

[9:57 AM] Wan, Lisa

Good morning everyone! Friendly reminders: This meeting is being recorded (I will start it at 10am). Please mute yourself. If necessary, I will mute your line if there's excessive background noise. Next Workshop: Hedging Component Workshop on Wednesday 1/5. If you are interested in presenting at the following workshop (Hedging Component on Wednesday 1/5), please contact the co-facilitators by this Friday 12/24 and send presentation materials to the co-facilitators by Friday 12/31. The next set of informal comments are due Wednesday 12/22, on the Need Determination and Allocation and the Recap on Slice-of-Day workshops. If you need to find the call-in information, schedule, or contact information for these workshops, they are included in the emails sent to the service list.

[10:10 AM] Ed Smeloff (Guest)

The question is not whether there is a risk of not having enough energy to charge batteries. The question is whether there is sufficient renewable energy to charge the batteries and meet GHG reduction targets.

[10:11 AM] Chris Devon

Ed Smeloff (Guest) The question is not whether there is a risk of not having enough energy to charge batteries. The question is whether there is sufficient renewable energy to charge the batteries and meet GHG reduction targets. That is the question in IRP. RA should be focused on reliability foremost.

[10:12 AM] Ed Smeloff (Guest)

Both IRP and RA should capture the concerns about meeting reliability and GHG goals.

[10:12 AM] Sergio Dueñas

Ed, I believe both proposals that consider charging sufficiency verification do not make distinctions between generation sources.

[10:14 AM] Ed Smeloff (Guest)

Sergio, I agree but LSEs will be procuring resources that meet GHG reduction goals and they will need to show these resources in RA showings.

[10:17 AM] Ed Smeloff (Guest)

If LSEs are only showing ELCCs for VERs then how can the PUC verify there will be enough charging energy, particularly from renewables

[10:19 AM] Ed Smeloff (Guest)

Didn't the CEC assume that the entire fleet of gas generation is retained.?

[10:21 AM] Chris Devon

Ed Smeloff (Guest) If LSEs are only showing ELCCs for VERs then how can the PUC verify there will be enough charging energy, particularly from renewables Ed - I would suggest the CPUC can use resource expansion modeling with GHG policy target constraints in IRP to ensure the needed mix of preferred resources are built. Then in RA the CPUC and CAISO should jointly do LOLE modeling to ensure the PRM and resource accreditation can ensure LOLE-based reliability targets are met. I believe there doesn't need to be a explicit GHG check in RA process if IRP is done correctly and the PPAs from those IRP built resources and CAISO GHG costs in the market outcomes should ensure the goals are met operationally.

like 1

[10:24 AM] Matthew Barmack

Chris Devon Ed - I would suggest the CPUC can use resource expansion modeling with GHG policy target constraints in IRP to ensure the needed mix of preferred resources are built. Then in RA the CPUC and CAISO should jointly do LOLE modeling to ensure the PRM and resource accreditation can ensure LOLE-based re.....and charging constraints would be reflected in ELCC for storage (and the resources capable of filling the storage) if ELCC were applied to storage.

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[10:34 AM] Ed Smeloff (Guest)

Doesn't fleet of RA-contracted resources have to show there is sufficient energy to charge batteries as well to assure 1 in 10 LOLE?

[10:35 AM] Chris Devon

Good points about the need to consider the hybrid & colocated resources and ITC restrictions. it will be difficult to impossible to do targeted resource specific ELCC on stand alone resources, even more so for all of the configuration variations of co-located and hybrids with ITC restrictions.

[10:37 AM] Doug Karpa (Peninsula Clean Energy)) (Guest)

Meck, Alan L - E&FP It wouldn't become a dispatch schedule because the concept is that the RA fleet could be dispatched to meet load in all hours, but when the day arrives, CAISO and the market will actually use those resources in the real time as appropriate. The RA construct is just a hypothetical exercise of "if we turn on EVERY resource and crank it up to 11, can we keep the lights on in an emergency" but that doesn't say much about how it operates day to day. Does that help?

[10:38 AM] Nuo Tang

Ed Smeloff (Guest) Doesn't fleet of RA-contracted resources have to show there is sufficient energy to charge batteries as well to assure 1 in 10 LOLE? Isn't the simplified version of the question whether sufficient energy is already accounted for in the PRM/ELCC vs explicitly accounted for in a capacity need so that it's not in the PRM?

