

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Oversee the
Resource Adequacy Program, Consider
Program Refinements, and Establish Annual
Local Procurement Obligations.

Rulemaking 11-10-023
(Filed October 20, 2011)

**COMMENTS OF THE DIVISION OF RATEPAYER ADVOCATES
ON FLEXIBLE CAPACITY PROCUREMENT WORKSHOP ISSUES**

PETER H. SPENCER
ALAN WECKER
Analysts for the Division of Ratepayer
Advocates
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102
Phone: (415) 703-2109
E-mail: phs@cpuc.ca.gov

MATT MILEY
Attorney for the Division of Ratepayer
Advocates
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102
Phone: (415) 703-3066
Fax: (415) 703-2262
E-mail: mm2@cpuc.ca.gov

April 5, 2013

TABLE OF CONTENTS

	Page
I. INTRODUCTION.....	1
II. DISCUSSION.....	2
A. DRA GENERALLY SUPPORTS THE PROPOSALS OF THE JOINT PARTIES AND THE ENERGY DIVISION.	2
1. Flexible capacity should be included in the Commission’s RA program.	3
2. 3-hour continuous ramping is a reasonable proxy for system reliability.	3
3. CAISO should initiate an annual stakeholder process to determine flexibility needs.	4
4. An enhanced Must Offer Obligation (MOO) for flexible capacity is needed.	4
5. The JPP methodology to calculate resource flexibility is reasonable.	5
6. Modifications to allow for participation of hydroelectric generation are appropriate and will avoid unnecessary costs.	6
B. THE RECORD DOES NOT SUPPORT IMPLEMENTATION OF MANDATORY LSE FLEXIBLE CAPACITY PROCUREMENT OBLIGATIONS FOR 2014.....	7
1. The record lacks substantial evidence to support a need for flexibility capacity procurement obligations in 2014.	7
2. Until the CAISO’s flexible capacity MOO is in place, capacity may not meet the flexibility need.	8
3. Fundamental issues must be addressed ahead of full implementation.	9
a) Intertie resources should be eligible to provide flexible capacity.....	9
c) An Energy Imbalance Market will contribute to flexible resource availability.	10
d) Spot market prices can affect the availability of	

flexible resources.	11
e) Modifications allowing for demand response and other limited use resources can affect flexible capacity needs.....	12
f) The current percentages for annual and monthly LSE procurement may lead to over-procurement.	13
C. THIS COMMISSION SHOULD NOT IMPOSE MANDATORY FLEXIBLE CAPACITY PROCUREMENT OBLIGATIONS IN 2014, BUT SHOULD INSTEAD DIRECT THE LSES TO SUBMIT AMENDED 2014 RA FILINGS.	14
1. Amended RA filings will provide important data to inform market participants and stakeholders.....	15
2. The Modified 2014 RA filings could provide the data needed for an <i>ex post</i> flexibility simulation.	16
III. CONCLUSION.....	17
ATTACHMENTS A-G	

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Oversee the
Resource Adequacy Program, Consider
Program Refinements, and Establish Annual
Local Procurement Obligations.

Rulemaking 11-10-023
(Filed October 20, 2011)

**COMMENTS OF THE DIVISION OF RATEPAYER ADVOCATES
ON FLEXIBLE CAPACITY PROCUREMENT WORKSHOP ISSUES**

I. INTRODUCTION

Pursuant to the March 11, 2013 *Administrative Law Judge's Ruling Resetting Schedule for Comments on Phase 2 Resource Adequacy Issues and Scheduling a Prehearing Conference* (ALJ Ruling), the Division of Ratepayer Advocates (DRA) submits these opening comments on the issue of flexible capacity procurement as discussed at the workshops held on January 23, 2013 and March 20, 2013.

DRA supports adoption of a flexible capacity procurement framework similar to that proposed in the “Resource Adequacy and Flexible Capacity Procurement Joint Parties’ Proposal” (JPP)¹ and the “Energy Division Flexible Capacity Procurement Revised Proposal” (ED Revised Proposal).² However, both the JPP and ED Revised Proposal would establish mandatory flexible capacity procurement obligations for each Load Serving Entity (LSE) in 2014. It would be premature to impose such an obligation before establishing a definite need for flexibility and creating the rules for full resource participation. LSEs should not be required to meet obligations in advance of the need for flexible capacity when supply is reduced, nor should ratepayers be expected to pay for capacity that is not yet

¹ The JPP was issued on October 29, 2012.

² The ED Revised Proposal was appended to the ALJ Ruling.

needed. Instead, DRA recommends that the Commission direct LSEs to submit Amended 2014 Resource Adequacy (RA) Filings that provide information on the available flexible capacity in each LSE's respective portfolios. This would allow stakeholders to obtain critical information that will better inform a flexible capacity mechanism to be implemented in advance of when it is needed, yet without imposing unnecessary costs on ratepayers. The benefits of this approach for 2014--modified RA Filings showing available 2014 flexible capacity, but no new procurement obligations – are explained in these comments.

There is not yet an adequate record on some important issues regarding flexible capacity. DRA's comments identify critical issues that should be addressed before the implementation of a framework to ensure adequate flexible capacity solution in the years beyond 2014.

Whatever steps to address flexible capacity procurement that the Commission ultimately adopts in this year's RA decision should be viewed as part of an ongoing multi-year process.³ These first steps may need to be modified as the Commission develops a long-term solution for future flexible capacity procurement.

II. DISCUSSION

A. DRA generally supports the proposals of the Joint Parties and the Energy Division.

DRA recommends that the Commission to adopt a forward flexible capacity procurement framework similar to that proposed in the JPP. The Commission has been evaluating the issue of flexible capacity for the past two years in the RA proceeding. Thanks to the efforts of the Joint Parties and the Energy Division, progress has been made in identifying the initial steps needed to achieve a long-term solution. A major modification to the Commission's current RA program is contemplated by the JPP and ED Revised Proposal, which, if implemented in whole or part, will create the first of its

³ Both the ED Revised Proposal (see pp. 2, 4) and the JPP (see pp. 3, 4, and 25) emphasize that their respective proposals should be considered an "interim" flexible capacity procurement solution.

kind mechanism to forward procure flexible capacity. The JPP and ED Revised Proposal take similar approaches and agree on most issues. DRA supports the proposed changes in RA procurement that are discussed below. We emphasize, as do the two proposals,⁴ that the Commission should treat these modifications as first steps in a process that will continue as the record is developed in subsequent Commission proceedings.

