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BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans.	Rulemaking 13-12-010 (Filed December 19, 2013)

ADMINISTRATIVE LAW JUDGE'S RULING DISCONTINUING PHASE 1A AND SETTING FORTH ISSUES FOR PHASE 1B

At the December 9, 2014 Prehearing Conference (PHC), I set forth a nine-point plan regarding the process for Phases 1a and 1b of this proceeding and took oral comment. On December 16, 2014, I issued a Ruling with a modified nine-point plan. Parties filed comments on January 12, 2015 and reply comments on January 20, 2015.

The nine-point plan in the December Ruling was as follows:

1. Discontinue the effort in Phase 1a to determine if there is a need for long-term flexible capacity procurement authorization by the Commission in 2015. Do not hold Phase 1a evidentiary hearings. Phase 1a testimony would be entered into the record by party motion.
2. Devote Phase 1b to refining deterministic and/or stochastic models so that the Commission has an improved tool with which to examine long-term flexible capacity need and make procurement decisions in the next and future Long-Term Procurement Plan (LTPP) proceedings.
3. In the Phase 1b effort to refine models, focus on the use of stochastic modeling for long-term generation planning. However, consider that deterministic modeling may still provide value, although technical work to refine the deterministic studies in this cycle is necessary. Energy

Division staff recommends further standardization of modeling inputs, assumptions, methods, definitions, and output reporting to improve the consistency and comparability of long-term planning studies -- stochastic, deterministic, or hybrid -- which could be conducted by any party.

4. In this modeling effort, consider the modeling requests in the Motions by the combined heat and power parties and Independent Energy Producer (IEP) in the efforts to develop more robust models to use for 2016 LTPP and beyond. At this time, neither grant nor deny those Motions, but use the ideas that were proposed there as possibilities in further modeling development.
5. A stakeholder process for modeling efforts and refinements would be led at the Commission by the Energy Division. Parties may wish to undertake their own efforts. The ideal is that a consensus or something near a consensus could develop over common modeling parameters which can then streamline the modeling process in future LTPP proceedings; to the extent that alternative models and variations are necessary, they should be as few and as limited as possible. Part of this process would be to explore ways to reduce long-term flexibility needs through assessing trade-offs through different resources. An example would be to model what types of solutions would be best to reduce over-generation circumstances.
6. Formally, the Administrative Law Judge would issue either a Phase 1a Ruling or Proposed Decision to defer flexible procurement authorizations to the 2016 LTPP and provide guidance on further modeling activities. This Ruling or Proposed Decision would not find that there is no procurement need or shortfall for flexible capacity for 2024. Instead, it would find that there is not sufficient evidence at this time to authorize such procurement and that there is both sufficient time and a critical need to further develop modeling efforts.

7. Alongside the modeling efforts, Phase 1b also would be directed toward developing policy guidance and Commission direction to the utilities as to what they should do in future shortfall situations. As an example, the Commission might give guidance to minimize greenhouse gases to the greatest extent consistent with maintaining reliability. Or the Commission might explore trade-offs among cost, environmental needs, and reliability objectives.
8. Because the plan outlined herein for Phase 1b is ambitious and not fully defined, it is not clear that it can be accomplished by the end of the proceeding as set in the Scoping Memo (May 6, 2016). There is currently little or no record for developing policy guidance as to what to order utilities to do or how to work with the California Independent System Operators (CAISO) and the California Energy Commission on these matters. There is a concurrent need to refine the complex models that are already in testimony to date. However, a focus on improving modeling and developing policy guidance appears to be a better use of resources in this 2014 proceeding than litigating what appears to be a small or zero flexible capacity need; and if any need, only in outlier circumstances. An important question is: should Phase 1b be extended until the culmination of these efforts, or should the efforts in Phase 1b be limited (if so, how?)?
9. Phase 1a reply testimony continues to be due on December 18, 2014, and shall be served so that the record can be used as a basis for the proposed process. In their January 12, 2015 comments on this Ruling, parties shall indicate if they request evidentiary hearings in Phase 1a (to the extent that Phase 1a continues).