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[10:39 AM] Doug Karpa (Peninsula Clean Energy)) (Guest)

Ed Smeloff (Guest) I would say yes, the RA showing should expressly show that you have charging for your storage, in my view. But people have different views on that point. (And yes, I use the chat for weedy stuff!)

[10:40 AM] Meck, Alan L - E&FP

Doug- I was referring to the discussion Nuo and Steve Keehn were having. If we want to start planning for multiple battery charging cycles per day, I think RA starts to look like a dispatch schedule.

[10:44 AM] Doug Karpa (Peninsula Clean Energy)) (Guest)

Meck, Alan L - E&FP Gotcha. My understanding is that the Gridwell proposal would use ELCC, so it wouldn't account for the details of dispatch, and the SCE proposal, yeah, LSEs would identify a quasi dispatch schedule. For example, PCE might decide to show our storage during HE22 through HE 04 if that's when we need it.

[10:44 AM] Nuo Tang

Meck, Alan L - E&FP I simply mention the need to consider charging because SCE's 24 hour Slice will allow LSEs to count/show batteries for more than 1 cycle. Added with talk about how storage should now be only charged with renewables. Put those 2 together, and I question where the 2nd sunrise for that 2nd discharge cycle at 6am.

[10:50 AM] Steve Keehn

Nuo, your point is a good one. If the second discharge period is at sunrise a storage facility col-located or hybrid with solar and relying on ITC would not be able to charge if it was discharged during the previous evening. This resource could only be counted on for one cycle per day.

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[10:58 AM] Ed Smeloff (Guest)

Is there an adjustment downwards for the rest of the class when an upward adjustment is made for a specific resource?

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[11:00 AM] Chris Devon

Ed - in the MISO Wind approach - yes, the higher performing resources get higher than the system-wide average ELCC contribution and the lower performing get less. This would be a better incentive structure IMO.

[11:04 AM] Cunningham, Patrick

I think the Commission's upcoming wind-locational ELCC classes will be establishing separate ELCC values for distinct geographic areas, but yeah, could apply a ratio factor like MISO (ACP's locational ELCC proposal had this too; faster to implement)

[11:05 AM] Ed Smeloff (Guest)

Chris - How many years of data are needed to qualify for the ELCC adjustment?

[11:06 AM] Chris Devon

Of course this is complicated by looking at multiple resource types, and the hybrid and co-located resources, but its not impossible to do it in a more nuanced manner then just applying fleet average like is done today. and good point as well Pat - I would like to see something like this done for wind and solar and storage, not just wind.

[11:07 AM] Chris Devon

Ed - I am not sure off the top of my head but I believe its 5 years of historical data, and newer ones get a blended approach. I will look to see if I can find the specifics

[11:09 AM] Chris Devon

appears MISO uses longer actually, "The historic output has been tracked for each wind CPNode over the top 8 daily peak hours for each year 2005 through 2019." here is a helpful report from MISO on this -

<https://cdn.misoenergy.org/2020%20Wind%20&%20Solar%20Capacity%20Credit%20Report408144.pdf>

[11:10 AM] Chris Devon

see section 3.1 for the deterministic approach

[11:18 AM] Nuo Tang

the assumption of that it's the same PRM may be flawed

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[11:45 AM] Cunningham, Patrick

If a top down allocation method is used, and the Commission worries about LSE leaning, would it be a viable option to limit transaction of obligations by the difference between an LSE's hourly load curve and the top-down system slice requirements? Lots of conditions there, I know.

[11:48 AM] Ed Smeloff (Guest)

RA costs might go up but energy costs will go down because of low cost of energy. It will go down further with less curtailment.

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[11:49 AM] Nuo Tang

I don't think this would limit the transactions to only pairs of LSEs, as long as the other LSE A has excess supply for the hours that LSE B is unable to procure supply in the market. But I do wonder if it limits the market to LSEs only and effectively not have suppliers participate in that market.

[11:51 AM] Nuo Tang

I think CAISO proposed something like this in RA Enhancements where an LSE is deficient, it would be charged at the CPM price for the surplus brought in by another LSE, even if there was no CPM.

