POSTED 11/14/25

Edited Q & A Transcript for TPP Webinar – Preliminary Busbar Mapping Results for the Proposed 2026-2027 TPP portfolios: 9 AM – Noon on 11/12/2025

Answers or edits made post-webinar are found in green.

QUESTION: Can the IRP team (or CEC staff) comment on the trajectory of the forecast currently in development and being discussed at tomorrow's IEPR workshop?

Nick Pappas (09:32:41)

RESPONSE: Nick: You mean the trajectory for the CEC's demand forecast? I don't think we have the right CEC staff on this webinar for that, and CPUC staff are a little hesitant to go deep on a CEC work product here. Is there something more specific you're asking about, though?

RESPONSE: Thanks Nathan. Yes, the question is regarding whether we may see a shift (positive or negative) in the forthcoming IEPR.

RESPONSE: Sorry Nick but we'll just have to defer to what's already in the IEPR docket and whatever CEC will be covering in their workshop tomorrow.

RESPONSE: Thanks!

QUESTION: Have the slides been posted?

Abreu-Fellmann, Chadia (09:33:52)

RESPONSE: Slides have not yet been posted but should be later today.

RESPONSE: See the CPUC's slides here and the CEC's slides here.

QUESTION: Wondering if the out-of-state wind estimates factor in the strong local opposition to wind projects in Idaho and recent decisions by local counties to significantly limit wind projects in southern Idaho.

Dan Sakura (09:36:17)

RESPONSE: The factors you identified were among those that informed our decision to delay the first available year of ID Wind until 2031. Our Idaho Wind potential is set at CAISO's portion of SWIP-N, which is already under

development. No additional ID wind beyond what this line could transmit is assumed.

RESPONSE: Thanks! In terms of the permitting challenges for SWIP-N, figure you may have seen Jerome County Idaho's decision to remand the SWIP-N special use permits to the Planning and Zoning Commission and BLM's decision to suspend its compliance work for the Robinson Summit substation project on SWIP-N.

RESPONSE: Yep. We will continue to monitor. For the purposes of this TPP, we are assuming that the wind could be delivered to CAISO by the first mapped year (2036).

RESPONSE: Thanks! A lot of the latest is in the FERC Docket ER25-2025 Rate incentives for Great Basin Transmission -- LS Power.

QUESTION: Regarding the P15/26 expansion there is data in RESOLVE showing the "Value" of the flows between PG&E and SCE. What does that RESOLVE "value" represent?

ewolfe@resero.com (09:43:03)

RESPONSE: Hi Ellen - Yes, RESOLVE would report this as a shadow price. The value of the upgrade ($/kW-yr) is related to the upgrade cost; i.e. if the value exceeds the upgrade cost, it will be selected. Please submit a request thru the CPUC RESOLVE Office Hours form if you have additional questions.

RESPONSE: The value of the flows could be captured by comparing average energy prices between the two zones.

RESPONSE: Ok. Can get on office hours. But a simple clarifying question. Is the Value parameter in $/kw-year? Thanks.

RESPONSE: Can you please remind me how to find further info on those office hours? Thanks Sam.

RESPONSE: Office Hours link

RESPONSE: Talking to the model devs - I don't think we have a "Value" parameter in quite the way you're envisioning but let's discuss during a future OH session.

Background 1: As we can see from the draft 2026-2027 portfolios, the Out-of-state (OOS) wind resource requirements are increasing. And the CAISO has been challenged to meet the out-of-state resource requirements from the CPUC.

Background 2: There are no known transmission projects that can integrate required resources apart from SWIP-N (Idaho), TWE (Wyoming), and SunZia (New Mexico).

Background 3: The CAISO reported in its September 25th stakeholder meeting that they are ISO is exploring transmission solutions to integrate wind resources from Wyoming. Still, that exercise seems to be at a very preliminary stage.

QUESTION 1: I have two questions. 1. Have you considered the cost of specific OOS transmission to access additional WY and NM resources you have included in these draft portfolios? If so, please describe.

Pushkar Wagle (09:44:39)

RESPONSE: Yes. For additional tranches of out-of-state wind that could not be delivered by in-development transmission projects, cost estimates informed by studies from prior CAISO TPPs and/or per-unit cost estimation are used to approximate new Tx line costs.

