

Integrated Resource Planning (R.20-05-003)

2020 IRP Filings

Filing Requirements' Questions and Answers

This document is a reference guide for LSEs required to file Plans in the IRP process. It provides clarifying instructions on how to fulfill the LSE Plan requirements detailed in Decision (D.) 18-02-018, D.19-11-016, and D.20-03-028. The questions included in this document reflect some of the questions IRP staff has received from various LSEs through emails, during the webinar on Filing Requirements' Templates (January 16, 2020), and multiple office hours held by staff. Staff has documented and shared the questions and answers to ensure all LSE Plans are developed in a consistent and comprehensive manner.

This will serve as a living document. IRP staff will continue to update this document until the September 1 filing deadline with added guidance for LSEs as new questions arise. All updates will be posted to the [IRP Filing Materials webpage](#).

Note: Questions marked with an asterisk () are the new/updated ones comparing to the previous version of this document posted in April 23, 2020.*

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List of Questions

Narrative Template and General Guidance

- 1- What are the differences between Standard Plan vs. Alternative Plan? Could smaller LSEs still file an alternative plan (LSEs smaller than a certain size)?
- 2- What is expected, in general from LSE plans filed in 2020, with context from the 2017-18 IRP cycle?
- 3- *Can an LSE submit an IRP which includes a Conforming Portfolio using a lower GHG target than the GHG target assigned by Energy Division?
- 4- *Why were the reliability assessments (local, system, and/or flex reliability) excluded from the LSE Plan filing requirements?
- 5- Can LSEs use updated baseline generation fleet information in their Conforming Portfolios that includes recently procured resources or other updated baseline information?
- 6- *Will LSEs be allowed to update the adopted 2019 IEPR forecast or ESP RA load forecasts to reflect recent CCA load departure or ESP load growth that is not reflected in those forecasts?
- 7- Does Energy Division still anticipate the CEC to adopt the 2019 IEPR at the January 22 CEC business meeting as noted in the December 26 Narrative Template or will it likely be adopted at the subsequent February 20 meeting?
- 8- Will LSEs be allowed to use the draft IEPR forecast in their IRPs or are they required to use the final adopted IEPR forecast?
- 9- What assumptions for departing load should be used by all LSEs to allocate costs and resources? Should all LSEs apply existing PCIA rules?
- 10- D.18-02-018 requires that for long-term contracting, outreach is described. Can this be included within the template?
- 11- Does the requirement to identify customers in disadvantaged communities include only residential customers or both residential and non-residential customers? If non-residential customers are included, are there any differences to the requirements for such customers? If so, how do the requirements differ?
- 12- Does the requirement to identify "total disadvantaged population number" refer to a count of customer accounts or total residential population in a community or something else?
- 13- *How are the planning standards incorporated in the filing requirements' templates?
- 14- What is the cut-off date to apply when categorizing each resource's Contract Status?
- 15- Why is the 2020 load forecast for each ESP held static through 2030, when this is not the case for CCAs and IOUs? If an ESP's load is held flat between 2020 and 2030, does this mean that the ESP's supply is held flat between 2020 and 2030 as well?

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16- *Is there a separate template (or specific instructions) for the Conforming Portfolio/Preferred Portfolio? Is the Conforming Portfolio/Preferred Portfolio included in (or derived from) the Resource Data Template?

17- In the Narrative Template, under "Required Portfolios," each LSE should account for the costs and benefits of any resources subject to the CAM in its Conforming Portfolio. An ESP has no control over the costs or benefits of resources subject to CAM. How is an ESP to address this issue?

18- For each section of the narrative template (e.g. both Study Design and Study Results) can LSEs provide information on all portfolios (conforming and non-conforming) developed?

19- Where can we find the detailed resource breakdown of the RSP adopted in the proposed decision? Tables 5 and 6 of the PD show aggregate resource categories (e.g., "Wind"), and we would like to see the detailed resource types per the classifications in the Resource Data Template (e.g., "Carrizo_Wind").

20- Summing the Day Weights by Hydro Conditions from the same Table 47 suggests that the hydro year is based on 75, 86 and 205 days for Low, Mid and High Hydro Conditions, respectively. Can ED clarify why the hydro year is so unevenly weighted (56%) on High Hydro Condition days?

21- Out of the 198 units given a RESOLVE resource tag of "CAISO_Hydro", 145 appear to have a nameplate capacity of less than 30 MW. These units appear to be what is counted toward the 7070 MW of "Large Hydro" in the results viewer. Can ED clarify if these small units are being modelled as large hydro and if so explain the rationale?

22- Although PCIA impacts to load were addressed in the Q&A's, the impact to resources were not explicitly addressed. LSEs are expecting an allocation of RPS and carbon-free resources from IOUs from PCIA. We intend to include our anticipated allocations in our IRP portfolio characterized in the Clean System Power template. Does this cause any concerns for Energy Division?

23- *Questions related to the QC values for renewables throughout 2030 :

24- Table 47 RESOLVE's 37 days and associated weights (2019-20 Inputs and Assumptions, 2/27/2020) lists 4/25/2009 for both days 33 and 34. These duplicate days are apparently mapped to low and high hydro conditions with different day weightings. What are the correct RESOLVE day references for days 33 and 34?

25- Could an alternative portfolio be submitted as an LSE's preferred portfolio?

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28- * If our Preferred Portfolio for the 46MMT target also meets our benchmark for the 38MMT target, can the same portfolio be submitted under both scenarios? Or are there underlying differences between the two targets that would necessitate separate model runs on our end?

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29- *What are the guidelines for LSEs to address their "fair share of reliability and renewable integration/ramping needs associated with the resources they select" in their IRP filings? Would one adequate method for an LSE to address this requirement be to report its portfolio's contribution to the LSE's system and flexible RA requirements throughout the planning horizon (holding today's requirements and resource capacity counting methodologies constant through 2030)?

30- *Should RA obligations, for the purposes of the IRP, be assumed to remain constant through the planning period?

31- * How should LSEs demonstrate that their portfolios do not assume reliability, renewable integration, and ramping needs associated with their portfolios will be met by resources in the portfolios of other LSEs?

32- * What are the expectations from Energy Division Staff of the IOU's IRP plans and the IRP reliability track procurement for the loads that had not departed at the time of the Decision (D.19-11-016) but will depart starting in 2021?

Resource Data Template

1- How do the proposed filing requirements and resource data template prevent the aggregated LSE IRP plans from exceeding the maximum amount of existing resources available to LSEs if LSEs use 'generic existing resources' in their respective individual plans?

