 0:45:17.10  
Nickerman, Luke  
And once we start going down that path, it creates a lot of additional complexity and it's really difficult to determine at what point do you stop.

0:45:22.260 --> 0:45:25.130  
Nickerman, Luke  
OK, so starting with.

0:45:26.780 --> 0:45:40.130  
Nickerman, Luke  
I cannot determine the exceedance level in the process that we go through, so I just wanna highlight one difference from the initial proposal that we had proposed as part of phase one, and what you're gonna see today.

0:45:41.50 --> 0:46:6.140  
Nickerman, Luke  
And so initially, we had proposed just kind of the peak load day each month. So that's like one day for every month and over a six year data set would be essentially six data points. We received stakeholder feedback that might not be robust, robust enough. And so we expanded it to the top five load days each month. And so over 6 year data set, that's 30 data points.

0:46:8.210 --> 0:46:10.510  
Nickerman, Luke  
And then in terms of the process?

0:46:11.650 --> 0:46:28.160  
Nickerman, Luke  
I you can really kind of break this up into two parts, so steps one through three and then steps 4 through 6 steps one through three are really focused on developing this peak load day profile. And So what we're doing is we're taking those top five peak load days in each month.

0:46:29.470 --> 0:46:36.740  
Nickerman, Luke  
We're gonna reviewing the solar and wind performance during those days, converting them to a capacity factor based on the installed capacity.

0:46:37.460 --> 0:46:41.10  
Nickerman, Luke  
I at the time and this is an additional improvement.

0:46:41.490 --> 0:46:55.510  
Nickerman, Luke  
I'm following safehold her feedback as well, and so we're actually going down to what is the installed capacity at a monthly level to create better capacity factors in this analysis.

0:46:57.40 --> 0:47:1.60  
Nickerman, Luke  
And then we take that data and then average across all of the years.

0:47:1.770 --> 0:47:4.740  
Nickerman, Luke  
And that essentially generates a peak load day profile.

0:47:6.170 --> 0:47:11.300  
Nickerman, Luke  
Then the second part steps 4 through 6 is where you then got to take that profile.

0:47:12.420 --> 0:47:19.600  
Nickerman, Luke  
You go back to exceedance levels. You look at different exceedance levels, you compare them, and then you kind of determine.

0:47:20.310 --> 0:47:21.640  
Nickerman, Luke  
What is the best match?

0:47:22.390 --> 0:47:31.940  
Nickerman, Luke  
And and like I said, we're not. We don't have specific recommendations for what that seems level is that the at this time. But we are presenting a number of options.

0:47:36.420 --> 0:47:40.510  
Nickerman, Luke  
OK. So let's kind of walk through these steps for solar to start.

0:47:41.430 --> 0:47:47.440  
Nickerman, Luke  
And so the top table. You can see this is essentially the output for steps one through 3.

0:47:48.650 --> 0:47:50.230  
Nickerman, Luke  
So we're taking.

0:47:50.960 --> 0:47:54.350  
Nickerman, Luke  
I'm six years of data, five data points for every.

0:47:55.590 --> 0:48:11.300  
Nickerman, Luke  
For every month and every hour I and so that is essentially 30 data points for each one of these cells that are then averaged, right. And so if you look at September, hovering, ending 17.

0:48:12.420 --> 0:48:14.450  
Nickerman, Luke  
It says 55%.

0:48:15.510 --> 0:48:18.330  
Nickerman, Luke  
And that means across those 30 data points that we looked at.

0:48:19.440 --> 0:48:25.990  
Nickerman, Luke  
It averaged out to be 55% of deliverable capacity in that hour.

0:48:27.580 --> 0:48:30.810  
Nickerman, Luke  
I and then Step 4. This is where Exceedance comes in.

0:48:31.760 --> 0:48:35.780  
Nickerman, Luke  
That we've just pulled as an example, 50% exceedance level.

0:48:36.580 --> 0:48:45.770  
Nickerman, Luke  
I and it with Exceedance. You're looking at the entire data set, right? And so I, you know, 30 days in a month.

0:48:46.480 --> 0:48:48.650  
Nickerman, Luke  
I crossed six years of data.

0:48:49.430 --> 0:48:57.820  
Nickerman, Luke  
I and and so you're looking at around 180 data points for each one of these cells for the for the exceedance data set.

0:48:58.970 --> 0:49:7.520  
Nickerman, Luke  
I 50% level, you're essentially selecting the median and so at the 50% level you get 64%.

0:49:9.350 --> 0:49:24.200  
Nickerman, Luke  
Now Step 5 is is where you're gonna comparing the two and saying OK, do you know what's the difference between those two profiles? Well, in that particular hour, hour and in 17 and September, there's a difference of 9%.

0:49:25.410 --> 0:49:33.120  
Nickerman, Luke  
And we've color-coded this and you can see that some values are positive. Those are the ones in the red and some are negative. Those are the ones in the green.

0:49:33.950 --> 0:49:47.530  
Nickerman, Luke  
So what does that mean? Well, for the positive red values means that more solar would be counted at that exceedance level than you would expect to see in kind of that set of peak load days that we looked at.

0:49:49.270 --> 0:49:56.840  
Nickerman, Luke  
And then for the negative green values, essentially there would be less solar counted at that exceedance level.

0:49:57.620 --> 0:50:0.330  
Nickerman, Luke  
Then you would expect from the peak load day analysis.

0:50:4.140 --> 0:50:9.130  
Nickerman, Luke  
So then step six, it can raise the question what is the right exceedance level?

0:50:9.830 --> 0:50:25.290  
Nickerman, Luke  
And there's lots of ways you could look at this. You could say, well, maybe we don't want any positive red values and any hour or month or maybe something less conservative would be maybe we just focus on the summer months or maybe you could say.

0:50:25.800 --> 0:50:30.40  
Nickerman, Luke  
Uh, you know we we can tolerate some number of positive red values.

0:50:32.480 --> 0:50:47.780  
Nickerman, Luke  
And so we we're proposing we're providing a number of options to test as part of the PRM analysis and and really we think that analysis should be of the venue that decides what the appropriate level is.

0:50:49.310 --> 0:50:55.30  
Nickerman, Luke  
Because as you're gonna be testing it and calibrating it as part of that process, it might suggest that you need.

0:50:56.210 --> 0:50:59.740  
Nickerman, Luke  
A more conservative or less conservative profile?

0:51:2.80 --> 0:51:4.70  
Nickerman, Luke  
OK, couple things to note before we dive in.

0:51:5.790 --> 0:51:14.120  
Nickerman, Luke  
When we didn't have access to solar technology type data. So for instance tracking versus fixed. So what you're seeing with solar is.

0:51:15.390 --> 0:51:24.400  
Nickerman, Luke  
It's essentially all solar, but we do think the the final analysis should take it down to to at least tracking versus fixed.

0:51:25.540 --> 0:51:37.10  
Nickerman, Luke  
And then also the data does not adjust for curtailments and so that's something that could be biasing the data, the values downward and then something to consider for further analysis.

0:51:39.330 --> 0:51:40.170  
Nickerman, Luke  
OK, so the.

0:51:41.150 --> 0:51:42.780  
Nickerman, Luke  
So the example that we have up here.

0:51:43.730 --> 0:51:55.260  
Nickerman, Luke  
It says 89%. Essentially that's 89% would be required to have no positive values and that's going down to four decimal places and.

0:51:56.170 --> 0:52:0.320  
Nickerman, Luke  
And that's that's probably that's kind of like the conservative book end.

0:52:1.650 --> 0:52:2.580  
Griffes, Peter  
So basically.

0:52:1.660 --> 0:52:10.830  
Nickerman, Luke  
And then we have the next slide, some other options. Then we looked at like 2 days decimal places and essentially that's the same since 89%.

0:52:11.90 --> 0:52:15.200  
Nickerman, Luke  
Hi to have no positive values at that level as well.

0:52:15.970 --> 0:52:20.460  
Nickerman, Luke  
And then you can start looking at, OK, what if we entertain some positive values?

0:52:21.100 --> 0:52:24.420  
Nickerman, Luke  
And and we looked at like 2% or less in all hours.

0:52:25.370 --> 0:52:31.720  
Nickerman, Luke  
That was 82% level. And then we looked at 5% or less in all hours and that was 73% level.

0:52:32.660 --> 0:52:40.10  
Nickerman, Luke  
I you could also and you could keep going right, you could say, well, what about 10% and so on the reason we stopped at 5 is because.

0:52:41.260 --> 0:52:56.350  
Nickerman, Luke  
Some of the hours of greatest concern late afternoon evening hours in summer months were the ones that were starting to show up with the the higher positive values. You can see like the five for for percent. Those are showing up in July.

0:52:57.220 --> 0:52:59.950  
Nickerman, Luke  
Are Indian, you know 1617 eighteen?

0:53:1.600 --> 0:53:8.690  
Nickerman, Luke  
And so I, so we stopped there, but certainly as part of the PRM analysis, there's other levels that you could go to.

0:53:21.50 --> 0:53:21.300  
Griffes, Peter  
Good.

0:53:12.850 --> 0:53:22.70  
Nickerman, Luke  
OK, so that's solar before we jump into wind. Just wanna talk quickly about what the appropriate level is to perform the analysis.

0:53:23.510 --> 0:53:25.40  
Griffes, Peter  
You look like you have a.

0:53:23.370 --> 0:53:33.780  
Griffes, Peter  
And there's lots of options. Yeah, Luke, you have a couple of questions I don't know. Hands raised. I know. If you wanna take them now or if you wanna. If they're clarifying questions, it might make sense to take them now. OK.

0:53:35.90 --> 0:53:36.720  
Nickerman, Luke  
Yeah. Do we have any clarifying questions?

0:53:38.390 --> 0:53:41.90  
Alexander, Maggie (she/her)  
You've got Tom and then Noah, Luke.

0:53:41.990 --> 0:53:48.380  
Nickerman, Luke  
OK. So, so Tom and Noah are these clarifying questions or questions that we can save until the end?

0:53:49.300 --> 0:53:50.810  
Tom Beach (Guest)  
And you can say mine till the end.

0:53:51.540 --> 0:53:53.510  
Nickerman, Luke  
OK, now how about you?

0:54:2.0 --> 0:54:2.460  
Nickerman, Luke  
OK.

0:54:4.380 --> 0:54:5.60  
Nuo Tang  
That's great.

0:53:55.380 --> 0:54:5.260  
Nuo Tang  
I'll, I'll I'd like to ask a little bit more detail on your steps one through 6. So if that's just clarifying question that help me understand, sure. Yeah, go ahead.

0:54:7.130 --> 0:54:15.840  
Nuo Tang  
So in your in your steps went through three. You you you mentioned there was or there's there's that table. Can you switch to that slide?

0:54:16.770 --> 0:54:17.910  
Nuo Tang  
It talks about worst day.

0:54:18.590 --> 0:54:22.760  
Nuo Tang  
I'm I'm wondering are you using the words worst day at peak day, sort of synonymously?

0:54:24.690 --> 0:54:25.700  
Nickerman, Luke  
We are, yes.

0:54:29.260 --> 0:54:29.830  
Nuo Tang  
OK.

0:54:28.640 --> 0:54:32.760  
Nickerman, Luke  
But that's that's essentially those five highest load days.

0:54:33.680 --> 0:54:35.290  
Nickerman, Luke  
In each month in each year.

0:54:36.820 --> 0:54:44.560  
Nuo Tang  
OK. But they're not the like the five worst solar production days of that that month.

0:54:45.230 --> 0:54:46.220  
Nickerman, Luke  
No, no, they're not.

0:54:47.690 --> 0:54:48.50  
Nuo Tang  
OK.

0:54:49.80 --> 0:55:3.910  
Nuo Tang  
And then on Step 4, this 50% level is is just a sort of illustrative and what you're saying is that sort of a policy decision or maybe Nick has said that before, is this is a policy decision or how how you want?

0:55:4.750 --> 0:55:5.960  
Nuo Tang  
What we want this to be.

0:55:8.770 --> 0:55:12.860  
Nickerman, Luke  
I yeah. I mean, I think it's partly a policy decision then it's also partly.

0:55:13.750 --> 0:55:14.600  
Nickerman, Luke  
I.

0:55:15.510 --> 0:55:19.810  
Nickerman, Luke  
Yeah. When we when we kind of get to that point of calibrating within the PRM analysis.

0:55:21.80 --> 0:55:27.690  
Nickerman, Luke  
You know, if you if you select a particular level and and that results in let's say a much higher PRM.

0:55:28.600 --> 0:55:32.690  
Nickerman, Luke  
Right then. Then you probably wanna go back and select something that's a little bit more conservative.

0:55:35.220 --> 0:55:51.580  
Nuo Tang  
Well, but the I mean, if the PRM is a function of the counting methodology, it seems like you're in. You're choosing a level of exceedance here, just so that it makes you feel better on the result of another.

0:55:52.800 --> 0:55:54.470  
Nickerman, Luke  
Yeah. So, so the decision.

0:55:56.350 --> 0:56:0.180  
Nickerman, Luke  
Said that, we should utilize the NRDC tool.

0:56:1.140 --> 0:56:7.560  
Nickerman, Luke  
And this was a tool that they had included in their comments in and Nick, feel free to jump in if I mischaracterize anything but.

0:56:8.370 --> 0:56:11.890  
Nickerman, Luke  
And the tool that they developed in that we had looked at.

0:56:12.640 --> 0:56:13.690  
Nickerman, Luke  
The data share with us.

0:56:14.350 --> 0:56:21.830  
Nickerman, Luke  
And it's set-up so that you're you're kind of basing the analysis on a loss of load study that's already been done.

0:56:22.680 --> 0:56:31.350  
Nickerman, Luke  
I and then you're gonna modifying the counting methodologies, so you could, let's say, modify the counting methodology for solar.

0:56:32.150 --> 0:56:36.490  
Nickerman, Luke  
I and you can run through and you're still. You're still going for a 0.1.

0:56:38.640 --> 0:56:40.130  
Nickerman, Luke  
Loss of load expectation.

0:56:40.810 --> 0:56:45.260  
Nickerman, Luke  
I and and then that's gonna kind of adjust the PRM of her down.

0:56:47.10 --> 0:56:50.760  
Nickerman, Luke  
Right. And so, but my understanding is you know that process.

0:56:51.960 --> 0:56:52.530  
Nickerman, Luke  
Is.

0:56:52.910 --> 0:57:0.300  
Nickerman, Luke  
Uh, you know the process that we're going to undertake and utilizing the kind of the loss of load state that's currently underway in the IRP?

0:57:2.410 --> 0:57:10.150  
Nickerman, Luke  
And and so as part of that process, that's gonna help us determine what the ultimate exceedance level is.

0:57:11.780 --> 0:57:14.150  
Nickerman, Luke  
Or counting methodology is for for wind and solar.

0:57:16.180 --> 0:57:17.590  
Nick Pappas  
Hey, Luca, this is Nick. Just.

0:57:16.820 --> 0:57:18.500  
Nuo Tang  
Got it. Thanks. Thanks for.

0:57:19.170 --> 0:57:48.150  
Nick Pappas  
Quick quick clarification on that. I I think you mostly characterized that correctly, but I think you know in that in that process you do need to sort of lock down one parameter to the other either lock down the profiles and that will tell you the PRM or I guess you could also approach this for if you have a desired PRM, you could adjust the counting rules until it kind of aligns with that. But I think they definitely are very much interlocked and yeah, so happy to discuss further throughout the day if that's helpful.

0:57:49.390 --> 0:57:54.680  
Nickerman, Luke  
OK. Yeah. And there's a, you know, a future workshop. We're gonna discuss this a little bit more in depth as well.

0:58:0.230 --> 0:58:0.570  
Nickerman, Luke  
OK.

0:58:2.890 --> 0:58:4.280  
Nickerman, Luke  
It's so.

0:58:6.350 --> 0:58:24.160  
Nickerman, Luke  
OK. So we were talking about, you know, different levels to perform the analysis. So there's the aggregate kind of solar level, which is what we looked at for solar. You could go to subcategories like technology type or geography and we'll look at geography kind of two different geographies for wind.

0:58:25.90 --> 0:58:27.20  
Nickerman, Luke  
You'd also go down to the individual resource level.

0:58:27.860 --> 0:58:31.350  
Nickerman, Luke  
And just kinda lots of pros and cons to each of these.

0:58:32.510 --> 0:58:46.200  
Nickerman, Luke  
You know, a few dimension here. You know more granular levels create incentives to invest in the best technology and maintenance, which is, you know, which is a good thing. But you know, going down to the individual resource level also is much more involved and labor intensive.

0:58:48.940 --> 0:58:58.590  
Nickerman, Luke  
I and then also the kind of at the aggregate level. Your results might differ from, let's say doing it at the individual resource level and then aggregating them up.

0:58:59.720 --> 0:59:6.900  
Nickerman, Luke  
And so something to also to consider in terms of what the impact that might have on on the exceedance percentage that you select?

0:59:8.50 --> 0:59:15.350  
Nickerman, Luke  
And then also for new resources that don't have sufficient data, it's really easy to to assign them to a sub category.

0:59:16.690 --> 0:59:25.800  
Nickerman, Luke  
Might be a little bit more involved if you're doing it individual resource level and then have to assign them to a profile that's you know you think would be comparable.

0:59:28.640 --> 0:59:38.400  
Nickerman, Luke  
And so one thing I just want to highlight before we move on, I think is is you know we need input from the industry on you know what is the desired level of disaggregation.

0:59:39.790 --> 0:59:43.90  
Nickerman, Luke  
You know, is it technology type for solar?

0:59:44.520 --> 0:59:44.900  
Nickerman, Luke  
Is it?

0:59:45.550 --> 0:59:52.720  
Nickerman, Luke  
You know, north of Path 15 S, Path 15 for wind? Or is it, you know, more disaggregated than than that as well?

0:59:57.400 --> 0:59:58.430  
Nickerman, Luke  
OK.

1:0:0.590 --> 1:0:2.760  
Nickerman, Luke  
The turning to the wind analysis.

1:0:3.460 --> 1:0:6.880  
Nickerman, Luke  
And so we're starting at kind of these.

1:0:7.420 --> 1:0:16.610  
Nickerman, Luke  
I profiles for these peak load days and we have, you know, 2 tables here, one for North Path 15 and one for South of Path 15.

1:0:17.470 --> 1:0:42.720  
Nickerman, Luke  
And generally you can you can see you know similarities to to the Ed regional, sorry, the energy vision, regional wind study for those of you that have reviewed that generally one of the things that they found was that the north of Path 15 resources generally had a higher capacity factors and let's say the evening hours, then the South of Path 15 resources and that's something that's also showing up here.

1:0:47.30 --> 1:0:51.460  
Nickerman, Luke  
OK. And so then we kind of did the analysis for.

1:0:52.760 --> 1:0:57.190  
Nickerman, Luke  
South about 15 and north about the fifteens, similar to to what we had done for solar.

1:0:58.120 --> 1:1:2.640  
Nickerman, Luke  
We started with, you know, what, if you're looking for no positive values, you know across all hours.

1:1:3.860 --> 1:1:7.470  
Nickerman, Luke  
And that and we arrived at the 80% level for for that.

1:1:8.90 --> 1:1:16.770  
Nickerman, Luke  
And then we came down to 2% or less and that was 78% level and 5% or less and that was 72% level.

1:1:22.0 --> 1:1:25.110  
Nickerman, Luke  
And and very similar results for north of PATH 15.

1:1:26.250 --> 1:1:28.260  
Nickerman, Luke  
As a 78% level for two.

1:1:28.980 --> 1:1:39.440  
Nickerman, Luke  
Offered for no positive values at 2 decimal places, 76% level for a difference of 2% or less and then 74% for 5% or less.

1:1:40.850 --> 1:1:49.0  
Nickerman, Luke  
You know one thing to highlight here, you couldn't make the case if you were really just focused on, let's say, summer or after late afternoon, evening hours.

1:1:50.740 --> 1:2:0.170  
Nickerman, Luke  
You know the difference here? 5% of laughs is really kind of showing up in the middle of the night. And so maybe you could go to something a little bit lower before you get.

1:2:0.420 --> 1:2:3.910  
Nickerman, Luke  
Umm you have higher levels than those. You need hours in the summer.

1:2:9.450 --> 1:2:9.980  
Nickerman, Luke  
OK.

1:2:11.230 --> 1:2:15.700  
Nickerman, Luke  
So have kerning to. How is this approach different from?

1:2:16.750 --> 1:2:17.990  
Nickerman, Luke  
Some of the other proposals.

1:2:19.120 --> 1:2:25.60  
Nickerman, Luke  
I am, you know, Nick talks a little bit about this. Maybe I can provide some additional clarification here.

1:2:26.360 --> 1:2:32.10  
Nickerman, Luke  
I'm and so happy to have people kind of jump in with questions and in comments as well.

1:2:33.130 --> 1:2:41.570  
Nickerman, Luke  
So we talked about our approach as having kind of these six steps kind of grouped together steps one through three to develop these.

1:2:42.250 --> 1:2:44.320  
Nickerman, Luke  
Kind of worse, low day profiles.

1:2:45.460 --> 1:2:53.910  
Nickerman, Luke  
And then steps 4 through 6, which then kind of bring in the exceedance portion or component of the analysis.

1:2:54.650 --> 1:3:2.210  
Nickerman, Luke  
I and I really think that kind of the biggest difference I in the proposals that have been put it forward to date at least.

1:3:3.440 --> 1:3:9.240  
Nickerman, Luke  
Is that you know some of the approaches are kind of stopping at that worst day type profile.