The Commission should adopt the following RA program modifications.

1. Flexible capacity should be included in the Commission’s RA program.

DRA supports the inclusion of flexible capacity in the existing RA program. The data presented in the two RA workshops is compelling in detailing future grid changes in California related to the addition of increasing amounts of intermittent renewable resources. The RA capacity procurement programs for both system and local reliability areas in California have successfully maintained reliable service at relatively reasonable costs to ratepayers. To ensure reliability in future years, it is necessary to include a flexible capacity component in the RA program. The JPP notes that its proposed flexible capacity procurement mechanism can be “woven into the existing bi-lateral resource adequacy procurement paradigm.”⁵ DRA agrees with this assessment.

2. 3-hour continuous ramping is a reasonable proxy for system reliability.

DRA supports the adoption of the JPP’s proposed 3-hour continuous ramping metric to define an overall operational ramping need.⁶ This metric is a reasonable proxy to quantify the range of overall CAISO-system flexibility operational need. As operational data on net load patterns is updated, the flexibility need as represented by the

⁴ ED Revised Proposal, p. 2 (“As the first step to a more far reaching evolution of the RA program, staff recommends implementing an interim flexible procurement mechanism”); JPP, p. 4 (“this must be an interim solution to address the system’s need for flexible capacity”).

⁵ JPP, p. 4.

⁶ JPP, p. 4.

ramping metric can be modified, if necessary, in future RA proceedings.⁷ The JPP⁸ defines the most critical flexible need to be a 3-hour ramping period during which the CAISO must have an adequate supply of resources that can be readily dispatched. After extensive discussion of ramping issues and refinement of the flexible attribute definition in the instant and prior RA proceedings, the JPP 3-hour continuous ramping recommendation is appropriate as an interim step and complies with the Commission's directive in D.12-06-025 to define flexibility in terms of operational characteristics.⁹

3. CAISO should initiate an annual stakeholder process to determine flexibility needs.

The CAISO should initiate an annual stakeholder process to study and determine what system flexibility needs should be implemented.¹⁰ As suggested by the Joint Parties, the new flexible capacity process should complement the current local capacity requirements (LCR) process. The LCR process has effectively maintained reliability since its inception in 2007. It will be useful to vet the flexible capacity technical studies and provide a forum for stakeholder input, as has been done with LCR technical studies. As with the LCR process, results of the flexible capacity technical studies will be examined in the Commission in annual RA proceedings. The annual RA proceedings should adopt LSE flexible capacity requirements consistent with the current practice with the local capacity requirements.

4. An enhanced Must Offer Obligation (MOO) for flexible capacity is needed.

DRA agrees with the JPP that a more stringent MOO is required for flexible capacity resources and that this process should be coordinated with the CAISO, CPUC,

⁷ JPP, p. 4: "the flexibility needs will continue to evolve over time" and "Addressing these needs will require more precise and forward looking capacity procurement."

⁸ JPP, p. 4

⁹ D.12-06-025, pp. 20-21.

¹⁰ JPP, p. 4

and stakeholders.¹¹ The ongoing CAISO stakeholder process “Flexible Resource Adequacy Criteria and Must Offer Obligations” is considering a flexible capacity MOO designed to assure dispatchability by the CAISO and focuses on limiting self-scheduling by resources. MOO requirements should be at the core of the contractual obligation established when an LSE purchases flexible attributes to meet established flexibility requirements. At the March 20th workshop, CAISO indicated that one of its main concerns in advocating for the establishment of a flexibility requirement as part of the CPUC RA program is obtaining assurance (preferably, by a contract showing) that resources that can provide flexibility will show up and be operationally available.¹² Absent an enhanced must-offer requirement, a flexible capacity procurement requirement lacks teeth because RA-contracted resources may not be under any legal obligation to actually “show up” with the operational characteristics the CAISO needs in the day-ahead and real-time markets for possible commitment and dispatch. If flexible capacity must be procured in 2012 without an enhanced MOO in place, ratepayers would not receive value commensurate with their purchase of flexible capacity.

5. The JPP methodology to calculate resource flexibility is reasonable.

DRA supports the JPP methodology for calculation of flexibility need,¹³ as well as the JPP methodology for calculation of a generation facility’s effective flexible capacity (EFC).¹⁴ This methodology considers the minimum consistent operating output of the generation facility, how long the plant must be on to reach the minimum consistent

¹² CAISO, “Methodology for Determining Flexible Capacity Procurement Requirements”, Slide 19; and slide 20 heading, “Need procurement rule that accounts for and ensures flexible capacity is available for operational use,” appended as Attachment C to these comments.

¹² CAISO, “Methodology for Determining Flexible Capacity Procurement Requirements”, Slide 19; and slide 20 heading, “Need procurement rule that accounts for and ensures flexible capacity is available for operational use,” appended as Attachment C to these comments.

¹³ JPP, pp. 7-8.

¹⁴ JPP, pp. 19-21.

operating output, and the maximum deliverable output of that generation facility. DRA agrees that the CAISO should be responsible for calculating this value and publishing a list of each generation facility with its corresponding EFC value in each month of the compliance year. The terms in the JPP proposed methodology for calculation of EFC apply only to thermal resources. As 3-hour ramping may not be the only flexibility product needed or found to be useful in the future, the Commission should recognize that the JPP methodologies for calculation of flexibility need and a generation facility's EFC are only a first step in defining flexible capacity.

6. Modifications to allow for participation of hydroelectric generation are appropriate and will avoid unnecessary costs.