2- What delivery term should be included?

3- How should contracted sales be entered?

4- Should LSEs update the Resource Data Template to reflect their actual contracts?

5- *Inland Empire and Sutter Energy Center (Row 2430) do not appear to be incremental for D. 19-11-016 in contrast to the decision. Is this an error?

6- Questions related to the 'Monthly_gwh_mw' tab:

7- Question related to the Column K "max_mw":

8- How the "dashboard" tab is to be completed?

9- Why are the incremental tabulations defaulted to the month of August? The procurement track specified September capacity, so should LSEs switch to September when evaluating incremental NQC vs. what was ordered?

10- Are the calculations in this spreadsheet representative of how the PUC will be evaluating compliance with the procurement order? Specifically, will the entire NQC of a new battery added to an existing baseline resource count as incremental, or will there be adjustments to account for the loss of capacity for the existing baseline resource?

11- Should all sales by the LSE be listed as a "transfer_sale" or just those involving other LSE's named on the "lse_names" sheet?

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12- For planned resources with CODs before 2027 without locational data provided for the 'new' supertype, which resource name should LSEs select? The generic CAISO resource names are only available for new facilities with CODs starting January 1, 2027. Are LSEs able to choose 'Generic New' resource superotypes for resources that are planned to come online before 2027?

13- Are LSEs required to include all currently shortlisted projects as under review, even if plans are to only contract with a subset of those contracts?

14- In the caiso_interconnection_queue tab, what is the difference between N/A (Project not in queue) and TBD (To be determined)?

15- What does Energy Division plan to do with the information about a resource's CAISO queue position?

16- Questions related to CAM resources:

Clean System Power (CSP) Calculator

1- Does the calculator account for the emissions from spinning reserves and when units are operated at partial load?

2- How should LSEs enter hybrid resources into the CSP tool?

3- Can LSEs use specific actual emission factors for specific resources?

4- Is there a document describing the emissions factors used and the specific calculations and sources used to develop them?

5- Is there any way to separate emissions into air basins using the calculator and add more criteria pollutants from biomass resources?

6- Will the CSP Calculator include the ability to view more cost information from the LSEs?

7- What is the process for LSEs to ask questions on the final CSP tool?

8- Will the CSP provide options to customize battery storage inputs? For example, Will the CSP allow different durations beyond 4-and 8-hour to be input?

9- Will LSEs be able to set discharging hours?

10- In the Supply Inputs tab of the tool, if the GWh dropdown is selected in Column C, are the GWh to be entered in the pink rows or is this all accounted for in the custom profile below starting on row 50?

11- Do IEPR forecasts account for load departure in 2021 and 2022 due to the Direct Access lottery expansion?

12- How should users enter unspecified PCC 1 Energy Only contracts, or Seller's choice contracts?

13- When entering load figures, should ESPs enter retails sales or gross their sales up for T&D losses?

14- What load forecast for 2030 should ESPs use to calculate their GHG benchmark?

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- 15- In what ways can LSEs deviate from form 1.1c of the IEPR for their demand forecasts. Can they customize load shape?
- 16- How does the CSP determine whether or not natural gas & unspecified imports is the marginal unit. In other words, what is the marginal unit methodology employed in the CSP tool?
- 17- Can LSEs enter custom inputs for the last 24 hours of 2020, which is a leap year? If so, can staff advise on how to input hours 8761-8784?
- 18- How is system power accounted for in the Supply Inputs?
- 19- Why do we get higher numbers when entering 2018 portfolios into the new calculator?
- 20- Questions related to the load profiles for input into the Clean System Power Calculator
- 21- CSP's emission profiles, supply profiles, and demand shapes changed from v1:
- 22- In reviewing the 46 MMT CSP and RESOLVE tools it appears that though the small hydro capacity is aligned (approximately 974 MW), the assumed energy from these units varies across the two models. In RESOLVE the annual energy from small hydro is 4,327 GWh while in the CSP it is 2,838 GWh. It would seem the inconsistency in assumed capacity factors would adversely impact the GHG positions of LSEs with small hydro in their portfolios relative to the RSP developed in RESOLVE. Please clarify.

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Narrative Template and General Guidance

1- What are the differences between Standard Plan vs. Alternative Plan? Could smaller LSEs still file an alternative plan (LSEs smaller than a certain size)?

Per D.18-02-018 (p.127), in 2017-18 IRP, three plan types were permitted to be filed by CPUC-jurisdictional LSEs depending on LSE size/type:

- 1) Standard Plan: LSEs with load greater than 700 GWh/yr.
- 2) Alternative Type 1 Plan: Small IOUs, electric service providers, and community choice aggregators assigned a load of less than 700 GWh in California in each of the first five years of the IRP planning horizon.
- 3) Alternative Type 2: Multijurisdictional LSEs that submit IRPs in other jurisdictions, such as PacifiCorp

In 2019-20 IRP, it is proposed that the Alternative Type 1 Plan will no longer be available for use by LSEs. Multijurisdictional LSEs that submit IRPs in other jurisdictions, such as Pacificorp, would be permitted to file a Non-Standard LSE Plan. All other LSEs would be required to file a Standard Plan in IRP if they serve load within the CAISO balancing authority area (unless the LSE demonstrates exemption from the IRP process). See Section 2.b of Filing Requirements Staff Proposal.

2- What is expected, in general from LSE plans filed in 2020, with context from the 2017-18 IRP cycle?

The filing templates already contain descriptions of what is expected from LSEs in each section. For context from the 2017-18 IRP cycle, D.19-04-040, Section 2.4, provides a review of each LSE plan filed in 2017-18 IRP, including scorecards.

3- *Can an LSE submit an IRP which includes a Conforming Portfolio using a lower GHG target than the GHG target assigned by Energy Division?

LSEs are required to submit at least two conforming portfolios, one for the 46 MMT GHG target and one for the 38 MMT GHG target. Using a lower GHG target than the ones that LSEs have been assigned by the Energy Division for each of the 46 MMT GHG target and the 38 MMT GHG target will disqualify the portfolio from being conforming. However, LSEs can submit portfolios using a lower GHG target than the GHG target assigned by the Energy Division as an alternate portfolio.

Note: Staff is working on some possible changes to the direction provided here. For any question/concern please contact Ali Eshraghi at alireza.eshraghi@cpuc.ca.gov.

