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Attachment A:

CPUC Framework for TPP Portfolio Selection

CPUC Energy Division
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I. Document Purpose

Through the IRP process, the CPUC generates portfolios of electrical generation and storage resources designed to meet the state's greenhouse gas emission reduction targets while minimizing cost and ensuring reliability. Each year the CPUC transmits to the CAISO a base case resource portfolio as a key input to the Transmission Planning Process (TPP). The CPUC may also transmit additional portfolios as inputs for sensitivity studies that test the implications of various policy options.

Although the resource portfolio(s) to be transmitted to the CAISO for use in the annual TPP are selected by the CPUC, it is important to the CPUC that the portfolios adequately meet the CAISO's needs as useful inputs that contribute to an efficient and informative planning process.

The purpose of this framework document is:

- To establish a structure that can be applied to select resource portfolios for the CPUC to transmit to the CAISO for inclusion in the TPP that meet all CPUC and CAISO objectives and requirements, and
- To increase transparency in the selection of portfolios transmitted to the CAISO to be analyzed in the TPP process.

The CPUC and CAISO seek jointly to establish TPP portfolio selection guiding principles and criteria to ensure an effective process for identifying portfolios that enhance the resource planning and transmission planning processes of the respective entities.[1]

II. Guiding Principles

The following principles are intended to guide the CPUC TPP portfolio selection process.

A. Overarching

1. The objective of each base case and sensitivity portfolio transmitted to the CAISO is clearly conveyed.
2. Portfolios selected for the upcoming TPP cycle should reflect the most up-to-date RSP or PSP portfolios adopted by the Commission and updates when possible.
3. Portfolios should build on prior CPUC resource planning direction.
4. Portfolios should minimize the need for post-processing of the transmitted portfolios by the CAISO of the transmitted portfolios.

B. Base Case Portfolios should:

1. Be "actionable" so that the CAISO can conduct the transmission planning process and recommend approval of identified transmission needs resulting from base case assessments.

[1] Portfolios used by the CAISO Transmission Planning Process must meet the requirements in Section 24.4.6.6 of the CAISO's tariff. Portfolios developed in the IRP process may inform the development of the CAISO's TPP scenarios to the extent feasible under the CAISO tariff and adopted by that organization.

2. Reflect CPUC policy guidance, which the CPUC would be expected to implement if transmission is approved to satisfy those policy needs.
3. Provide regulatory certainty.
    a. If the TPP determines that new transmission needs are approved as a result of the resources mapped in the base case portfolio, the CPUC will be expected to take procurement action to encourage development of resources in that area. The CAISO and the public should have confidence that the support will remain in place through the transmission permitting process.
    b. Sustain previously approved transmission investment decisions in future resource planning.
4. Include CPUC guidance on significant gas-fired resource retention and retirement with sufficient locational specificity for the CAISO to conduct TPP modeling and analysis.
5. Include CPUC guidance on the location of battery storage and certain other resources with sufficient specificity for the CAISO to conduct TPP modeling and analysis.

C. Policy-Driven Sensitivity Portfolios should:

1. Be reasonably linked to the overall aim of either a) supporting a "least regrets" approach that provides a reasonable range of future scenarios that can be associated with the base case, or b) gathering additional transmission information for future portfolio development that explores incremental optionality or risk.
2. These sensitivities should not unreasonably contradict significant policy decisions that are incorporated within the base case.

III. TPP Use Cases

The base case portfolio is used in the CAISO TPP studies described below. The generic resources in the portfolio are primarily used in the CAISO TPP year 10 study cases.

Reliability Assessment

- The base case portfolio is used by the CAISO in the reliability assessment, which includes NERC, WECC and other planning standards, to identify reliability needs and mitigation plans that may include transmission and/or non-wires solutions.
- Identified mitigation plans are recommended to the CAISO Board of Governors for approval of the transmission solutions within the mitigation plan.

Policy-Driven Study

- The overarching public policy objective is the state's mandate for meeting renewable energy targets and greenhouse gas (GHG) reduction target. For purposes of the TPP study process, this high-level objective is comprised of two sub-objectives: first, to support the delivery of renewable energy over the course of all hours of the year, and second, to support Resource Adequacy (RA) deliverability status for the renewable resources and storage resources identified in the portfolio as requiring that status.