DRA supports PG&E's proposal to modify the enhanced MOO in order to better incorporate hydroelectric generation into future flexibility obligations. PG&E proposes that hydroelectric resources be required to have 6 hours of energy per day per MW of flexibility.¹⁵ ED staff also supports the PG&E proposal, noting that the JPP is overly restrictive for use-limited resources such as hydro, instead agreeing that:

“flexible hydro resources should be required to submit economic bids, within environmental constraints such as mandatory water deliveries and start up restrictions.”¹⁶

The MOO modification will prevent the unnecessary exclusion of flexible hydroelectric resources where flow of water can be temporarily constrained. Without accounting for the ability of hydroelectric generation to provide flexibility, ratepayers will be required to buy unnecessary capacity.

The introduction of a MOO modification for hydroelectric generation participation as a flexible capacity resource in the market opens the door for consideration of future MOO modifications for other use-limited resources. DRA supports the ED Revised

¹⁵ PG&E Proposed Process to Quantify Flexibility within a Hydro Resource, submitted as Attachment A of the ED Revised Proposal, p. 9.

¹⁶ ED Revised Proposal, p. 5.

Proposal's call for consideration of other use-limited resource modifications in the 2014 annual RA proceeding.¹⁷

B. The Record Does Not Support Implementation of Mandatory LSE Flexible Capacity Procurement Obligations for 2014.

In this section, DRA demonstrates that it is premature to adopt LSE mandatory flexible procurement obligations for 2014. Failure to implement mandatory flexible procurement obligations for 2014 does not indicate a failure to address the expected need for flexible capacity in the future. Implementation of a flexible capacity program should begin without mandatory procurement obligations; first, by defining flexible capacity and developing methodologies for measuring flexibility, then moving forward with a stakeholder processes to refine the details of requirements to be met by suppliers.

Mandatory procurement obligations imposed prematurely could force LSEs to procure high cost contracts with no apparent operational value. The availability of flexible capacity in 2014 far exceeds projected needs, the flexible capacity MOO will not be in place for the 2014 RA compliance year, and many important details should be resolved before new obligations are imposed. For all of these reasons, new mandatory obligations are not only unnecessary at this time, but would likely harm ratepayers. As a first step, implementing a program without compliance obligations is the prudent choice.

1. The record lacks substantial evidence to support a need for flexibility capacity procurement obligations in 2014.

Neither the JPP or ED Revised Proposal, nor the materials presented at the January 23rd and March 20th workshops, provide a compelling case for mandatory LSE flexible capacity procurement obligations in 2014. Workshop data indicated that flexible capacity availability in 2014 exceeds projected needs even in extreme cases through 2016. The updated information provided in the workshop on March 20th illustrates that

¹⁷ ED Revised Proposal, p. 6

physical available capacity exceeds even the extreme levels of need by more than 10,000 MW.¹⁸ Moreover, the workshop data presentation by the CAISO does not reflect the ability of any demand response resources to contribute towards flexible capacity needs.

As explained in Section B (3) below, many other factors may reduce the CAISO's needs for flexible capacity. The current oversupply conditions, both in terms of generic and flexible capacity, present an excellent opportunity to consider how those factors may reduce the need for additional procurement to satisfy the increased flexibility needs.

2. Until the CAISO's flexible capacity MOO is in place, capacity may not meet the flexibility need.

It is premature to impose additional costs on ratepayers for mandatory flexible capacity obligations in advance of CAISO's enhanced flexible capacity MOO. The CAISO's enhanced MOO addressing flexibility concerns will not be in place before 2015.¹⁹ In December 26, 2012 opening comments, numerous parties addressed the possibility that a flexible capacity RA program could start in advance of implementation of CAISO's flexible capacity MOO.²⁰ Yet generators who sell flexible capacity should be expected to provide some measure of ramping when called upon to submit bids into the CAISO markets. Without an enhanced MOO in for the RA compliance year, there is no certainty that generators will provide ramping characteristics to the CAISO.

¹⁸ CAISO March 20th Workshop Presentation, slide 19.
[http://www.caiso.com/Documents/FlexRAPresentation %20CPUC Workshop03-20-2013FinalUpdated20PercentTracking.pdf](http://www.caiso.com/Documents/FlexRAPresentation%20CPUCWorkshop03-20-2013FinalUpdated20PercentTracking.pdf), appended as Attachment C to these comments.

¹⁹ CAISO Flexible Resource Adequacy Criteria and Must-Offer Obligation Straw Proposal, December 14, 2012, p. 4. <http://www.caiso.com/Documents/StrawProposal-flexibleResourceAdequacyCriteriaMustOfferObligation.pdf>, and appended as Attachment B to these comments.

²⁰ AReM pp. 12-13, CLECA p. 3.

3. Fundamental issues must be addressed ahead of full implementation.

A number of flexible capacity policy refinements should be considered prior to the implementation of mandatory flexible capacity procurement obligations in order to promote efficient procurement outcomes. This is especially true regarding issues related to resources that have the potential to contribute towards reducing the flexibility needs of the CAISO system, but which are excluded from either the JPP or the ED Revised Proposal. DRA's view, based on the discussions at the workshops, is that of a number of issues, some interrelated, need to be addressed prior to implementation of mandatory flexible capacity procurement, including: (1) inertia capability, (2) 15-minute scheduling across the inertias, (3) establishment of a western region energy imbalance market, (4) CAISO spot market developments, and (5) role for demand response and other energy-limited resources.

a) Inertia resources should be eligible to provide flexible capacity.

DRA supports the direct inclusion of 15-minute scheduled inertia resources to participate as a flexible capacity resource. Alternatively, DRA would support adjustment (downward) of the "need" to reflect the ability of inertia resources to provide flexible capacity, as mentioned in the JPP.²¹ Such an adjustment would need to allow for the potentially large magnitude of inertia resource availability to contribute towards flexibility requirements. Ultimately, it is important that inertia resources that can respond to 15-minute dispatch signals are eligible to compete against internal resources to provide flexible capacity. Unless these resources are explicitly described as qualifying for flexible capacity, the adjustment to "need" must be further explored and described before implementation of mandatory obligations.

²¹ JPP, p. 23. Notably, the Joint Parties did not provide further detail on how the flexibility need might be adjusted to reflect the presence of the inertias.

b) 15-minute Scheduling.