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4- ***Why were the reliability assessments (local, system, and/or flex reliability) excluded from the LSE Plan filing requirements?**

Staff considered party comments and found that establishing an upfront system reliability planning standard to determine compliance would be challenging. The capacity contribution assumptions that LSEs would need to make for their planned resources would be speculative without seeing total aggregated resources. Accurately quantifying each LSE's share of CAISO system peak out to 2030 would also be challenging. Staff is still requesting information in the data template that will allow staff to do a quantitative reliability evaluation after aggregating portfolios and better understanding the ELCC of each resource type under that future. Furthermore, staff has added a "system reliability progress tracking table" that is automatically produced within the Resource Data Template using coarse capacity contribution assumptions. While not accurate enough to determine compliance or assess reliability, this table will offer some high-level visibility into how much each LSE's portfolio contains resources that contribute to reliability.

With regards to local reliability information, staff found during the 2018 LSE IRP plan review process that the information provided by LSEs in the narrative in regards to Local RA compliance did not provide any information incremental to that already obtained by the Resource Adequacy program.

5- **Can LSEs use updated baseline generation fleet information in their Conforming Portfolios that includes recently procured resources or other updated baseline information?**

The baseline resources should align with staff's definition in the Glossary of Terms in the narrative template. Detailed instructions for contract reporting can be found in the Resource Data Template. Also, see questions 2 and 4 in the "Resource Data Template" section.

6- ***Will LSEs be allowed to update the adopted 2019 IEPR forecast or ESP RA load forecasts to reflect recent CCA load departure or ESP load growth that is not reflected in those forecasts?**

Pursuant to a Ruling issued by ALJ Fitch on January 24, 2020, there was a window of opportunity to update load forecasts for CCAs who may not be included in the 2019 IEPR or otherwise wish to update their IEPR forecast, and for ESPs who wish to deviate from their confidential year-ahead RA load forecasts. All non-IOU LSEs were permitted to file load forecast information that deviates from the IEPR (e.g., CCAs that have very recently expanded) or RA forecasts by February 28, and parties were allowed to respond in comments by March 13. Load forecast adjustments and GHG benchmarks for all LSEs were addressed in a subsequent ruling issued on April 15, 2020. Commission staff also confidentially communicated to each ESP its individual load forecast for purposes of their

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individual IRP filings after reviewing 2020 RA year-ahead forecasts that were due on April 20 and making adjustments needed to ensure that aggregated ESP loads equal the total direct access load for 2030 as forecasted by the CEC at 28,790 GWh.

- 7- Does Energy Division still anticipate the CEC to adopt the 2019 IEPR at the January 22 CEC business meeting as noted in the December 26 Narrative Template or will it likely be adopted at the subsequent February 20 meeting?**

The CEC adopted the California Energy Demand (CED) 2019 along with any changes identified at its January 22, 2020 Business Meeting.¹

- 8- Will LSEs be allowed to use the draft IEPR forecast in their IRPs or are they required to use the final adopted IEPR forecast?**

LSEs should use the final adopted IEPR forecast. For the purposes of 2020 filings, this would be the CED 2019 adopted at the CEC's January 22, 2020 business meeting.²

- 9- What assumptions for departing load should be used by all LSEs to allocate costs and resources? Should all LSEs apply existing PCIA rules?**

LSEs should not deviate from their assigned load forecast in preparing their proposed resource portfolios. LSEs may describe in their narrative (Study Results and Action Plan sections) how PCIA rules may affect their costs and planned resources.

- 10- D.18-02-018 requires that for long-term contracting, outreach is described. Can this be included within the template?**

LSEs would enter this information in section III.a. (Study Results/Preferred and Conforming Portfolios), and in Section IV. Action Plan. No revision to the template necessary.

- 11- Does the requirement to identify customers in disadvantaged communities include only residential customers or both residential and non-residential customers? If non-residential customers are included, are there any differences to the requirements for such customers? If so, how do the requirements differ?**

Each LSE should provide a qualitative description of the demographics of the DAC customers it serves, including both residential and non-residential customers. The finest level of granularity would be census tracts, but LSEs may summarize at the zip code level if that is all that is available to them. If census tracts granularity is not being used, LSEs must explain the reason for the level of granularity they are providing.

¹ https://ww2.energy.ca.gov/2019_energypolicy/documents/

² Ibid

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12- Does the requirement to identify “total disadvantaged population number” refer to a count of customer accounts or total residential population in a community or something else?

Total residential population in a community. If that granularity is not available, LSEs must explain the reason for the level of granularity they are providing.

13- *How are the planning standards incorporated in the filing requirements' templates?

The CSP tool provides calculations for some quantitative planning standards such as GHG emissions and local air pollutants. For other planning standards that are not specific outputs of the CSP tool, LSEs should look to the Narrative Template for instructions on how to provide that information.

With respect to system reliability, the Resource Data Template also calculates an estimated NQC value for an LSE's portfolio and compares it to an estimate of its share of peak demand, thus flagging any potential shortfalls.

14- What is the cut-off date to apply when categorizing each resource's Contract Status?

June 30, 2020. For example, for a resource for which there is an approved contract in place as at this date, the LSE would categorize the resource as “Development”.

15- Why is the 2020 load forecast for each ESP held static through 2030, when this is not the case for CCAs and IOUs? If an ESP's load is held flat between 2020 and 2030, does this mean that the ESP's supply is held flat between 2020 and 2030 as well?

For most LSEs, load forecasts are sourced directly from the CEC's updated IEPR forecast. This is consistent with other efforts within IRP to have LSEs follow the CEC's forecast. For ESPs, because they generally do not have long-term load forecasts and are not individually included in the IEPR, their near-term loads are assumed to be constant through 2030. ESPs should plan for procuring supply in 2030 that matches their assigned load forecast.

16- *Is there a separate template (or specific instructions) for the Conforming Portfolio/Preferred Portfolio? Is the Conforming Portfolio/Preferred Portfolio included in (or derived from) the Resource Data Template?

Please refer to the [Filing Requirements Overview](#) which covers the Conforming Portfolio/Preferred Portfolio definition.

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17- In the Narrative Template, under "Required Portfolios," each LSE should account for the costs and benefits of any resources subject to the CAM in its Conforming Portfolio. An ESP has no control over the costs or benefits of resources subject to CAM. How is an ESP to address this issue?

We don't expect LSEs to have control over the resources subject to CAM. We simply require that LSEs include the resources listed in the year-ahead CAM list in their Plans using the RA capacity value by month for each IOU service territory in which they serve. An LSE's proportional share is determined by its year-ahead share of the total coincident peak load for each IOU service territory, as assigned in the Commission's annual resource adequacy process. For IRP purposes, we assume that the LSE's proportional share of that resource is assumed static through the IRP planning horizon. In terms of cost, LSEs should use their own cost projections for those resources.