RESPONSE: Where can we see this transmision cost data? I could not find it in the Dashboard. Thanks.

RESPONSE: This data is included in the RSEOLVE analysis, both in the slides that were published with the Sept Ruling and, within the RESOLVE package, in the CPUC Pro Forma (as a Fixed Cost Adder).

RESPONSE: Apologies, this detail was not included in the September Ruling slides. They are on Slide 80 here:

RESPONSE: September Ruling Slides

QUESTION: 2. Just like last year, will you be asking the CAISO not to trigger upgrades related to the additional OOS wind amounts in the portfolio that are beyond the amounts that can be accommodated on the already-identified and in-development transmission upgrades?

Pushkar Wagle (09:44:48)

RESPONSE: Hello Pushkar, both the CAISO and the CPUC are performing studies on OOS wind, as per last year's Decision. We are currently not able to give a preview on what those studies are providing us, or what will be included on this in the eventual PD.

RESPONSE: Ok. Thanks.

QUESTION: A couple of clarifying questions re: load. Is AATE included in the EV load charging profile? Also, does the Commission still apply "load forecast multipliers"? These were applied to address load forecast uncertainty (2019 I&A), i.e. +/- 1.5% and 2.5%

Oh, Helena (09:44:41)

RESPONSE: (1) In RESOLVE, Baseline LDV, Baseline MHDV, AATE LDV, and AATE MHDV are all separate profiles; on Slide 29, these load components were grouped together into "EV Load". (2) No.

QUESTION: Regarding the P15/26 expansion, Sierra said they reduce post-offshore wind deployment (slide 46) or something to that effect. Can you please expand on to what that refers/means?

ewolfe@resero.com (09:44:55)

RESPONSE: Hi Ellen, this is because OSW is tying into the PGE area, so the path expansion is used less once OSW comes online. In the sensitivity, additional expansion of the Path 26/Path 15 expansion compared to the Proposed Base Case is required to meet PG&E load due to the lack of OSW.

RESPONSE: Got it! Thanks.

QUESTION: Does resolve model consider the Rio Sol project that is parallel to the Sunzia project? https://riosol.energy/

Dorland, Kanya (09:48:14)

RESPONSE: RESOLVE does consider RioSol as a transmission option and assumes that CAISO has the option to secure rights on the line.

QUESTION: per Sierra's comments on slide 51, if OOS Transmission is insufficient to deliver OOS geo, how does IRP assume that it gets delivered? Or what are the other presumptions/implications? (E.g., will that portfolio and gap in Transmission just be handed to the CAISO to address, or...?

ewolfe@resero.com (09:48:49)

Response: In cases where both current in-state transmission and the CAISO-identified projects described in the 2024 whitepaper are insufficient to deliver out-of-state (OOS) resources, RESOLVE selects generic lines (e.g., a 500 MW line from the CAISO intertie to SCE Metro) to deliver the resources. For example, RESOLVE selected generic in-state transmission lines to deliver the high volumes of OOS geothermal in the 2041 sensitivity case. (Slide 51) You can see the generic in-state transmission projects RESOLVE considered and selected in the RESOLVE Upstream Notebooks on the "Transmission" sheet. In these cases, the CPUC makes CAISO aware of these generic transmission needs in meetings and through the transmitted mapped portfolio, and CAISO explores and addresses them at their discretion.

In cases where OOS transmission upgrades are needed to deliver OOS resources to CAISO, RESOLVE can, as with in-state upgrades, select either in-development (E.g., SunZia) or generic upgrades to deliver the resources. These upgrades are not explicitly in the RESOLVE notebooks but rather are represented as cost adders on OOS resources. See slide 80 of the February I&A slides for a table of candidate OOS upgrades used this cycle. Since CAISO cannot carry out interregional planning alone, the planning of these lines would likely require the cooperation of CAISO with OOS balancing authorities and/or merchant developers.

QUESTION: Regarding Sierra's concluding statement that the P15/26 upgrade is needed to meet PG&E's load, what would be the impact if the upgrade did not happen in a timely manner?

ewolfe@resero.com (09:50:53)

RESPONSE: The risks of inability to develop the Path expansion was not explored in RESOLVE modeling. This is the first TPP in which RESOLVE determined a need for Path expansion, and we will be working with CAISO to identify next steps and options to off-ramp, if needed.