1:3:10.360 --> 1:3:20.180  
Nickerman, Luke  
I cannot then taking it back to Exceedance and so that's what we see as kind of the primary difference between our approach and some of the other approaches.

1:3:21.600 --> 1:3:26.130  
Nickerman, Luke  
With that said, there are kind of like different ways to arrive.

1:3:27.880 --> 1:3:33.540  
Nickerman, Luke  
Arrived at that kind of worse load day profile, you know, which are some of the things that Nick had talked to.

1:3:35.490 --> 1:3:41.90  
Nickerman, Luke  
And so why? Why do we think it's important to go back to exceedance or useful to go back to exceedance?

1:3:42.570 --> 1:3:46.730  
Nickerman, Luke  
Well, we we see it seems as being really flexible and adjustable.

1:3:47.440 --> 1:3:52.550  
Nickerman, Luke  
I and so, for instance, within the PRM calibration process.

1:3:53.170 --> 1:3:56.220  
Nickerman, Luke  
Yeah, it's really easy to kind of go to a different exceedance level.

1:3:58.170 --> 1:4:3.550  
Nickerman, Luke  
And it's not as clear. You know, if you stop it kind of a worse day profile.

1:4:4.340 --> 1:4:6.890  
Nickerman, Luke  
Uh and the Internet in the calibration process?

1:4:8.320 --> 1:4:17.790  
Nickerman, Luke  
How how you modify that profile in a way that gets you something a little bit more conservative or less conservative, so something that we kind of wanna throw out there for discussion?

1:4:18.890 --> 1:4:21.610  
Nickerman, Luke  
I think also from an administrative perspective.

1:4:22.500 --> 1:4:23.910  
Nickerman, Luke  
It's very easy to.

1:4:24.820 --> 1:4:27.370  
Nickerman, Luke  
Uh, you know, Exceedences is very easy.

1:4:29.500 --> 1:4:35.890  
Nickerman, Luke  
Analytical process to run and so it's something that can be replicated fairly easily over a number of resources.

1:4:37.690 --> 1:4:40.410  
Nickerman, Luke  
What's the kind? While you do have these additional steps?

1:4:41.550 --> 1:4:43.840  
Nickerman, Luke  
I love looking at different exceedance levels.

1:4:44.540 --> 1:4:47.310  
Nickerman, Luke  
I can can can I deciding which ones to use?

1:4:51.860 --> 1:4:54.650  
Nickerman, Luke  
And then finally, key issues and questions.

1:4:57.140 --> 1:4:59.390  
Nickerman, Luke  
So the first one, we've talked a little bit about already.

1:5:1.20 --> 1:5:8.90  
Nickerman, Luke  
You know, we think this is only a first step and that really the final level should be determined as part of that PRM analysis.

1:5:9.530 --> 1:5:14.740  
Nickerman, Luke  
I ANOTHER is kind of what data to use production versus forecast data.

1:5:16.280 --> 1:5:22.550  
Nickerman, Luke  
So production captures actual generation best, but it also captures congestion and containments.

1:5:23.730 --> 1:5:26.720  
Nickerman, Luke  
You know things that would have to be fixed in some way.

1:5:27.750 --> 1:5:31.560  
Nickerman, Luke  
And then the CAISO forecast would eliminate congestion, and for tail mints. But.

1:5:33.120 --> 1:5:36.660  
Nickerman, Luke  
Could also vary from the actual actual results.

1:5:38.70 --> 1:5:40.500  
Nickerman, Luke  
And then and then how many years of data use?

1:5:41.670 --> 1:5:45.900  
Nickerman, Luke  
Talked about how there's lots of options here. You know between three and 10 years.

1:5:47.50 --> 1:5:52.410  
Nickerman, Luke  
You know, we used six years. The recent CC stack analysis that came out used eight years.

1:5:53.780 --> 1:5:55.210  
Nickerman, Luke  
Hydro uses 10 years, but.

1:5:56.460 --> 1:6:4.440  
Nickerman, Luke  
You know we're not. We're not building any new hydro units. And so really, there's there's plenty of data for how you use that's still to draw from.

1:6:6.170 --> 1:6:9.530  
Nickerman, Luke  
So go ahead and stop there and then open things up for questions.

1:6:11.730 --> 1:6:13.140  
Meck, Alan L - Mktg Affil-E&FP  
Alright. Thank you, nick.

1:6:14.590 --> 1:6:28.350  
Tom Beach (Guest)  
First I wanted to make sure Tom Beach. It looks like you lowered your hand. Did you have your question answered well, I I think I'm gonna have a chance to comment on PG and E's presentation. So I'll hold off on that until my presentation.

1:6:29.10 --> 1:6:33.130  
Meck, Alan L - Mktg Affil-E&FP  
OK, great. So the next hand that I saw was Noah Tong.

1:6:37.880 --> 1:6:43.90  
Nuo Tang  
Ohh, I think a couple of others are in front of me. Mark and Scott right front of me. So I'll let them go first.

1:6:45.640 --> 1:6:48.80  
Meck, Alan L - Mktg Affil-E&FP  
OK, Mark spect.

1:6:51.210 --> 1:6:56.260  
Mark Specht  
Hey folks, this is marked with the Union of Concerned Scientists and Luke, thanks for the presentation.

1:6:57.960 --> 1:7:26.720  
Mark Specht  
Just on the calibration with the PRM piece, I think Nick's Nick said it exactly right earlier that you're going to have to lock down one of those things first. You're either going to have to lock down the renewable profiles or you're going to have to lock down the PRM, and then you'll have to calibrate the other one to make sure that your portfolio meets LOLE the LOLE requirements. So I guess I'm wondering it it, I guess, I guess I'm wondering, it's implied by this.

1:7:26.810 --> 1:7:30.20  
Mark Specht  
Ginny presentation that you all think we've locked down the PRM.

1:7:30.650 --> 1:7:40.900  
Mark Specht  
And then choose Exceedance profiles that make sure everything's adding up correctly, and we'll have a portfolio that meets Hello Allie requirements. So I'm I guess I'm just curious why.

1:7:41.530 --> 1:7:48.350  
Mark Specht  
You all think the PRM is the first thing we've locked down, and then we'd choose exceedance values rather than the other way around.

1:7:52.70 --> 1:7:53.910  
Nickerman, Luke  
Yeah. So let me start by saying that.

1:7:55.230 --> 1:7:58.60  
Nickerman, Luke  
I don't know the person. He has an exact position on this at this point, so.

1:7:59.120 --> 1:8:7.580  
Nickerman, Luke  
Our position could change, but it makes sense to me that you would as a start at least lock down the PRM.

1:8:8.370 --> 1:8:11.610  
Nickerman, Luke  
And then see kind of what 6 scenes level does that apply?

1:8:12.470 --> 1:8:19.480  
Nickerman, Luke  
And you know, and and if you're not happy with that, then you know, you can go back and and make adjustments.

1:8:20.190 --> 1:8:20.560  
Nickerman, Luke  
But.

1:8:22.170 --> 1:8:26.820  
Nickerman, Luke  
Skydive as a starting point. It, it seems, pretty reasonable to me that that's where you would start.

1:8:30.980 --> 1:8:35.770  
Mark Specht  
OK, thanks. I guess we'll have more time to discuss this in the future PRM workshops. Thanks.

1:8:37.940 --> 1:8:39.10  
Meck, Alan L - Mktg Affil-E&FP  
Right, Scott?

1:8:41.440 --> 1:8:49.820  
Scott Murtishaw  
Yeah. Hi. So, Luke, I'm curious. You are one of the previous slides, I think the one right before this one that's showing now.

1:8:51.20 --> 1:8:51.770  
Scott Murtishaw  
You noted that.

1:8:52.850 --> 1:8:53.950  
Scott Murtishaw  
Some of the proposals.

1:8:54.660 --> 1:9:0.660  
Scott Murtishaw  
Uh, and I would characterize how we as as being one those kind of stop at the worst load day production profiles.

1:9:2.90 --> 1:9:5.370  
Scott Murtishaw  
I just am not sure I see the benefit of.

1:9:7.170 --> 1:9:7.460  
Scott Murtishaw  
Of.

1:9:8.180 --> 1:9:16.730  
Scott Murtishaw  
Going through that four through six, calculating exceedances with the goal of trying to get to an exceedance that most closely matches the worst load day.

1:9:17.390 --> 1:9:18.100  
Scott Murtishaw  
The profiles.

1:9:19.190 --> 1:9:23.750  
Scott Murtishaw  
Do you have any thoughts on that? What what additional value add does that provide?

1:9:26.560 --> 1:9:30.780  
Nickerman, Luke  
So in the so when you go through this PRM calibration process.

1:9:31.860 --> 1:9:33.170  
Nickerman, Luke  
So you lock down the PRM.

1:9:34.20 --> 1:9:34.640  
Nickerman, Luke  
And.

1:9:36.320 --> 1:9:46.370  
Nickerman, Luke  
Well, so so you would be doing this kind of the other way, I guess, right in that process. So you would kind of take this worst day load profile and that would be the thing that's locked.

1:9:47.170 --> 1:9:54.120  
Nickerman, Luke  
And then you can run it through the PRM and then you know what happens if that results in like a 5% higher PRM.

1:9:55.370 --> 1:9:57.100  
Nickerman, Luke  
You know, and and maybe we're OK with that.

1:9:59.950 --> 1:10:1.100  
Nickerman, Luke  
You know it, it's.

1:10:2.940 --> 1:10:5.870  
Nickerman, Luke  
It seems it just seems easier to kind of start.

1:10:6.390 --> 1:10:8.250  
Nickerman, Luke  
I the other way.

1:10:10.0 --> 1:10:12.420  
Nickerman, Luke  
And then the other kind of concern I have.

1:10:13.280 --> 1:10:15.870  
Nickerman, Luke  
I would tell the worst low day profiles is.

1:10:18.550 --> 1:10:23.350  
Nickerman, Luke  
There is room within the methodologies I've seen to make them less or more conservative.

1:10:25.850 --> 1:10:29.810  
Nickerman, Luke  
But it's it's not as much room as you have with like an exceedance approach.

1:10:30.790 --> 1:10:31.730  
Nickerman, Luke  
Right where you can kind of.

1:10:32.370 --> 1:10:37.980  
Nickerman, Luke  
You know, if if 70% isn't working, you can go down to 60 or you can go up to 80.

1:10:38.640 --> 1:10:39.140  
Nickerman, Luke  
Umm.

1:10:40.620 --> 1:10:45.850  
Nickerman, Luke  
Whereas the with the worst low day kind of approach, you have a much smaller data set, right?

1:10:46.520 --> 1:10:48.420  
Nickerman, Luke  
You know, assuming you're using five days.

1:10:49.410 --> 1:10:55.160  
Nickerman, Luke  
Yeah, that's five days and and let's say six years. So that's 30 data points that you have to work with.

1:10:57.70 --> 1:10:58.920  
Nickerman, Luke  
It's just a much less robust.

1:10:59.880 --> 1:11:0.600  
Nickerman, Luke  
Set of data.

1:11:5.650 --> 1:11:6.390  
Scott Murtishaw  
Yeah, it just.

1:11:5.890 --> 1:11:6.390  
Nickerman, Luke  
Does that help?

1:11:8.840 --> 1:11:11.660  
Scott Murtishaw  
Yeah. I guess to me that the indicates that the goal.

1:11:12.610 --> 1:11:15.20  
Scott Murtishaw  
It if you define the goal as.

1:11:15.660 --> 1:11:18.560  
Scott Murtishaw  
Trying to find an exceedance level that best matches.

1:11:19.250 --> 1:11:23.620  
Scott Murtishaw  
The worst age generation profile, which is what your tables of differences we're doing.

1:11:24.890 --> 1:11:25.390  
Scott Murtishaw  
Then.

1:11:26.130 --> 1:11:30.190  
Scott Murtishaw  
4 through 6 just seemed like a necessary steps, but if it's not necessarily the gold.

1:11:30.840 --> 1:11:35.270  
Scott Murtishaw  
To come up with an exceedance profile that most closely resembles a worst day.

1:11:36.120 --> 1:11:38.50  
Scott Murtishaw  
Actual historical average profile.

1:11:38.960 --> 1:11:39.390  
Scott Murtishaw  
Then.

1:11:41.390 --> 1:11:50.20  
Scott Murtishaw  
Sure. But if the former is true, I don't understand. I guess I still don't understand the the point of going through the Exceedance steps, but I'll just stop it. Stop there.

1:11:53.940 --> 1:11:54.330  
Meck, Alan L - Mktg Affil-E&FP  
Alright.

1:11:53.760 --> 1:11:56.50  
Nickerman, Luke  
OK. Yeah, Noah.

1:11:59.80 --> 1:12:28.310  
Nuo Tang  
Yeah. Thanks. I'm I'm gonna echo what Mark and Scott are have been saying is I I don't think you can. We can set an PRM value without knowing what the exceedance threshold is. First, because the PRM is is a function of the counting methodologies. If we were. If PG is saying that there is a threshold to which parties or the Commission should not like.

1:12:29.170 --> 1:12:36.490  
Nuo Tang  
The PRM to be, and therefore it should modify the exceedance data afterwards, and that's a different conversation.

1:12:37.340 --> 1:12:46.850  
Nuo Tang  
But I think first we we need to set down what is the sort of the right or wrong exceedance value and threshold to calculate the pyramid.

1:12:51.450 --> 1:12:53.520  
Nickerman, Luke  
Yeah, I mean maybe this is.

1:12:54.960 --> 1:12:56.350  
Nickerman, Luke  
I discussion that we should.

1:12:57.80 --> 1:13:3.260  
Nickerman, Luke  
Kind of have once we have that PRM discussion right and and little bit more familiar with.

1:13:4.60 --> 1:13:6.330  
Nickerman, Luke  
And in that process and that tool.

1:13:9.360 --> 1:13:17.290  
Nickerman, Luke  
It just given that we don't have any of the the presentations kind of here before us kind of laying out how that process works.

1:13:21.320 --> 1:13:23.850  
Nickerman, Luke  
But I I I mean I'll just say like I.

1:13:25.590 --> 1:13:30.520  
Nickerman, Luke  
I tend to disagree, but in in open for you know further discussion on that.

1:13:35.920 --> 1:13:40.410  
Nuo Tang  
Yeah, I think we should focus on trying to understand and and.

1:13:42.860 --> 1:13:54.540  
Nuo Tang  
Have a goal to to seek for the exceedance threshold rather than making it dependent on what another aspect of this process is, which is the PRM. Thanks.

1:13:57.250 --> 1:14:0.950  
Meck, Alan L - Mktg Affil-E&FP  
Thank you, Noah. Nick Pappas from NRDC.

1:14:1.830 --> 1:14:33.920  
Nick Pappas  
Hey, thanks, Alan. Thanks Luke for the great presentation. So first, thanks for putting a lot of thought into both the sort of discussion and the data here. I wanted to look back at some of the heat maps you presented. Maybe you could pull up the wind or solar first. I think these are super helpful tools and I think the mindset of trying to sort of think about how we limit the overproduction or assumed overproduction here is really critical. So sort of eliminating these red values. But I kind of echo some of the discussion thus far. I would love to.

1:14:34.20 --> 1:14:58.990  
Nick Pappas  
Sort of think through further how we wait the sort of policy benefits you described of of Exceedance and its flexibility with the potential that that some of these exceedance profiles may if we squeeze out all the red, may squeeze out a lot of, let's say, the midday energy or some of these dark green spots for wind and solar. I think this kind of goes to Michelle's earlier point, which is we may be thinking a lot more about energy value as we go forward and.

1:14:59.740 --> 1:15:16.910  
Nick Pappas  
There there could be options to think about, you know, other profiles that eliminate the red with with less dark green. So yeah, definitely look forward to continuing that conversation as well as the sort of PRM and resource profile steps discussion.

1:15:19.240 --> 1:15:22.140  
Nickerman, Luke  
Yeah. Yeah. Thanks, Nick and I, you know, I think.

1:15:22.910 --> 1:15:26.200  
Nickerman, Luke  
And the point you're making is, you know, potentially a point for.

1:15:27.180 --> 1:15:31.940  
Nickerman, Luke  
You know, varying the mixing level by month and that's certainly something that we have thought about.

1:15:33.960 --> 1:15:36.270  
Nickerman, Luke  
But it does introduce additional complexity.

1:15:36.210 --> 1:15:36.690  
McIntosh, Henry  
Thanks.

1:15:38.200 --> 1:15:49.780  
Nickerman, Luke  
You know and and you know, like you said, there are other options and proposals on table. You know, we're certainly kind of open to to, you know, looking further at those. And so look forward to further discussion.

1:15:52.890 --> 1:15:56.330  
Meck, Alan L - Mktg Affil-E&FP  
Alright. Thank you, nick. Next up, Brian bearing.

1:15:57.780 --> 1:16:28.890  
Brian Biering  
Thanks. This is Brian. Bearing for the American Clean Power Association of California, the thanks Luke for for the great presentation and also for you know all the the work you guys have been doing reaching out you know ahead of time leading up to the workshops. I wanted to follow up on your comment about or kind of questions I guess to the industry about you know the desired level of granularity and I think our and I'll be touching on this in my presentation later this afternoon. But our position is definitely we would like to see a lot of granularity and you know recognition of region specific value.

1:16:28.960 --> 1:16:31.710  
Brian Biering  
Of wind resources, it does definitely vary by region.

1:16:33.110 --> 1:17:1.760  
Brian Biering  
I had a question about how things would work for new resources. I wanted to give you kind of an example to kind of tease out what I what I think I heard you say about using you know sub regions for new resources. So for example if we had offshore wind resources coming online say in the 20 thirty 2035, you know time frame, would those resources essentially be relying on data from MP?

1:17:1.860 --> 1:17:2.650  
Brian Biering  
Teen.

1:17:3.560 --> 1:17:18.260  
Brian Biering  
In that time, you know that they would already have been collected, you know. So how would we sort of recognize the value that you know of of offshore wind resources that might be different in terms of the production value from resources and NP 15?

1:17:21.400 --> 1:17:25.400  
Nickerman, Luke  
I yeah. So, so that's a good question and.

1:17:26.170 --> 1:17:28.620  
Nickerman, Luke  
I mean, I think you're aware that it's so the.

1:17:29.280 --> 1:17:34.190  
Nickerman, Luke  
Easy study. Regional wind study did have a separate category for offshore wind.

1:17:35.470 --> 1:17:36.880  
Nickerman, Luke  
You know, I don't think that.

1:17:38.130 --> 1:17:49.720  
Nickerman, Luke  
We would be trying to apply like an MP15 or SP15 to those resources so you know we might have to have like, you know, special treatment or figure out an alternative.

1:17:52.290 --> 1:18:9.710  
Nickerman, Luke  
Because, I mean, you raise a good point. Like what? What what happens when you bring down a resource that's either technologically different or geographically different and so different that evaluate it just doesn't make sense to assign a value to it from a resource that really isn't comparable.

1:18:12.510 --> 1:18:12.780  
Brian Biering  
Thanks.

1:18:13.930 --> 1:18:14.200  
Nickerman, Luke  
Yep.

1:18:17.340 --> 1:18:23.390  
Meck, Alan L - Mktg Affil-E&FP  
Alright, thank you for that. Next up, uh, Kyle Navis Navis. I'm gonna.

1:18:25.190 --> 1:18:25.590  
Navis, Kyle  
Cut.

1:18:24.630 --> 1:18:25.940  
Meck, Alan L - Mktg Affil-E&FP  
I butchered that name, I'm sure.

1:18:26.800 --> 1:18:58.310  
Navis, Kyle  
No worries, it's Kyle. Novice uh from public advocate's office. I want to just for the sake of this comment, you know, assume we do have a PRM locked in and that we're thinking about how to set the exceedance level methodologically. And I just want to suggest that maybe rather than selecting a 2% or 5% error level, could you develop an approach that maybe minimizes the sum of the absolute value of the error for a specified period of concern. So for example, something that minimizes the sum for the periods with loss of load risk that was.

1:18:58.440 --> 1:19:4.50  
Navis, Kyle  
That were identified in the February Ed LOLE study for 2024 and.

1:19:4.920 --> 1:19:5.700  
Navis, Kyle  
In addition.

1:19:6.500 --> 1:19:8.930  
Navis, Kyle  
You know, I'd note that you'd wanna limit that.

1:19:10.0 --> 1:19:15.670  
Navis, Kyle  
Uh optimization 2 hours. That actually makes sense for solar production, so you don't you know.

1:19:17.560 --> 1:19:39.330  
Navis, Kyle  
Get extra error thrown into hours when solar isn't going to actually be producing, so you would want to limit your your minimization to hours that are before sunset. But could that approach work for getting to a level that is less pulling a number out of a hat to represent risk levels and more something that's like analytically determined?

1:19:41.770 --> 1:19:47.540  
Nickerman, Luke  
And yeah, you know, happy to kind of explore that and and have you know maybe a follow up conversation on.

1:19:48.670 --> 1:19:50.300  
Nickerman, Luke  
You know specifically what you're thinking.

1:19:53.70 --> 1:19:54.890  
Nickerman, Luke  
And so let me just.

1:19:56.30 --> 1:19:59.310  
Nickerman, Luke  
And I try to rephrase that. So it was the minimization of the.

1:20:0.710 --> 1:20:5.460  
Nickerman, Luke  
The air. So essentially the differences from the mean, is that what you're suggesting?

1:20:6.180 --> 1:20:9.390  
Navis, Kyle  
So looking at is this LED 7 can't quite see.