The change to 15-minute scheduling may have a significant impact on flexible capacity reliability needs. In large part due to the requirements of FERC Order 764, CAISO is proposing changes to the time interval in which external resources can schedule energy into (or out of) the CAISO market.²² Moving from a one-hour scheduling timeframe to a 15-minute timeframe, and including ancillary service spot markets in that 15-minute time frame will allow external resources to participate more fully in the CAISO marketplace. The change to 15-minute scheduling could also promote more reliable operations by reducing forecast error and incenting curtailment in negative price periods, thereby reducing flexibility needs.

c) An Energy Imbalance Market will contribute to flexible resource availability.

The potential establishment of a west-wide energy imbalance market (EIM) is expected to lead to increased availability of external resources to sell into the CAISO region during times of ramp need. While many details surrounding the possible implementation of a west-wide EIM remain to be developed, the February 2013 Memorandum of Understanding (MOU)²³ between CAISO and PacifiCorp may provide some of the benefits of a west-wide market to the CAISO region as early as 2014. A report issued subsequent to the released MOU indicated that increased availability of flexible generation resources is one of those benefits.²⁴ This includes an additional 10,000 MW of capacity to schedule into the CAISO grid.²⁵

²² See for example, “FERC Order 764 Compliance, 15-Minute Scheduling and Settlement, Draft Final Proposal,” March 26, 2013, and appended as Attachment F to these comments.

²³ MOU available at http://www.caiso.com/Documents/ISO-PacifiCorpMOU_Effective20130212.pdf and appended as Attachment D to these comments.

²⁴ Energy and Environment, Inc., *PacifiCorp-ISO Energy Imbalance Market Benefits*, March 13, 2013, pp. 25-26. “An EIM would lower the total cost of procuring and utilizing flexibility reserves for both [PacifiCorp and CAISO] in two ways: (1) reducing flexibility reserve requirement quantities by combining PacifiCorp’s and [CA] ISO’s forecast error for load and variable generation; and (2) enabling flexibility reserves to be procured from thermal or hydro reserves anywhere in the EIM footprint, subject

Footnote continued on next page

d) Spot market prices can affect the availability of flexible resources.

Any comprehensive flexible capacity policy should recognize that spot energy and ancillary services market incentives for attracting flexible resources will exist in 2014 and later years. Implementation of mandatory flexible capacity obligations should consider the potential impact of this incentive mechanism, in addition to forward market procurement incentives. Development of the flexible ramping product in the spot market will take careful consideration to avoid adverse unintended consequences and the spot market will likely not be available in the near term.²⁶

Changes in the spot market will provide additional revenue streams for resources available as a flexible capacity resource, regardless of whether or not those resources will hold forward contracts for RA flexible capacity provision. CAISO is in the process of modifying their spot market to include a flexible-ramping ancillary service.²⁷ The spot market co-optimizes the use of resources to provide energy and required ancillary services, including those resources that can provide ramping. Energy and ramping services can, and likely will, be provided by resources that do not have a forward flexible capacity contract. Also, energy or ramping services provided by any flexible capacity resource (either those with or without a forward contract obligation to show up in operational timeframes) will attract increases in revenue streams available through the improved CAISO energy and ancillary service spot markets.²⁸ While the extent of

to transmission constraints. The results is that the combined cost of procuring flexibility reserves with an EIM is less than it would be if each entity procured them independently. Available at <http://www.aiso.com/Documents/PacifiCorp-ISOEnergyImbalanceMarketBenefits.pdf>, and appended as Attachment E to these comments.

²⁵ *California Current*, 3/22/2013, p. 8.

²⁶ See e.g. <http://www.aiso.com/Documents/DMM-CommentsFlexibleRampingProductSecondRevisedDraftFinalProposal.pdf> and appended as Attachment A to these comments.

²⁷ Flexible Ramping Product – <http://www.aiso.com/Documents/SecondRevisedDraftFinalProposal-FlexibleRampingProduct.pdf>, and appended as Attachment G to these comments.

²⁸ CAISO is currently revamping the spot markets for energy and ancillary services to reflect both a

Footnote continued on next page

incentives to available through the spot market is currently unknown, it is unreasonable to assume that only those resources with forward contracts will participate in the spot market. The CAISO's Market Surveillance Committee indicated the economic benefits of rewarding generating unit flexibility through revenues from short run markets for energy and ancillary services rather than through RA capacity payments in its Opinion on Flexible Capacity Procurement: Risk of Retirement.²⁹

e) Modifications allowing for demand response and other limited use resources can affect flexible capacity needs.

The Commission should modify bidding requirements for demand response and other energy-limited resources to allow their participation in a future flexible capacity market. Demand response resources, and other energy-limited resources will be able to play a critical role in providing flexible capacity or ramping services for the CAISO balancing area during critical times of ramping need. With appropriate controls and sufficient lead time for program administration, these resources can be automated and made available as dispatchable resources. The current ED Revised Proposal and the JPP do not address the ways in which demand response (and other energy limited) resources can fully participate in the forward flexible capacity procurement process. The Commission should adopt an exception to the 17-hour MOO bid requirement or hydroelectric generation in the near term, and should consider a similar exception for other use-limited resources, including demand resources as part on the ongoing development of a flexible capacity procurement mechanism. The failure to include these resources limits the ability for the Commission to reach its long-term goals, including

ramping requirement and the planned introduction of 15-minute inertia scheduling in 2014. Both of these changes should provide increased incentive for operators of these resources to make them available for CAISO dispatch during times of high ramping need, as clearing prices should be higher at those times than they would be in the absence of the planned improvements.

²⁹ Opinion on Flexible Capacity Procurement: Risk of Retirement, Market Surveillance Committee of the California ISO, Sept. 7, 2012, p. 11.

maximizing the use of preferred resources in adherence of the Loading Order. Failure to include these resources also risks increased cost to ratepayers. Increasing the number and amount of resources that participate in the forward capacity market should result in greater price competition, thereby lowering costs to ratepayers.

f) The current percentages for annual and monthly LSE procurement may lead to over-procurement.