- Powerflow, deliverability, and production cost simulation analysis are used to assess the need for transmission upgrades under scenarios where resources are considered most likely to be located, considering the policy and strategic goals identified by the CPUC.
- Policy-Driven stress scenarios or sensitivity scenarios may be provided in addition to the base scenario.
- The sensitivity scenarios are used to assess transmission impacts and options under different plausible scenarios and potentially identify least regret transmission investments.
- Any transmission solutions that are needed in the baseline scenario and at least a significant percentage of the stress scenarios are recommended for approval as part of the comprehensive Transmission Plan in the current cycle.
- Transmission solutions that are needed in the baseline scenario but which are not needed in any of the stress scenarios or are needed in an insignificant percentage of the stress scenarios, may also be recommended for approval as part of the comprehensive Transmission Plan in the current cycle, if the CAISO finds that sufficient analytic justification exists.
- Any transmission solutions that are not needed in the baseline scenario are not recommended for approval as part of the comprehensive Transmission Plan in the current cycle.

Economic Planning Study

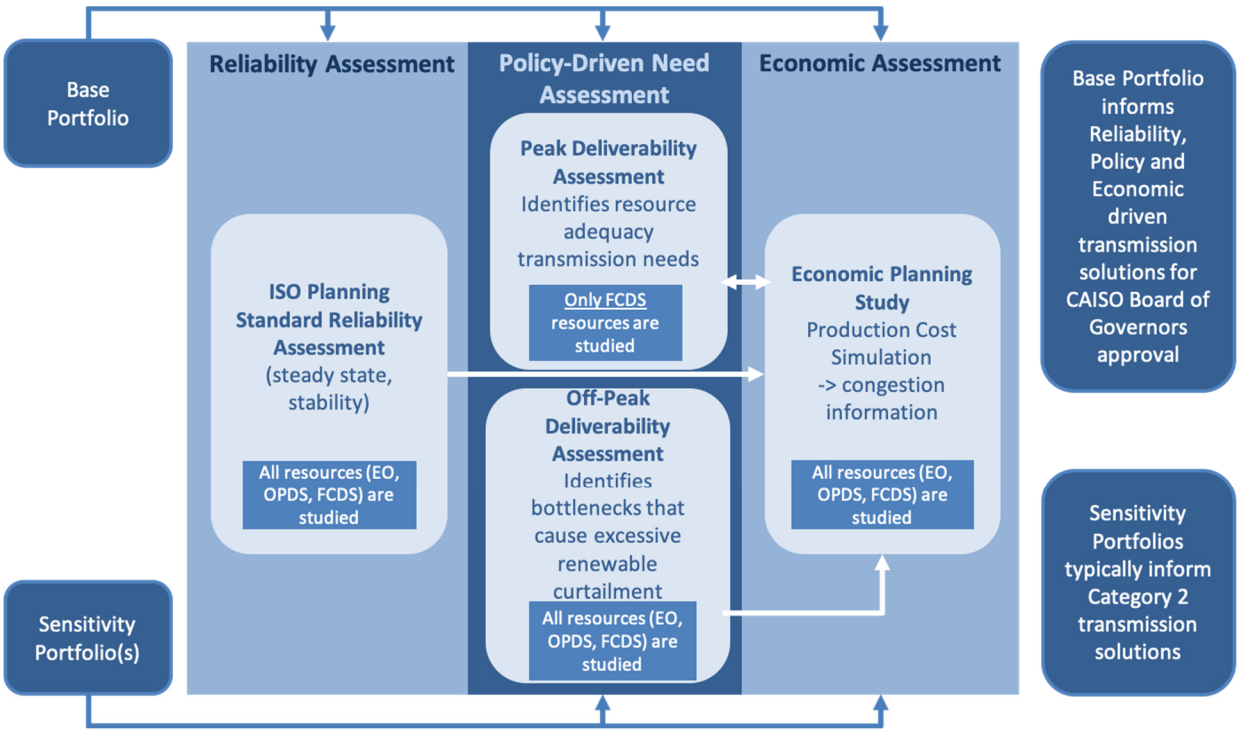
- The base case portfolio is used by the CAISO in its economic planning study.
- Explores economic-driven transmission solutions that may create opportunities to reduce ratepayer costs within the ISO.
- Use production cost simulation performed for all hours of the study year to identify grid congestion, prioritize candidate projects and assess their economic benefits.
- Candidate projects with a benefit-to-cost ratio of 1.0 or more may go before the CAISO Board of Governors for approval.