RESPONSE: Got it. Thanks.

QUESTION: Is CPUC staff considering any portfolio analysis assessing impacts of lower than expected generic imports (uncontracted / unspecified import assumption) in light of WRAP policy impacts and broader WECC wide resource deficiencies?

Nick Pappas (09:51:35)

RESPONSE: Currently, not to my knowledge. Please include in your comments how you think we should perform and implement this analysis.

QUESTION: Have you or do you intend to perform a sensitivity analysis of the gas retention if carbon capture and storage is considered a clean energy resource under RCPPP?

Eric Little (09:51:56)

RESPONSE: We have not done this in past. Please add into your comments any sensitivity cases that you suggest for future years.

QUESTION: Is there any update to the expected plunge in 4-hour battery marginal ELCCs that Staff flagged in slides posted about the IRP Ruling? Is that still the expectation?

Mary Neal (09:52:18)

RESPONSE: Hi Mary - our modeling suggests that the "plunge" will happen, based on the loads and portfolio selections represented in this TPP, although the exact timing is uncertain because it depends on the actual rate of solar & storage deployment.

QUESTION: related to the Gates uprate: We are confused about a change in the busbar mapping that we have observed for PHS. Previously, Helms Uprate was modeled in the busbar @Gregg. We don't see it now. The CPUC issued Decision 25-09-016 that authorizes the cost recovery for the update. Could you elaborate?

Soumya (09:53:15)

RESPONSE: For this round of mapping we focused mostly on faithfully mapping to RESOLVE. We will get into this in the latter half of the webinar, but we focused first on mapping to RESOLVE and minimizing transmission exceedances and still need to optimize for other criteria. We will take note of what you've raised so far with Greg substation

---

QUESTION: Has there been any effort to compare past busbar mapping efforts to the actual procurement that has occurred? Similarly, is there any effort to direct procurement to areas that busbar mapping identifies are optimal?

Deborah Behles (09:54:12)

RESPONSE: Deborah: The short answer is that, despite us being ~7yrs into busbar mapping portfolios for study in CAISO's TPP, that's still relatively early days in terms of where the actual resource procurement is happening vis a vis the transmission investments triggerred by studying IRP portfolios in TPP.

RESPONSE: We'll keep this in mind going forward though to see if us or CAISO can provide visibility as new projects come onlinen in future cycles.

RESPONSE: As for your second question, there is a balance we're trying to strike between letting the market build/procure in the correct places vs. us or someone else directing procurement in specific areas.

RESPONSE: Thanks Nathan. That's very helpful.

QUESTION: Regarding Sierra's clarification that delaying Humboldt OSW does not necessarily mean a delay until 2041, but only a delay after 2036, how does inform or not the timing of the supporting transmission projects?

ewolfe@resero.com (09:54:42)

RESPONSE: That refers to the fact that those are the years we transmit to the CAISO. We are currently in the process/discussions for more detail on this. We welcome your comments on how you think transmission should be affected considering this.

QUESTION: On 4-hour and 8-hour Lithium-ion Battery, shouldn't this be 4-hour and 8-hour BESS so that technology type isn't specified and remains agnostic?

John Hasar (09:55:07)

RESPONSE: That's correct, although the operating charateristics (round-trip efficiency, depth-of-discharge) used in the SERVM analysis to determine the ELCCs reflect Li-ion battery specs.

RESPONSE: That's correct, although the resource cost and operating charateristics (round-trip efficiency, depth-of-discharge) used in RESOLVE reflect Li-ion batteries.

QUESTION: With respect to _IX limits (in RESOLVE, but maybe also in mapping) it seems like geothermal resources are not included in the testing of exceedance. Is that the case? If so, what's the basis for that choice?

ewolfe@resero.com (09:57:38)

RESPONSE: This is only the case for out-of-state geothermal, where the costs to interconnect and deliver the units to the CAISO system are included in the resource cost.

RESPONSE: Thank you.

QUESTION: Shouldn't burn probability adjust based on resource types that can catch fire such as lithium batteries?