1:20:9.950 --> 1:20:10.460  
Navis, Kyle  
I'm.

1:20:11.970 --> 1:20:17.470  
Navis, Kyle  
It's, uh, actually, could you go to the one with the yellow arrows and boxes just.

1:20:17.720 --> 1:20:43.70  
Navis, Kyle  
Yeah, yeah, this one. OK, so you're looking at minimizing for the hours with identified loss of load expectation risk. You select those cells and then you minimize the sum of the absolute value of the error to try and minimize it taking into account all of those hours. And so that would be, I think the Step 5 difference.

1:20:45.590 --> 1:20:46.0  
Nickerman, Luke  
OK.

1:20:47.940 --> 1:20:53.900  
Nickerman, Luke  
I think I have an idea of what you're suggesting, but maybe let's connect offline and and we can chat a little further.

1:20:53.960 --> 1:20:56.50  
Navis, Kyle  
Yeah. Certainly we can do that. Thanks. OK.

1:21:0.20 --> 1:21:12.360  
Meck, Alan L - Mktg Affil-E&FP  
Alright, let's just do a quick time check. I would really like to get through these questions within the next 7 minutes, so let's just try and keep our eye on that. So Next up, Gregory Klatt.

1:21:13.900 --> 1:21:34.850  
Gregory Klatt  
Thank you Greg Clatt for Western Power Trading Forum and just two preparatory remarks. First, I do appreciate all the work you, Luke and and Nick have put into this and also other stakeholders that you've been socializing these ideas with. And secondly, I wanna preface my questions with the observation that that my.

1:21:36.220 --> 1:21:46.450  
Gregory Klatt  
A difficulty in grasping a this point I wanna I wanna touch upon again. Maybe due to my ignorance. So put just putting that out there. But here's what I like to say.

1:21:47.590 --> 1:21:54.90  
Gregory Klatt  
Me, I am very concerned with the idea that we are going to use the PRM.

1:21:55.260 --> 1:21:56.640  
Gregory Klatt  
To somehow.

1:21:57.620 --> 1:22:11.510  
Gregory Klatt  
Deal with some deficiency in the EXCEEDANCE methodology. My understanding is that the EXCEEDANCE methodology is supposed to. The goal of this is to come up with an accurate measure of the contribution.

1:22:12.180 --> 1:22:41.550  
Gregory Klatt  
Contributions of these resources towards reliability during times of system stress, and actually we have to come up with contributions to reliability across all 24 hours because we have a 24 slice RA framework that we're trying to implement. So that being the case, if we're trying to come up with an accurate measurement, it would seem to me that that's that's comes before deciding what the PRM is gonna be. Now we can we we and let me clarify that.

1:22:43.90 --> 1:23:13.150  
Gregory Klatt  
We need to decide up front pretty much what the PRM, PRM methodology is going to be, how it's going to be derived, what's gonna be the process, right. But I don't think we can set a PRM up front. A number 15 percent, 17% and then back into Exceedance to meet that. That metric that that just that doesn't make any sense to me and I see it being fraught with problems.

1:23:13.860 --> 1:23:17.360  
Gregory Klatt  
Can you? I think I think we need and here's why I'm bringing this up again.

1:23:18.160 --> 1:23:29.30  
Gregory Klatt  
It's difficult for me to evaluate the reasonableness and the adequacy of the different exceedance proposals.

1:23:31.0 --> 1:23:34.860  
Gregory Klatt  
With that issue unresolved, the cart before the horse issue.

1:23:36.110 --> 1:23:53.380  
Gregory Klatt  
So I think we should spend a few minutes today and and walk through it so that people like me who are kind of fixed on this idea and having difficulty understanding what you're what you're trying to say here, can join the conversation and do an assessment of, OK, whether this makes sense or not.

1:23:56.140 --> 1:24:8.740  
Nickerman, Luke  
I yeah. So. So the decision did suggest it stakeholders participate. It's within the IRP process, right. So the DRP process right now is going through a loss of load study.

1:24:9.500 --> 1:24:12.80  
Nickerman, Luke  
And determining PRM's etcetera.

1:24:13.60 --> 1:24:25.230  
Nickerman, Luke  
There was a modeling advisory group webinar last week where they kind of talked through, you know, how different choices impact the PRM. Right? And so if you're.

1:24:25.750 --> 1:24:26.920  
Nickerman, Luke  
I.

1:24:27.940 --> 1:24:29.90  
Nickerman, Luke  
You know using.

1:24:31.510 --> 1:24:37.480  
Nickerman, Luke  
You know, if if if you're not using it, for instance UCAP right, that impacts the PRM. That's gonna raise the PRM.

1:24:38.230 --> 1:24:42.90  
Nickerman, Luke  
And beyond the level that they were finding with the pcap.

1:24:43.250 --> 1:24:45.940  
Nickerman, Luke  
And and so I think there's.

1:24:47.720 --> 1:24:55.730  
Nickerman, Luke  
It it I would really kind of urge stakeholders to participate in that process, become a little bit familiar with how.

1:24:56.830 --> 1:24:58.740  
Nickerman, Luke  
And IRP is setting up.

1:24:59.650 --> 1:25:0.470  
Nickerman, Luke  
That study.

1:25:1.490 --> 1:25:9.700  
Nickerman, Luke  
Because I thought it was pretty clear in the decision, you know, as part of the RA process, we're going to be leveraging that study.

1:25:10.410 --> 1:25:13.710  
Nickerman, Luke  
And you know to to set-up our PRM.

1:25:14.510 --> 1:25:18.720  
Nickerman, Luke  
I can't I and I know there is some disagreement about.

1:25:20.200 --> 1:25:21.120  
Nickerman, Luke  
You know whether the RA.

1:25:21.200 --> 1:25:24.290  
Nickerman, Luke  
They, you know, proceeding should do its own loss of load study.

1:25:25.430 --> 1:25:26.700  
Nickerman, Luke  
But I I don't.

1:25:27.350 --> 1:25:37.0  
Nickerman, Luke  
Think that would be a good use of resources. I given that the IRP is already kind of going through that process. And so that's just kind of my feeling.

1:25:38.840 --> 1:25:42.600  
Nickerman, Luke  
But you know, happy to hear other, you know, perspectives and and thoughts on that.

1:25:48.300 --> 1:25:51.150  
Meck, Alan L - Mktg Affil-E&FP  
Alright, moving along Michele Kito.

1:25:54.380 --> 1:26:26.510  
Kito, Michele  
Sure. This is Michelle Kito from energy division. And I just have a few points. So one of which is I just want to note that this is very consistent with what CAISO is doing in the resource efficiency test, which is basically saying every hour, do we have sufficient resources going into the market. So I view this as a step forward and trying to match up our resources on an hourly basis. The second thing is we think we're overthinking the solar exceedance level that we're using. Most of the loss of load events are going to be in the net peak hours, and solar isn't generating in the net peak hours.

1:26:26.620 --> 1:26:57.330  
Kito, Michele  
So I think I think what level we set here for exceedance is really gonna have more to do with energy sufficiency. So I do think we're overthinking this may be a little with regard to solar. In addition, I just wanted to know that there is this question about whether we're gonna go to an individual level. And I think if we're gonna go to an individual resource level and I know a lot of folks oppose this, but if we do go to an individual resource level, I really think it's more important to look at more data.

1:26:57.410 --> 1:27:28.60  
Kito, Michele  
And the the performance and that's why I think Exceedance would be really important to think about. And then finally, I note that you know, if we do something similar for gas, if we look at forced outages, I don't think that the gas units would wanna be measured just on their worst day. So I think we have to think about this holistically and we can't be saying we need to look at the worst day for solar and we don't look at the worst days for gas. So I with those comments, I I just think that.

1:27:28.160 --> 1:27:50.160  
Kito, Michele  
And I I appreciate what you've you have here and the discussion, but I I think we might be overthinking this question of what exceedance level and what level of reliability with regard to solar given that it's not generating during loss of load events in particular. So I just wanted to put that out there. Thanks.

1:27:53.450 --> 1:27:57.850  
Nickerman, Luke  
Yeah, thanks. I'll certainly kind of take that back and and consider it as we.

1:27:58.560 --> 1:28:1.160  
Nickerman, Luke  
Think through any refinements to this approach.

1:28:3.280 --> 1:28:8.750  
Meck, Alan L - Mktg Affil-E&FP  
Alright, great points, Michelle. And lastly, Partha Malvadkar from CAISO.

1:28:11.40 --> 1:28:16.480  
Partha Malvadkar  
No, thanks. Thanks a lot. Thanks, Luke. Really helpful presentation presentation. My question is actually was.

1:28:17.300 --> 1:28:21.540  
Partha Malvadkar  
A very similar to Michelle's, so I'll try to keep it brief. I was have you?

1:28:22.240 --> 1:28:44.540  
Partha Malvadkar  
Done analysis of if. If you looked at a sort of what the variability is for like, let's just say we're focusing on wind instead of solar through a year over year basis. If you chose let's just say let's just say you chose 80% exceedance level with the variability might look like for the portfolio and how that might be different if you actually with a variable it looks would look like if you.

1:28:45.470 --> 1:28:49.950  
Partha Malvadkar  
We're to Judge resources on a resource by resource basis in terms of setting their.

1:28:50.630 --> 1:28:56.330  
Partha Malvadkar  
Uh, their value based on exceedance about theology. I was wondering if that type of analysis have been performed.

1:28:58.460 --> 1:29:4.30  
Nickerman, Luke  
Uh, so we we have not done that yet, but that's a you know it's a good suggestion and we'll certainly.

1:29:4.970 --> 1:29:5.970  
Nickerman, Luke  
I take that back and.

1:29:6.710 --> 1:29:12.810  
Nickerman, Luke  
And you know, also happy to have, you know conversations offline about you know improvements to the to the approach.

1:29:14.270 --> 1:29:15.570  
Partha Malvadkar  
I think you look appreciate.

1:29:21.440 --> 1:29:29.740  
Meck, Alan L - Mktg Affil-E&FP  
Alright, it looks like we have one more in the queue, but Brent, we really need to move along, otherwise we we're gonna be cutting into lunch.

1:29:30.260 --> 1:29:32.370  
Meck, Alan L - Mktg Affil-E&FP  
I'm so I'm sorry it.

1:29:31.160 --> 1:29:32.750  
Brent Buffington  
And contact.

1:29:34.660 --> 1:29:35.150  
Meck, Alan L - Mktg Affil-E&FP  
I.

1:29:37.960 --> 1:29:38.740  
Meck, Alan L - Mktg Affil-E&FP  
Let's see.

1:29:38.40 --> 1:30:5.920  
Brent Buffington  
Yeah. So yeah, can can I just go really quickly just agreeing with a couple of folks like Greg, I I don't think and LOLE can be leveraged. The output of LOLE NPR city can be leveraged to figure out what they exceedance is or exchange should really be just, you know, our best estimate of the reliability contribution of resource in each hour. And just a note about why you wouldn't want to focus on the hours that the LOLE study surfaces.

1:30:6.880 --> 1:30:28.520  
Brent Buffington  
They assume that resources all the entire portfolios available every hour of every day up to its capabilities and every hour is a loss of load concern. If you don't have resources. So you know in the real world we're worried about early 19, maybe in resource adequacy space, we can't make any assumptions about resources. This is the mechanism to get those resources in those hours.

1:30:29.600 --> 1:30:31.240  
Brent Buffington  
So just want to caution there. So that's it.

1:30:34.440 --> 1:30:34.820  
Meck, Alan L - Mktg Affil-E&FP  
Alright.

1:30:33.370 --> 1:30:35.910  
Nickerman, Luke  
OK. Yeah. Thanks Brett. Thank you.

1:30:37.250 --> 1:30:37.780  
Meck, Alan L - Mktg Affil-E&FP  
OK.

1:30:39.350 --> 1:30:40.250  
Meck, Alan L - Mktg Affil-E&FP  
Thank you, Luke.

1:30:42.780 --> 1:30:43.820  
Meck, Alan L - Mktg Affil-E&FP  
SEIA.

1:30:44.860 --> 1:30:45.830  
Meck, Alan L - Mktg Affil-E&FP  
Tom Beach, are you there?

1:30:47.670 --> 1:30:48.240  
Tom Beach (Guest)  
I am.

1:30:49.200 --> 1:30:49.710  
Meck, Alan L - Mktg Affil-E&FP  
Alright.

1:30:52.970 --> 1:30:54.210  
Tom Beach (Guest)  
I actually I.

1:30:50.670 --> 1:30:54.540  
Meck, Alan L - Mktg Affil-E&FP  
If you wanna go ahead and share your presentation or do you want me to pull it up?

1:30:54.870 --> 1:30:58.860  
Tom Beach (Guest)  
Yeah, if you could pull it up, that would be good. I I don't have very many slides. That'd be great.

1:30:59.660 --> 1:31:0.370  
Meck, Alan L - Mktg Affil-E&FP  
Store.

1:31:1.620 --> 1:31:2.670  
Meck, Alan L - Mktg Affil-E&FP  
Let me open it.

1:31:6.90 --> 1:31:7.340  
Meck, Alan L - Mktg Affil-E&FP  
And.

1:31:8.710 --> 1:31:10.590  
Meck, Alan L - Mktg Affil-E&FP  
Share.

1:31:13.340 --> 1:31:17.890  
Tom Beach (Guest)  
There we go. OK, alright. Why don't you go to the second slide?

1:31:21.850 --> 1:31:49.110  
Tom Beach (Guest)  
So yeah this I wanna do a couple things in this brief presentation here. I just wanna update some of the work that CIA did in the earlier set of workshops where we were looking to ELCC studies that have been done as an indication of, you know what a starting point for an exceedance value for solar might be.

1:31:50.70 --> 1:31:58.150  
Tom Beach (Guest)  
So I'll do that in the first few slides here and then I do have some comments on PG and E's Peak Day methodology.

1:31:59.270 --> 1:32:8.480  
Tom Beach (Guest)  
At the end. So starting with the this slide, this is the analysis that we presented in the earlier set of workshops.

1:32:9.520 --> 1:32:11.70  
Tom Beach (Guest)  
What we did is we.

1:32:11.150 --> 1:32:22.260  
Tom Beach (Guest)  
We we the the green line here is the was the the solar ELCC values at that point in time. And we looked at.

1:32:25.680 --> 1:32:26.450  
Tom Beach (Guest)  
Solar.

1:32:27.690 --> 1:32:57.920  
Tom Beach (Guest)  
CAISO output normalized, so it was expressed in terms of capacity factors for four years, 2018 to 2021, and we looked at various exceedance values and looked for the exceedance value that best represented the ELCC monthly ELCC values. And we also focused just on solar output.

1:32:58.120 --> 1:33:12.870  
Tom Beach (Guest)  
During the hours when there was a positive LOLE based on the you know, the ELCC LOLE studies at that time and that was 5:00 PM to 9:00 PM.

1:33:13.530 --> 1:33:31.950  
Tom Beach (Guest)  
And so this is the this is the picture that came out of that analysis and the 50% exceedance seemed to us to, you know, best capture the the ELCC monthly ELCC values at that time. It's not perfect.

1:33:33.50 --> 1:33:34.550  
Tom Beach (Guest)  
But it was pretty close.

1:33:36.430 --> 1:33:55.920  
Tom Beach (Guest)  
So the one we go to the next slide, but you know since then we've had we have a new lol ELCC study that came out in February and the ELCC's for solar are lower than than they were at the time we did that original analysis. And one of the important.

1:33:57.360 --> 1:34:26.490  
Tom Beach (Guest)  
Aspects of the new this is the expected unserved energy diagram from that study. The the hours with expected unserved energy have been pushed out later in the evening and so in terms of the hours when solar produces instead of five to nine, it's really there's significant EUE values are in the 6:00 PM to 9:00 PM hours.

1:34:26.620 --> 1:34:32.610  
Tom Beach (Guest)  
Except for August and September, where there is still some significant EUE between 5:00 and 6:00.

1:34:32.690 --> 1:34:32.930  
Tom Beach (Guest)  
This.

1:34:34.840 --> 1:34:39.330  
Tom Beach (Guest)  
So what we did is we went back and redid our analysis.

1:34:40.730 --> 1:35:1.610  
Tom Beach (Guest)  
To compare ELCC's to solar Exceedances, instead of using 5:00 PM to 9:00 PM for all months, we used 6:00 PM to 9:00 PM except in August and September, where we used 5 to 9. So if you go to the next slide, you can see those results.

1:35:2.790 --> 1:35:29.270  
Tom Beach (Guest)  
And again, you know, 50% exceedance was the best fit for the updated ELCC's. With that, that change in the hours when there's a a positive expected unserved energy that there are some interesting differences in the shape of the yacc curve versus the.

1:35:30.610 --> 1:35:44.920  
Tom Beach (Guest)  
Versus the solar exceedance curve. Here for example, you note that there's solar in the in the the latest ELCC study has some significant value in October, November and December.

1:35:46.280 --> 1:36:7.510  
Tom Beach (Guest)  
And certainly significantly higher than solar output in from 6:00 PM to 9:00 PM in those months when solar output is very low in those hours. And I assume that that's related to the importance of solar as an energy source for charging storage.

1:36:9.630 --> 1:36:22.60  
Tom Beach (Guest)  
Because obviously storage would be an important resource in the peak hours in those winter fall, late fall and winter months. And so this may reflect the fact that.

1:36:24.470 --> 1:36:25.100  
Tom Beach (Guest)  
To.

1:36:27.90 --> 1:36:36.860  
Tom Beach (Guest)  
Pick up on Michelle's observation that you know important part of Solar's capacity value is as a source of of midday energy to charge solar.

1:36:38.470 --> 1:36:39.170  
Tom Beach (Guest)  
So.

1:36:39.930 --> 1:36:51.900  
Tom Beach (Guest)  
I I think that that, you know, we see that this would be one way to pick a a starting exceedance value for solar.

1:36:53.160 --> 1:37:1.110  
Tom Beach (Guest)  
For use in a in a in running a PRM analysis, you know obviously a 50% exceedance for solar.

1:37:2.180 --> 1:37:10.130  
Tom Beach (Guest)  
Does will also provide more energy in the middle of the day. I think we do agree with.

1:37:10.610 --> 1:37:41.460  
Tom Beach (Guest)  
With Nick Pappas and and PG&E that you know, this may be a somewhat iterative process. I mean, I think we should try to pick exceedances to look at in a PRM analysis, but ultimately, ultimately, I think it is important to have a PRM that's used for RA that's consistent with the PRM that's being used for the IRP. It's gonna be extremely.

1:37:41.540 --> 1:37:50.650  
Tom Beach (Guest)  
Confusing. And if the IRP is using one PRM and and RA is using a different PRM?

1:37:52.440 --> 1:37:54.850  
Tom Beach (Guest)  
Umm, so when we go to the last slide.

1:37:55.510 --> 1:38:0.740  
Tom Beach (Guest)  
Which are my comments on PG and E's peak day approach.

1:38:3.60 --> 1:38:18.410  
Tom Beach (Guest)  
One of the one thing that I think PGE has done, which I'm happy to see is that the normalized the historical solar output to the amount of solar that was online in.

1:38:19.680 --> 1:38:22.990  
Tom Beach (Guest)  
In each year, I think that that was important, so that.

1:38:24.200 --> 1:38:33.450  
Tom Beach (Guest)  
We wouldn't be putting too much weight on the early years that had lower amounts of solar online, so that's an important improvement that PG&E has made.

1:38:35.170 --> 1:38:35.950  
Tom Beach (Guest)  
You know I.

1:38:37.190 --> 1:38:55.480  
Tom Beach (Guest)  
I I think I will respectfully not quite agree with Michelle that solar has zero production in the net load peak hours in in the later let load peak hours. You're right, it solar does after.

1:38:56.700 --> 1:39:12.820  
Tom Beach (Guest)  
9:00 PM in the summer and after 6:00 or 7:00 PM in the winter, the solar output is 0, but the earlier parts of the peak period there is solar output and those include hours that have nonzero EUE.

1:39:13.740 --> 1:39:16.790  
Tom Beach (Guest)  
And so one of the things that we did is we looked at.

1:39:18.210 --> 1:39:21.510  
Tom Beach (Guest)  
PG and ES data basically looking at.

1:39:22.710 --> 1:39:34.800  
Tom Beach (Guest)  
At those hours that are read in in their comparison of exceedance to the peak day. And we looked at averaging.

1:39:35.980 --> 1:40:6.970  
Tom Beach (Guest)  
Those values over and this is, I think, consistent with Cal PA suggestion to look at the hours that have a nonzero expected unserved energy, and we we didn't look at the absolute value of the differences in those hours. We actually just let positive values offset negative values in those nonzero euwe hours. And when we did that, we came out with a 55%.

1:40:7.350 --> 1:40:9.510  
Tom Beach (Guest)  
Exceedance that minimized.

1:40:10.760 --> 1:40:18.570  
Tom Beach (Guest)  
Basically the the sum of the differences across those non 0 EUE hours. So we we have.

1:40:19.780 --> 1:40:36.330  
Tom Beach (Guest)  
We kind of agree with Cal Pier that that's a useful thing to do is to look at those hours with nonzero EUE. But we also agree with Michelle that it is important to look at what solar output is in the middle of the day.

1:40:37.550 --> 1:40:39.70  
Tom Beach (Guest)  
I think we're gonna have to.

1:40:40.250 --> 1:41:3.190  
Tom Beach (Guest)  
Wait until we put this all together into a an LOLE or PRM analysis to see if they're. I mean the the exceedance does not have a big effect on the amount of solar available in the middle of the day a 70% exceeds yes, the available solar in the middle of the day is somewhat lower than with a 50% exceedance.