Long-term Local capacity technical (LCT) Analysis (currently assessed every two years)

- Used to determine the minimum local capacity requirement (LCR) in local capacity areas and sub areas that is needed to meet reliability criteria.
- Intended to provide an indication of whether there are potential deficiencies that need to trigger a new procurement proceeding.
- Only resources with full or partial deliverability status are counted to meet LCR.
- The economic benefit of a transmission solution that would reduce LCR needs may be quantified as part of the economic planning study and used for justification for recommending approval of that transmission solution.

Figure 1 depicts how the CPUC transmitted portfolio types are used in various TPP assessments and what the potential outcomes include. Additionally, it depicts whether the resources studied under each assessment are energy only (EO), full capacity deliverability status (FCDS), or off-peak deliverability status (OPDS) resources.

Figure 1: IRP Resource Portfolio Selection Process for the CAISO's TPP



IV. Criteria

The CPUC will consider options for TPP portfolios by comparing how each potential portfolio meets the following criteria. If a portfolio does not meet a criterion, the CPUC will seek CAISO guidance, before the portfolio is formally selected, to determine what mitigation/improvement options exist.

A. Base Case Portfolio for Reliability, Policy and Economic Assessment

1. Portfolios should be comprehensive. The base case portfolio should be a total portfolio (baseline, new builds, plus retirements) that reflects CPUC policy guidance.
2. All resources can foreseeably be mapped to busbars (including baseline, new build, and retired resources), or the CPUC can provide policy guidance on the location of resources.
3. The CAISO can reasonably expect that generic resources will come to fruition so that they can be confidently modeled in the TPP.
4. Portfolios need to include explanation of the underlying policies that are directly affecting the portfolio development.
5. The entire portfolio should meet state goals and CPUC requirements, such as meeting RPS mandates and GHG reduction targets, and should provide overall supply adequacy reliability.
6. Portfolios should generally be cumulative year-over-year and should not unreasonably shift large amounts of resources in ways that would likely impact transmission needs.

B. Sensitivity Portfolios for Policy Assessment

1. Articulate the purpose for such analysis. This explanation will be developed in a coordinated fashion by the CPUC and the CAISO and will be included in the formal CPUC ruling that conveys these sensitivities.
    a. The purpose for the analysis of each sensitivity portfolio should be included in the formal CPUC ruling that conveys the portfolios. Per the guiding principles, the description should communicate whether the aim is to gather additional transmission impact information for future portfolio development, or to support the recommendation of "least regrets" transmission upgrades to the CAISO Board of Governors by providing a reasonable range of future scenarios.
    b. Portfolios should include explanation of the policy intent that drives the purpose for the sensitivity analysis.

V. Portfolio Selection Process

CPUC staff will first identify a range of portfolios for consideration that meet IRP and TPP objectives. For each portfolio, staff will consider the following questions:

A. Policy objectives

1. What policy objectives does the portfolio aim to further?

B. Intended Use Case

2. What questions does the use of this resource portfolio in the TPP answer?
    - Examples may include the following:
        - Understand transmission implications of CPUC-approved IRP portfolios or potential future IRP portfolios.
        - Test the transmission implications of potential policy direction.

C. Expected TPP Outputs

3. What type of information is expected to be produced by the TPP analysis?
4. Is the TPP information expected to flow as an input into the IRP process?
5. What is the expected format of the results and how will this information be considered in the IRP process?