18- For each section of the narrative template (e.g. both Study Design and Study Results) can LSEs provide information on all portfolios (conforming and non-conforming) developed?

Yes. LSEs can provide information on all portfolios they developed, both conforming and non-conforming. While LSEs are required to submit at least two conforming portfolios, one for 46 MMT GHG target and one for 38 MMT GHG target, they can study and report multiple conforming and non-conforming portfolios for each GHG target. However, if they report more than one conforming portfolio for each GHG target, they need to select a preferred one.

19- Where can we find the detailed resource breakdown of the RSP adopted in the proposed decision? Tables 5 and 6 of the PD show aggregate resource categories (e.g., "Wind"), and we would like to see the detailed resource types per the classifications in the Resource Data Template (e.g., "Carrizo_Wind").

There are two ways to obtain this data:

1) RESOLVE Results Viewer. Make sure the case

"46MMT_20200207_2045_2GWPRM_NOOTCEXT_RSP_PD" is loaded in the Dashboard. Then in the Portfolio Analytics tab, see the table "Selected Renewables By Location".

2) See

ftp://ftp.cpuc.ca.gov/energy/modeling/RSP_SERVM_all_units_capmax_baseline_marked_20200220.xlsx which itemizes units modeled in SERVM and identifies the new resources that were selected by RESOLVE. The unit names contain information such as "Carrizo".

20- Summing the Day Weights by Hydro Conditions from the same Table 47 suggests that the hydro year is based on 75, 86 and 205 days for Low, Mid and High Hydro Conditions, respectively. Can ED clarify why the hydro year is so unevenly weighted (56%) on High Hydro Condition days?

RESOLVE's day sampling for hydro is based on three years of hydro conditions. The days and associated hydro conditions that are picked are selected to match the associated distribution of daily energy budgets among those three years--not necessarily to balance the number/weight of

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days selected from each hydro year. Not all days in a high hydro year will be high hydro days--so some of the days selected from the high hydro year may be chosen to fill out parts of the distribution that correspond more typically to average (or even low) hydro years.

- 21- Out of the 198 units given a RESOLVE resource tag of "CAISO_Hydro", 145 appear to have a nameplate capacity of less than 30 MW. These units appear to be what is counted toward the 7070 MW of "Large Hydro" in the results viewer. Can ED clarify if these small units are being modelled as large hydro and if so explain the rationale?**

Yes, we are counting these 145 units as large hydro in RESOLVE. To the extent possible, unit level sizes were considered in developing the RESOLVE dataset, but the overall objective was to ensure an aggregate "small hydro" and "large hydro" resource that properly reflects the capacity and energy summed by each plant type. In developing the 2017 IRP model, checks were done against RPS compliance report data to ensure small hydro GWh matched actual generation. In developing the 2019 model, the underlying unit-level dataset was switched to the SERVVM model generator list, which did not directly map to the previous RESOLVE unit list and its hydro classification. However, the aggregate MW by small and large hydro plant types were generally in line with the 2017 RESOLVE dataset.

- 22- Although PCIA impacts to load were addressed in the Q&A's, the impact to resources were not explicitly addressed. LSEs are expecting an allocation of RPS and carbon-free resources from IOUs from PCIA. We intend to include our anticipated allocations in our IRP portfolio characterized in the Clean System Power template. Does this cause any concerns for Energy Division?**

When entering resources into the Supply Inputs tab of the CSP calculator, LSEs should only input resources for which they have procured or plan to procure directly. LSEs paying the PCIA do not hold the contract or the attributes of those resources and so should not enter those resources into the CSP tool. If changes are made to the PCIA allocation methodology then the CPUC can consider associated IRP changes at that time.

Language from PD: PCIA resources should be included in the IOU baseline resources in their IRPs, and other LSEs should not include PCIA resources in their baseline resources, unless otherwise directed by the Commission in the PCIA proceeding or another venue.

- 23- *Questions related to the QC values for renewables throughout 2030 :**

- a- RESOLVE uses a marginal ELCC surface for wind and solar, and the current QC is derived using an average ELCC approach, which likely will not be resolved until June/July. Please clarify why the ELCC approach differs from existing Commission adopted methodology.**

It is correct that the data template uses average ELCC, not marginal. Average ELCC values adopted in the RA proceeding are appropriate for counting capacity the short term, and it is the capacity to use to measure procurement against the

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Procurement Track order in D.19-11-016, which mandates procurement through 2023. One purpose of building NQC-counting functionality into the template was to measure fulfillment of this procurement mandate, so the template uses RA-adopted average ELCC values through 2023. Beyond 2023, the template uses RESOLVE-derived average ELCC values to estimate capacity contribution from wind, solar, and storage resources, including existing and new units.

24- Table 47 RESOLVE's 37 days and associated weights (2019-20 Inputs and Assumptions, 2/27/2020) lists 4/25/2009 for both days 33 and 34. These duplicate days are apparently mapped to low and high hydro conditions with different day weightings. What are the correct RESOLVE day references for days 33 and 34?

The day sampling algorithm selects days from nine years worth of potential conditions to match long run distributions of load, wind, solar, and hydro. The nine years correspond to three years of load/wind/solar profiles (2007-2009) and three years of hydro conditions (low, medium, and high). Each calendar year of L/W/S profiles is paired with each of the hydro conditions (which assumes that L/W/S are uncorrelated with hydro energy budgets--generally pretty safe) for a total of nine years from which to sample.

The dates listed in the I&A documents refer to the calendar dates and associated weather for the load, wind, and solar profiles but are not associated with the hydro budgets, which are sampled independently. The day sampling algorithm is allowed to pick any calendar date's L/W/S profiles under low, medium, or high hydro conditions, and is not limited to picking that date with only a single set of hydro conditions. This is one instance where the day sampling algorithm chose to duplicate its pick of L/W/S conditions under multiple hydro conditions.

25- Could an alternative portfolio be submitted as an LSE's preferred portfolio?

LSEs are required to submit at least two conforming portfolios, one for the 46 MMT GHG target and one for the 38 MMT GHG target. LSEs can study and report multiple conforming portfolios for each GHG target but if they do so, they need to select a preferred one for each GHG target. These preferred conforming portfolios are the ones that will be assessed by staff for compliance and will be used in the aggregation process. While LSEs can also file alternate portfolios, these portfolios will not be prioritized for aggregation purposes.