1:41:4.760 --> 1:41:18.630  
Tom Beach (Guest)  
It may, it may not. That may not be a significant factor until we get a lot more storage or a lot more midday electrification load.

1:41:19.240 --> 1:41:27.930  
Tom Beach (Guest)  
But I think we're gonna have to kind of see how this all fits together before we can draw any firm conclusions about that.

1:41:29.790 --> 1:41:46.780  
Tom Beach (Guest)  
I think that PG and E's use of of of five peak days instead of 1 peak day. Is is also an improvement that I think is good. We would in terms of industry feedback from the solar industry, I think our number one.

1:41:49.0 --> 1:42:2.640  
Tom Beach (Guest)  
Concern would be fixed versus tracking systems. Uh, I'm not sure where we're gonna get the data for that, because the CAISO solar output data obviously includes both fixed and tracking all mixed together.

1:42:3.900 --> 1:42:5.670  
Tom Beach (Guest)  
We will do some thinking about that.

1:42:7.190 --> 1:42:32.140  
Tom Beach (Guest)  
It also would be interesting to look at in terms of regional in California, it's probably more coastal versus inland where there is more of a variation in the solar resource. That's probably a second order effect. And then looking out to the future, we don't think that it needs to be done.

1:42:32.670 --> 1:42:52.110  
Tom Beach (Guest)  
Uh. As part of this process, but looking out into the future, especially if we're getting a lot of electrification load in the winter for space heating, we think then it would be important to look at the effect of multiple days of cloudy weather in the winter time.

1:42:53.570 --> 1:42:57.940  
Tom Beach (Guest)  
So those are our comments and happy to answer any questions.

1:43:0.290 --> 1:43:3.630  
Meck, Alan L - Mktg Affil-E&FP  
Alright, it looks like we've got one question from Gregory Klatt. Go ahead.

1:43:8.780 --> 1:43:9.180  
Tom Beach (Guest)  
Alright.

1:43:4.550 --> 1:43:27.660  
Gregory Klatt  
Thank you, Greg. Fat, Western Power trading forum. Hey, Tom, how you doing? Hey, I got a quick question for you. When you when you when, when you were discussing the the desirability of having consistency between the PRM's for IRP and RA, were you referring to the number that you know the the metric 15% or 17% or the methodology?

1:43:30.330 --> 1:43:34.600  
Tom Beach (Guest)  
Well, I've been thinking the best thing would be to have the same number you used.

1:43:36.200 --> 1:43:37.70  
Tom Beach (Guest)  
That would be.

1:43:37.850 --> 1:43:40.170  
Tom Beach (Guest)  
And provide everybody with the clearest direction.

1:43:40.570 --> 1:43:41.200  
Tom Beach (Guest)  
Uh.

1:43:40.990 --> 1:43:41.590  
Gregory Klatt  
Cause.

1:43:42.480 --> 1:44:14.190  
Gregory Klatt  
Yeah, I think I think LSE S or have some concerns, right, because they when you're doing procurement for IRP and then that's based upon you know NQC the way that it NQC is defined specifically for for IRP and then that not necessarily providing the same bang for your buck in terms of RA capacity. So the IRP, the LOLE studies are doing there relies or you utilizes marginal ELCC values for.

1:44:14.260 --> 1:44:16.720  
Gregory Klatt  
For solar and wind and other resources. So.

1:44:18.450 --> 1:44:23.240  
Gregory Klatt  
With that understanding, or does your answer the same that you would wanna have?

1:44:23.980 --> 1:44:33.630  
Gregory Klatt  
You know the PRM for RA would need to be depended upon using marginal ELCC values to really be the same number. Would you agree with that?

1:44:35.120 --> 1:44:39.310  
Gregory Klatt  
I don't mean to cross Ave here, but I'm just trying to understand so I understand the point.

1:44:38.400 --> 1:44:45.710  
Tom Beach (Guest)  
Well, I mean, we're we're moving away from using ELCC for RA. I mean, I I don't.

1:44:47.440 --> 1:45:1.580  
Tom Beach (Guest)  
Assessing the impact of new resources on reliability, I think it's reasonable to use a marginal ELCC for that. I mean, we're moving away from the the only thing we're using.

1:45:2.680 --> 1:45:17.270  
Tom Beach (Guest)  
And and the ELCC values that I've presented here are all average ELCC values. They're not marginal, right? We've we've used average ELCC for RA, and I certainly think that.

1:45:18.140 --> 1:45:18.830  
Tom Beach (Guest)  
I did.

1:45:20.90 --> 1:45:35.600  
Tom Beach (Guest)  
Any any ELCC analysis used for RA where you're trying to get what's the capacity value of the entire fleet, you you have to use average, but we're we're moving away from doing that, right? We're trying to move to a simpler exceedance method.

1:45:37.80 --> 1:45:37.850  
Tom Beach (Guest)  
And.

1:45:39.60 --> 1:45:44.120  
Tom Beach (Guest)  
So, you know, I think marginally. ELCC has its place in IRP.

1:45:44.200 --> 1:45:44.630  
Tom Beach (Guest)  
He.

1:45:46.100 --> 1:45:49.150  
Tom Beach (Guest)  
And I think once we get this calibrated.

1:45:49.800 --> 1:45:50.610  
Tom Beach (Guest)  
Then.

1:45:52.130 --> 1:46:3.600  
Tom Beach (Guest)  
For RA we get a an exceedance that is calibrated for RA. Then we can move away from having to do average ELCC studies that are difficult.

1:46:4.350 --> 1:46:5.570  
Gregory Klatt  
I thanks Tom.

1:46:11.890 --> 1:46:14.100  
Meck, Alan L - Mktg Affil-E&FP  
Alright, Next up, Scott murtishaw.

1:46:17.700 --> 1:46:18.130  
Scott Murtishaw  
Hey, Tom.

1:46:18.790 --> 1:46:19.120  
Tom Beach (Guest)  
Hey.

1:46:19.510 --> 1:46:24.830  
Scott Murtishaw  
Uh, so 11 minor correction there or maybe major correction.

1:46:25.510 --> 1:46:28.130  
Scott Murtishaw  
Is that we are not moving away from ELCC.

1:46:29.360 --> 1:46:30.40  
Scott Murtishaw  
Because.

1:46:30.990 --> 1:46:36.140  
Scott Murtishaw  
The decision that for RA said that the PC is complying with the statue.

1:46:36.750 --> 1:46:38.440  
Scott Murtishaw  
And that what we're doing is the CC.

1:46:41.70 --> 1:46:46.580  
Scott Murtishaw  
So just, you know, be careful with your words because we are absolutely not moving away from the ELCC.

1:46:47.200 --> 1:46:47.750  
Scott Murtishaw  
If we wanna.

1:46:50.880 --> 1:46:51.640  
Scott Murtishaw  
Right, this is.

1:46:46.880 --> 1:46:52.570  
Tom Beach (Guest)  
I I I I stand. I stand corrected. Thank you for that, that important edit.

1:46:55.850 --> 1:46:56.130  
Tom Beach (Guest)  
Right.

1:46:57.370 --> 1:46:57.640  
Scott Murtishaw  
Yeah.

1:46:52.340 --> 1:46:59.370  
Scott Murtishaw  
Yeah, this is this is ELCC. It's just a different flavor of ELCC, right? You're you're absolutely.

1:47:0.600 --> 1:47:0.880  
Scott Murtishaw  
Yeah.

1:47:2.190 --> 1:47:3.90  
Scott Murtishaw  
So the second thing.

1:47:3.770 --> 1:47:7.290  
Scott Murtishaw  
Is a I guess really just kind of agreeing with Greg, it's.

1:47:8.600 --> 1:47:18.890  
Scott Murtishaw  
Because the IRP process is completely different, using a direct translation from the LOLE study to now even incremental or marginal.

1:47:20.0 --> 1:47:25.770  
Scott Murtishaw  
ELCC, which I was surprised to see it as an interesting development. I just don't the PRM's will be.

1:47:26.800 --> 1:47:31.830  
Scott Murtishaw  
Using developed using two completely different methodologies and will not really be comfortable.

1:47:32.540 --> 1:47:35.570  
Scott Murtishaw  
At all. So I think we should expect to see very different PRM's.

1:47:36.840 --> 1:47:39.950  
Scott Murtishaw  
As they're used for IRP purposes and RA purposes.

1:47:42.700 --> 1:47:50.430  
Tom Beach (Guest)  
I'm not sure I agree with that because the, I mean the IRP is is it's looking it, it is analyzing the whole portfolio, it's just.

1:47:51.150 --> 1:47:59.690  
Tom Beach (Guest)  
That process is is trying to figure out what to add to the whole the existing portfolio, so I'm not sure I agree that.

1:48:1.130 --> 1:48:6.450  
Tom Beach (Guest)  
I mean, I'll have to think about it some more, but I'm not sure I agree that the PRM that's used in IRP.

1:48:7.290 --> 1:48:11.240  
Tom Beach (Guest)  
Doesn't reflect the whole portfolio. I think it does and.

1:48:11.90 --> 1:48:11.560  
Scott Murtishaw  
Yeah, it.

1:48:12.990 --> 1:48:17.800  
Scott Murtishaw  
Yeah, it does. But but it's it's using entirely different resource counting values.

1:48:21.630 --> 1:48:21.850  
Meck, Alan L - Mktg Affil-E&FP  
Yeah.

1:48:21.220 --> 1:48:28.810  
Tom Beach (Guest)  
But it's only it's only the only purpose of the IRP is to pick new resources. It's not trying to value the whole portfolio.

1:48:32.10 --> 1:48:34.710  
Scott Murtishaw  
Yeah, but it's modeling the entire portfolio.

1:48:36.140 --> 1:48:42.320  
Scott Murtishaw  
To to to determine that the portfolio meets the 0.1 LOLE standard.

1:48:45.750 --> 1:48:46.130  
Scott Murtishaw  
And and.

1:48:45.70 --> 1:48:53.560  
Tom Beach (Guest)  
And it's picking PRM to so that the whole portfolio meets that standard. And I that seems to be what seems to me to be what we're trying to do here as well.

1:48:54.540 --> 1:49:0.930  
Scott Murtishaw  
Yeah, but I think because the the resource values will be different. The PRM number that you end up getting will be different.

1:49:2.590 --> 1:49:3.520  
Scott Murtishaw  
So that's really my main.

1:49:2.240 --> 1:49:7.10  
Meck, Alan L - Mktg Affil-E&FP  
Yeah, a very important a very important input into the.

1:49:7.550 --> 1:49:25.710  
Meck, Alan L - Mktg Affil-E&FP  
Uh LOLE study, as I understand it, and I'm not an expert, is the resource counting methodology. And so if we're using exceedance, let's say exceedance 50% and IRP is doing ELCC those are going to come out with two very different numbers.

1:49:26.680 --> 1:49:28.220  
Meck, Alan L - Mktg Affil-E&FP  
Because the inputs are very different.

1:49:36.80 --> 1:49:47.420  
Tom Beach (Guest)  
Yeah, I think that's a, I mean I to interesting point, I have to think about it some more and look look again at exactly how they're doing it in IRP.

1:49:52.360 --> 1:49:54.170  
Meck, Alan L - Mktg Affil-E&FP  
All right, last up, Nick Pappas.

1:49:55.90 --> 1:50:24.700  
Nick Pappas  
Hey, thanks, Ellen and thanks Tom for bringing all this forward. Mike, my comment I think mostly was was covered in the last exchange, but maybe just one comment on framing is I I think what really matters is not whether the PRM numbers are identical, but whether the underlying analysis and portfolios that are tested are aligned. And I think that we can get even if as has been discussed here, the counting rules may be different using one version of the ELCC in IRP. And that's Scott correctly presented this exceeding spaced version of ELCC.

1:50:25.60 --> 1:50:31.780  
Nick Pappas  
In slice of day. So I think if the portfolios are aligned and meet that LOLE test reliability standard.

1:50:32.470 --> 1:50:42.720  
Nick Pappas  
In less, we have precisely the same counting rules and IRP. They may differ and from a policy perspective, I think that's completely fine for for the purposes of this. So I I think maybe.

1:50:43.870 --> 1:50:50.750  
Nick Pappas  
It's an important kind of methodological point, but we don't need to go to that final step of saying it's 17.2 and in both.

1:50:50.830 --> 1:50:55.140  
Nick Pappas  
Uh, so yeah, pretty appreciate the the discussion on this.

1:51:2.810 --> 1:51:4.70  
Meck, Alan L - Mktg Affil-E&FP  
OK, that looks like.

1:51:5.70 --> 1:51:6.310  
Meck, Alan L - Mktg Affil-E&FP  
Last of.

1:51:7.370 --> 1:51:11.0  
Meck, Alan L - Mktg Affil-E&FP  
Comments and questions on this presentation. Thank you, Tom.

1:51:12.830 --> 1:51:13.620  
Meck, Alan L - Mktg Affil-E&FP  
On.

1:51:14.580 --> 1:51:24.0  
Meck, Alan L - Mktg Affil-E&FP  
Now for the last presentation before lunch, I'm Cal WEA and presenter is going to be Dariush, I believe.

1:51:27.340 --> 1:51:28.410  
Meck, Alan L - Mktg Affil-E&FP  
Dariush, are you there?

1:51:29.380 --> 1:51:29.960  
Dariush Shirmohammadi  
I'm here.

1:51:31.30 --> 1:51:31.540  
Meck, Alan L - Mktg Affil-E&FP  
Great.

1:51:32.10 --> 1:51:42.170  
Meck, Alan L - Mktg Affil-E&FP  
I'm a let me go ahead and stop sharing mine. Do you want to share your presentation or do you want me to go and pull it up for you? Actually, I will use mine.

1:51:42.910 --> 1:51:49.10  
Dariush Shirmohammadi  
OK, great. Alright, this way I can do all kinds of activities here and everybody can see that.

1:51:50.840 --> 1:51:53.410  
Dariush Shirmohammadi  
I'm assuming everybody can see my slide.

1:51:54.360 --> 1:51:54.630  
Meck, Alan L - Mktg Affil-E&FP  
Yep.

1:51:55.360 --> 1:51:55.940  
Dariush Shirmohammadi  
OK.

1:51:57.990 --> 1:51:58.400  
Dariush Shirmohammadi  
Well.

1:52:2.30 --> 1:52:4.620  
Dariush Shirmohammadi  
We we, I, I I never stopped.

1:52:6.110 --> 1:52:8.680  
Dariush Shirmohammadi  
Bashing Achiness method but.

1:52:10.160 --> 1:52:21.870  
Dariush Shirmohammadi  
Especially in in in its raw form where we just take a bunch of data and take some exceedance level of it and say this is my answer.

1:52:23.390 --> 1:52:25.660  
Dariush Shirmohammadi  
We we we see the data is.

1:52:26.320 --> 1:52:31.650  
Dariush Shirmohammadi  
That that level, especially if arbitrarily selected, is eventually gets arbitrarily selected.

1:52:33.30 --> 1:52:35.530  
Dariush Shirmohammadi  
PGE fried to have has tried to.

1:52:36.350 --> 1:52:38.200  
Dariush Shirmohammadi  
Somehow tied to.

1:52:38.940 --> 1:52:39.400  
Dariush Shirmohammadi  
Umm.

1:52:40.400 --> 1:52:41.400  
Dariush Shirmohammadi  
To to.

1:52:43.10 --> 1:52:44.540  
Dariush Shirmohammadi  
Correlation with load.

1:52:46.170 --> 1:52:56.730  
Dariush Shirmohammadi  
And and and and and that that at least gives us some legit legit legitimacy. But eventually they've seen this level is always always till they selected.

1:52:57.640 --> 1:53:2.910  
Dariush Shirmohammadi  
And and also the results of EXCEEDANCE could be completed.

1:53:4.300 --> 1:53:18.770  
Dariush Shirmohammadi  
Could be could be erratic if we have limited sample results and as as we see it limited some sample data as we as we see as we enter this hourly framework.

1:53:19.810 --> 1:53:24.660  
Dariush Shirmohammadi  
And and people are focusing on targeted sampling and.

1:53:25.540 --> 1:53:27.930  
Dariush Shirmohammadi  
We see the number of.

1:53:29.680 --> 1:53:33.190  
Dariush Shirmohammadi  
Samples will be rather limited and.

1:53:34.470 --> 1:53:44.740  
Dariush Shirmohammadi  
And and and so did chances of ending up with some we we actually made a presentation on in which we played with numbers and see so how.

1:53:46.380 --> 1:53:59.890  
Dariush Shirmohammadi  
With one or two numbers moving around and exceedance method can give totally erratic number results, so so that's that's those are the dangers of exceedance method.

1:54:1.250 --> 1:54:1.780  
Dariush Shirmohammadi  
The.

1:54:3.110 --> 1:54:5.280  
Dariush Shirmohammadi  
We we proposed in LR.

1:54:6.640 --> 1:54:11.190  
Dariush Shirmohammadi  
Who's 2 main pillars? Well, target assembling.

1:54:12.100 --> 1:54:41.610  
Dariush Shirmohammadi  
And and we we basically said target sampling should be based on days that load system needs capacity or as a proxy for that we picked load those hours to do the sampling for those hours where load well higher than a certain threshold and threshold could be and and after the threshold is.

1:54:42.50 --> 1:54:51.640  
Dariush Shirmohammadi  
Is picked and of course the higher that'd be. Take that threshold like PGE case where they pick the five highest load days.

1:54:52.720 --> 1:54:53.570  
Dariush Shirmohammadi  
Of highest.

1:54:54.540 --> 1:54:55.640  
Dariush Shirmohammadi  
Peak load days.

1:54:56.400 --> 1:55:5.90  
Dariush Shirmohammadi  
Umm, as once that threshold is picked in. In that case threshold is 5 but number of samples.

1:55:6.310 --> 1:55:15.580  
Dariush Shirmohammadi  
In our case, we we've been talking about picking at the at load being said beyond certain percentage of the peak load for that particular hour.

1:55:16.370 --> 1:55:20.20  
Dariush Shirmohammadi  
We we still have are presenting the methodology in terms of.

1:55:21.10 --> 1:55:25.830  
Dariush Shirmohammadi  
Treating each hour separately, but I think PG and E's approach could also work.

1:55:27.500 --> 1:55:29.460  
Dariush Shirmohammadi  
Yeah. And and.

1:55:30.500 --> 1:55:33.650  
Dariush Shirmohammadi  
So once we do this sampling.

1:55:34.880 --> 1:56:4.750  
Dariush Shirmohammadi  
The the level of conservativeness would be whether we be pick the those hours which have the highest need for capacity. Once we have that we have limited sub sample of data, limited data samples. We just say take the average of them we we advocate taking the average of what the data we have. However there has been discussions or or at least the.

1:56:4.830 --> 1:56:10.250  
Dariush Shirmohammadi  
Since the order talked about Exceedance method, we decided to combine the.

1:56:12.190 --> 1:56:26.180  
Dariush Shirmohammadi  
Yeah, LCR with with Escenas concept and we we are presenting something called NLR exceedance NLRB. We still advocate the use of averaging of the.

1:56:26.800 --> 1:56:45.470  
Dariush Shirmohammadi  
Umm sample data which which would be few and and we we we advise against you saying exceedance which can generate especially for wind well data. We have few data samples which are can be all over the place.

1:56:49.470 --> 1:56:50.20  
Dariush Shirmohammadi  
So.

1:56:52.90 --> 1:56:56.80  
Dariush Shirmohammadi  
We we in the past we have presented these results for.

1:56:57.20 --> 1:56:57.580  
Dariush Shirmohammadi  
Umm.

1:57:0.90 --> 1:57:1.520  
Dariush Shirmohammadi  
Certain hours.

1:57:4.190 --> 1:57:8.870  
Dariush Shirmohammadi  
We we picked our ending 4:00 PM or 16.

1:57:10.250 --> 1:57:15.710  
Dariush Shirmohammadi  
In August, to sort of as a proxy for gross peak load.

1:57:17.250 --> 1:57:18.770  
Dariush Shirmohammadi  
Time slot or time.

1:57:21.800 --> 1:57:24.610  
Dariush Shirmohammadi  
Slice one hour slice.

1:57:25.660 --> 1:57:26.310  
Dariush Shirmohammadi  
And.

1:57:27.660 --> 1:57:32.550  
Dariush Shirmohammadi  
We showed what they seen. This method will show if you use just.

1:57:33.830 --> 1:57:45.30  
Dariush Shirmohammadi  
And these are using actual generation data for based on CAISO, from CAISO for the past three years, not 2019 to 2021.

1:57:47.420 --> 1:57:48.10  
Dariush Shirmohammadi  
So.

1:57:49.750 --> 1:57:54.480  
Dariush Shirmohammadi  
We see that as we just if if we simply use exceedance without.

1:57:55.300 --> 1:57:59.290  
Dariush Shirmohammadi  
Doing targeted sampling the numbers can be all over the place.

1:58:2.40 --> 1:58:2.760  
Dariush Shirmohammadi  
We then.

1:58:4.400 --> 1:58:9.850  
Dariush Shirmohammadi  
Applied or originally? You know our approach, which is I call it now average NLR.

1:58:11.50 --> 1:58:15.240  
Dariush Shirmohammadi  
And and we said what, what? And we then do that.

1:58:18.150 --> 1:58:26.410  
Dariush Shirmohammadi  
We increased the low threshold which would make the number some the number of samples smaller and smaller.