[11:51 AM] Doug Karpa (Peninsula Clean Energy)) (Guest)

Colbert, Cathleen I'd love to chat further, but from PCE's perspective, we have a bit of the opposite concern that if we have a four hour need, with storage, we'd pay for the four hours we need, but I think we'd expect that for a gas resource, a lot of those extra 20 hours would have zero value, because, for example, going forward, everyone is going to be awash in capacity during the solar window, so we'd have to pay for the full cost of the resource for a lot of hours we don't need and can't offload either. I am not at all sure how that would play out in the real world though.

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[11:53 AM] Colbert, Cathleen

Doug Karpa (Peninsula Clean Energy)) (Guest)Colbert, Cathleen I'd love to chat further, but from PCE's perspective, we have a bit of the opposite concern that if we have a four hour need, with storage, we'd pay for the four hours we need, but I think we'd expect that for a gas resource, a lot of those extra 20 hours would have zero value, b...Doug Karpa (Peninsula Clean Energy)) (Guest) I'd love to connect on this. I strongly believe thinking through what signals and commercial outcomes may arrive from the various options is critical to inform our thinking. Thanks for the invite, I'll reach out.

[11:59 AM] Doug Karpa (Peninsula Clean Energy)) (Guest)

Yes. A hugely important variable in LOLE studies (and ELCC studies) are the specifics of how battery storage dispatches. It won't take a lot of change in those dispatch behaviors to change the ELCC.

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[12:00 PM] Ed Smeloff (Guest)

As we add 11.5 GW NQC over the next 5 years ELCC would likely change very quickly

[12:02 PM] Ed Smeloff (Guest)

Using UCAP for hybrids would have a similar disadvantage.

[12:03 PM] Colbert, Cathleen

Doug Karpa (Peninsula Clean Energy)) (Guest)Yes. A hugely important variable in LOLE studies (and ELCC studies) are the specifics of how battery storage dispatches. It won't take a lot of change in those dispatch behaviors to change the ELCC.@Doug - Completely agree and thanks for raising . The

generation modeling dispatch assumptions need to be stakeholdered and developed in a manner that parties have confidence in the results.

[12:04 PM] Julia Prochnik (Guest)

Barbara, does the change work for you too?

[12:08 PM] Ed Smeloff (Guest)

What is the limitation on redeployment from saturated hours to unsaturated hours?

[12:10 PM] Ed Smeloff (Guest)

The analogy with peakers seems strong.

[12:12 PM] Ed Smeloff (Guest)

Would the ELCC for peakers vary depending on the number of starts required and the ramp rates within those periods?

[12:14 PM] Matthew Barmack

Totally agree with Donald Brooks (Guest).

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[12:15 PM] Ed Smeloff (Guest)

The Commission process for adopting annual LOLE that includes robust stakeholder participation would be very challenging.

[12:18 PM] Nick Pappas

Colbert, Cathleen Could you confirm that the Vistra/Gridwell proposal freezes ELCC values for any resource for the life of the contract?(I was not aware of that element of the proposal)

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[12:23 PM] Griffes, Peter

How does use of a vintaged ELCC lead account for the declining contribution to reliability of a resource as similar resources are added to the portfolio? Is it incorporated into the ELCCs of subsequently added resources of the same type?

[12:24 PM] Matthew Barmack

Griffes, PeterHow does use of a vintaged ELCC lead account for the declining contribution to reliability of a resource as similar resources are added to the portfolio? Is it incorporated into the ELCCs of subsequently added resources of the same type?Yes

[12:25 PM] Nuo Tang

We'll see that again this year when the ED runs ELCC again, per recent RA decision

[12:26 PM] Nick Pappas

Griffes, PeterHow does use of a vintaged ELCC lead account for the declining contribution to reliability of a resource as similar resources are added to the portfolio? Is it incorporated into the ELCCs of subsequently added resources of the same type?Agreed with this concern, it seems like vintaging / freezing ELCC would be very counter to the intended benefits of the internally consistent and continuously recalibrated ELCC framework.

