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

CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION COMMENTS ON APRIL 9, 2014 WORKSHOP PRESENTATIONS AND PROPOSALS ON FLEXIBLE CAPACITY AND RESOURCE ADEQUACY

Roger E. Collanton
General Counsel
Anna A. McKenna
Assistant General Counsel
Beth Ann Burns
Senior Counsel
California Independent System Operator Corporation
250 Outcropping Way
Folsom California 95630
Tel.: (916) 351-4400
Fax.: (916) 608-7222
bburns@caiso.com

Attorneys for the California Independent System Operator Corporation

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The California Independent System Operator Corporation ("ISO") respectfully submits these comments on the presentations and proposals regarding the flexible capacity procurement framework and resource adequacy rule changes for 2015 that were discussed at the California Public Utilities Commission ("CPUC" or "Commission") workshop on April 9, 2014.[1]

The ISO's comments focus on four key subjects --

1) The need for the Commission to act now and establish mandatory flexible capacity requirements;
2) The ISO's preliminary calculation of the CPUC jurisdictional load serving entities' contribution to each of the defined flexible capacity categories;
3) The Energy Division's proposals on the Implementation of the Flexible Capacity Procurement Framework, the Qualifying Capacity and Effective Flexible Capacity Calculation Methodologies for Energy Storage and

[1] The ISO submits these comments in accordance with the ruling of the Administrative Law Judge at the workshop on April 9, 2014.

Supply-Side Demand Response, and the Revised Resource Adequacy Implementation Staff Proposal; and

4) The proposal of San Diego Gas & Electric Company ("SDG&E") to unbundle the procurement of flexible and generic capacity

I. MANDATORY RULES FOR PROCUREMENT OF FLEXIBLE RA CAPACITY FOR 2015.

In decision D.13-06-024 in the prior resource adequacy proceeding, the CPUC stated "…[t]he flexible capacity framework will be mandatory starting with RA compliance year 2015… ."[2] That was a sound decision then, and it remains the most prudent and appropriate course and timing of action now. The ISO continues to support the CPUC decision in this regard and believes that the Commission must establish specific flexible capacity requirements in this proceeding.

This is a critical point in the transition in California's electric grid. Pictures of a new net load curve that make up the now famous "Duck Chart" are demonstrated daily. For example, new records for the amount of solar output on the system continue to be set monthly, if not weekly. Given these undeniable circumstances, there is a clear need to set a binding requirement for flexible capacity now. Having a binding flexible capacity procurement requirement in place will enhance the reliability of the system by ensuring that a sufficient pool of resources is available to the ISO to address a variety of ramping needs.

Based on discussion at the workshop, it appears that some parties believe there is no need to establish a flexible capacity procurement requirement at this time because

[2] Order Instituting Rulemaking to Oversee the Resource Adequacy Program, Consider Program Refinements, and Establish Annual Local Procurement Obligations, docket no. R.11-10-023, D.13-06-024 (June 27, 2013), p. 69.

there is currently an excess of flexible capacity on the system. The ISO strongly disagrees with that approach. The ISO is already experiencing operational challenges in balancing generation and load during both the morning and evening ramps. These challenges will only increase in the upcoming years. Given this trend, it is important to complete the development of the requirements and test the processes necessary to ensure that adequate flexible capacity is procured prior to reaching the time when a shortage of flexible capacity could put system reliability at risk. In particular, this will allow the Commission, the ISO and other parties sufficient time to enhance and refine these requirements as we learn more about the flexible capacity needs of the system. It is essential that the flexible capacity program be functioning effectively and that any issues be resolved before a serious operational problem arises.

The ISO understands that the flexible capacity procurement obligation will be a new addition to the RA program and will, just as the RA program has, evolve over time. However, the only way for this evolution to begin in a timely manner is to put mandatory flexible capacity requirements into effect for 2015.