1:58:27.540 --> 1:58:29.810  
Dariush Shirmohammadi  
As we and then we averaged.

1:58:30.710 --> 1:58:32.770  
Dariush Shirmohammadi  
They the wind and solar.

1:58:33.430 --> 1:58:39.40  
Dariush Shirmohammadi  
Data to sort of calculate solar qualifying capacity of wind qualifying capacity.

1:58:40.150 --> 1:58:45.230  
Dariush Shirmohammadi  
And and the the numbers came out to be a lot more stable.

1:58:46.10 --> 1:58:49.270  
Dariush Shirmohammadi  
Across the garden and and and of course if you have.

1:58:52.140 --> 1:58:56.340  
Dariush Shirmohammadi  
Production during times Lisa system needs are the highest matters.

1:58:57.310 --> 1:58:59.530  
Dariush Shirmohammadi  
And then we would look at.

1:59:1.470 --> 1:59:2.200  
Dariush Shirmohammadi  
Higher.

1:59:3.490 --> 1:59:5.0  
Dariush Shirmohammadi  
Load levels for sampling.

1:59:7.560 --> 1:59:8.650  
Dariush Shirmohammadi  
And.

1:59:9.610 --> 1:59:19.50  
Dariush Shirmohammadi  
Instead of averaging the results of the targets sample data, it could use the 50% exceedance or median.

1:59:20.60 --> 1:59:26.450  
Dariush Shirmohammadi  
It's called exceedance. Now this if if you have the audacity of calling exceedance.

1:59:28.770 --> 1:59:33.380  
Dariush Shirmohammadi  
ELCC this one is a lot easier to call. It's actually accurate.

1:59:34.200 --> 1:59:37.790  
Dariush Shirmohammadi  
If it the idea was to take the sample data.

1:59:38.830 --> 1:59:40.720  
Dariush Shirmohammadi  
And take the 50%.

1:59:41.590 --> 1:59:46.240  
Dariush Shirmohammadi  
And high 50% median number for the sample data.

1:59:47.250 --> 1:59:50.880  
Dariush Shirmohammadi  
And the numbers are still fairly stable.

1:59:52.830 --> 1:59:57.860  
Dariush Shirmohammadi  
And and if if you want to be conservative then take.

2:0:0.380 --> 2:0:8.510  
Dariush Shirmohammadi  
Higher low threshold when load is highest. He also did the ELRP exchange ELRP 70%.

2:0:10.280 --> 2:0:19.690  
Dariush Shirmohammadi  
We believe that either the median average or the median of the this limited sample that we end up with.

2:0:20.710 --> 2:0:25.300  
Dariush Shirmohammadi  
After we have a target, we have done the targets target as sampling.

2:0:27.920 --> 2:0:31.70  
Dariush Shirmohammadi  
Should be used and the numbers are not that different.

2:0:33.820 --> 2:0:36.920  
Dariush Shirmohammadi  
We repeated this calculation.

2:0:37.910 --> 2:0:38.410  
Dariush Shirmohammadi  
Umm.

2:0:39.440 --> 2:0:41.130  
Dariush Shirmohammadi  
And for.

2:0:41.850 --> 2:0:46.590  
Dariush Shirmohammadi  
Our ending 20 or 8:00 PM again in August as.

2:0:47.410 --> 2:0:48.20  
Dariush Shirmohammadi  
Has.

2:0:49.260 --> 2:0:51.250  
Dariush Shirmohammadi  
As an indication of the.

2:0:52.130 --> 2:0:52.620  
Dariush Shirmohammadi  
Uh.

2:0:54.520 --> 2:0:57.170  
Dariush Shirmohammadi  
Net peak node for the for the year.

2:0:58.210 --> 2:1:4.780  
Dariush Shirmohammadi  
I may or may not be the case, but just picked that hour. I'll ending 8 in August.

2:1:5.760 --> 2:1:12.360  
Dariush Shirmohammadi  
And again, did targeted sampling across all days of August at our ending.

2:1:13.160 --> 2:1:14.970  
Dariush Shirmohammadi  
8 Or I'll ending 20.

2:1:16.280 --> 2:1:17.510  
Dariush Shirmohammadi  
And.

2:1:18.750 --> 2:1:21.970  
Dariush Shirmohammadi  
This is the average DNR value for solar.

2:1:22.700 --> 2:1:28.200  
Dariush Shirmohammadi  
And average, you know already for wind and this is median of.

2:1:31.770 --> 2:1:34.680  
Dariush Shirmohammadi  
Uh solar and wind values.

2:1:36.570 --> 2:1:47.930  
Dariush Shirmohammadi  
So we we we, we we would like to emphasize that as we see it, if you wanna be more conservative, we should just focus on raising the load threshold.

2:1:49.280 --> 2:1:54.100  
Dariush Shirmohammadi  
But eventually we should have enough sample size to.

2:1:54.980 --> 2:2:1.830  
Dariush Shirmohammadi  
To to have even using average or mean to end up with.

2:2:3.260 --> 2:2:4.730  
Dariush Shirmohammadi  
A a meaningful.

2:2:6.880 --> 2:2:7.730  
Dariush Shirmohammadi  
Number here.

2:2:11.170 --> 2:2:13.540  
Dariush Shirmohammadi  
We also agree with folks that say.

2:2:14.990 --> 2:2:21.250  
Dariush Shirmohammadi  
Here we, we, we, we, we we have over the years. So for example gas resources have.

2:2:22.340 --> 2:2:26.850  
Dariush Shirmohammadi  
It should have a qualifying capacity equal to the installed capacity.

2:2:28.150 --> 2:2:33.180  
Dariush Shirmohammadi  
Umm, you know a calculation? Of course we have used interconnection capacity.

2:2:33.890 --> 2:2:42.130  
Dariush Shirmohammadi  
Because that's the amount that they they power can put out. So they they could they the QC of of maybe resources should be.

2:2:42.840 --> 2:2:44.880  
Dariush Shirmohammadi  
Equal to the installed capacity.

2:2:45.870 --> 2:2:46.580  
Dariush Shirmohammadi  
Or.

2:2:48.460 --> 2:2:49.510  
Dariush Shirmohammadi  
You cap.

2:2:50.520 --> 2:2:59.750  
Dariush Shirmohammadi  
Based on the force outage rate, but then we focus on PRM because PRM addresses so many other aspects, not only the.

2:3:1.390 --> 2:3:2.690  
Dariush Shirmohammadi  
The wind and solar.

2:3:3.950 --> 2:3:5.640  
Dariush Shirmohammadi  
Qualifying capacity value.

2:3:6.690 --> 2:3:21.880  
Dariush Shirmohammadi  
So we we believe that the these numbers should be picked first. Yeah, we should agree on qualifying capacity when and solar and then then for if we want to be super conservative to go after PRM as.

2:3:22.510 --> 2:3:23.20  
Dariush Shirmohammadi  
Uh.

2:3:25.40 --> 2:3:48.720  
Dariush Shirmohammadi  
Or we wanna be up less conservative to do that through PRM. And and that PRM does not need to be the same amount for every month, could be varying from month to month or the different ways of working with PRM so that we can address all resources and all the other factors.

2:3:49.360 --> 2:3:52.0  
Dariush Shirmohammadi  
That that impact.

2:3:53.750 --> 2:3:59.240  
Dariush Shirmohammadi  
The the loss of load expectation. One last point that I wanna say is.

2:4:0.460 --> 2:4:13.210  
Dariush Shirmohammadi  
And and it's selecting the five peak day loads which which I we we agree with PG&E that's one way way of targeted sampling which which is totally acceptable.

2:4:14.720 --> 2:4:23.870  
Dariush Shirmohammadi  
PG&E does that based on gross load days, gross peak load for for those to select the five worst days.

2:4:24.720 --> 2:4:25.630  
Dariush Shirmohammadi  
That may be.

2:4:28.470 --> 2:4:29.400  
Dariush Shirmohammadi  
Not a bad idea.

2:4:30.740 --> 2:4:32.610  
Dariush Shirmohammadi  
As as I expect.

2:4:36.420 --> 2:4:37.710  
Dariush Shirmohammadi  
The five highest.

2:4:39.340 --> 2:4:47.510  
Dariush Shirmohammadi  
Net load days, which is the one that we should worry about because that's where the loss of load is the highest and the highest.

2:4:48.650 --> 2:4:57.810  
Dariush Shirmohammadi  
Go slow. Taste may be highly correlated with one another anyway, but maybe a bachelor option, given that we are talking about loss of load.

2:4:58.840 --> 2:5:2.350  
Dariush Shirmohammadi  
And and concerns about capacity shortfall.

2:5:3.230 --> 2:5:4.620  
Dariush Shirmohammadi  
It would be to have.

2:5:6.260 --> 2:5:6.740  
Dariush Shirmohammadi  
Umm.

2:5:9.210 --> 2:5:18.30  
Dariush Shirmohammadi  
Pick pick the five worst days considering net peak load value, but again, that's that's just just an opinion.

2:5:18.180 --> 2:5:25.860  
Dariush Shirmohammadi  
And and I don't think that's that's as critical as focusing on limited on on.

2:5:27.240 --> 2:5:28.470  
Dariush Shirmohammadi  
Targeted sampling.

2:5:29.880 --> 2:5:41.570  
Dariush Shirmohammadi  
Which was first introduced using. You know our approach and then simply averaging this limited sample of data or taking the median of limited sample data we have.

2:5:42.590 --> 2:5:47.870  
Dariush Shirmohammadi  
That's the that's all my presentation, but I can by the way, I can turn my camera on.

2:5:49.640 --> 2:5:50.620  
Dariush Shirmohammadi  
And.

2:5:51.410 --> 2:5:51.690  
Dariush Shirmohammadi  
I'm.

2:5:52.730 --> 2:5:57.320  
Dariush Shirmohammadi  
I can ask her any questions that I can try to answer any questions that might be there.

2:5:59.690 --> 2:6:2.630  
Meck, Alan L - Mktg Affil-E&FP  
Uh, looks like we have one question from Brent Buffington.

2:6:4.400 --> 2:6:19.900  
Brent Buffington  
Yeah. So Brent Buffington from SCE, so, so, Dariush, your top table and your bottom 2 tables really apples and oranges. And so the top table, 50% exceedance for wind, is 43.3.

2:6:20.600 --> 2:6:28.930  
Brent Buffington  
The third down table, the 50% exceeded, so that's the whole thing, is 50% exceedance and it's 43.3 ish.

2:6:29.570 --> 2:6:40.520  
Brent Buffington  
Basically, what that that would. And then similarly for the 70 and the and the bottom table. What what this means to me is the resampling system underlying ENL R doesn't actually do anything.

2:6:41.270 --> 2:6:42.340  
Dariush Shirmohammadi  
Well, yeah.

2:6:41.760 --> 2:6:53.390  
Brent Buffington  
Because you're basically, you're getting the same numbers out, you're getting the the same exceedance it so and this is observation I made last time around. Basically, since there's very little correlation between.

2:6:54.160 --> 2:6:58.700  
Brent Buffington  
Wind output and peak load hours. You're basically just random resampling.

2:6:59.390 --> 2:7:13.680  
Brent Buffington  
Uh and then finding new exceedances and it just happens, you know, so the this is fully expected because it doesn't actually add explanatory power, but do maybe a comment or or thought or kind of what you're getting at.

2:7:14.410 --> 2:7:15.470  
Brent Buffington  
Trying to get out past that.

2:7:14.900 --> 2:7:23.980  
Dariush Shirmohammadi  
Well, I'm glad. I'm glad you brought raised that point and and obviously we need to have a chat so that you better understand what we do.

2:7:25.210 --> 2:7:40.440  
Dariush Shirmohammadi  
As you see, when we pick higher, when we target our sampling at the higher load levels, the numbers definitely vary and and you you can see that. What if even if you look at compared to 43%?

2:7:41.190 --> 2:7:45.500  
Dariush Shirmohammadi  
The reason this number these numbers and these numbers are the same.

2:7:46.250 --> 2:7:47.300  
Dariush Shirmohammadi  
Is because.

2:7:49.280 --> 2:7:53.380  
Dariush Shirmohammadi  
Every day that, at least for for 8 hours, say hour.

2:7:54.130 --> 2:7:57.370  
Dariush Shirmohammadi  
Sending a PM or I'll end 20.

2:7:59.390 --> 2:8:6.480  
Dariush Shirmohammadi  
For every day the load level was above 50% of the peak for our ending.

2:8:8.470 --> 2:8:23.140  
Dariush Shirmohammadi  
20 in August. So while the Exceedance doesn't care about the load level, just takes the the the top 50. Well, the median of the load jar load generation.

2:8:23.810 --> 2:8:26.240  
Dariush Shirmohammadi  
For all this sample load data.

2:8:27.240 --> 2:8:29.440  
Dariush Shirmohammadi  
See if we pick the.

2:8:31.350 --> 2:8:32.340  
Dariush Shirmohammadi  
The free sample.

2:8:33.910 --> 2:8:43.270  
Dariush Shirmohammadi  
Uh, when cherish. And for what? For only when the load is above 50% since the the sample is identical.

2:8:44.150 --> 2:9:8.760  
Dariush Shirmohammadi  
Because load every day during our ending eight was above 50% of the maximum load at our ending 8:00 PM so the that's why these two numbers came out to be identical. They're not similar. They're identical because the sample is the same. That's why we say we should focus on a higher load levels. Well, where?

2:9:11.730 --> 2:9:16.980  
Dariush Shirmohammadi  
Sampling will be a lot more targeted for production that matters.

2:9:17.790 --> 2:9:41.800  
Dariush Shirmohammadi  
So this is similar to PG and E's approach in which to pick five worst days based on load level not based on generation level or because that's when generation matters. Then they look at generation during that five worst days and and then I think at one at one of the approaches they were talking about to take the average of the generation.

2:9:44.680 --> 2:9:58.850  
Dariush Shirmohammadi  
But but anyway, so you'll observation simply is is is rather. That's trivial. Point that yeah, load every day is about 50% of the maximum load. That's all.

2:10:0.440 --> 2:10:1.330  
Brent Buffington  
OK so.

2:10:0.150 --> 2:10:1.990  
Dariush Shirmohammadi  
These are the ones that, yeah.

2:10:2.670 --> 2:10:4.500  
Brent Buffington  
OK, they thank you, sure.

2:10:8.790 --> 2:10:11.70  
Meck, Alan L - Mktg Affil-E&FP  
Alright, Next up, Nick Pappas.

2:10:12.130 --> 2:10:22.740  
Nick Pappas  
OK. Thanks, Alan, and thanks. Are you sure for bringing this forward? So I'm I'm still wrapping my head around kind of the the latest iteration of this, I think, Dariush, directionally, I, I agree kind of the.

2:10:23.970 --> 2:10:50.400  
Nick Pappas  
And maybe, well, let let me see. I I think I agree as I mentioned in my presentations with trying to align the values we're using with the the peak load days, I wanna understand a little bit more as someone who's certainly not meteorological expert on wind, Brent's comment and the discussion around sort of whether there is any correlation or kind of patterns we can we can draw from that that impact both you know load and wind and maybe to to get at that.

2:10:51.240 --> 2:11:3.30  
Nick Pappas  
I'm curious if you have thoughts on what this might look like at, you know, 90 or 95%. If we think about sort of those those handful of days in August that are really extreme weather, does that potentially shift?

2:11:3.690 --> 2:11:14.580  
Nick Pappas  
The outcomes here, if we're thinking about days with a heat Dome and big pressure systems, the presuming those are the days really at the end of the day, we're really gonna care about.

2:11:15.350 --> 2:11:17.410  
Dariush Shirmohammadi  
Well, let's let's do this. Let let me.

2:11:18.570 --> 2:11:24.920  
Dariush Shirmohammadi  
I'm. I'm I'm I should have maybe done the 90% here as well so that you could see that.

2:11:27.130 --> 2:11:42.300  
Dariush Shirmohammadi  
Or or 95%. Yeah, we could see where where the numbers end up at. I went to 70 and 80% only. Yeah. So. Well, I went from my days at California ISO and I was out operational responsibilities as well.

2:11:43.20 --> 2:11:45.990  
Dariush Shirmohammadi  
I remember we we would say that.

2:11:46.900 --> 2:11:51.270  
Dariush Shirmohammadi  
Enjoying the worst, worst possible hours. Sometimes it was like.

2:11:52.420 --> 2:12:2.860  
Dariush Shirmohammadi  
The air was frozen and was was in moving, and so I I can see that I can see the concern and and the approach we are talking about is trying to.

2:12:4.580 --> 2:12:6.220  
Dariush Shirmohammadi  
Amplify that.

2:12:7.200 --> 2:12:7.990  
Dariush Shirmohammadi  
Maybe.

2:12:9.710 --> 2:12:11.300  
Dariush Shirmohammadi  
Reverse correlation.

2:12:12.170 --> 2:12:41.260  
Dariush Shirmohammadi  
When, when and positive cores direct correlation with solar generation, so you may maybe we should go to higher if if you wanna be more conservative, we should. We should go to 90% threshold now, five peak if I go with the five worst days in in a month which we agree by the way that's a better approach. I just getting one day warned worse Group A month when the numbers are gonna be 2/2 probably.

2:12:42.950 --> 2:12:48.860  
Dariush Shirmohammadi  
Two unreliable if we take the five worst days of the month.

2:12:50.550 --> 2:12:51.890  
Dariush Shirmohammadi  
We are talking about.

2:12:53.70 --> 2:12:57.420  
Dariush Shirmohammadi  
Maybe 87% or 85% so.

2:12:58.760 --> 2:13:19.450  
Dariush Shirmohammadi  
As the threshold, so we could we could go for that. The big difference between what we do here and what what at least PG&E does for sampling is that we sample every hour separately individually based on what happened during that hour as opposed to taking a whole day and and looking at.

2:13:23.530 --> 2:13:49.600  
Dariush Shirmohammadi  
Generation across the whole day. Well, five worst peak days of the month. That's the biggest difference. And and we have no issues. But using that kind of an approach that we focus on five worst day. So yeah I I what I will do I'll add another column here for 90% which is similar to the five worst days and and see what well poser to five worst days and.

2:13:50.140 --> 2:13:56.880  
Dariush Shirmohammadi  
And and see where the numbers end up at so that, but at least that would to me, that would be more.

2:13:57.750 --> 2:14:2.290  
Dariush Shirmohammadi  
Reasonable then. Then simply pick 70% exceedance or 80% exceedance.

2:14:4.390 --> 2:14:13.140  
Dariush Shirmohammadi  
Especially when the number of sample points is down to 20 or 25 or 50, I mean and then then.

2:14:13.370 --> 2:14:13.890  
Dariush Shirmohammadi  
And.

2:14:16.270 --> 2:14:23.720  
Dariush Shirmohammadi  
And in this particular case, we only had three years, so the temp total samples for every hour was like.

2:14:25.0 --> 2:14:28.130  
Dariush Shirmohammadi  
93 and of course, when you do.

2:14:29.870 --> 2:14:34.260  
Dariush Shirmohammadi  
Targeted sampling the number of points reduces dramatically.

2:14:35.220 --> 2:14:38.510  
Dariush Shirmohammadi  
And trying to apply scenes to that is.

2:14:39.200 --> 2:14:41.230  
Dariush Shirmohammadi  
Have you? You can end up anywhere.

2:14:42.350 --> 2:14:46.460  
Dariush Shirmohammadi  
As opposed to taking a an average of the of the results.

2:14:47.610 --> 2:14:52.480  
Dariush Shirmohammadi  
But I I acknowledge, let's see what you're that what you said, yeah.

2:14:53.320 --> 2:14:54.90  
Nick Pappas  
Thank you, Dariush.

2:14:53.310 --> 2:14:57.280  
Dariush Shirmohammadi  
So it's good I I will add a a new column and and have.

2:14:59.870 --> 2:15:1.870  
Dariush Shirmohammadi  
Now see send it to everybody.

2:15:5.970 --> 2:15:9.40  
Meck, Alan L - Mktg Affil-E&FP  
Alright, Luke Nickerman from PG&E.

2:15:11.340 --> 2:15:12.650  
Nickerman, Luke  
And yeah, I thinks they're yours.

2:15:13.220 --> 2:15:25.660  
Nickerman, Luke  
And I I I wanna say I I do like kind of the innovation of applying exceedance is part of kind of this profile development. I think it's kind of a.

2:15:26.450 --> 2:15:40.130  
Nickerman, Luke  
It was like kind of an innovative approach there. I guess the one concern I have with it is that you are dealing with a very small kind of sample, right? And so if you, if you're talking about like an 80%.

2:15:41.20 --> 2:15:44.820  
Nickerman, Luke  
I exceedance on a sample of.

2:15:46.240 --> 2:15:49.690  
Nickerman, Luke  
How many years have three years of data so.

2:15:49.60 --> 2:15:57.390  
Nickerman, Luke  
Yeah, this. Yeah. So three years of data and this is probably 6 if the 80% level is probably 6.

2:15:58.730 --> 2:16:6.520  
Nickerman, Luke  
Data points per year. So you're like 18 data points. So like a 90% it would be like 2 observations.

2:16:7.240 --> 2:16:18.40  
Nickerman, Luke  
Above that right and and so the the data gets pretty thin and so it maybe the important thing here is that you might need to expand the number of years that you're.

2:16:18.550 --> 2:16:36.300  
Dariush Shirmohammadi  
I I completely agree with you, I this is unfortunately we we only found I I asked one of my engineers to look and download the data from CAISO, CAISO, Oasis and that's what we could get three years only. Now I I wish we had.