Phase 1a

In general, parties were supportive of the nine-point plan in the December 16, 2014 Ruling. In particular, parties generally agree that Phase 1a should be discontinued either because there is sufficient evidence that there is

not a demonstrated need for the Commission to authorize new system or flexible capacity procurement through 2024, or because the studies in testimony are not sufficiently developed to determine whether such capacity should be authorized at this time. No party requested that evidentiary hearings should be held at this time. However, IEP argues that Phase 1a should not be discontinued. IEP argues that if the studies it recommended in its October 27, 2014 Motion are undertaken, the Commission will have more complete information and will be in a better position to decide the question of need and to determine whether evidentiary hearings are required.

Point 6 of the nine-point plan contemplates further studies in Phase 1b this proceeding; unlike IEP's recommendation, these studies will be used to inform the next LTPP proceeding (anticipated to commence early 2016) instead of this proceeding. Because of the timeline associated with Phase 1b studies (discussed below), there is little practical difference between an examination of the results of further studies at the end of this proceeding or at the start of the next proceeding. Once Phase 1b studies are completed and improved, modeling can be considered in the next LTPP proceeding where there will be an opportunity for parties to develop the record, including evidentiary hearings (if necessary). As point 4 of the nine-point plan contemplates, IEP's October Motion will not be ruled upon at this time, but the ideas in the Motion will be considered as part of Phase 1b.

With that, Phase 1a of this proceeding is discontinued. There is not sufficient evidence at this time to authorize additional flexible or system capacity procurement through 2024 in this proceeding. There is both sufficient time and a critical need to further develop modeling efforts to inform the 2016 LTPP proceeding regarding the need for flexible capacity through 2026

To ensure continuity, the record of this proceeding should be made available for the 2016 LTPP proceeding.

Phase 1b

This Ruling now outlines a Phase 1b work plan along the lines of points 2-5 and point 7 in the nine-point plan. The intent of Phase 1b is three-fold: to help further develop and validate models which can accurately highlight and distinguish needs for both flexible and generic system resource attributes to maintain reliability, to investigate efficient solutions to potential operational flexibility events (such as over-generation events), and to set the stage for expanded future analyses which will balance the cost-effectiveness and GHG impacts of measures to ensure system reliability. Ensuring system reliability a has -- and will continue to be -- the primary motive of Phase 1 of the LTPP proceeding. However, planning for long-term greenhouse gas (GHG) minimization at the lowest cost will be necessary to realizing State policy goals.

In setting forth and implementing the Phase 1b work plan, a guiding principle will be to focus on activities that are most impactful on results, can be conducted independently of one another, and are achievable by the end of 2015.

As detailed herein, Phase 1b activities will encompass five major topic areas. For the first three topic areas, stakeholders will be invited to participate in technical working groups led by Energy Division. The last two topic areas will involve collaborative work between Energy Division and subject matter experts, with subsequent stakeholder review.

Technical Working Group Topic Areas

1) Developing common definitions, metrics, and standards

Traditionally the LTPP system analysis has used a 15-17% planning reserve margin[1] as the reliability standard. Stochastic analysis presents a number of reliability metrics that could be used in addition to the adopted planning reserve margin in recognition of reliability issues not envisioned when the planning reserve margin was adopted. The record in this proceeding includes stochastic analysis that uses the "1-day-in-10 years" industry standard[2] as the general basis for evaluating system reliability, but this standard is subject to varying interpretations. Additionally, there may be other more appropriate ways to measure system reliability. It is also not clear which interpretation of the "1-day-in-10 years" industry standard is consistent with applicable NERC[3] standards. This working group will seek consensus on a common way for planners to measure system reliability, consistent with applicable NERC standards, and will include the following dimensions:

a. Define "day"

A definition of "day" could range from counting a loss of load event in a single hour or less as a full "day," to counting one "day" as a total of 24 hours of

[1] CPUC Decision (D.) 04-01-050, at 23-24, available online at: http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/33625.PDF.

[2] Generally meaning the electricity system should be planned such that customers should not experience an outage more often than one day in ten years.