John Hasar (10:01:47)

RESPONSE: The purpose of this criteria is to evaluate the relative fire risk among the busbars, not necessarily among the technologies being mapped. If you have additional thoughts or recommendations for how/why we should vary this criteria for individual technologies, please include them in written comments.

QUESTION: o Plants that are exempted by the screens for the youngest and most effective plants are not given a total weighted criteria score and do not appear to be included in either the "Unit Scoring" or "Gas Generator Database" tables. Is there a list of plants that were exempted from non-retention?

Orran Balagopalan (10:07:52)

RESPONSE: Yes, this list can be found in the supplemental "Gas Capacity Not Retained" workbook available on the CPUC's 26-27 TPP website.

QUESTION: I was under the impression that La Paloma generation was necessary to maintain the P26 rating. Is that not the case?

Soumya (10:09:24)

RESPONSE: Hi Soumya, we will discuss with the ISO. Thanks for bringing this up.

RESPONSE: Hi Soumya, thanks for your input here. We can take this back. Do you have additional info on considerations that should be taken with data sources. Please add into your comments

---

QUESTION: Has the CAISO shown that it is feasible to replace 880 MW of generation in the Greater Bay Area with storage?

Eric Little (10:09:38)

RESPONSE: Pursuant to the 1-for-1 replacement values published in the 2026 LCTR report, yes.

RESPONSE: Just want to confirm that you are referring to the 1,338MW of for max. 4-hour storage that can be added in the GBA as 1 for 1 MW replacement (mostly replacing gas-fired generation) included in the CAISO's 2026 LCT report.

RESPONSE: Yes, see page 29 of the 2026 LCTR.

QUESTION: Can you describe the input that led to the Level 5 classification for the Substation Level Interconnection criteria for most of the 500 kV substations in the PG&E Fresno area, and specifically for Manning?

Joanne Bradley (10:09:57)

RESPONSE: Interconnection criteria is based on mainly on distance from substation for in-CAISO solar, onshore wind, and geothermal resources and interconnection voltage analysis for in-CAISO. It now also includes some PTO feedback and per-unit cost guide information. For this round of mapping we

focused mostly on faithfully mapping to RESOLVE and still need to optimize for that criteria. As noted over email, we can look into the Manning substation closer and get back to you.

RESPONSE: Thank you!

QUESTION: Re Local Capacity Areas: Will TPP analysis assess any gaps in local areas resulting from load growth and analyze potential for preferred resources to meet needs?

Nick Pappas (10:10:33)

RESPONSE: Nick: Are you asking about the portfolio(s) we develop for next TPP, or how they will actually be studied in TPP? If the latter, we'd have to defer to CAISO.

QUESTION: Does this analysis utiliize the CAISO's recent analysis in its Local Capacity Technical Study that identified locations where energy storage can replace gas capacity on a 1-for-1 basis?

Deborah Behles (10:11:18)

RESPONSE: Yes.

QUESTION: Has there been any analysis of how busbar mapping meets the requirements of 887 to prioritize reductions of gas plant usage in local areas?

Deborah Behles (10:12:23)

RESPONSE: Our Community and Societal Impacts criteria considers the mapping of resources into DACs and NAAs. Mapping resources into these areas should reduce gas plant usage in local areas, although this dynamic is not modeled explicitly in RESOLVE at this time.

RESPONSE: Thanks Sam. That's helpful.

QUESTION: Does the Land Use analysis reduce overall resource potential, or only allocations to substations?

Nancy Rader (10:14:38)

RESPONSE: Based on later statement, the answer seems to be that it reduces overall resource potential.

RESPONSE: The land use and environmental evaluation for busbar mapping informs how much MW can be distributed to a specific substation area. (2 of the 7 criteria). The land use screens are what reduce resource potential and create the area of analysis that all the metrics are based on.

QUESTION: Did RESOLVE consider the merchant line referred to as Western Bounty which could connect renewables from Oregon, Idaho, and Nevada to California?