2:16:38.750 --> 2:16:47.270  
Dariush Shirmohammadi  
We could get more, but yeah, it's it's. Yeah, I agree. The more the more data we have, the more stability and results we should see.

2:16:48.620 --> 2:16:49.520  
Nickerman, Luke  
OK. Yeah. Thanks.

2:16:50.510 --> 2:16:51.60  
Dariush Shirmohammadi  
Thank you.

2:16:57.680 --> 2:17:2.90  
Meck, Alan L - Mktg Affil-E&FP  
OK, looks like we have run out of questions and.

2:17:3.130 --> 2:17:7.70  
Meck, Alan L - Mktg Affil-E&FP  
Right about when I was hoping to take lunch. Actually, I think we're about 5:00 or 10 minutes early.

2:17:7.920 --> 2:17:8.430  
Meck, Alan L - Mktg Affil-E&FP  
On.

2:17:8.570 --> 2:17:16.10  
Alexander, Maggie (she/her)  
Alan, I think we have a question on the chat from Ed. The question was would targeted sampling be different for each hour in each month?

2:17:18.820 --> 2:17:23.310  
Dariush Shirmohammadi  
No, I think we should pick basically a load level across all the month.

2:17:25.40 --> 2:17:26.590  
Dariush Shirmohammadi  
I across all hours.

2:17:27.770 --> 2:17:32.370  
Dariush Shirmohammadi  
And say 80% or 90% as was just suggest that by Nick.

2:17:33.490 --> 2:17:36.780  
Dariush Shirmohammadi  
And or maybe even higher.

2:17:37.910 --> 2:17:42.800  
Dariush Shirmohammadi  
Umm. And and focus on on on very high load levels.

2:17:44.140 --> 2:17:52.390  
Dariush Shirmohammadi  
But once we pick that, we should stay the same although and and this is just to make keep things simple, I if you wanna be.

2:17:55.710 --> 2:18:3.660  
Dariush Shirmohammadi  
If you wanna be probably scientifically accurate, maybe we want to use pick different threshold for different hours, but I I must say that I even.

2:18:5.200 --> 2:18:13.200  
Dariush Shirmohammadi  
Yeah. I I I would. I would like to stay with the same level, say 80% or 90% across all hours.

2:18:32.270 --> 2:18:33.120  
Dariush Shirmohammadi  
I I agree.

2:18:14.430 --> 2:18:34.770  
Ed Smeloff (Guest)  
So. So this is Ed. So the reason I asked that is sort of following on Michelle's question, we're we're becoming more concerned about energy sufficiency. So understanding what the the level is in the the non peak hours is also going to be important for us to assure that we were able to charge the batteries.

2:18:35.130 --> 2:18:40.660  
Dariush Shirmohammadi  
I agree, I agree. And and here we we we treat every hour.

2:18:41.850 --> 2:18:54.530  
Dariush Shirmohammadi  
Umm, we treat every hour separately. Not that I say this. That's better than PG and E5 peak day approach. I'm not saying it's better, but it allows us to.

2:18:54.600 --> 2:18:54.800  
Dariush Shirmohammadi  
So.

2:18:56.370 --> 2:19:2.520  
Dariush Shirmohammadi  
Treat every hour individually and focus on the nine of of the worst.

2:19:4.630 --> 2:19:10.480  
Dariush Shirmohammadi  
Hours for for worst load hours for those or highest load hours for that particular hour.

2:19:13.650 --> 2:19:27.680  
Dariush Shirmohammadi  
I like the approach in in in a way that it also correlates ours with each other because hours are the same day, but this this one may be a addresses the concern that Michelle raised more more directly.

2:19:32.860 --> 2:19:37.100  
Meck, Alan L - Mktg Affil-E&FP  
And looks like we have one more follow-up question. Uh Scott murtishaw.

2:19:40.70 --> 2:19:42.80  
Scott Murtishaw  
Yeah. Thanks. Hey, dariush. Hi.

2:19:42.710 --> 2:19:57.200  
Scott Murtishaw  
Yeah, I wasn't sure if I understood that correctly, so I'm glad that that that was brought up and clarified. But doesn't this then raise the same concern that IP and and some other parties had about on the load side using?

2:19:58.90 --> 2:20:5.330  
Scott Murtishaw  
The worst hours instead of the worst days that you you end up getting a kind of a synthetic generation profile.

2:20:7.640 --> 2:20:9.630  
Scott Murtishaw  
That's the kind of.

2:20:12.810 --> 2:20:13.340  
Scott Murtishaw  
Uh.

2:20:14.140 --> 2:20:20.150  
Scott Murtishaw  
You know, just the counterpart to the concerns about having this synthetic load profile that a lot of parties brought up.

2:20:21.0 --> 2:20:24.620  
Scott Murtishaw  
With respect to kind of worst day load versus worst hour by hour.

2:20:26.390 --> 2:20:33.110  
Dariush Shirmohammadi  
And that's that's one of the reasons I I I I I'm, I'm starting to favor pianese approach of.

2:20:33.900 --> 2:20:42.710  
Dariush Shirmohammadi  
And I like the fact that the important thing about Ian LR is targeted sampling, and once we have targeted sampling.

2:20:43.610 --> 2:20:46.400  
Dariush Shirmohammadi  
Then we have data generation.

2:20:47.510 --> 2:21:2.110  
Dariush Shirmohammadi  
Wind and solar generation for the targeted went for hours that matter for days, say days that matter. Then that's why we if Pigeon is approach allows us to have.

2:21:2.860 --> 2:21:5.830  
Dariush Shirmohammadi  
Umm to get rid of the synthetic?

2:21:8.60 --> 2:21:10.990  
Dariush Shirmohammadi  
Low profile that that you just talked about.

2:21:12.290 --> 2:21:13.300  
Dariush Shirmohammadi  
With that said.

2:21:14.620 --> 2:21:21.870  
Dariush Shirmohammadi  
We we somehow decided to go to 24 hours hourly numbers, so this is one way of doing it.

2:21:22.950 --> 2:21:31.690  
Dariush Shirmohammadi  
The The What pigeon is proposed in picking 5 peak days is another way and and and.

2:21:32.360 --> 2:21:46.830  
Dariush Shirmohammadi  
And I think that way we can avoid, as you say, a synthetic low profile for the day we we haven't, I don't know what whether if we do individual hours as as we have done in, in, in this particular case.

2:21:47.930 --> 2:21:55.700  
Dariush Shirmohammadi  
They sent synthetic load profile for they look will look funny or it will follow.

2:21:56.600 --> 2:21:58.820  
Dariush Shirmohammadi  
Similar to the five worst days.

2:22:0.380 --> 2:22:7.550  
Dariush Shirmohammadi  
And and and and five peak load days, but nevertheless obviously 5.

2:22:9.40 --> 2:22:13.40  
Dariush Shirmohammadi  
Peak load days. Make sure that the low profile is not synthetic, yeah.

2:22:15.690 --> 2:22:16.230  
Scott Murtishaw  
OK. Thanks.

2:22:17.110 --> 2:22:17.520  
Dariush Shirmohammadi  
Sure.

2:22:23.660 --> 2:22:24.330  
Meck, Alan L - Mktg Affil-E&FP  
Alright.

2:22:25.30 --> 2:22:38.440  
Meck, Alan L - Mktg Affil-E&FP  
Well, thank you everyone for robust discussion. It's 1224 right now, while we just say 12:30 and I had scheduled an hour for lunch. So why don't we plan to meet back here at around 1:30?

2:22:39.100 --> 2:22:43.410  
Meck, Alan L - Mktg Affil-E&FP  
And by around I mean by around number of 130.

2:22:45.420 --> 2:22:45.820  
Meck, Alan L - Mktg Affil-E&FP  
So.

2:22:46.570 --> 2:22:55.790  
Meck, Alan L - Mktg Affil-E&FP  
Uh, and then Next up, after lunch, we will have a the CPUC with Simone Brant. Alright so.

2:22:56.640 --> 2:23:0.260  
Meck, Alan L - Mktg Affil-E&FP  
65 minutes for lunch. We'll be back here at 1:30. Thank you, everybody.

3:28:39.760 --> 3:28:40.610  
Meck, Alan L - Mktg Affil-E&FP  
Hi folks.

3:28:41.420 --> 3:28:43.630  
Meck, Alan L - Mktg Affil-E&FP  
Welcome back to the second-half of.

3:28:45.280 --> 3:28:46.300  
Meck, Alan L - Mktg Affil-E&FP  
First workshop.

3:28:47.50 --> 3:28:49.630  
Meck, Alan L - Mktg Affil-E&FP  
Of the RA reform phase two.

3:28:50.910 --> 3:28:56.20  
Meck, Alan L - Mktg Affil-E&FP  
Umm, so it looks like we have Simone Brant, who's gonna be our next presenter.

3:28:56.510 --> 3:29:2.630  
Meck, Alan L - Mktg Affil-E&FP  
Uh, and I just wanted to note for everyone on the call to remind everyone that the call is being recorded.

3:29:3.440 --> 3:29:4.280  
Meck, Alan L - Mktg Affil-E&FP  
And.

3:29:5.760 --> 3:29:7.910  
Meck, Alan L - Mktg Affil-E&FP  
Oh, great. Looks like Simone already has.

3:29:12.40 --> 3:29:13.730  
Meck, Alan L - Mktg Affil-E&FP  
With this, your presentation Simone.

3:29:18.30 --> 3:29:18.360  
Meck, Alan L - Mktg Affil-E&FP  
OK.

3:29:15.550 --> 3:29:19.430  
Brant, Simone  
Yeah, I hope so. Is it so you can see it?

3:29:20.560 --> 3:29:20.860  
Brant, Simone  
Yeah.

3:29:20.900 --> 3:29:24.510  
Meck, Alan L - Mktg Affil-E&FP  
I did. I didn't review it beforehand, but OK, there there we go. Great.

3:29:23.470 --> 3:29:26.690  
Brant, Simone  
I I got. Yeah, yeah, I it's giving the title.

3:29:27.250 --> 3:29:28.440  
Brant, Simone  
Yeah, yeah.

3:29:28.660 --> 3:29:30.640  
Meck, Alan L - Mktg Affil-E&FP  
OK, I'll hand it right off to you then.

3:29:32.230 --> 3:29:33.660  
Brant, Simone  
OK. Thanks.

3:29:37.500 --> 3:29:38.720  
Brant, Simone  
Yeah. So.

3:29:40.590 --> 3:29:47.480  
Brant, Simone  
Energy division did we did a fairly similar analysis to what PG&E has been doing, but.

3:29:48.220 --> 3:29:55.360  
Brant, Simone  
We wanted to do that with the CAISO settlement data, since we have access to the individual resource settlement.

3:29:56.980 --> 3:30:4.730  
Brant, Simone  
So we use the the last five years from 2017 to 2021 for all the wind and solar.

3:30:5.900 --> 3:30:6.740  
Brant, Simone  
And then.

3:30:7.440 --> 3:30:14.390  
Brant, Simone  
Umm did similar look at peak days versus the exceedance levels.

3:30:12.580 --> 3:30:15.350  
Alexander, Maggie (she/her)  
It's the first time exceedance.

3:30:16.520 --> 3:30:28.120  
Brant, Simone  
I'm sorry. And then also broke. It broke at the profiles out into north-south. And then also we have data for some error zona and New Mexico wind.

3:30:29.40 --> 3:30:39.970  
Brant, Simone  
And then solar split into fixed tracking and solar thermal, since those were some of the some of the categories that parties have been talking about along the way.

3:30:41.290 --> 3:30:44.960  
Brant, Simone  
So these are just a few examples.

3:30:47.800 --> 3:30:52.460  
Brant, Simone  
Of of the sorts of profiles they came up with it. This is for August.

3:30:54.550 --> 3:31:2.480  
Brant, Simone  
And see just the uh fix solar solar, thermal and tracking, and then overall for North and South.

3:31:3.430 --> 3:31:13.880  
Brant, Simone  
Umm, with the, you know, these are it's listed as percentiles, but it's also fifty 6070 and eighty 80th percentile. Uh, exceedance.

3:31:15.190 --> 3:31:16.70  
Brant, Simone  
Yeah, other direction.

3:31:17.360 --> 3:31:17.870  
Brant, Simone  
Umm.

3:31:18.620 --> 3:31:26.140  
Brant, Simone  
So you know for that's for August. And then just show for Mars, just to show a different month you can see.

3:31:27.260 --> 3:31:31.70  
Brant, Simone  
Umm, there's some some differences between North and South?

3:31:31.690 --> 3:31:36.570  
Brant, Simone  
And then I'll just the differences between the months he did the same thing.

3:31:37.720 --> 3:31:43.370  
Brant, Simone  
Umm for win just showing 2 examples of.

3:31:45.370 --> 3:31:47.540  
Brant, Simone  
Profiles for August and March.

3:31:48.790 --> 3:31:49.340  
Brant, Simone  
Umm.

3:31:51.40 --> 3:31:52.110  
Brant, Simone  
And then.

3:31:55.0 --> 3:32:6.670  
Brant, Simone  
Yeah. Then looking at the peak days, he tried using the worst day of the month, worst three days and worst five days. This is just showing for one example for one category.

3:32:8.260 --> 3:32:13.380  
Brant, Simone  
Three and five, you can see there's there's a small difference if you use three or five days.

3:32:15.270 --> 3:32:24.620  
Brant, Simone  
In the shape of the profile. But what's a bigger difference is if you use the mean versus the median of those peak days.

3:32:25.450 --> 3:32:29.30  
Brant, Simone  
I think you know earlier PG&E was talking about using.

3:32:29.760 --> 3:32:31.770  
Brant, Simone  
The mean just taking the average.

3:32:32.620 --> 3:32:33.500  
Brant, Simone  
But.

3:32:34.700 --> 3:32:35.210  
Brant, Simone  
Umm.

3:32:36.170 --> 3:32:45.570  
Brant, Simone  
It seems like when you look at the daily shapes to me, then the median actually seems to track with the percentile shapes.

3:32:47.20 --> 3:32:52.820  
Brant, Simone  
Yeah, more similarly, you can especially see that with with the wind.

3:32:53.510 --> 3:33:1.640  
Brant, Simone  
Here where the seems that there are some some days with rather high wind in the middle of the day that raised the mean.

3:33:3.510 --> 3:33:7.280  
Brant, Simone  
Umm, you know a way that's different than if you take the median or.

3:33:8.220 --> 3:33:9.490  
Brant, Simone  
The exceedance levels.

3:33:10.620 --> 3:33:11.660  
Brant, Simone  
The different colors.

3:33:14.200 --> 3:33:31.630  
Brant, Simone  
But you know, I didn't do a a detailed look at what they exceedance value would be. The best tracked it, but it it seems that that you know these values track fairly similarly to what Luke showed earlier where you know you get pretty close when you're around 70s.

3:33:32.800 --> 3:33:38.110  
Brant, Simone  
Percent 70% mixed ancestors or the yellow 30th percentile line here.

3:33:41.760 --> 3:33:42.250  
Brant, Simone  
Umm.

3:33:45.480 --> 3:33:46.150  
Brant, Simone  
So.

3:33:49.50 --> 3:33:49.720  
Brant, Simone  
That.

3:33:51.250 --> 3:33:52.280  
Brant, Simone  
The main uh.

3:33:53.120 --> 3:33:54.0  
Brant, Simone  
Presentation here.

3:33:55.120 --> 3:34:7.20  
Brant, Simone  
So as I just mentioned, there's this wanted to raise this question of how how we calibrate if, if whether it makes sense when we look at the peak days.

3:34:7.940 --> 3:34:15.580  
Brant, Simone  
Yeah, we're not convinced that it makes a huge difference to do is 1, three or five, probably three or five would be adequate.

3:34:16.410 --> 3:34:23.660  
Brant, Simone  
But it does seem to make some difference, particularly it's on ours, whether using the median or the mean of the.

3:34:25.260 --> 3:34:26.830  
Brant, Simone  
This peak day profiles.

3:34:28.530 --> 3:34:29.120  
Brant, Simone  
Umm.

3:34:30.300 --> 3:34:33.930  
Brant, Simone  
And then you know here you broke it down into.

3:34:35.90 --> 3:34:37.0  
Brant, Simone  
To categories that we thought we could.

3:34:37.730 --> 3:34:50.360  
Brant, Simone  
Reasonably implemented, which is North and South, since that's very readily available for each resource, and then we have data in the server model on the tracking versus fix or.

3:34:50.960 --> 3:34:51.430  
Brant, Simone  
Umm.

3:34:53.120 --> 3:34:53.830  
Brant, Simone  
But.

3:34:55.230 --> 3:35:1.510  
Brant, Simone  
There's also the question of would it make sense just to do in individual profiles for each resource because.

3:35:2.260 --> 3:35:8.210  
Brant, Simone  
In some ways, that's the simplest way it cause we have data for every single resource.

3:35:9.650 --> 3:35:20.440  
Brant, Simone  
Do we can it would be no different to implement what I showed you here versus an individual value for each resource, but it would.

3:35:21.730 --> 3:35:27.860  
Brant, Simone  
More accurately, accurately reflect what that resource is actually. Pretty production level is.

3:35:29.540 --> 3:35:30.140  
Brant, Simone  
Umm.

3:35:32.990 --> 3:35:55.830  
Brant, Simone  
There would be some additional complexity in terms of showing materials, so we'd welcome feedback on which would make more sense. Also looking for feedback on whether there is an additional analysis that would be helpful for us to do since we we have access to this data that that's a little bit different than what all of the other parties have accessed.

3:36:13.230 --> 3:36:16.520  
Gannon, Jaime Rose  
As Simone do you want me to tell you who's in the case of questions?

3:36:15.340 --> 3:36:22.100  
Brant, Simone  
Yeah, and oh, OK. Sorry. I was just trying to figure out how I could I see I can see now. Alright, so I and it's new off.

3:36:23.980 --> 3:36:41.360  
Ed Smeloff (Guest)  
Uh, this is Ed. Smell off. I I wanted to ask, what is the source of data that would be for the, you know, fixed tilt trackers and and solar thermal and is it available for all five of the years that you're looking at?

3:36:44.230 --> 3:36:49.140  
Brant, Simone  
This is data that we have in this server model which is.

3:36:50.200 --> 3:36:53.390  
Brant, Simone  
Yeah, energy division sign model.

3:36:54.520 --> 3:37:1.900  
Brant, Simone  
I I'm not entirely sure where that data came from since Donald was out at the time.

3:37:5.710 --> 3:37:6.650  
Ed Smeloff (Guest)  
Ohh do.

3:37:3.390 --> 3:37:14.570  
Brant, Simone  
So I wasn't able to touch base with him, but and I I planning to follow up on that though, because there were a few newer resources where that I had to exclude since I didn't have the information.

3:37:15.0 --> 3:37:24.790  
Ed Smeloff (Guest)  
Do we know if that's actual production data or whether that is some sort of synthetic data that was created by the the consultant for for SERVUM?

3:37:24.650 --> 3:37:25.120  
Brant, Simone  
Well.

3:37:25.870 --> 3:37:37.590  
Brant, Simone  
In SERVM, they're not using actual production data, but here I was using the actual production data. I was only taking the fixed versus tracking information that was included in the.

3:37:39.390 --> 3:37:40.300  
Ed Smeloff (Guest)  
OK. Thanks.

3:37:43.720 --> 3:37:45.70  
Brant, Simone  
It's uh, Tom beach.

3:37:46.930 --> 3:38:2.0  
Tom Beach (Guest)  
Yeah, Simone, if I could follow up on edx questions. I'm not exactly clear. I I thought you said you had settlement data from the CAISO that separated out fixed and tracking. But your answer to the last question suggested that.

3:38:2.840 --> 3:38:9.0  
Tom Beach (Guest)  
You use some information from servum to separate I I'm very confused about.

3:38:8.670 --> 3:38:14.50  
Brant, Simone  
Ohh, the settlement data is by resource I.

3:38:14.940 --> 3:38:19.500  
Brant, Simone  
It was the information in SERVM that categorized the resource.

3:38:20.460 --> 3:38:31.430  
Tom Beach (Guest)  
Ohh OK. And it would it be possible? I mean cause you know you know the the data that is public on the CAISO website is just aggregated solar.

3:38:32.710 --> 3:38:33.200  
Brant, Simone  
Mm-hmm.

3:38:32.130 --> 3:38:59.800  
Tom Beach (Guest)  
And so, I mean, it would be a a real service if if you could make available the aggregate, you know, solar fixed, solar tracking and solar thermal data. I mean I hopefully since it's aggregated, it wouldn't be confidential and that would be a real advance in the data that I think everybody has to work with.

3:39:1.840 --> 3:39:10.830  
Brant, Simone  
OK. Yeah, I'll definitely look look into whether we, I we should I agree we should be able to to release those profiles since.

3:39:11.860 --> 3:39:15.740  
Brant, Simone  
They all have enough resources within them my believe.

3:39:16.470 --> 3:39:18.650  
Brant, Simone  
Yeah, definitely. It will check on that though.

3:39:20.60 --> 3:39:20.990  
Tom Beach (Guest)  
Thank you very much.

3:39:24.180 --> 3:39:24.760  
Brant, Simone  
Nick.

3:39:24.360 --> 3:39:25.20  
Meck, Alan L - Mktg Affil-E&FP  
Ohh.

3:39:27.50 --> 3:39:58.310  
Nick Pappas  
Hey, thanks very much. And Simone, thanks a lot for for bringing this forward. I had two questions. Tom actually hit on my first which was about sharing the data. I would echo that I think it would be super helpful if the stakeholder community is all working off a common set, particularly with these extra attributes that we don't have access to. And maybe if I could also just make a plug, if you do, if you are able to share that data to also include the load and that load observed during those same periods, I think that would probably be sufficient for all of us to be doing the type of analysis discussed today.