26- * How should LSEs that are not self-providing to meet obligations under D.19-11-019 account for procurement occurring on their behalf in their Plans?

If an LSE opted-out of its procurement obligation under D.19-11-016, or was not assigned a procurement obligation under D.19-11-016, and thus will have a certain amount of procurement occurring on their behalf, the LSE must enter an amount and type of resource(s) communicated to it by Energy Division staff. Staff will coordinate LSEs that are not self-procuring and IOUs procuring

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on their behalf to prevent double-counting and to ensure that reported resources align with the procurement that has already occurred or is consistent with the RSP. Staff expect this to occur in approximately June-July 2020.

27- *What are LSEs expected to do on RA this year versus what they were required to do last year?

In the last cycle, LSEs were only required to report RA resources currently under contract using average RA ELCCs for existing resources and marginal ELCCs for new resources, and only the IOUs were required to provide cost data. For this cycle, LSEs must report resources listed in the year-ahead CAM list using the RA capacity value by month for each IOU service territory in which they serve and report costs using their own cost projections for those resources. LSEs must also use the Resource Data Template to track the progress of LSE contributions to system RA, using the built-in assumptions about the capacity contribution by resource type for the full planning horizon.

28- * If a Preferred Portfolio for the 46MMT target also meets our benchmark for the 38MMT target, can the same portfolio be submitted under both scenarios? Or are there underlying differences between the two targets that would necessitate separate model runs on our end?

While some of the criteria that define a conforming portfolio are the same for 46 MMT target and 38 MMT target, the two portfolios should be different in terms of the 2030 LSE-specific GHG Emissions Benchmark. Thus, a portfolio cannot be a conforming one to both the 46 MMT target and the 38 MMT target.

Note: Staff is working on some possible changes to the direction provided here. For any question/concern please contact Ali Eshraghi at alireza.eshraghi@cpuc.ca.gov.

29- *What are the guidelines for LSEs to address their "fair share of reliability and renewable integration/ramping needs associated with the resources they select" in their IRP filings? Would one adequate method for an LSE to address this requirement be to report its portfolio's contribution to the LSE's system and flexible RA requirements throughout the planning horizon (holding today's requirements and resource capacity counting methodologies constant through 2030)?

The final Resource Data Template includes functionality for tracking the progress of LSE contributions to system RA. Detailed instructions have been provided in the template, including built-in assumptions about the capacity contribution by resource type for the full planning horizon. There is no requirement to quantitatively forecast flexible RA contributions at this time.

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30- *Should RA obligations, for the purposes of the IRP, be assumed to remain constant through the planning period?

RA obligations are not constant over time and change as the CAISO system peak and system resource mix changes over time. The template to be released May 11th will include functionality for tracking the progress of LSE contributions to system RA. Detailed instructions will be provided in the template, including built-in assumptions about the capacity contribution by resource type for the full planning horizon.

31- * How should LSEs demonstrate that their portfolios do not assume reliability, renewable integration, and ramping needs associated with their portfolios will be met by resources in the portfolios of other LSEs?

The final Resource Data Template includes functionality for tracking the progress of LSE contributions to system RA. Detailed instructions have been provided in the template, including built-in assumptions about the capacity contribution by resource type for the full planning horizon.

32- * What are the expectations from Energy Division Staff of the IOU's IRP plans and the IRP reliability track procurement for the loads that had not departed at the time of the Decision (D.19-11-016) but will depart starting in 2021?

If an LSE opted-out of its procurement obligation under D.19-11-016, or was not assigned a procurement obligation under D.19-11-016, and thus will have a certain amount of procurement occurring on their behalf, the LSE must enter an amount and type of resource(s) communicated to it by Energy Division staff. Staff will coordinate LSEs that are not self-procuring and IOUs procuring on their behalf to prevent double-counting and to ensure that reported resources align with the procurement that has already occurred or is consistent with the RSP. Staff expect this to occur in approximately June-July 2020.

Filing Requirements' Questions and Answers

Resource Data Template

- 1- How do the proposed filing requirements and resource data template prevent the aggregated LSE IRP plans from exceeding the maximum amount of existing resources available to LSEs if LSEs use 'generic existing resources' in their respective individual plans?**

There is no way to prevent this before staff receives all of the completed templates. After receiving all of the templates, staff will aggregate the plans, examine the amount of generic resources that are being planned for, and determine if that exceeds available capacity.

- 2- What delivery term should be included?**

Please include all contracts with delivery start dates on or after January 1st, 2020, and before January 1st, 2031.

- 3- How should contracted sales be entered?**

Per the instructions_1_general tab, all numbers should be entered as 0 or positive numbers. Indicate the resource as transfer_sale, per part 9 of the instructions. Provide an explanatory note to help staff determine approximate resource mix. This is reflected in the updated instructions

- 4- Should LSEs update the Resource Data Template to reflect their actual contracts?**

Yes.

- 5- *Inland Empire and Sutter Energy Center (Row 2430) do not appear to be incremental for D. 19-11-016 in contrast to the decision. Is this an error?**

This issue was fixed in the version of the template posted on May 12—these resources are now incremental. You can verify by going to the "resources" tab and looking for INLDEM_5_UNIT 1 and SutterEnergyCC-Total – both have an is_incremental value of 1.

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6- Questions related to the 'Monthly_gwh_mw' tab:

- a- **Column C 'cpuc_contract_id'; is there a specific format or can each LSE name the contract id as they see fit if there is currently no Contract ID in the CPUC Contracts Database.**

If there is currently no contract ID in the CPUC contracts database, you can use whatever unique identifier you like, as long as it allows staff to uniquely identify a contract. If the resource name and contract ID alone does not uniquely ID the resource, you need to write a note per part 5 of the instructions so that staff can uniquely identify a contract.

- b- **For unit specific purchases from another LSE, should the LSE report the Resource ID in the "resource" field, or should such contracts be listed as "transfer_purchase" with unit information provided in the notes section?**

List these contracts as "transfer_purchase" and use a note to explain what the unit is.

- c- **For resources that are identified as "existing_generic" what should the entry be for the "max_mw" field. This information is not known for a generic resource.**

Please estimate the maximum rate at which the resource can provide energy, in MW. Staff understands that this is not a nameplate value.