Anonymous (10:15:29)

QUESTION: Did RESOLVE consider the Western Bounty Transmission System project, which is a proposed merchant line that would interconnect renewables from Oregon, Idaho and Nevada to California. It is expected to come on line in the mid 2030s https://share.google/np7faLp17XmPNn8EO

Dorland, Kanya (10:23:45)

RESPONSE: Thanks for sharing. We did not--we are not assuming any additional tranches of Idaho Wind beyond the 1.1 GW from SWIP-N, and are only considering geothermal in Oregon (delivered to Malin). Can you please include details on this, as well as the resource potential in these areas, in your comments?

RESPONSE: Engie North America is the Western Bounty Transmission System developer. Its on-line date is 2033. for more information on Western Bounty please go to western bountytransmission.com

RESPONSE: The Western Bounty Transmission System project info includes a claim that the project would enable 12 gigawatts of transmission capacity between central hub Nevada and 4 termination points in California, Oregon and Idaho.

RESPONSE: Engie America submitted the Western Bounty Transmission System project to the Western Transmission Planning Regions including the CAISO for consideration in 2024.

RESPONSE: The project one page is located here westernbountytransmission.com

RESPONSE: Thank you, this is helpful. If you want this feedback on record please submit it in formal comments

RESPONSE: Thank you, this is helpful. If you want this feedback on record please submit it in formal written comments

RESPONSE: Engie's one pager on the project is located at westernbountytransmission.com

RESPONSE: Thank you. For this feedback to be reviewed and considered, please include this information in formal written comments submitted after this webinar (separate from this Q&A and this thread).

Background: The Large-scale Solar Association met with the CEC team at the end of September to discuss a potential GIS model of water availability that could be incorporated into the CEC Land Use Screens.

QUESTION: Has the CEC had the opportunity to incorporate the Conservation Biology Institute's model on agricultural water stress across the San Joaquin Valley (San Joaquin Land and Water Strategy - Conservation Biology Institute)?

Hillary Hebert (10:15:43)

RESPONSE: No, this is a topic we plan to address in the upcoming year.

QUESTION: You show geothermal fields in California available for development. Are there any announced projects to develop these fields? I was under the impression that current geothermal development is out-of-state.

Mary Neal (10:31:55)

RESPONSE: There are a few contracts for new in-state geothermal in the Salton Sea and Geysers areas - but I think generally your sentiment is correct.

RESPONSE: For this reason we introduced near-term build limits on in-state geothermal for the 26-27 TPP.

RESPONSE: The land use and environmental analysis for the conventional geothermal fields are describing the environmental conditions of where build

could take place, given areas that have some electrical generating potential (totaling ~3,400 MW).

QUESTION: For Idaho wind, have you looked at Idaho Power's OASIS website which shows that there is not a lot of wind in the interconnection queue? Also, have you looked at the fact that the Idaho Public Utilities Commission hasn't granted a CPCN for the SWIP-N line?

Dan Sakura (10:41:10)

RESPONSE: Yes we have reviewed these. These were among the factors that informed our decision to delay the first available year in RESOLVE until 2031. Our assumption is that by 2036 the project could be energized.

RESPONSE: If you have reason to believe that no ID wind could ever be delivered to CAISO, please explain more in your written comments.

RESPONSE: Thanks -- is there a deadline to submit written comments? Wondering if you've looked at the pending litigation in the Ninth Circuit -- State of Idaho v. FAA and Wind Turbine Petitioners v. FAA challenging the FAA's no hazard determinations for the Lava Ridge wind project.

RESPONSE: Formal written comments are due on November 21st.

QUESTION: From Paul Deaver's geothermal land availability results slide (29) it seems like there is still a fair amount of in-state geo potential land, yet it seemed little was built out in this portfolio in RESOLVE. You all indicated a build rate limit for in-state. Is that what has limited in-state geo?

ewolfe@resero.com (10:44:11)

RESPONSE: The limit played a role, but also some of the in-state geothermal is blocked by CAISO deliverability constraints.

RESPONSE: Thanks.

QUESTION: Also with respect to in-state geo, is the NE CA geo that is presumed delivered through Malin subject to the in-state build rate limit or treated more like OOS geothermal?

ewolfe@resero.com (10:45:02)

RESPONSE: It's treated more like OOS Geothermal - not subject to the IX limit.

RESPONSE: IX - treated as out-of-state; not subject to IX limits

RESPONSE: Build limits: This resource is subjected to the in-state build limit

RESPONSE: Thanks on both.