[3] North American Electric Reliability Corporation, a not-for-profit international regulatory authority whose mission is to assure the reliability of the bulk power system in North America.

loss of load events regardless of when the events actually occurred or whether the events were contiguous.

b. Define loss of load event

A loss of load "event" could be defined to occur whenever available supply falls below load, regardless of operating reserves. An event could also be defined to occur whenever available supply falls below load plus all operating reserves.

c. Define reliability metrics and select a standard

The definitions of "day" and loss of load "event" may be applied to a number of metrics that measure the expected frequency of an "event" occurrence. Examples of metrics include Loss of Load Expectation, Loss of Load Hours, and Expected Unserved Energy. Selecting a standard means deciding that the expected frequency of an event must not be greater than some threshold value for one or more of these metrics. Selection of a standard also implies adopting a reliability level for one or more metrics that balances the competing goals of cost, reliability, environment, and safety.

2) Identifying standard outputs

Planning study results that evaluate system reliability are difficult to interpret and compare across different models without the adoption of standard outputs that every study should produce. This working group will seek consensus on standard outputs independent of study methodology and modeling platform. The set of standard outputs could include for example, one or more reliability metrics, details on the state of the system leading up to or during a loss of load event, and expected production costs and GHG emissions.

3) Validating both deterministic and stochastic models and making technical improvements

Several key assumptions in both deterministic and stochastic models are especially influential on results, for example, gross load profiles, wind and solar profiles, net load profiles, and reserve requirement calculations. It will be important to validate the magnitude and directionality these assumptions have on the modeling results. Establishing more detailed guidelines or criteria to both instruct and standardize future deterministic and stochastic modeling operations and input assumptions can yield more comparable results that are easier to interpret. The end goal of this exercise is to confirm that the model(s) are accurate and appropriate for use by the Commission to evaluate need and authorize procurement in current and future proceedings.

Other Topic Areas

Stakeholder participation will be vital for the three topic areas above. While this process is on-going, some additional analyses may be performed by Energy Division, either working independently or in collaboration with subject matter experts. These activities may include, but are not limited to, the following:

1) Zero Curtailment Book-end

The CAISO has asserted that additional deterministic studies of the existing Trajectory and 40% renewable portfolio standard scenarios with no renewable curtailment allowed must be conducted to provide a complete set of book-ends to characterize the nature and extent of need for flexible resources to address expected over-generation and ramping needs in 2024. This Ruling requests the CAISO to proceed with these additional studies and provide results

to this proceeding. Other parties may choose to provide their own study results concurrent with the CAISO or wait to comment on the CAISO's additional study results. In order to isolate the effects of varying levels of renewable curtailment on over-generation and ramping needs, the additional deterministic studies will be based on the same study assumptions and methodology as the CAISO's deterministic studies served on August 13, 2014. That is, study assumptions will not be updated with new information such as pending applications for procurement to satisfy Local Capacity Requirements.[4] Using the same methodology and assumptions for the additional studies will preserve comparability with the initial deterministic studies in this proceeding.

2. Policies to Address Over-generation (or other flexibility issues)

This topic will investigate solutions to potential over-generation, one of the flexibility issues of interest that has emerged from the modelling results reviewed in Phase 1a. Over-generation results from the confluence of higher penetration of renewable resources, operating limitations in the existing fleet of conventional resources, and periods of relatively low electricity demand. It occurs when there is too much "must-take" generation[5] on the system to attain system balance after all possible dispatchable generation,[6] such as gas-fired

[4] As described in the latest Assigned Commissioner's Ruling on Updates to Planning Assumptions and Scenarios, issued March 4, 2015 and available online at: http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M147/K780/147780118.PDF.

[5] "Must take" means generation that the system operator must use whenever available, for example, nuclear, geothermal, and intermittent renewables such as wind and solar.

[6] Dispatchable generation refers to sources of electricity that can be dispatched at the request of the system operator; that is, generating plants that can be turned on or off, or can adjust their power output on demand.

plants, have been turned down to minimum operating levels or shut down. Over-generation is not necessarily a reliability issue; curtailment provides a tool to manage and maintain system balance. The CAISO can order "must-take" resources to reduce their production of electricity, which generally means turning down renewables. Curtailment is not necessarily an economically efficient solution to large scale over-generation, however, and over use of curtailment will impede the achievement of state renewable energy goals. Other solutions exist besides curtailment to reduce or prevent over-generation. For example, increasing energy usage at times of excess production, storing excess energy for use later in the day, and exporting energy to other states including through imbalance markets can all prevent or help manage over-generation.