- d- **How should an LSE report a PCC 2 contract? If the renewable resource is specified in the contract, should the LSE enter the out-of-state resource id in the "resource" field? If the renewable resources are identified as part of a portfolio of resources (i.e. multiple units without specific unit volumes), should the LSE enter this as an "unspecified import" and provide clarification in the notes?**

Staff agrees with this approach. For a specified resource, enter the resource ID in the "resource" field and write "pcc2" in the notes. For a portfolio of resources, use "unspecified_import" and, in the notes column, provide information on the approximate resource mix and carbon content, along with "pcc2."

- e- **How will the Resource Data template and CSP Calculator interact?**

The CSP tool and Resource Data Template are for different purposes. The CSP tool is for ensuring that a portfolio meets a certain GHG target, the Resource Data Template is for reporting planned and existing contracts. Therefore, these workbooks are not intended to be explicitly linked via Excel formulas. However,

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the data in these workbooks should match to the extent possible, and both workbooks should include planned contracts and existing contracts.

- f- **If a battery is being added to an existing resource, should the monthly_gwh_mw tab be left completely unchanged (no new rows or edits to the existing resource) and just flag the battery in the new "incremental_explanation" column? Or is the preference to still have separate time series data and a discrete row for the battery? If it is the former, is there anywhere you need the online date for the new battery component to be captured?**

Please use the first option, entering the resource as a single hybrid resource. In the "notes" column in monthly_gwh_mw for the battery, please write "battery added to [resource name] on [date]." In the incremental_explanation column in unique_contracts, please follow part 10 of the directions. Also see cell below to ensure you don't double-count NQC MW. You should make sure that NQC MW is accurately tallied in column AQ of "unique_contracts."

- g- **How will the information provided for contracts identified as 'review' in Column J of the monthly_gwh_mw tab be included in an LSE's portfolio for aggregation purposes? Including all shortlisted projects may result in modeling more resources than LSEs may plan to contract for.**

See answer to the Q13.

7- Question related to the Column K "max_mw":

- a- **This column requires LSEs to fill in the resource's nameplate in MW or the max MW amount the resource can deliver. For contracts with a pool of resources and no capacity values, the CSP will determine a share and capacity value based on the composition of the pool. Do entries for columns F (energy in GWh) and K in the Resource Data Template for these resources need to align with the shape and capacities provided by the CSP?**

Please estimate the maximum rate at which the resource can provide energy, in MW. You can use what the CSP tool determines. Staff understands that this is not a nameplate value.

8- How the "dashboard" tab is to be completed?

The tables in the dashboard tab (starting at row 4) are automatically updated via Excel formulas, so LSEs should not change these tables (because they will update automatically based on data entered in the blue tabs). LSEs can, however, change cells A1 and A2 (month and year, respectively) to view procurement data for different years and months; see the

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comments in these cells. LSEs should review the dashboard tab, after they enter their data, to make sure their procurement is accurately reflected. See the instructions_2_tab_overview tab, cell D18, for more details on how to use the purple dashboard tabs.

9- Why are the incremental tabulations defaulted to the month of August? The procurement track specified September capacity, so should LSEs switch to September when evaluating incremental NQC vs. what was ordered?

Yes, you should switch the tab's active month to September to tally NQC vs procurement track. See the comment in Cell A1 of "dashboard." August was put there as a placeholder-it is OK to change it to whatever month you like.

10- Are the calculations in this spreadsheet representative of how the PUC will be evaluating compliance with the procurement order? Specifically, will the entire NQC of a new battery added to an existing baseline resource count as incremental, or will there be adjustments to account for the loss of capacity for the existing baseline resource?

Please see Decision 20-01-004 for guidance on how to enter the NQC of added batteries, linked here

<http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M325/K127/325127824.PDF>. If you add a battery to the resource, you should derate the NQC of the entire project such that you match the counting conventions in this decision. Staff is agnostic to whether you derate the battery or the associated generator - the important thing is to make sure that the total NQC MW of the hybrid resource is accurate and follows D 20-01-004.

11- Should all sales by the LSE be listed as a "transfer_sale" or just those involving other LSE's named on the "lse_names" sheet?

All sales from one LSE to another are transfer_sales. If the LSE name does not appear on the LSE_names sheet, please provide the buyer name, seller name, and approximate resource mix in the notes column (per the instructions), just as you would for any other transfer_sale or transfer_purchase. It is OK if the LSE name is nonstandard if you cannot find it on the list of lse_names.

12- For planned resources with CODs before 2027 without locational data provided for the 'new' supertype, which resource name should LSEs select? The generic CAISO resource names are only available for new facilities with CODs starting January 1, 2027. Are LSEs able to choose 'Generic New' resource superotypes for resources that are planned to come online before 2027?

Per part 8 of the instructions, all resources with CODs on or before Dec 31st, 2026 should be one of the new_resolve resources. You cannot use generic resources for this category. LSEs should use their best judgment when selecting among the new_resolve resource as to which

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area it will come from, even if it is not yet certain. This is by design to encourage more detailed planning for near-medium term resources. However, for resources where the LSE has absolutely no locational preference, the LSE can write "no locational preference" in the notes column (they should still, however, use one of the new_resolve categories for resources with CODs before Dec 31st, 2026, as above). This will be taken into account when aggregating portfolios and seeking to minimize exceedence of transmission and resource potential limits.

13- Are LSEs required to include all currently shortlisted projects as under review, even if plans are to only contract with a subset of those contracts?

No, you do not need to include all shortlisted resources. With respect to shortlisted resources, your data template should only contain the subset of shortlisted resources that you intend to contract with. In other words, if a resource is shortlisted but you do NOT plan to contract it, you should omit it from the template.

14- In the caiso_interconnection_queue tab, what is the difference between N/A (Project not in queue) and TBD (To be determined)?

If you believe that the project will enter the queue soon (i.e. it is a CAISO resource that hasn't connected yet, and you eventually expect it to enter the queue), put TBD. If the project will not go into the CAISO queue (due to being out of state, or not tied to any physical resource), put N/A.

15- What does Energy Division plan to do with the information about a resource's CAISO queue position?

Queue position is one of the fields that helps communicate the viability of a resource. Staff will use this and other resource viability information in plan aggregation and other planning workstreams within IRP.

16- Questions related to CAM resources:

- a- Are LSEs expected to list contracts for the individual CAM resources? Or do we report them as a single aggregate contract? LSEs receive their annual CAM allocation in aggregate so listing individual CAM resources as separate contracts is challenging.**

It is OK to list all CAM resources in your service territory as a single aggregate contract.

- b- Should LSEs use the name 2020 capacity allocation through 2030, or should we use our same 2020 proportional share of the total resources available each year on the CPUC's CAM resource list?**

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Use the same 2020 proportional share of the total resources available each year (the second option).