[12:28 PM] Colbert, Cathleen

Matthew BarmackYesMatthew Barmack Thanks, Matt! I'd add that vintaging impacts that you're raising could either be balanced within buckets in a single ELCC or it can be done through balancing across ELCCs runs (year over year), it is a design choice. When working with PJM on this effort. I also want to flag that this having a meaningful impact on in the latter case future runs is de minimis to nil under a paradigm with a single year term and only becomes something needed to carefully litigate for longer term contracts. Just a couple thoughts, to remember that for now we're largely discussing this as under a non-multi year contract. We should discuss any changes needed if multi-year is explicitly considered.

[12:29 PM] Nuo Tang

using incremental ELCC/vintaging would be consistent with IRP procurement and meeting LOLE w/o adjusting PRM significantly from one used in IRP. Otherwise, if incremental capacity is used in IRP and different NQC is used in RA, the PRM will need to be adjusted up in RA framework

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[12:29 PM] Worhach, Paul

The "downtime" limitation should be reflected in the operational constraints of a given duration storage resource. Just showing energy sufficiency is not sufficient.

[12:31 PM] Matthew Barmack

ELCC models multiple 8760 draws of load/weather/renewables so inherently captures the capability of resources to address multi-day events.

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[12:31 PM] Ed Smeloff (Guest)

Could the excess energy be converted to another energy carrier (hydrogen, ammonia) that could be used in another month?

[12:32 PM] Colbert, Cathleen

Worhach, PaulThe "downtime" limitation should be reflected in the operational constraints of a given duration storage resource. Just showing energy sufficiency is not sufficient. Just for precision, technically these aren't "downtimes" as Non-Generator Resources are considered always "on". The mechanism for capturing the need to recharge is through State of Charge, where the market calculates SOC in real-time and dispatches are limited relative to its SOC telemetered. The SOC is generally sum of discharge MW and charge MW*efficiency rates so that SOC is the stored energy after round-trip efficiencies are considered, so the operational limit forces charging after accounting for RTE so the SOC value can support dispatch signal. Happy to share more details if you're interested.

[12:36 PM] Doug Karpa (Peninsula Clean Energy)) (Guest)

I also think that for the multiday issues, it's worth noting the CEC modeling that Cathleen pointed to, because that looked at what happens if the existing patterns of multiday low generation periods get even worse than they are now.

[12:41 PM] Matthew Barmack

Doug Karpa (Peninsula Clean Energy)) (Guest)I also think that for the multiday issues, it's worth noting the CEC modeling that Cathleen pointed to, because that looked at what happens if the existing patterns of multiday low generation periods get even worse than they are now. Yes, and that is why I think we need an approach that looks beyond a single day, which ELCC does. As numerous studies have demonstrated, this will be an even bigger issue if electrification shifts more reliability problems to the winter, when multi-day periods of low renewable generation are more common.

[12:57 PM] Colbert, Cathleen

Nick Pappas (External)Colbert, Cathleen Could you confirm that the Vistra/Gridwell proposal freezes ELCC values for any resource for the life of the contract? (I was not aware of that element of the proposal)Nick Pappas Similar to SCE's proposal that finer details of the proposal should be refined through a subsequent robust stakeholder process, Gridwell's proposal to includes a deep dive on details like this in the subsequent forum. We believe this option is one that must be discussed and considered in that forum.

[1:00 PM] Nick Pappas

Colbert, CathleenNick Pappas Similar to SCE's proposal that finer details of the proposal should be refined through a subsequent robust stakeholder process, Gridwell's proposal to includes a deep dive on details like this in the subsequent forum. We believe this option is one that must be discussed and considered i...Thanks Cathleen, just wanted to confirm what I heard. Sounds like there is not a firm proposal to freeze ELCC for the life of the contract at this point then?

[1:02 PM] Colbert, Cathleen

Nick Pappas (External)Thanks Cathleen, just wanted to confirm what I heard. Sounds like there is not a firm proposal to freeze ELCC for the life of the contract at this point then?Nick Pappas, I've recounted the message that I got from Carrie on the Gridwell proposal and understand the current proposal to allow for the details on ELCC development to be refined in a stakeholder process. Please reach out to Carrie via email for any further confirmation.

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[1:45 PM] Rich Viebrock

Where do we order?

[1:45 PM] Nuo Tang

swag?

[1:45 PM] McIntosh, Henry

How about a smaller font?

[1:46 PM] Nuo Tang

parting gifts at WPTF meeting?