D. Work Required

6. What level of human resources and time are required to develop the portfolio and formally transmit it? This may include work such as:
    - Portfolio formation
        - Model runs required, if any
        - Use of LSEs' plans required, if any
    - Busbar mapping

E. Stakeholder Engagement

7. Has stakeholder engagement or the formal decision-making process informed the portfolio?

F. Risks

8. What are the risks of the portfolio not adequately meeting an objective of the CAISO's TPP or the CPUC's IRP process?

G. Mitigations

9. What mitigations can be applied to address the identified risks?

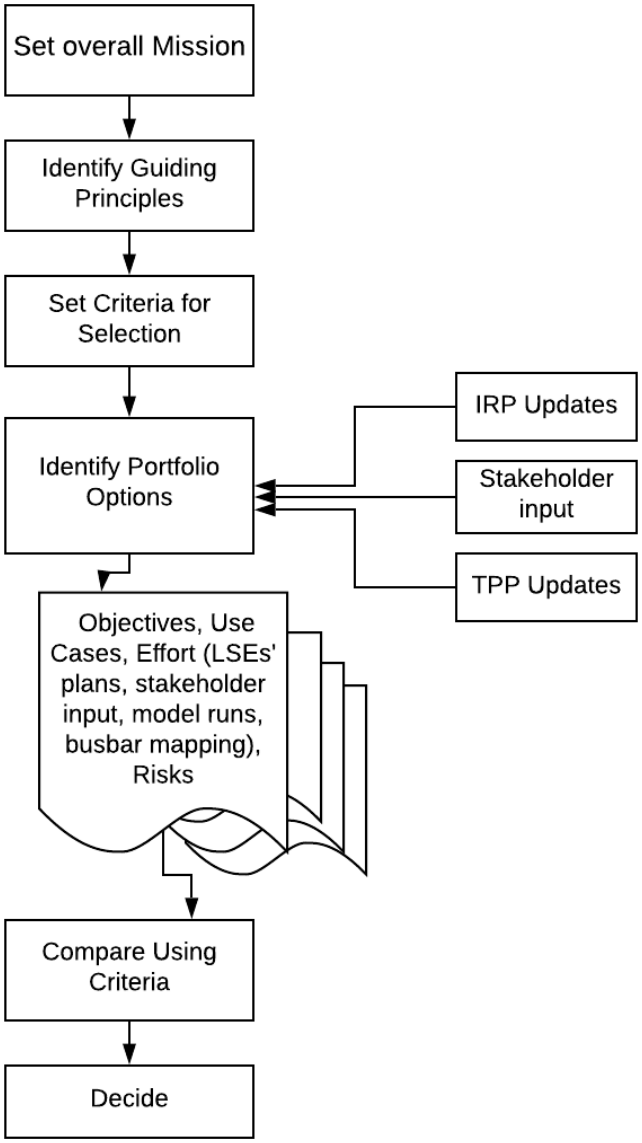
VI. Portfolio Comparison

After identifying portfolios of interest that meet the criteria explained in this framework document, staff will compare all portfolio options against the criteria.

VII. Conclusion

Staff expect to recommend selected portfolios in accordance with this framework and after careful comparison of portfolio options. After selecting portfolios, for continuation of transparency, staff will produce a Selected Portfolio Description, which describes each portfolio and the rationale for its selection. Figure 2 on the following page depicts the full IRP resource selection process for the TPP.

Figure 2: IRP Resource Portfolio Selection Process for the CAISO's TPP



VIII. Appendix

A. Previous CPUC Portfolios Submitted to the CAISO

- For the 2020-2021 TPP:
  - Base case: the updated 2018 Preferred System Portfolio (PSP) with updates to reflect more in-service resources, less planned resources and effective busbar mapping.
  - Sensitivity #1: 2019-2020 Reference System Portfolio (RSP) with the 46 MMT target for 2030.
  - Sensitivity #2: 2019 30 MMT target for 2030, testing the impacts of energy-only deliverability status on congestion and generator curtailments.

- For the 2019-2020 TPP:
  - Base Case: 42 MMT of the RESOLVE 2017-2018 RSP using the 2017 IEPR load forecasts and with updated transmission capability.
  - Sensitivity #1: RESOLVE 32 MMT portfolio, allowing out-of-state on existing transmission only.
  - Sensitivity #2: RESOLVE 32 MMT, allowing up to 4,250 MW of out-of-state (NM and WY) wind on new transmission.

[END ATTACHMENT A]