- c- **What should LSEs use to determine their CAM allocation – the year ahead list or quarterly update?**

Use the year-ahead list.

- d- **Are LSEs to report only system RA, or should we also include flex, local, and/or DR? If we are to include CAM DR, how should it be reported in the templates?**

Report System RA only. CAM DR should be reported in the templates as DR. For these resources, the "cam" variable in unique_contracts should be set to 1.

- e- **For CAM resources that are in a Local area within the CCA's partnering IOU TAC area but listed on the CAM list of a different IOU how should a LSE account for those resources? (for example, SCE is listed as having resources within Bay Area but that is not within its TAC area)**

You should still mark these as CAM. Provide a note that explains which LSE has these on their CAM list.

Filing Requirements' Questions and Answers

Clean System Power (CSP) Calculator

1- Does the calculator account for the emissions from spinning reserves and when units are operated at partial load?

Emissions from units operating at less than their full capacity are included in the system power emissions factors. The SERVVM production cost model co-optimizes energy and ancillary services, so the resulting fuel burn and emissions values include the impact of operating resources as spinning reserves.

2- How should LSEs enter hybrid resources into the CSP tool?

While the CSP tool does not have a specific option that allows LSEs to simulate hybrid resources, it is possible to represent hybrid solar + storage resources by either adding battery and solar capacity separately so that the tool will in-effect add the profiles together; or using the user-defined custom GHG-free generation profile to model hybrid resource dispatch with a production shape that has been defined outside of the tool. There are more instructions on how to enter hybrids at the end of the CSP tool instruction document.³

3- Can LSEs use specific actual emission factors for specific resources?

The tool is not designed to allow for user-specified emissions factors. Using standard emissions factors in the tool allows for a like-for-like comparison of LSE plans.

4- Is there a document describing the emissions factors used and the specific calculations and sources used to develop them?

Hourly emissions factors are included in the "Emission Profiles" tab. There is also a section in the CSP Tool documentation titled "Hourly emissions factors used in the CSP tool" that describes how emissions factors were calculated.

5- Is there any way to separate emissions into air basins using the calculator and add more criteria pollutants from biomass resources?

The tool does not have the functionality to provide more granular air emissions outputs. Moving forward, staff will continue working with parties to refine how air emissions and other important planning outputs can be best conveyed in IRP modeling.

³ See CSP tool documentation here: <https://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442463630>

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6- Will the CSP Calculator include the ability to view more cost information from the LSEs?

The tool does not have the functionality to provide cost and revenue requirement outputs. In future cycles as we continue to refine the CSP Tool, staff will consider adding cost functionality so that we can compare LSE portfolio costs in a more systematic way. For now, LSEs should continue to calculate cost and rates information about the incremental resources proposed in their respective IRPs on their own using the 2019 I&A cost documentation.

7- What is the process for LSEs to ask questions on the final CSP tool?

Staff will hold office hours with LSEs to answer any questions about the Filing Requirements including the Tool.

8- Will the CSP provide options to customize battery storage inputs? For example, Will the CSP allow different durations beyond 4-and 8-hour to be input?

Users can choose between 2-hour and 4-hour battery storage options. If users wanted to model, for example, a 3 hour battery, they could enter half of the capacity as a two hour battery and half as a four hour. The pumped storage resource provides an example of a long-duration storage profile.

9- Will LSEs be able to set discharging hours?

The tool does not let LSEs set discharging hours. The assumption is that a "4 hour" battery has 4 hours of storage capacity (MWh) relative to the charging/discharging capacity (MW). Charging and discharging capacity are assumed to be the same.

10- In the Supply Inputs tab of the tool, if the GWh dropdown is selected in Column C, are the GWh to be entered in the pink rows or is this all accounted for in the custom profile below starting on row 50?

Any resource entered in the Custom Profile section of the Supply Inputs worksheet should not be entered in the rows with suggested resources (rows the GWh/MW toggles). Entering a resource in both places would result in it being double counted.

11- Do IEPR forecasts account for load departure in 2021 and 2022 due to the Direct Access lottery expansion?

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Yes, the tool uses the load forecast from the 2019 IEPR Form 1.1c, which includes 4,000 GWh of DA service expansion under SB 237 (Hertzberg, 2018).

12- How should users enter unspecified PCC 1 Energy Only contracts, or Seller's choice contracts?

LSEs reporting these types of contracts that do specify the nameplate capacity of the delivering resource(s) should enter the annual GWh for the resource(s) that it believes most closely matches the energy source or sources(s) for the contract in the *Supply Inputs* worksheet.

13- When entering load figures, should ESPs enter retails sales or gross their sales up for T&D losses?

ESPs should enter retail sales. The CSP tool grosses those figures up for T&D losses when appropriate.

14- What load forecast for 2030 should ESPs use to calculate their GHG benchmark?

Commission staff will confidentially communicate to each ESP its individual load forecast for purposes of their individual IRP filings, which will be developed based on the year-ahead load forecast that each ESP submits this year for RA purposes.

15- In what ways can LSEs deviate from form 1.1c of the IEPR for their demand forecasts. Can they customize load shape?

Users have the option of specifying custom 8760 demand profiles for each component of the demand forecast on the "Custom Hourly Load Profiles" section of the *Demand Inputs* worksheet as long as the assigned annual energy volumes remain unchanged. This option is appropriate for LSEs that know the hourly shape of their demand components and wish to reflect those projections in their plan. Custom hourly shapes are applied to the annual demand forecasts in the *Demand Inputs* worksheet. Users may also specify a percentage of their baseline demand that comes from C&I loads in each year using the "Use Custom?" toggle in Column C of the *Demand Inputs* tab. A C&I baseline hourly demand shape will be applied to the C&I percentage, and the remaining baseline demand will receive a non-C&I hourly demand shape. If a custom C&I percentage is not entered, the default percentage will be used.

16- How does the CSP determine whether or not natural gas & unspecified imports is the marginal unit. In other words, what is the marginal unit methodology employed in the CSP tool?

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Average emissions factors, as opposed to marginal, are used in the tool. The decision to use average rather than marginal emissions factors for system power reflects the underlying goal of the CSP method: to attribute system-wide emissions to multiple LSEs in a consistent manner, so that the aggregation of their portfolio emissions will be comparable to those of the system. One benefit of using average emissions factors is that multiplying an average emissions factor by a given level of demand will sum to the total emissions for that level of demand. In California, where there is a single dominant dispatchable fuel (natural gas), marginal emissions factors will tend to overestimate aggregate emissions because the marginal generator tends to be less efficient than generators further down in the stack of dispatchable resources.