The JPP proposed percentages for LSE forward flexibility capacity procurement may lead to over-procurement.³⁰ In order to gauge the appropriate percentage of forward procurement, the risks and uncertainties associated with forward commitment capability should be considered, as should an assessment of possible spot market participation by those who are not able to commit in the forward (annual) timeframe. Neither of the proposals, nor the two workshop presentations, provides any underlying fundamental support for procuring 90% of the requirement on an annual basis, and 100% of the requirement on a monthly basis. The proposals simply adopt the same percentages used for RA system capacity without taking into account unique aspects of flexible capacity procurement.

This issue will likely not be fully addressed before the final 2014 RA decision, demonstrating the prudence of defer mandatory flexible capacity procurement obligations until after the 2014 RA proceeding, while at the same time moving forward to consider this and other unresolved issues.

³⁰ JPP, p. 10.

C. This Commission should not impose mandatory Flexible Capacity procurement obligations in 2014, but should instead direct the LSEs to submit Amended 2014 RA Filings.

DRA proposes one significant modification to the JPP and ED proposals; elimination of the LSE flexible capacity procurement obligations for 2014, while at the same time requiring the LSEs to amend their RA filings to include information about the effective flexible capacity in their current RA portfolio. There are distinct advantages to this approach, including reducing the risk of ratepayers paying for unnecessary capacity.

The current RA program requires both annual and monthly RA compliance filings by all LSEs. In these filings, LSEs are required to complete a template showing all capacity contracts used to meet their system and local capacity requirements. The templates are distributed to the LSEs by the Energy Division and include the LSE's specific system and local capacity requirements. The filings should be amended to include potential flexible resources and flexible capacity amounts. Each LSE can use the CAISO generated list of flexible capacity generators to report the amount of flexible capacity potential in their contracts. Under DRA's proposal, the LSEs will not be obligated to meet flexible capacity obligations in 2014, but will be required to submit completed filings indicating potential flexible resources and capacity.

Filing flexible capacity amended 2014 RA filings without flexible capacity procurement obligations is appropriate for 2014 since, as detailed above, the data does not support any insufficiency of flexible capacity in 2014. The initiation of a flexible capacity procurement mechanism in 2014 has been characterized as an attempt to fine tune the process ahead of future critical years. Notably, the ED Revised Proposal even suggests that no enforcement options are necessary in 2014 to assure that obligations are met.³¹ Under DRA's proposal, the advantages of beginning a flexible procurement

³¹ ED Revised Proposal, p. 7.

mechanism in 2014 can be realized without risking increased ratepayer costs. Specifically, adoption of DRA's proposal will provide the following advantages:

1. Amended RA filings will provide important data to inform market participants and stakeholders.

Requiring LSEs to file amended 2014 RA templates without flexible capacity procurement obligations will provide important data to inform the RA program going forward.

- The amended templates provided by ED to the LSEs can list projected flexible capacity quantities for each month. The flexible capacity quantities will vary each month for the LSEs. The use of the automated features in the templates will allow LSEs list potential flexible resources and input quantities they may utilize for future mandatory requirements. Thus, the LSEs gain valuable insight into the future management of their portfolios. From this data, they can evaluate the most cost effective method to comply with future obligations. This can include decisions over which resources are best contracted for flexible capacity versus system or local capacity.
- Data from the filings will allow the CAISO and ED to gain insight into the flexible capacity in 2014 LSE portfolios. Valuable information can be gained by evaluating how the LSEs choose to designate flexible capacity in their filings. Any potential shortfalls in flexible capacity will be shown ahead of need in the filings and can be effectively managed.
- Generators can also benefit from 2014 filings data by discovering how much flexibility they may be asked to provide. The information should help in clarifying and perhaps modifying contracts to account for potential increased costs of providing

flexible capacity. It is expected that there will be dialogues between LSEs and generators when more is known about potential changes related to flexible capacity.

- The market in general, including all the stakeholders, can benefit from information in 2014. There are many unknowns in the emerging procurement of flexible capacity and initial data from 2014 filings can provide useful insight ahead of future requirements. Aggregated data should be made public in frequent releases. The Commission should contemplate releasing as much data as possible under current confidentiality rules.

2. The Modified 2014 RA filings could provide the data needed for an *ex post* flexibility simulation.

The Commission could consider further enhancing the value of the Modified 2014 RA filings by employing simulations that determine the daily marginal generation stack for 2014 for ramping services, using economic bids that are the basis of the proposed CAISO flexible capacity MOO. This would need to be fleshed out, preferably through a stakeholder process, before it is employed. Conceptually, the simulation would be a computational model that includes all of the flexible capacity resources indicated in the Modified 2014 RA Filings as flexible and assumes that all such resources provide economic bids. The output of the simulation would be the bids the CAISO would have chosen to provide ramping services based on the actual load and the intermittent output from intermittent resources throughout the day, and based on the production level of those resources outside of the amended 2014 RA Filings. This output would be especially important for resources that currently self-schedule or for resources that are use-limited.

The benefits of an *ex post* economic dispatch simulation include:

- Obtaining information related to the costs of compliance of the proposed CAISO flexible capacity MOO, which would provide generators with an estimate of how much flexible energy production could add to their going forward costs;

- Gaining information on how use-limited resources could be operated by running multiple simulations using the same day's net load data with different bid parameters;
- Simulation efforts ongoing in the 2012 LTPP proceeding could greatly inform nearer-term RA flexibility requirements going forward, and it's even possible that after the 2012 LTPP "interim" year 2018 simulations are complete (later in 2013), CAISO could continue to use the same engine to assess RA issues for, say, 2015 or 2016.
- Understanding to what degree the 3-hour ramping requirement addresses other flexibility issues.