3:40:0.20 --> 3:40:10.150  
Nick Pappas  
I did also wanna just ask if you have a view you commented a bit on the sort of challenges of aligning the shapes determined in in worst day.

3:40:11.390 --> 3:40:18.780  
Nick Pappas  
And the exceedance shapes kind of harkening back to this morning's discussion, I'm wondering if if you are, if energy division has thoughts or of you on kind of?

3:40:19.700 --> 3:40:26.810  
Nick Pappas  
The the policy trade-offs between specifically going with an exceedance profile or going with a different shape determined through one of these other methods.

3:40:31.630 --> 3:40:34.120  
Brant, Simone  
Personally, I tend towards.

3:40:35.400 --> 3:40:45.590  
Brant, Simone  
Doing a true exceedance and you using the profile to to select your exceedance level. But when I when I look at the data I.

3:40:46.340 --> 3:41:2.200  
Brant, Simone  
See, particularly for wind. I see a lot of randomness where it's not necessarily linked to load for the solar it's fairly regular, but in in recent years we've seen some of that randomness in terms of fire impacts.

3:41:3.150 --> 3:41:3.740  
Brant, Simone  
And.

3:41:4.410 --> 3:41:10.290  
Brant, Simone  
To me, I I don't necessarily feel like it's there's a direct enough correlation.

3:41:10.980 --> 3:41:15.190  
Brant, Simone  
That it that there's a benefit of reducing the size of your data set.

3:41:16.880 --> 3:41:17.290  
Nick Pappas  
Thanks so much.

3:41:21.100 --> 3:41:21.720  
Meck, Alan L - Mktg Affil-E&FP  
Alright.

3:41:21.340 --> 3:41:23.200  
Brant, Simone  
And Noah?

3:41:27.10 --> 3:41:38.130  
Nuo Tang  
Hey, no, it's. I'm from Middle river power. Simone, can you recall in a past life, what before ELCC, whether or not the exceedance values for purchase?

3:41:40.170 --> 3:41:40.660  
Nuo Tang  
Technology.

3:41:41.450 --> 3:41:44.300  
Nuo Tang  
So specific versus resource specific.

3:41:47.600 --> 3:41:49.850  
Brant, Simone  
The There were resource specific.

3:41:51.640 --> 3:42:2.410  
Nuo Tang  
OK. And then in the decision for the the last message for the 24 slice framework, was there a sort of a question on whether or not the new?

3:42:3.840 --> 3:42:5.940  
Nuo Tang  
Exceedance ELCC methodology.

3:42:7.60 --> 3:42:8.300  
Nuo Tang  
Would be.

3:42:9.860 --> 3:42:12.450  
Nuo Tang  
Resource versus technology specific.

3:42:15.660 --> 3:42:19.770  
Brant, Simone  
I don't think there's been a determination on that at this point.

3:42:20.390 --> 3:42:20.950  
Brant, Simone  
Umm.

3:42:23.350 --> 3:42:27.330  
Brant, Simone  
Yeah. And I believe SCE proposed having sort of.

3:42:28.70 --> 3:42:35.20  
Brant, Simone  
Having category technology categories or locational some sort of categories that hadn't been determined at this point.

3:42:36.750 --> 3:42:41.520  
Brant, Simone  
But there hasn't, as far as I know there it's still helping question.

3:42:42.360 --> 3:43:8.760  
Nuo Tang  
Got it. It seems like if we have the resource specific information, it be the simple enough to calculate the exceedance values for on an hourly basis for all the research for themselves, rather than having having a, you know technology slash regional location base for each type of resource. It does not seem like there's a.

3:43:9.710 --> 3:43:12.280  
Nuo Tang  
Marginal benefit to doing to grouping them together?

3:43:16.80 --> 3:43:28.490  
Brant, Simone  
Yeah. I mean, I think we could do what we used to do with the tech factors and those could potentially be at least by technology or but you know for resources that were relatively new.

3:43:29.250 --> 3:43:29.630  
Brant, Simone  
But.

3:43:29.650 --> 3:43:31.100  
Nuo Tang  
But got it.

3:43:30.440 --> 3:43:40.80  
Brant, Simone  
Yeah, I agree. I mean, it seems that you know, given that you want to reward resources that are performing, it makes some sense to to have individualized values.

3:43:40.920 --> 3:43:54.160  
Nuo Tang  
Yeah, I mean, I guess if you know you're socializing and grouping resources together, you, you and you tend to not show 1 being better than the other. Thanks.

3:43:57.360 --> 3:43:57.900  
Brant, Simone  
Peter.

3:44:0.640 --> 3:44:9.110  
Griffes, Peter  
Yes, Simon, this is very helpful. I I might have missed it in your description, but that this is settlement data is that was that what the basis of this is?

3:44:10.680 --> 3:44:11.290  
Brant, Simone  
Correct.

3:44:11.890 --> 3:44:14.290  
Griffes, Peter  
And and how does it take into account?

3:44:14.370 --> 3:44:16.380  
Griffes, Peter  
I'm a curtailments.

3:44:18.430 --> 3:44:27.640  
Brant, Simone  
Yeah, it it wouldn't have in. It wouldn't take into account any amount that was curtailed. I believe it's just the amount that was actually produced.

3:44:28.340 --> 3:44:33.240  
Brant, Simone  
I did try to look a little bit at comparing the bidding.

3:44:33.920 --> 3:44:37.60  
Brant, Simone  
Amount with the the settlement amount.

3:44:37.10 --> 3:44:37.540  
Griffes, Peter  
Umm.

3:44:37.920 --> 3:44:45.560  
Brant, Simone  
But to see if if it would make a significant difference, but I it didn't, bids didn't seem.

3:44:46.330 --> 3:44:53.490  
Brant, Simone  
To be accurate in that way, his the they tended to be below the settled amount rather than above the settled amount.

3:44:54.200 --> 3:45:0.440  
Brant, Simone  
So yeah, I'm not sure if we there is a good way to to account for any curtailments.

3:45:0.890 --> 3:45:21.900  
Griffes, Peter  
No. OK. Well, I'm just. I'm just wondering because I because I think what we're trying to measure here is the availability of the resource to produce. And so that if the ISO is dispatching for, for economic regions or curtailing for economic reasons, then essentially that shouldn't be going against the generator in, in terms of their.

3:45:23.500 --> 3:45:35.900  
Griffes, Peter  
What they should be able to count or produce for RA purposes, or at least that's one perspective that OK. The other question, the other question I had has to do with.

3:45:38.910 --> 3:45:44.690  
Griffes, Peter  
Ohh I'm I'm I'm forgetting it right now. So I wanna like won't I come back? I want to go ahead and go to go to neck.

3:45:46.550 --> 3:46:2.120  
Brant, Simone  
OK. Yeah, I was hoping that the bidding data would be a a better reflection of of how much was curtailed, but it just it didn't. I don't know how to exactly how those forecasts are generated and they didn't seem to be entirely accurate.

3:46:4.780 --> 3:46:5.170  
Brant, Simone  
Nick.

3:46:7.80 --> 3:46:7.410  
Brant, Simone  
So.

3:46:7.310 --> 3:46:37.440  
Nick Pappas  
Hey, thanks, Simone. I'm sorry to jump back in the queue here, but I did want to just resurface some of the discussion from last summer around the individual resource profile sort of speaking to the exchange with Noah. So we had NRDC had presented during the workshops on the concept of individualized resource profiles, which I would echo now as comments. I think there are potential policy benefits there, but there was a, I think a very strong negative reaction from market participants about the prospect of having, you know many, many, many different profiles to have to.

3:46:37.540 --> 3:46:46.910  
Nick Pappas  
Sort of manage and understand when when transacting in the marketplace. So I I just wanted to surface that feedback that came through very strongly when this came up in the last series.

3:46:52.990 --> 3:46:58.690  
Brant, Simone  
Yeah, we, we we had that discussion think especially with with SCE.

3:46:59.530 --> 3:47:24.400  
Brant, Simone  
Umm. In terms of replacements, but I guess I'm I'm curious to hear from. From the market participants it how much it and if an issue that is and I don't know you know how whether the variability between resources would make big enough difference and you know how often are you actually replacing a wind or solar resource anyway.

3:47:31.640 --> 3:47:32.100  
Brant, Simone  
Noah.

3:47:32.210 --> 3:47:32.890  
Meck, Alan L - Mktg Affil-E&FP  
All right, Noah.

3:47:34.390 --> 3:47:41.360  
Nuo Tang  
Yeah. I I guess maybe 2/2 points here on on the resource specificity and in QC guys, I can get really.

3:47:43.760 --> 3:48:9.130  
Nuo Tang  
Is dependent on how we envisioned profiles to work and the NQC files to work. You know whether or not you can have to do 2 multiplications essentially together, or if you only need one NQC file for each resource, and essentially that it it's it's not that big of a deal. Second, on the curtailments, I mean the CAISO.

3:48:10.470 --> 3:48:28.60  
Nuo Tang  
Hosts right and aggregates curtailment information on an hourly basis. And so I'm I'm curious to see whether or not the CAISO has any feedback on making that available to energy division so that it can reconstitute all of the sort of the generation.

3:48:28.480 --> 3:48:32.360  
Nuo Tang  
But availability for these resources.

3:48:33.750 --> 3:48:35.880  
Nuo Tang  
Is to to get out through a more accurate calculation.

3:48:49.360 --> 3:48:59.90  
Brant, Simone  
Well, if not now, we can. We can follow up with CAISO and see if if that data could be available in terms of individual resource hourly curtailments. It's.

3:49:7.200 --> 3:49:10.750  
Meck, Alan L - Mktg Affil-E&FP  
OK, that seems like the end of the questions.

3:49:12.590 --> 3:49:13.890  
Meck, Alan L - Mktg Affil-E&FP  
No more for Simone.

3:49:16.80 --> 3:49:16.440  
Meck, Alan L - Mktg Affil-E&FP  
All right.

3:49:17.250 --> 3:49:18.140  
Meck, Alan L - Mktg Affil-E&FP  
Thank you, Simone.

3:49:19.30 --> 3:49:29.570  
Meck, Alan L - Mktg Affil-E&FP  
Umm, last up for the day we have Brian bearing for ACP California. Brian, do you have your presentation up? OK, perfect.

3:49:32.570 --> 3:49:33.820  
Meck, Alan L - Mktg Affil-E&FP  
Alright, floor is yours.

3:49:36.20 --> 3:49:38.990  
Brian Biering  
Great. Thanks, Alan. Can you see the presentation? OK.

3:49:41.610 --> 3:49:50.390  
Meck, Alan L - Mktg Affil-E&FP  
I yeah, you might wanna go off video though, because your video is taking up. I don't know. It can other people read it, OK.

3:49:51.580 --> 3:49:52.820  
Meck, Alan L - Mktg Affil-E&FP  
Actually, I guess that doesn't help.

3:49:59.40 --> 3:50:4.570  
Meck, Alan L - Mktg Affil-E&FP  
I take it back, it actually didn't make the presentation any bigger or smaller. So ohh, there you go. That's better.

3:50:6.400 --> 3:50:12.170  
Brian Biering  
OK, I am Brian bearing. I'm with the Wolfram Allison Schroeder, Harris from Donlan and we are representing.

3:50:12.920 --> 3:50:34.170  
Brian Biering  
I can Clean Power Association California and this proceeding ACP, California represents utility scale, wind, solar and storage developers and California throughout the West where we advocate for clear and predictable rules for planning new clean capacity as well as market rules that encourage collaboration throughout the West.

3:50:35.760 --> 3:51:1.190  
Brian Biering  
Since the solar parties are very well represented by Ed and Tom and others on the proceeding at that, we would mostly focus on wind issues in our presentation and in particular, we've been thinking a lot about how the methodology would work for new resources, particular offshore wind and wind resources in the Intermountain West and reasons like New Mexico.

3:51:4.360 --> 3:51:12.390  
Brian Biering  
So I guess First off, the framing that we wanted to offer up for the parties on relation to the decision governing the workshops.

3:51:13.510 --> 3:51:25.100  
Brian Biering  
You know, I think we were candidly disappointed with the didn't understand really the the statutory analysis around the ELCC. We're not here to relitigate that now.

3:51:26.470 --> 3:51:50.980  
Brian Biering  
But I think the the point we wanted to make there is that you know, if we're not going to adhere to the plain language of the statute that the parties ought to be open to multiple different proposals that adhere to decision 2206 or 50. And in particular, you know, there may be instances where a, you know, kind of 1 size fits all approach may not make sense for certain resource types.

3:51:51.950 --> 3:52:9.80  
Brian Biering  
I know there's been a lot of discussion today about wind resources and NP15 and SP15, and I was really glad to see on someones presentation that you know you are looking at wind resources at least from you know the have some data on service. Umm you know from Arizona and New Mexico.

3:52:10.400 --> 3:52:28.30  
Brian Biering  
But the main point we really want to bring forward is that the geographic value of when varies greatly by region. This was obviously recognized, you know, by the Commission itself, both in the context of the IRP as well as in this proceeding. You know, with the new ELCC factors that are taking effect in 2023.

3:52:29.820 --> 3:52:43.320  
Brian Biering  
We have been talking with our Members about the data needs and you know in particular looking at resources and New Mexico and elsewhere and trying to get that data together so we can really help inform the proceeding and.

3:52:44.10 --> 3:52:54.400  
Brian Biering  
Are actively working with PG&E, NRDC and others in the proceeding to try to get that data together so we can really have a better look at resources outside of the CAISO.

3:52:55.680 --> 3:53:8.330  
Brian Biering  
The challenge that we're we're really seeing is, is that the issue that I flagged to Luke earlier this morning and that's with offshore wind, we don't know how that's going to work. It is a different type of technology.

3:53:9.650 --> 3:53:12.850  
Brian Biering  
I'm gonna scroll ahead to this slide.

3:53:14.250 --> 3:53:43.570  
Brian Biering  
Which is basically a heat map that was done by enrol. It's a little dated, but I think that you know, hopefully the wind, the wind hasn't changed all that much from this. And basically what this is showing is the dark blue areas are where the highest speeds are at 100 meter height and you can see there you know, if you look closely enough that there are, you know dark blue areas off the coast of Humboldt, there's dark blue areas off the coast of the Central Coast. And then there's dark blue areas.

3:53:43.660 --> 3:53:45.750  
Brian Biering  
About the intermountain West.

3:53:46.510 --> 3:54:11.430  
Brian Biering  
And the diversity of value of those resources really does need to be recognized, and the RA program and kinessa continue to be recognized in the RA program. So we don't have a specific proposal yet exactly how to do that, but I would like to make the general point that you know, to the extent that we can provide some analysis and we're we're happy to support that however we can.

3:54:12.610 --> 3:54:34.100  
Brian Biering  
Of individual geographic regions, sub regions down to individual projects, even we would we would like to do that. We think that it's it's critical for this proceeding to ensure that the signals are in place to you know reflect the reliability, the relative reliability contributions at different resources.

3:54:35.670 --> 3:54:40.460  
Brian Biering  
That was recognized and the the this is the slide from the commissions.

3:54:41.750 --> 3:54:58.340  
Brian Biering  
IRP Modeling Advisory Group Workshop last week and you can see that here with the different values. For example offshore wind in 2026 is showing the 46% marginally ELCC you know out of state wind is showing slightly less than that 32%.

3:54:59.640 --> 3:55:7.270  
Brian Biering  
And so I think there is a lot of data out there on the relative value of wind across different regions.

3:55:8.590 --> 3:55:16.330  
Brian Biering  
I'm going back to my original point about you to be flexible and different methodologies. We do still see this as a good starting point.

3:55:18.970 --> 3:55:47.120  
Brian Biering  
The other point I really want to get across here is the importance of the RA program to contracting under the IRP. There was a lot of discussion earlier today around, you know, realigning the PRM and the IRP and the RA, I think from our perspective, what really matters is that the counting methodologies align and in particular the counting methodologies that are used for procurement under the IRP. You know they don't need to be exactly consistent. But you know if there's wide.

3:55:47.270 --> 3:55:57.70  
Brian Biering  
Variation between how we're valuing capacity and IRP and how an LLC is valuing capacity in the RA program that really creates a lot of challenges and contracting.

3:55:58.290 --> 3:56:26.460  
Brian Biering  
And that his son's lack of certainty is also an issue. And I think that's where we've definitely got some heartburn right now around, you know, how we're, how is this all going to work? You know, what does this mean for contracts right now that we're trying to execute? You know, we've come a long way from the RPS program and RPS contracts do not get resources financed anymore. You need to have the RA value accounted for. You can have the IRP value accounted for in the contract.

3:56:27.280 --> 3:56:47.740  
Brian Biering  
And the RPS contracts and RU aren't sufficient to really provide for the contracting and financing of new resources. We really need that clear, predictable signal from both the IRP and the RA program as to how much degree sources are gonna count under the contracts both you know when we sign the contract and 10 years from now when the contract is still would act.

3:56:49.380 --> 3:56:52.460  
Brian Biering  
Uh, so I'm gonna go backwards. Back to our proposals.

3:56:53.910 --> 3:57:0.900  
Brian Biering  
So the first proposal is related to, you know, how do we account for new resources where something like offshore wind, where there's just not data?

3:57:2.80 --> 3:57:34.430  
Brian Biering  
You know there's, you know, using data from MP15, just you know it's not a good representation of offshore wind and our proposal is pretty simple. We think that we should be using the marginal ELCC values for those resources for a period of time until there's operational data to support a new QC value. I realized that's running a little counter to my previous point about the need for certainty, you know, throughout the duration of the contract. But really what we're looking for right now is we have no idea, you know, how much offshore wind resources are going to be, how they're going to be valued and what.

3:57:34.530 --> 3:57:45.400  
Brian Biering  
You know, and how that the RA contributions will be calculated and if there's some way to provide some indication now in some certainty now we really think that's gonna help with getting those resources under contract.

3:57:47.250 --> 3:58:20.580  
Brian Biering  
The second proposal will offer, and this is this is kind of aligned with, I think some of what PG&E and Cal WEA have put forward. Although I recognize that, you know, they've outlined different proposals, but I think the notion of focusing on the highest load days or net load days, you know, really makes a lot of sense to us. And you know, I think that is a reason to either focus on a lower exceedance level and or account for things through the planning reserve March. I didn't quite track the conversation earlier, you know, around the planning reserve March and kind of.

3:58:20.710 --> 3:58:50.980  
Brian Biering  
You know, we're putting the cart before the horrors, largely because I think we see that planning reserve margin is sort of accounting for the risk that you know, there's weather variability, there's derates of gas resources, all reason, there's all sorts of reasons that capacity that's being counted may not in fact be available and that, you know, if you're, if you're choosing an exceedance level, you know that that best fits the ratepayers needs in terms of minimizing the overall amount of procurement that.

3:58:51.260 --> 3:58:59.470  
Brian Biering  
Planning for the variability of those resources and an accounting for the variability through planning reserve margin makes sense to us.

3:59:1.290 --> 3:59:4.250  
Brian Biering  
So I'm gonna stop there and see if you all have any questions.

3:59:9.260 --> 3:59:20.890  
Meck, Alan L - Mktg Affil-E&FP  
Doesn't look like anyone has jumped in the queue yet, but while we're waiting for others, I I'd like to inquire a little bit about your enril slot. Ohh, you know what, Tom Beach just jumped in the queue, so I'll let him go first.

3:59:23.170 --> 3:59:37.600  
Tom Beach (Guest)  
Brian, this is Tom Beach. Yeah, I I was wondering, do you for example offshore wind, is there data available? I mean obviously there was some data used for the ELCC studies.

3:59:38.580 --> 4:0:6.20  
Tom Beach (Guest)  
Of the ELCC value marginally ELCC of offshore wind. I mean, if if that data is based on historical measurements that you know you can correlate to the load levels that would if that data is out there obviously would be very helpful to being able to include, you know, a new resource like offshore wind in this program.

4:0:26.100 --> 4:0:26.350  
Tom Beach (Guest)  
Just.

4:0:7.860 --> 4:0:35.140  
Brian Biering  
Yeah. I mean, I think, Tom, the issue there is we don't have any operating resources yet. We're expecting the bulk of the resources to come online, you know 20 thirty 2032 to 2035. You know that time frame when they get through the lease auction process later the later in November of this year. So the historic data issue is really what's kind of driving kind of the concern around how would an exceedance analysis work, what would we land with that?

4:0:36.780 --> 4:0:49.750  
Brian Biering  
My understanding is the the data is based on simulated production data. I'm not at at at you know. I don't know exactly where that data came from and I think that's something we could certainly think about.

4:0:50.490 --> 4:0:53.390  
Brian Biering  
I plan to discuss further is the and the proceeding.

4:0:54.500 --> 4:1:7.370  
Tom Beach (Guest)  
Yeah, I mean I I I understand that it would all be it's simulated data since there's nothing's been built, but obviously somebody's probably been taking measurements off the coast. I mean, I know they're boys out there.

4:1:8.450 --> 4:1:13.420  
Tom Beach (Guest)  
That have wind speed measurements, and I'm sure someone's looking at that data.

4:1:14.700 --> 4:1:19.470  
Tom Beach (Guest)  
So that's the kind of data that I I recognizing that it would have to be simulated.

4:1:20.830 --> 4:1:23.740  
Tom Beach (Guest)  
That could be, you know, could be very useful.