17- Can LSEs enter custom inputs for the last 24 hours of 2020, which is a leap year? If so, can staff advise on how to input hours 8761-8784?

The tool does not allow users to enter data for the last 24 hours of 2020 because the tool does not simulate leap years. Each future year is modeled with 8760 hours. All future years in the tool are built using the 2007 weather year, with demand shapes that use the 1990 calendar of weekend/weekday and holidays and 2007 weather. Neither 2007 nor 1990 were leap years, so the renewable profile and demand data, and the resultant SERVM production cost shapes (including battery dispatch, system power emissions factors, etc.) are based on a year that does not have a leap day.

LSEs should make their best effort to align hourly custom profiles with the underlying weather and calendar conditions. One important consideration for demand profiles is to align weekend/weekend status, because demand can vary significantly between weekends and weekdays.

18- How is system power accounted for in the Supply Inputs?

System power is calculated through subtracting an LSE's resources specified in the 'Supply inputs' from an LSE's load on an hourly basis. There are, however, some emissions that the CSP tool allocates to an LSE regardless of its hourly position. This allocation is done on a pro-rata basis by an LSE's share of total CAISO load for combined heat and power (CHP) emissions as well as some dispatchable gas emissions. For dispatchable gas (as determined by the SERVM modeling) there are some hours in which gas is running despite overgeneration. This implies that some portion of gas power is not displaceable and necessitates allocation to each LSE such that the associated emissions are not 'lost' when each LSE specifies its own portfolio. Likewise for CHP, this is because the units generation is not attributed to any LSE in particular.

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19- Why do we get higher numbers when entering 2018 portfolios into the new calculator?

- a- **This appears to stem from the assumptions made in the new Clean System Power calculator that “system power” has the emissions profile equivalent to that of natural gas. can you confirm that this change was intentional? Is the assumption that all system power is natural gas?**

System power in both this and last cycle of IRP reflects emissions associated with natural gas. There are two related changes, however. First, this cycle uses emissions factors for each hour of the year instead of the month-hour averages. Second, hours in which gas emissions are not displaceable by an LSE (e.g., some mid-day solar hours) are accounted for in a separate area of the tool from the emissions intensity. Resources count towards an LSE's portfolio only if their power output is delivered to (1) a California Balancing Authority area, if RPS eligible, or (2) the CAISO system if the resource is not RPS-eligible.

- b- **How are low GHG resources such as large hydro and nuclear taken into account in the calculator, and are these resources not taken into account as part of system power? If LSEs have resources such as these under contract for RA, how should they be taken into account in the calculator, since the LSEs do not know how they will be dispatched?**

This would exclude RA contracts that do not have associated energy. For nuclear and large hydro, LSEs can claim this generation only if they have it as part of their portfolio.

20- Questions related to the load profiles for input into the Clean System Power Calculator

Load profiles are allowed to change but the relative amounts of baseline load, electric vehicle load, other electrification, energy efficiency, and BTM PV are fixed by the calculator tool. If the assumption of such relative amounts is inaccurate for an LSE, even if customer hourly shapes for all components match the LSE's metering data, the final normalized shape will not match the actual metered shape of the LSE. In such a scenario, what does the CPUC expect? Does the CPUC expect that if an LSE uses custom hourly demand profiles, that the final output metered shape will not match the actual metered shape of the LSE? (Especially in the short-term for 2020?) Would it be acceptable for an LSE to construct a metered shape for the baseline load that returns the actual metered shape of the LSE in 2020?

If an LSE chooses to enter a custom hourly demand shape, the shape must be normalized so that the sum of the hourly values over the entire year equals 1. We understand that the IEPR's load modifier forecasts will not match most individual

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LSE load modifier forecasts, but the pro-rata share methodology will aid LSE plan aggregation. LSEs may customize the metered shape for their baseline load and load modifiers to the extent that they see fit to best match their own load shapes as long as the annual load volumes remain unchanged meaning that the sum of the hourly volumes over the entire year equal 1. LSEs must also provide a detailed explanation as to how their load shape was developed in the Narrative Template.

21- CSP's emission profiles, supply profiles, and demand shapes changed from v1:

a- What drove the changes?

Changes were driven by the portfolio updates to the Feb 2020 RSP as reflected in SERVM, and the 2019 IEPR..

b- Why is dispatchable gas now holding flat instead of declining?

When compared with the earlier draft of the CSP tool, dispatchable gas generation does not decline as much 2020 to 2030. This is in large part due to a 5 TWh increase in system load from the updated CEC IEPR forecast.

c- Are these profiles final or will there be another version of updates?

Profiles are final based on SERVM modeling of the 46 MMT and 38 MMT portfolios adopted in D.20-03-028.

d- Gas is now marginal during SERVM curtailment or when RSP input (columns BM: BP on Supply Resource Profiles) is negative. As a result, hours where the system is curtailed increases from 1,319 to 1,605 in 2030. What triggered the change? Please explain the rationale.

This change in methodology was implemented to avoid unrealistic oversupply credits for LSEs in the CSP tool. Generally, the goal of looking at both SERVM curtailment and RSP input to determine curtailment in the CSP is to take into account system dynamics evaluated in SERVM while at the same time avoiding unrealistic additional oversupply as the RSP inputs were replicated in the CSP tool. Specifically, the RSP input logic was added because it was noticed that storage dispatch within SERVM was masking hours which were in oversupply and would have had curtailment, if not for the storage charging that hour.

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22- In reviewing the 46 MMT CSP and RESOLVE tools it appears that though the small hydro capacity is aligned (approximately 974 MW), the assumed energy from these units varies across the two models. In RESOLVE the annual energy from small hydro is 4,327 GWh while in the CSP it is 2,838 GWh. It would seem the inconsistency in assumed capacity factors would adversely impact the GHG positions of LSEs with small hydro in their portfolios relative to the RSP developed in RESOLVE. Please clarify.

The small hydro profile in the CSP tool has a lower capacity factor compared with RESOLVE. Because RESOLVE models small hydro as a flat profile, and SERVUM models small and large hydro as one unit, a new profile was created for the purpose of hourly emissions. This was accomplished using historical small hydro generation in CAISO and CAISO contracted capacity. Those LSEs whose small hydro supply has a different capacity factor may choose to enter the energy supplied in GWh in the Supply Inputs tab rather than capacity using the toggle to the left of the input cells.