QUESTION: For feedback on Paul's (CEC's) slides what's the best way to submit them? Through comments on busbar mapping, or directly to CEC, or...?

ewolfe@resero.com (10:48:23)

RESPONSE: Please feel free to both submit your feedback in your official comments (especially for process/methodology improvement suggestions) and to reach out directly to the CEC with questions.

RESPONSE: Thanks.

QUESTION: Do you expect to put out a revised mapping prior to the PD on the portfolio? Might you be able to offer any estimates of timing?

ewolfe@resero.com (10:54:01)

RESPONSE: The busbar mapped dashboards for both the base case and sensitivity case will next be released with the PD in the the timeframe of late December to mid January. We will be considering the comments on this Ruling, as well the original September 30th Ruling.

QUESTION: How does "permitting policy" drive resource selection? Is this a subjective criterion?

Nancy Rader (11:00:26)

RESPONSE: "Permitting policy" was used to inform near-term build limits on wind and geothermal resources, as well as delay ID wind until 2031. It's not modeled explicitly in RESOLVE otherwise. Apologies if I am missing the context behind this question - follow up if needed.

RESPONSE: How do you determine "permitting policy" limits? Is this a subjective criterion?

RESPONSE: For example, there has been little in-state wind permitting recently -- was that fact used to limit future in-state wind? As pointed out by Dan Sakura in this Q/A, there hasn't been much permitting in Idaho either, yet that didn't seem to limit future projections.

RESPONSE: Yes, the team observed a lack of new permits being awarded to in-state wind projects and imposed a near-term build limit on wind to reflect that. In the case of Idaho, similar headwinds drove us to delay the first available year for Idaho wind.

QUESTION: I know this is a topic for Friday's OH and not this webinar, but, Nathan, if you could provide an update on when the RDT will be posted, that would be much appreciated.

Mary Neal (11:04:46)

RESPONSE: Mary: We have asked our webmaster to publish today. If it's not up on the site yet, please keep an eye out.

QUESTION: [Cal Advocates] - the mapping continues to include 3.1 GW of NM wind at Palo Verde, with the note, "Assumed Sunzia is utilized with Pinal Central/Palo Verde intertie point." Sunzia's entitlements total 2,131 MW from Pinal Central to PV. How will the gap be accounted for?

Lambert, Christian (11:04:49)

RESPONSE: We are actively discussing options with CAISO and are studying other deliverability options as part of the additional out-of-state wind study that was proposed in the 25-26 TPP Decision.

QUESTION: For the Land-Use and Env. Impacts Alignment, will you be splitting off NE Cal from NGBA?

Nancy Rader (11:07:34)

RESPONSE: The four sub-regions in N. Cal for which land use and env impact criteria are calculated (as well all the five other criteria) are NGBA, GBA, Kern and Fresno.

RESPONSE: We have produced land criteria for the NVE-operated substations in NE CA, those can be considered as part of NGBA for the purposes of busbar mapping.

QUESTION: [Cal Advocates] - for NOL geothermal behind the Control-Inyokern constraint, do these generic resources correspond to California resource areas in the Long Valley caldera and Ridgecrest area, or to Nevada resource areas (as in 25-26 portfolio - e.g., Fish Lake) that were remapped away from Control?

Lambert, Christian (11:16:29)

RESPONSE: Hi Christian, we will have to answer this post webinar since we cannot get into that dashboard detail right now. I will mark this down to answer within the transcript.

RESPONSE: In the preliminary busbar mapping dashboard, there is 116.8 MW of OOS geothermal being mapped to Control.

QUESTION: For Karishma's slides regarding EoP, Northern and Central NV geo was referenced and the need to look for the right locations for those. Can you offer any further details on what the range of shifts you'd consider with respect to these NV geothermal resources?

ewolfe@resero.com (11:16:46)

RESPONSE: We don't yet have a sense of how far/if we would shift these resources at this stage in the busbar mapping.

Statement: Thank you for the early release and especially for this webinar, as well as the opportunity to submit comments.

ewolfe@resero.com (11:20:10)

RESPONSE: Thank you to everyone who tuned in and asked questions at this webinar. We rely on your participation to make this process equitable and accurate and look forward to your formal comments on Nov. 21.