As mentioned above, the details of how this simulation could be designed and implemented would need to be fleshed out through a stakeholder process such as facilitated by Energy Division or as facilitated by CAISO working group meetings to flesh out the details of such a simulation. In no event, however, should this process delay the issuance of the RA decision in June 2013. DRA suggests that the Commission explore employing simulation modeling in the spirit of advancing the process of gaining operational experience and estimating the range of cost in anticipation of a flexibility need without changing the actual operations of generation facilities. This will aid the Commission as it determines the next steps in the evolution of an RA framework that accommodates flexible capacity need. The cost of performing this simulation could be integrated into the 2014 RA proceeding, which could be submitted via a Joint IOU Advice Letter with adoption by December 31, 2013.

III. CONCLUSION

According to CAISO, "California's electric system is undergoing one of its most significant transformations ever." ³² DRA agrees and encourages the Commission to move forward to address the challenges of ensuring reliability given California's unique successes (achieving the Renewable Portfolio Standard) and challenges (once-through

³²

<http://www.caiso.com/Documents/2013FlexibleCapacityProcurementRequirementProposalSupplement.pdf>

cooling retirements). Now is the time to gather the information and build the framework to meet California's future demand for more specific types of capacity for operational needs. DRA therefore recommends that the Commission:

- Adopt a basic framework for flexible capacity procurement into the Commission's RA program;
- Adopt the proposed 3-hour continuous ramping metric to define an overall operational need;
- Support an annual flexible capacity technical study process led by the CAISO;
- Adopt modifications to the MOO to allow for hydroelectric generation participation;
- Conclude that LSE mandatory flexibility obligations are premature for 2014, and
- Require LSEs to file amended RA templates that include flexible capacity information.

Moving forward expeditiously with these steps will allow the Commission and stakeholders to implement a flexible capacity procurement mechanism that meets California ratepayers energy needs at a reasonable cost, without compromising California's commitment to environmental goals.

Respectfully submitted,

/s/ MATT MILEY
MATT MILEY
Staff Counsel

Attorney for Division of Ratepayer Advocates
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102
Phone: (415) 703-3066
Fax: (415) 703-2262

April 5, 2013

Email: mm2@cpuc.ca.gov

ATTACHMENT A



Comments on the Second Revised Draft Final Proposal Flexible Ramping Product Department of Market Monitoring December 5th, 2012

I. Overview

The Department of Market Monitoring (DMM) appreciates the opportunity to comment on the ISO's Second Revised Draft Final Proposal for the Flexible Ramping Product posted on October 24, 2012. There have been only minor changes made to the proposal since the Revised Draft Final Proposal, the most significant being its integration with the proposed Order 764 market re-design. At this time, DMM believes the revised FRP design using real ramping has been the only workable solution put forth and agrees with the ISO that current design should be used as a foundation for any future flexible ramping product. DMM is supportive of the design overall and appreciates the recent changes in response to our and other stakeholders comments. Although the proposal design remains complex with a high risk of unintended consequences, the integration with Order 764 and the delayed finalization until after board approval of the final 15-minute market design gives some assurance that the finalized ramping product will fit the needs of the ISO in the future. Below, first we comment generally on the flexible ramping product (FRP) design proposal and then review specific aspects of the proposal.

- DMM supports the ISO's decision to delay the finalization of the FRP design until after the Board of Governors has approved the Order 764 market design. FERC Order 764 may necessitate significant market changes in order to accommodate 15-minute scheduling. The close relationship between the flexible ramping product and energy has already obligated changes to the FRP design due to the initially proposed Order 764 design.
- DMM believes that the FRP market design may be a costly solution to build and a risky solution to implement, as the FRP market design impacts every major piece of the ISO spot market. While an elegant approach, the proposal does add an additional layer of complexity to the market clearing optimization and will have an impact on the other products procured. Given the projected procurement quantities, it is not clear that such a complex and interwoven solution is warranted in the short-term; however, DMM agrees that as an increasing percentage of the generation online is variable energy a flexible ramping product will be needed in the future. We

ATTACHMENT B

DECEMBER 14, 2012

- Development of performance obligations for flexible capacity resources, including ISO market must-offer obligations
- Backstop procurement compensation for resources procured to remedy deficiencies in meeting flexible capacity resource obligations, and
- Revisions to the ISO Standard Capacity Product tariff provisions to apply to flexible RA capacity resources.

While the issues to be resolved in the second stage of this stakeholder process are outlined here, these issues will not be addressed until the issues within the first stage are resolved. The ISO will seek resolution of these issues by end of year 2013 and in place in time for 2015 RA compliance. These stages are discussed in greater detail below.

2 Overview of Stage 1 of the Flexible Resource Adequacy Capacity and Must-Offer Obligation Proposal

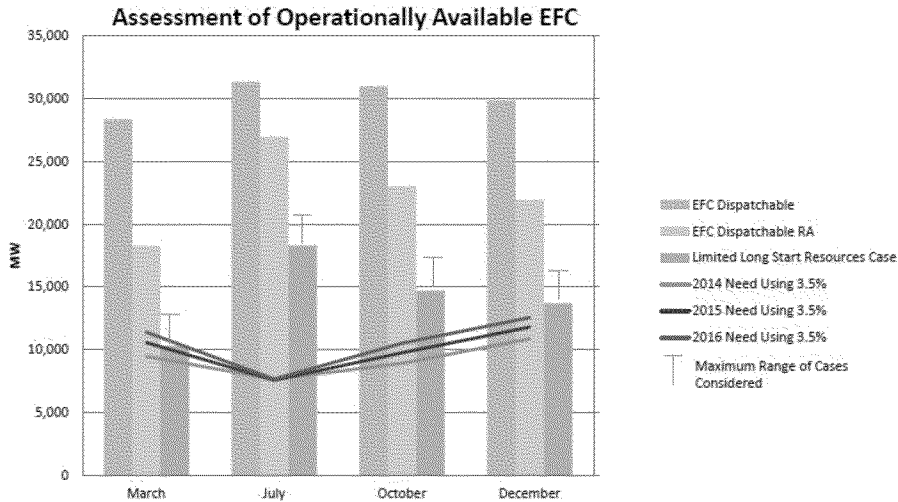
As noted above, the ISO faces new challenges to integrate more intermittent and more distributed generation resources. In order to meet these challenges, in the first stage of this stakeholder initiative, the ISO proposes the following changes to the ISO tariff:

- 1) The ISO will issue a list detailing the total amount of flexible capacity a resource is eligible to contribute towards an LSE's flexible capacity procurement obligation based on its ramp rate, P_{min}, and NQC.
- 2) The ISO will determine monthly flexible capacity requirements for each month of the upcoming year on a system level. For this interim solution the ISO will base flexible capacity procurement requirements on the need for incremental energy.³
- 3) The ISO will allocate these requirements to all Local Regulatory Authorities within the ISO's BAA based on each LRA's relative share of forecasted monthly system peak for their adoption.
- 4) LRAs without a flexible capacity procurement obligation in place will default to the ISO's allocation.
- 5) As part of an LSE's RA showings, both year-ahead and month-ahead, flexible capacity showings, each LSE will be required to demonstrate that it is compliant with its local regulatory authority's flexible capacity provisions.
- 6) LSEs will be required to demonstrate that they have procured 90 percent of their flexible capacity in their year-ahead RA showings and 100 percent in their month-ahead showing.

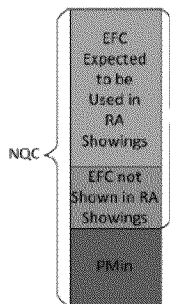
³ As shown in Figure 1, the ISO will need to work with all Local Regulatory Authorities and stakeholders to address decremental energy needs as part of a long-term solution.

ATTACHMENT C

Need a procurement rule to ensure sufficient flexibility in the procured RA resources (revised to reflect 80% fixed tilt solar fleet)



Need procurement rule that accounts for and ensures flexible capability is available for operational use



- Just because a resource has a calculated EFC, does not mean it will be listed as flexible in an RA showing and available for operational use.
- Simple case assessments* reflect potential of reduction of EFC for actual operation use due to:
 - Hydro conditions/run of river
 - Self-scheduling
 - Outages
 - Elections by resources to be inflexible

* Assumed reductions and additional cases are detailed in the Appendix

ATTACHMENT D

EXHIBIT B

Stakeholder Process Draft Milestone Schedule

Milestone	Activity	Date
Execute MOU	Public release of the executed MOU	Feb 12, 2013
Stakeholder Feedback on MOU	The ISO and PacifiCorp present and receive stakeholder feedback on MOU	Feb 12 - Mar 8, 2013
ISO Board Authorization	The ISO presents the MOU to its governing board and requests authorization to enter into the Implementation Agreement and initiate an EIM stakeholder process, consistent with the Principles	Mar 20 - 21, 2013
EIM Stakeholder Process	Initiation of EIM stakeholder process for all participants	Apr 2013
Implementation Agreement Execution and Filing with FERC	The Parties will negotiate and execute the Implementation Agreement consistent with the MOU, and file with FERC	Apr 30, 2013
Implementation Agreement Effective	Implementation Agreement effective based on FERC acceptance, including first payment to the ISO for start-up costs	Jun 30, 2013
ISO Board Approval	Stakeholder process for EIM is concluded, final EIM proposal is presented to the ISO governing board for approval	Sept - Dec 2013
EIM Tariffs Filed with FERC	The ISO and PacifiCorp file respective tariff changes with FERC at least 120 days before go-live	Jan - Apr 2014
Go-Live	EIM market opens to initial participation	Oct 2014

Project Draft Milestone Schedule

Milestone	Activity	Date
Initial Resource and Contract Analysis—Phase 1	Joint analysis of existing resources, transmission assets, and existing contracts with particular focus on contracts that interconnect PacifiCorp and the ISO	Feb - Apr 2013
Initial Technical Requirements and Market Design Review	Joint analysis of technical requirements, market design, and resources	Feb - Apr 2013
Initial Participation Requirements for Third-Party Generator Owners	Assessment/determination of participation requirements for PacifiCorp-system third-party generator owners and load serving entities, informed by outreach and engagement	Feb - Apr 2013
Resource/Contract Analysis	Joint analysis of existing resources, transmission	Jul - Oct 2013

ATTACHMENT E

2.2.3 REDUCED FLEXIBILITY RESERVES

Currently, PacifiCorp and ISO meet their operating reserve requirements by procuring and utilizing existing generating capacity within their respective BAAs. An EIM would lower the total cost of procuring and utilizing flexibility reserves for both entities in two ways: (1) reducing flexibility reserve requirement quantities by combining PacifiCorp and ISO's forecast error for load and variable generation; and (2) enabling flexibility reserves to be procured from thermal or hydro resources anywhere in the EIM footprint, subject to transmission constraints. The result is that the combined cost of procuring flexibility reserves with an EIM is less than it would be if each entity procured them independently.

E3 estimated the cost savings from reduced flexibility reserves using the following three steps. First, flexibility reserve requirements were calculated for PacifiCorp and ISO as separate areas (Benchmark Case) and then again as a combined area (EIM Flexibility Reserve Case).²³ Flexibility reserve requirements were calculated separately for each hour using three years of 10-minute load, wind, and solar data for PacifiCorp and ISO. Calculations in the EIM Flexibility Reserve Case were constrained so that reductions in flexibility reserve requirements were less than or equal to the assumed transfer capability between PacifiCorp and ISO.

Next, E3 applied the flexibility reserve requirement calculations from above to production cost simulation runs for each case, using GridView. In the Benchmark Case and EIM Dispatch Cases, PacifiCorp and ISO must procure flexibility reserves from capacity located in their respective BAs to meet the requirements calculated for each

²³ These results, when scaled back from 2017, are similar in size to the levels of reserves procured in each jurisdiction today for regulation and load following.

entity. In the EIM Flexibility Reserve Case, all PacifiCorp and ISO generation is eligible to meet the single flexibility reserve requirement for the EIM footprint, subject to transfer constraints.

Table 3 shows E3's estimates of the combined minimum reserve requirements for PacifiCorp and ISO under the EIM. The standalone case represents no transfer capability between PacifiCorp and ISO, and is comprised of 608 MW of required reserves in PacifiCorp and 1,403 MW in ISO. As the Table shows, increasing transfer capability allows for greater diversity benefits, reducing minimum reserve holdings.