The Commission administers numerous policies and programs that can facilitate development of solutions to over-generation and/or other efficiently address a variety of operational flexibility needs. Phase 1b of this proceeding will attempt to quantify the expected timing and magnitude of these risks and the value of potential solutions. This effort may include further studies using existing or moderately updated versions of the 2014 LTPP CAISO deterministic model to evaluate the relative costs and benefits of different strategies for minimizing over-generation.

Based on the results of this effort, this proceeding will consider recommendations and policies to alleviate over-generation, and/or efficiently address other operational flexibility challenges, that may be implemented in other proceedings. Some Commission policy and program areas that already address, or could be modified to address these issues include but are not limited to the following:

- **Energy Storage:** Direct procurement of energy storage that captures surplus generation and provides grid services.
- **Rate Design:** Design retail rates (e.g. Time-Of-Use periods) to encourage consumption during periods of likely surplus generation and encourage conservation in other periods.
- **Vehicle Electrification:** Facilitate managed electric vehicle charging aligned with real-time market price signals.
- **Demand Response:** Integrate demand response programs into the real-time market.
- **Resource Adequacy:** Refine rules to better capture a resource's contribution to grid services or burden on grid reliability.
- **Distributed Generation:** Create more value for customer-owned distributed generation based on time of production rather than overall energy production.
- **Renewables:** Facilitate contracts with appropriate levels of economic curtailment.
- **Valuing Flexible Attributes:** Collaborate with CAISO to develop market mechanisms that value a resource's ability to provide flexibility, other grid services, and minimize over-generation.

Phase 1b process

As stated above, for the first three topic areas of Phase 1b efforts, Energy Division will facilitate technical working groups. All stakeholders will be invited to join these working groups. The working groups will meet regularly to discuss their respective issues, and present their recommendations at a workshop, anticipated to be held in May 2015. This workshop will be noticed in a Ruling, and parties will have an opportunity for comments on the recommendations.

For the remaining topic areas of Phase 1b efforts, Energy Division in collaboration with subject matter experts will conduct the work and present recommendations at another workshop, anticipated to be held in June 2015. This

workshop also will be noticed in a Ruling, and parties will have an opportunity for comments on the recommendations.

I anticipate the stakeholder comments on all topic areas of the Phase 1b efforts to form the basis for a Proposed Decision in the 3rd or 4th quarter of 2015. A final Commission Decision would likely adopt modeling changes that would then be incorporated in the 2016 LTPP and future LTPPs, and policy recommendations regarding over-generation issues.

IT IS RULED that:

1. No evidentiary hearings are needed for Phase 1a of this proceeding.
2. Phase 1a of this proceeding is discontinued. There is not sufficient evidence at this time to determine whether or not there is a need for additional flexible or system capacity through 2024.
3. Parties seeking to have testimony served in Phase 1a admitted into the record of this proceeding shall file a Motion to that effect no later than April 3, 2015. Any objections shall be filed no later than April 10, 2015.
4. The record of this proceeding should be made available for the 2016 Long-Term Procurement Plan proceeding.
5. Issues regarding flexible capacity should be considered in the next Long-Term Procurement Plan proceeding (LTTP). There is both sufficient time and a critical need to further develop modeling efforts to inform the 2016 LTPP proceeding regarding the need for flexible capacity through 2026.
6. Phase 1b of this proceeding will commence as outlined herein.
7. The California Independent System Operator (CAISO) should conduct additional deterministic studies of the existing Trajectory and 40% Renewable Portfolio Standards scenarios with no renewable curtailment allowed to provide a complete set of book-ends to characterize the nature and extent of need for

flexible resources to address expected over-generation and ramping needs in 2024. The CAISO is authorized to file the results of such studies in this docket no later than May 8, 2015. Other parties may also file their own study results by this date. Comments on all such filings are due May 29, 2015.

Dated March 25, 2015, at San Francisco, California.

/s/ DAVID M. GAMSON
David M. Gamson
Administrative Law Judge