4:1:24.350 --> 4:1:38.60  
Brian Biering  
Right. And I think there are operational projects elsewhere in the world, you know, Portugal and other parts of Europe. So I think some of that might have come from there too. But again, I don't, I don't have a good answer on exactly what that the source that data is, but.

4:1:41.250 --> 4:1:41.850  
Tom Beach (Guest)  
OK. Thank you.

4:1:45.120 --> 4:1:46.530  
Meck, Alan L - Mktg Affil-E&FP  
Alright, Nick Pappas.

4:1:47.840 --> 4:2:19.290  
Nick Pappas  
Hey, Brian. Thanks a lot for the presentation. Nick Pappas within RDC, I thought your point on financing new resources and the sort of breadth of resource development needed to get to SP100 was really interesting on point. But I wanted to to tease out a little bit how this would interact between RA and IRP and whether there's, you know rather than getting perfect certainty in the future for RA when we're thinking about this new resource development, is there more of a clear functional role in the IRP to get those signals, whether it's in a procurement order or something?

4:2:19.400 --> 4:2:21.260  
Nick Pappas  
You know element of the programmatic approach to.

4:2:21.980 --> 4:2:25.990  
Nick Pappas  
To get these new projects online and and take out some of that, that financing risk.

4:2:28.0 --> 4:2:58.220  
Brian Biering  
I mean, I think there is and I think to some extent the marginal you LCC analysis that's being used for air P procurement right now provides some degree of certainty. I think what we're seeing in some of the contracts generally speaking is that our A is still the fundamental product that's being transacted. And so to the extent that you don't know what you're a value is even if you know what the hell it's going to be valued and the LCD.

4:2:58.270 --> 4:3:2.960  
Brian Biering  
Or piece submission. The RA side of the equation still holds up procurement.

4:3:5.140 --> 4:3:5.870  
Nick Pappas  
Got it. Thank you.

4:3:10.140 --> 4:3:11.140  
Meck, Alan L - Mktg Affil-E&FP  
Alright, Greg klatt.

4:3:13.460 --> 4:3:16.140  
Gregory Klatt  
Hey, Brian. Great clap for WPTF.

4:3:16.720 --> 4:3:17.130  
Brian Biering  
Right.

4:3:20.190 --> 4:3:20.550  
Brian Biering  
The.

4:3:18.80 --> 4:3:38.600  
Gregory Klatt  
I so I appreciate your presentation and you also referenced the earlier discussion about the PRM and it wasn't clear to me whether you were kind of agreeing with the concerns I was raising or you were providing a fairly cogent rebuttal to it. Could you please just went by so fast? Could you clarify that please?

4:3:37.540 --> 4:3:43.970  
Brian Biering  
It was, it was. Sorry. Yeah, it was more on the rebuttal side, Greg. So I think that the thinking is is that.

4:4:5.10 --> 4:4:5.440  
Gregory Klatt  
Right.

4:3:44.800 --> 4:4:12.970  
Brian Biering  
You know, with the PRM worth thinking of that as sort of a risk mitigation measure, if you will. You know, you plan for the PRM to account for the risk that exists in the portfolio, that it's not gonna meet. You know that the, the the resources won't be available as they as they were planned. So you have to scale that that planning reserve margin based on that risk. And so if you choose a lower exceedance level and that's arguably riskier that those resources won't produce.

4:4:13.660 --> 4:4:19.450  
Brian Biering  
That makes sense. Then to count for that risk in the context of the PRM, that was the the point I was trying to make.

4:4:19.370 --> 4:4:44.10  
Gregory Klatt  
No, I think we're in agreement then I cause I I think that you need to kind of choose and exceedance that tries to, you know provide a plausible measurement of how much a given category resource or individual resources will contribute towards reliability, right in terms of of qualifying capacity you pick that number, you find out what.

4:4:44.780 --> 4:5:15.70  
Gregory Klatt  
The the the resulting QC values are you. Plug that into the model or models that you use to produce a PRM measurement, and then you have a discussion about OK do we want? Here's kind of like the range. Do we wanna go higher in the range or lower in the range of the numbers that seem to get as close to the reliability standard to account for the risk associated with the chosen exceedance factor? So. So maybe we're kind of.

4:5:16.550 --> 4:5:17.800  
Brian Biering  
I think we're on the same page.

4:5:15.180 --> 4:5:19.130  
Gregory Klatt  
Talking past each other earlier. Yeah. OK.

4:5:20.700 --> 4:5:21.240  
Brian Biering  
Thanks Greg.

4:5:20.860 --> 4:5:21.350  
Gregory Klatt  
Thanks.

4:5:27.990 --> 4:5:28.520  
Meck, Alan L - Mktg Affil-E&FP  
Alright.

4:5:30.660 --> 4:5:39.500  
Meck, Alan L - Mktg Affil-E&FP  
If there are no more questions, I actually had one, I'd like to inquire a little bit about your enril slide on it.

4:5:40.350 --> 4:5:43.330  
Meck, Alan L - Mktg Affil-E&FP  
Looked to me, it sounded to me like what you were saying was.

4:5:44.30 --> 4:5:44.680  
Meck, Alan L - Mktg Affil-E&FP  
I'm.

4:5:45.610 --> 4:5:58.180  
Meck, Alan L - Mktg Affil-E&FP  
Maybe so. One of the big problems that I I think that we've gotten out of today's workshop with respect to getting an ELCC or hammering down an exceedance level for wind is that there's a wide variance.

4:5:59.780 --> 4:6:6.620  
Meck, Alan L - Mktg Affil-E&FP  
That you get and so I'm wondering. I'm looking at your end real slide. Is it that?

4:6:7.570 --> 4:6:13.550  
Meck, Alan L - Mktg Affil-E&FP  
We might get a more stable value for ECC if we measure wind resources by region.

4:6:14.690 --> 4:6:15.920  
Meck, Alan L - Mktg Affil-E&FP  
Do you think that's true?

4:6:17.190 --> 4:6:18.320  
Brian Biering  
I think it would be true.

4:6:19.330 --> 4:6:19.710  
Brian Biering  
Yeah.

4:6:21.810 --> 4:6:22.370  
Meck, Alan L - Mktg Affil-E&FP  
OK.

4:6:24.890 --> 4:6:31.0  
Meck, Alan L - Mktg Affil-E&FP  
Well, I think that's an interesting idea to toy with. I I don't know where, where that how much further I can take that idea right now I have to.

4:6:32.380 --> 4:6:34.950  
Meck, Alan L - Mktg Affil-E&FP  
Of think about that some more myself, but interesting.

4:6:35.590 --> 4:6:39.590  
Brian Biering  
Yeah. I mean, I think that, Alan, what what we were really trying to drive at was that.

4:6:40.870 --> 4:6:54.420  
Brian Biering  
Wind resources and SP15 and P-15. You know, I get that. You know, we've got to account for that obviously. And we've got to have accurate, but most given the you know, the level of wind resources we have on the system today within CAISO.

4:6:56.380 --> 4:7:7.970  
Brian Biering  
I think where I was trying to tie it was looking at what SP 100 is showing. Look at what the IRP is showing for the relative build out of offshore wind. You know, the governors came out saying, you know, 20 gigawatts.

4:7:9.190 --> 4:7:9.740  
Brian Biering  
You know.

4:7:10.810 --> 4:7:15.870  
Brian Biering  
That we need the signals in place and the resource adequacy program to reflect.

4:7:16.620 --> 4:7:21.190  
Brian Biering  
You know the the differentiation and those values across the West.

4:7:28.550 --> 4:7:29.50  
Meck, Alan L - Mktg Affil-E&FP  
Alright.

4:7:30.150 --> 4:7:30.460  
Meck, Alan L - Mktg Affil-E&FP  
As.

4:7:29.940 --> 4:7:48.250  
Gregory Klatt  
Alan, this is Greg, Greg, Cloud again, I I think we've touched upon some. I just wanna why? Why was why were you a bit surprised by that idea? Because it seems to me, I mean we've already gone towards developing regional ELCC values for wind for the purposes and for the reasons that that Brian.

4:7:49.630 --> 4:8:6.280  
Gregory Klatt  
Articulated why would we not want to do something similar in terms of exceedance? If we don't do? If we don't take it down into the granularity of individual resources, why wouldn't we want to have, at the very least granularity granularity on a regional basis?

4:8:13.580 --> 4:8:14.90  
Gregory Klatt  
Ah.

4:8:7.370 --> 4:8:26.500  
Meck, Alan L - Mktg Affil-E&FP  
I sounds like we would. I had just never considered that before getting down to the nitty gritty of ELCC values versus exceedance. I I'm normally a policy person and getting into this level of detail is the my my new learning frontier. If you, if you will.

4:8:25.420 --> 4:8:28.870  
Gregory Klatt  
Well, yeah, welcome to my world as a lawyer, so.

4:8:32.290 --> 4:9:2.260  
Brian Biering  
I mean I I think the other observation all offer is just that you know we are cognizant and sensitive to the fact that this you know what we're asking for here takes a lot may take a lot of work you know and I think that was why we were trying to think about, you know especially in part of the staff you know and and that's why we were trying to think about you know is there a way we can kind of use the martial ELCC factors as a bridge for some of these areas that may not have you know times of data the same way we have an SP15 and P.

4:9:2.420 --> 4:9:2.720  
Brian Biering  
Team.

4:9:12.420 --> 4:9:15.140  
Meck, Alan L - Mktg Affil-E&FP  
All right. Well, thank you very much, Brian.

4:9:16.850 --> 4:9:21.470  
Meck, Alan L - Mktg Affil-E&FP  
Just one last check and see if there are any other questions or comments that.

4:9:22.180 --> 4:9:23.470  
Meck, Alan L - Mktg Affil-E&FP  
People would like to add in.

4:9:26.230 --> 4:9:29.270  
Meck, Alan L - Mktg Affil-E&FP  
OK, let's look, please. Got Brent buffington.

4:9:30.490 --> 4:9:31.10  
Meck, Alan L - Mktg Affil-E&FP  
Go ahead.

4:9:32.350 --> 4:9:34.890  
Brent Buffington  
Yeah. So Brian, especially on that last comment.

4:9:35.660 --> 4:9:43.460  
Brent Buffington  
To get marginal ELC energy division and their consultants had to make some assumption about the.

4:9:44.160 --> 4:10:9.750  
Brent Buffington  
Production of the facility like you know in, in, for wind and solar, that corresponds pretty closely with the available capacity and maybe even made some assumptions about how it varies over time. So yeah, I I think using that that same data set that that's what drives consistency between IRP and RA is using a consistent set of underlying assumptions about the characteristics of these resources.

4:10:10.690 --> 4:10:12.100  
Brent Buffington  
So yeah, totally agree.

4:10:14.70 --> 4:10:14.640  
Brian Biering  
Thanks Brett.

4:10:18.0 --> 4:10:18.910  
Meck, Alan L - Mktg Affil-E&FP  
Yeah, thanks for that.

4:10:20.470 --> 4:10:22.280  
Meck, Alan L - Mktg Affil-E&FP  
Alright, last call.

4:10:23.290 --> 4:10:28.890  
Meck, Alan L - Mktg Affil-E&FP  
Otherwise, we can end the call early and give everyone back 45 minutes.

4:10:32.670 --> 4:10:34.30  
Meck, Alan L - Mktg Affil-E&FP  
OK, well.

4:10:36.640 --> 4:10:36.980  
Meck, Alan L - Mktg Affil-E&FP  
Yeah.

4:10:33.580 --> 4:10:37.510  
Nuo Tang  
Hey, I'm Alan. This is Noah. Tone from middle represents and I was wondering if we could.

4:10:40.70 --> 4:10:49.160  
Nuo Tang  
Yeah, I was wondering if we could have a slight discussion on have PRM and how IRP PRM.

4:10:50.340 --> 4:10:51.610  
Nuo Tang  
Part of the decision it was.

4:10:54.950 --> 4:10:59.750  
Nuo Tang  
I was wondering if staff could provide some that clarification whether or not just.

4:11:1.120 --> 4:11:4.370  
Nuo Tang  
There is an IRP LOLE study being run.

4:11:6.340 --> 4:11:9.350  
Nuo Tang  
And and that would inform and when that would run.

4:11:12.230 --> 4:11:35.580  
Gannon, Jaime Rose  
I know I could jump in and Michelle or Simone, please feel free to add on. So I IRP did put out some results of the recent run of the model for 2024 and 2026. I believe in 2030. So those results were presented on at their mag workshop last week.

4:11:36.290 --> 4:11:54.600  
Gannon, Jaime Rose  
Umm. And I believe that is the refreshed study. It incorporated some of the changes that parties had requested in the RA proceeding. I think those are you know documented or summarize what changes and updates it made to the assumptions were included in that deck. Were you able to attend that meeting?

4:11:56.750 --> 4:12:16.980  
Nuo Tang  
Not exactly that, but I but I have a general overview of that. My understanding was that that LOLE study was based on a pcap analysis or accounting conventions and it's different than what we are doing RA and so I'm trying to better understand how that would relate here.

4:12:17.960 --> 4:12:25.150  
Gannon, Jaime Rose  
Right. So I think the results per were presented at an eye cap level as well as at PG CAP level.

4:12:26.340 --> 4:12:27.140  
Gannon, Jaime Rose  
And.

4:12:28.480 --> 4:12:35.90  
Gannon, Jaime Rose  
I think you know, personally speaking, what we're trying to better understand internally is how we could take.

4:12:35.890 --> 4:12:51.850  
Gannon, Jaime Rose  
You know the results of the study and utilize them to do this calibration exercise. And so we're working internally to kind of better understand how staff could support those efforts.

4:12:55.910 --> 4:12:57.400  
Nuo Tang  
The the ICAP.

4:12:58.990 --> 4:13:0.570  
Nuo Tang  
Salts for 20.

4:13:1.400 --> 4:13:2.140  
Nuo Tang  
There's 24.

4:13:2.940 --> 4:13:7.120  
Nuo Tang  
30 I don't, I don't recall if there was a 26th, but there might have been. So the ICAP.

4:13:8.360 --> 4:13:20.530  
Nuo Tang  
I guess your your in your mind will could be applicable for 24 where that decision said I'm minimum 1717 1/2%.

4:13:22.520 --> 4:13:23.880  
Nuo Tang  
For 2024, is that right?

4:13:25.560 --> 4:13:26.190  
Gregory Klatt  
17.

4:13:25.830 --> 4:13:26.550  
Gannon, Jaime Rose  
So.

4:13:28.360 --> 4:13:28.800  
Nuo Tang  
70.

4:13:27.430 --> 4:13:29.70  
Gannon, Jaime Rose  
Yeah. So so when the?

4:13:29.800 --> 4:13:43.430  
Gannon, Jaime Rose  
Yeah, we said 17%, but that wasn't based on, you know a, you know it was an of a number in between what we thought was achievable. I guess I don't think it's based on any analytics.

4:13:44.990 --> 4:13:45.500  
Gannon, Jaime Rose  
But.

4:13:46.180 --> 4:14:10.730  
Gannon, Jaime Rose  
Umm. What? What we get from the LOLE output is like the selected units and so that my understanding of the way that it's done is that studies done 1st and then we could take that the selected units which include a pcap or not pcap. I'm sorry a cap Max value and do some thinking about how we could apply a you know.

4:14:11.310 --> 4:14:28.590  
Gannon, Jaime Rose  
A A slice of day accounting to those cat Max values to come up with what the appropriate PRM is, but I think you know there does have to be some questions answered at you know, at what point do you base that value like you know?

4:14:29.340 --> 4:14:33.630  
Gannon, Jaime Rose  
How we're ending 18. What? What point do you base it off of because.

4:14:34.350 --> 4:14:35.470  
Gannon, Jaime Rose  
You have so many values.

4:14:35.660 --> 4:14:35.990  
Nuo Tang  
Sorry.

4:14:37.80 --> 4:14:39.330  
Nuo Tang  
Yeah, sorry I I lost connection there out of here.

4:14:40.340 --> 4:14:41.450  
Nuo Tang  
Let let me try this.

4:14:47.860 --> 4:14:48.70  
Nuo Tang  
So.

4:14:47.730 --> 4:14:50.550  
Meck, Alan L - Mktg Affil-E&FP  
Uh, know you're breaking up. We can't really hear you.

4:14:53.460 --> 4:14:56.680  
Nuo Tang  
Yeah, sorry about that. How about is this any better? I don't know.

4:14:57.740 --> 4:14:58.180  
Meck, Alan L - Mktg Affil-E&FP  
Yes.

4:14:57.610 --> 4:15:17.740  
Nuo Tang  
Walking around my house and trying to find Wi-Fi spot I don't know. So let me try to rephrase what I'm hearing. IRP team has already run its LOLE study and so parties here in are you pricing, should you utilize that our CAP analysis, PRM analysis and?

4:15:18.910 --> 4:15:20.180  
Nuo Tang  
Figure out how that may.

4:15:20.720 --> 4:15:28.690  
Nuo Tang  
Uh impact the 24 slice proposal and we we so there's not a any additional study that will be run.

4:15:29.500 --> 4:15:31.360  
Nuo Tang  
In the meantime, I guess.

4:15:32.330 --> 4:15:33.70  
Nuo Tang  
Because it's already.

4:15:44.660 --> 4:15:46.670  
Nuo Tang  
But OK.

4:15:36.980 --> 4:16:4.190  
Gannon, Jaime Rose  
Umm, I don't wanna say there's no additional study that won't be done because I'm not gonna preclude that from happening, you know. But I think we have a refresh 2024 study results. I don't know if it's in enough of a granule form granular format to be converted over. I know that that the calibration model and ARDC used, I think it was table six from the.

4:16:4.940 --> 4:16:13.950  
Gannon, Jaime Rose  
From the LOLE staff report that was put out in February was used in that calibration model, so I think you'd have to get similar.

4:16:14.660 --> 4:16:30.170  
Gannon, Jaime Rose  
Results and I, you know, similar kind of classification of resources at like the selected units by resource class by month level. I'm not sure if that was presented at the Mac, but I think you'd have to get that level of data.

4:16:32.170 --> 4:16:34.220  
Gannon, Jaime Rose  
And and I will also note that.

4:16:35.120 --> 4:16:42.430  
Gannon, Jaime Rose  
The 2024 LOLE study that was refreshed is at an annual level. It was not done at a monthly level, so we won't have that monthly granularity.

4:16:45.320 --> 4:16:45.640  
Nuo Tang  
Right.

4:16:44.440 --> 4:16:56.600  
Nick Pappas  
Hey, Jamie, this is Nick Pappas. If if I can jump in for a moment on this within RDC, agree with all of your comments, just to provide a little more color on kind of translating that study, I think the annual issue is.

4:16:57.310 --> 4:17:28.820  
Nick Pappas  
One, we have to think through all of the work we did was assuming monthly, monthly portfolios calibrated to .1 LOLE. So I think some thinking needs to to go in there to the extent we're not gonna do monthly calibration moving forward. And then the second missing piece is just nailing down what the resource counting rules are. So we use, you know, indicative resource counting with different exceedance or we'll stay approaches. There were some options to to change in there, but we didn't have things like hourly limitations for gas or kind of any final stuff for.

4:17:29.320 --> 4:17:43.950  
Nick Pappas  
Variable renewable resources or hybrids or any of the other things sort of that are the focus of this workshop series. But I I look forward to working with you all and probably presenting at the PRM workshop to think about how to take this forward as next steps.

4:17:47.760 --> 4:17:56.890  
Nuo Tang  
Is it it possible for energy division to help and facilitate getting that portfolio data set for us?

4:17:57.620 --> 4:18:0.60  
Nuo Tang  
Uh, so that we can all have it for the PRM workshop.

4:18:3.910 --> 4:18:4.130  
Nuo Tang  
Lisa.

4:18:1.490 --> 4:18:26.380  
Gannon, Jaime Rose  
Yep, I'm working on it and yes, hope to get that in, you know, in preparation of that discussion, because I think it would isn't a needed element to further the discussion on it. Also we are hoping to get IRP and ERM stop involved more and hopefully involved in those discussions so that we could better understand you know the outputs there.

4:18:27.570 --> 4:18:28.550  
Nuo Tang  
Sounds great. Thanks.

4:18:34.30 --> 4:18:34.500  
Meck, Alan L - Mktg Affil-E&FP  
OK.

4:18:35.880 --> 4:18:36.670  
Meck, Alan L - Mktg Affil-E&FP  
Well, that was great.

4:18:37.170 --> 4:18:39.60  
Meck, Alan L - Mktg Affil-E&FP  
Umm anything else?

4:18:43.970 --> 4:18:45.670  
Meck, Alan L - Mktg Affil-E&FP  
And we want to talk about Amazon Prime Day.

4:18:46.600 --> 4:18:48.110  
Meck, Alan L - Mktg Affil-E&FP  
Just kidding, OK?

4:18:48.360 --> 4:18:52.220  
Meck, Alan L - Mktg Affil-E&FP  
I'm well. Thank you everybody for the great discussion.

4:18:52.540 --> 4:18:53.190  
Meck, Alan L - Mktg Affil-E&FP  
I.

4:18:54.180 --> 4:18:59.410  
Meck, Alan L - Mktg Affil-E&FP  
This has been the first workshop in the phase two of Ari Reform.

4:19:0.310 --> 4:19:4.660  
Meck, Alan L - Mktg Affil-E&FP  
And looking forward to more interesting discussions in the future.

4:19:6.350 --> 4:19:9.720  
Meck, Alan L - Mktg Affil-E&FP  
Thank you, everybody. And I'll give you guys 40 minutes back.