Table 3. Estimated Total Minimum Reserve Holdings under the EIM in 2017

PacifiCorp-ISO Transfer Capability	Minimum Reserve Holdings (MW)
Standalone (no EIM)	2,011
100 MW	1,932
400 MW	1,687
800 MW	1,583

As a final step, E3 calculated the difference in production costs between the EIM Dispatch Case and EIM Flexibility Reserve Case to estimate the annual benefit of reduced flexibility reserves, over and above the dispatch benefits. This yields the incremental savings associated with flexibility reserve reductions between the two cases. E3 benchmarked the cost savings using market prices for ancillary services in ISO, to ensure that these estimates were reasonable (See Technical Appendix).

Since the PacifiCorp-ISO EIM would be a 5-minute energy market, only the portion of savings associated with reductions in load following reserves (5-minute to hourly timescale) would accrue under an EIM. Each area would continue to procure and deploy regulation reserves independently. Since load following accounts for approximately 80%

ATTACHMENT F

California ISO

1 Introduction

On June 22, 2012, FERC approved Order 764¹ to remove barriers to the integration of variable energy resources by requiring each transmission provider to: (1) offer an option to schedule energy with 15-minute granularity; and, (2) require variable energy resources to provide meteorological and forced outage data for the purpose of power production forecasting. For the California ISO (ISO), the primary changes required by the 15-minute scheduling option required under the FERC order are to intertie transactions since internal resources are dispatched every five minutes. The ISO is required to make a compliance filing with FERC by November 12, 2013 to describe how it proposes to address these items.

In this draft final proposal, the ISO is seeking to maximize the use of existing market functionality to meet the FERC compliance obligation and address real-time market inefficiencies while minimizing potential seams issues with neighboring balancing authorities. The ISO proposes to introduce a 15-minute financially binding settlement within the real-time market that will apply to both intertie and internal resources as well as load. Currently, the ISO real-time market includes a fifteen minute process for real-time unit commitment (RTUC) and procurement of incremental ancillary services. The hour-ahead scheduling process (HASP), in the existing market, is a special run of the real-time unit commitment run which results in financially binding hourly energy and ancillary services schedules for non-dynamic intertie transactions. Under the proposed 15-minute market, energy and ancillary services schedules for internal generation, and dynamic and non-dynamic intertie transactions will be financially binding every fifteen minutes. Load will also settle in this 15-minute market based on deviations from day-ahead energy schedules and ISO forecast. The ISO is not proposing any changes to the existing five minute real-time dispatch (RTD).

FERC Order 764 only requires that transmission providers offer resources an *option* to update energy schedules every fifteen minutes. It does not require a transmission provider to require 15-minute energy scheduling for interties, neither does it address internal resource scheduling. However, it does provide a transmission provider the option to propose a superior approach.

Consequently, the ISO believes that Order 764 is an opportunity to implement real-time market changes that were not possible before the order. As described in more detail below, the ISO's proposal for adding full 15-minute energy scheduling and settlement is a superior option because:

- It complies with the Order 764 to allow for 15-minute energy scheduling at the interties. At the same time, it the proposal includes provisions to allow for hourly schedules of intertie transactions to remain. However, the ISO would no longer guarantee the price of those schedules for the entire hour.
- It addresses existing real-time imbalance energy offset issues that occur because of changes between the HASP and RTD optimizations. Under the ISO's proposed design, the same market optimization will produce settlement prices for both internal and external resources.

¹ Additional information is available at www.ferc.gov on the Commission's order in Docket No. RM10-11-000; Order No. 764 Integration of Variable Energy Resources

ATTACHMENT G

This paper will describe the ISO's proposal to define the upward and downward flexible ramping products. The purpose of this stakeholder effort is to develop market-based flexible ramping products to address the operational challenges of maintaining power balance in real-time markets. The ISO has observed that the fleet of units determined in the real-time unit commitment process (RTUC), also known as the real-time pre-dispatch (RTPD) process, sometimes is not positioned with sufficient ramping capability and flexibility in real-time dispatch (RTD) to handle the 5-minute to 5-minute system load and supply changes. Insufficient ramping capability sometimes manifests itself in triggering power balance violations, which means there is no feasible system wide RTD schedule to maintain supply and demand power balance. In this case, there are at least three undesirable outcomes:

- the system has to rely on regulation services to resolve the issue in real delivery time after the imbalance has caused frequency deviation or area control error (ACE)
- When power balance is violated, the RTD energy price is not priced by economic bids, but by administrative penalty prices, which creates market inefficiency in the long run. Moreover, the ISO has to pay the imbalance energy from the regulation services the administrative penalty prices from RTD.
- If there is insufficient regulation service, the result of insufficient ramping capability may result in leaning on interconnection, which may affect the ability to meet required operational performance criteria.

Since the new nodal market was implemented in 2009, the ISO has modeled multi-interval optimization in the unit commitment and dispatch process. The multi-interval optimization can look several intervals ahead to meet forecasted ramping need. The ISO has observed that the optimization will often create exactly the same amount of ramping capacity according to the forecast. When the future system condition materializes, the actual ramping need may differ from the forecast. If the actual ramping need is higher than the forecast, the net supply cannot meet the net demand, and a power balance violation is triggered. This happens because there is no margin on the between interval ramping need in a multi-interval optimization, and any deviation beyond the forecasted ramping need may incur a power balance violation. The purpose of the flex ramp product to be developed in this proposal is to create ramping margin on top of the forecasted between interval ramping need, and thus reduce the frequency of power balance violations.

With increasing level of renewable penetration, the operational challenge of ramping capability is even more prominent, as the variable outputs of the renewable resources may increase the magnitude of the 5-minute to 5-minute net load changes. In Figure 1, the net load equals the load minus the renewable resources' total output. As shown in Figure 1, the 5-minute to 5-minute net load change may triple its magnitude in hour ending 18 and 19 with renewable generation output moving in the opposite direction of load. It may also reverse the direction of load ramping in hour ending 7 and 8.