II. SEASONAL ALLOCATION TO THE FLEXIBLE CAPACITY CATEGORIES AND THE MUST- OFFER OBLIGATIONS

Since the time the ISO presented the total system flexible capacity values at the April 9, 2014 resource adequacy workshop**,** the ISO has re-assessed the flexible capacity categories proposed by the ISO and Energy Division. Specifically, both the ISO and Energy Division have proposed to divide the flexible capacity needs into three categories. These categories are defined based on the ISO's assessment of the characteristics of the flexible capacity fleet that will be required to meet the ISO system's operational needs. In the ISO's stakeholder initiative on the flexible resource

adequacy criteria and must-offer obligation, the ISO proposed the following flexible capacity categories:

> **Category 1 (Base Flexibility)**: Operational needs determined by the magnitude of the largest 3-hour secondary net-load[3] ramp
>
> **Category 2 (Peak Flexibility)**: Operational need determined by the difference between 95 percent of the maximum 3-hour net-load ramp and the largest 3-hour secondary net-load ramp
>
> **Category 3 (Super-Peak Flexibility):** Operational need determined by five percent of the maximum 3-hour net-load ramp of the month

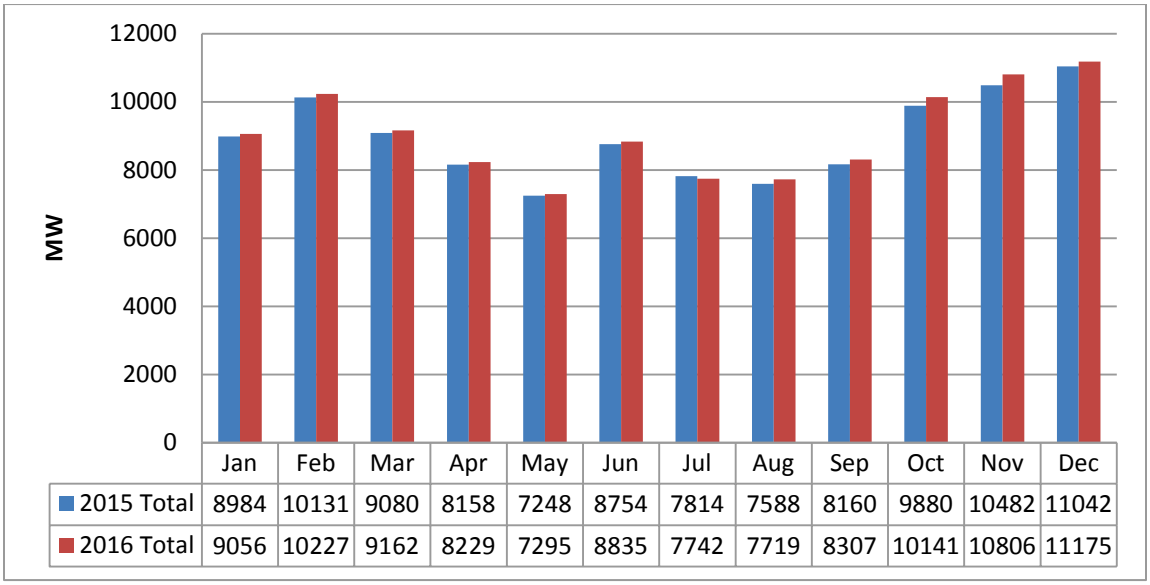
These categories include different minimum flexible capacity operating characteristics and different limits on the total quantity of flexible capacity within each category. In order to establish the quantities needed in each category, the ISO will conduct a five-step assessment process:

1) Calculate the system level needs;
2) Calculate the quantity needed in each category in each month;
3) Add the contingency requirements into the categories proportionally to the percentages established calculated in step 2;
4) Analyze the distributions of both largest three-hour net-load ramps for the primary and secondary net load ramps to determine appropriate seasonal demarcations; and
5) Calculate a simple average of the percent of base flexibility needs from all months within a season.

[3] Net-load is calculated as load minus wind minus solar. The largest daily secondary 3-hour net-load ramp is calculated as the largest net load ramp that does not correspond with the daily maximum net-load ramp. For example, if the daily maximum 3-hour net-load ramp occurs between 5:00 p.m. and 8:00 p.m., then the largest secondary ramp would be determined by the largest morning 3-hour net-load ramp.

On April 4, 2015, the ISO submitted in this proceeding its preliminary flexible capacity needs assessment for the forecasted 2015 needs. These needs are derived using the study process that was vetted at both the CPUC and ISO over the past 18 months. The ISO will submit the final assessment to the Commission at the beginning of May 2014.[4] As part of the preliminary assessment, the ISO calculated the contribution of the CPUC jurisdictional load serving entities to the ISO's flexible capacity need. Figure 1 presents the ISO's preliminary calculation of this contribution by month for 2015 and advisory calculations for 2016.

Figure 1: Preliminary CPUC Jurisdictional LSEs' Monthly Contribution to ISO System Flexible Capacity Needs for 2015 and Advisory Calculations for 2016



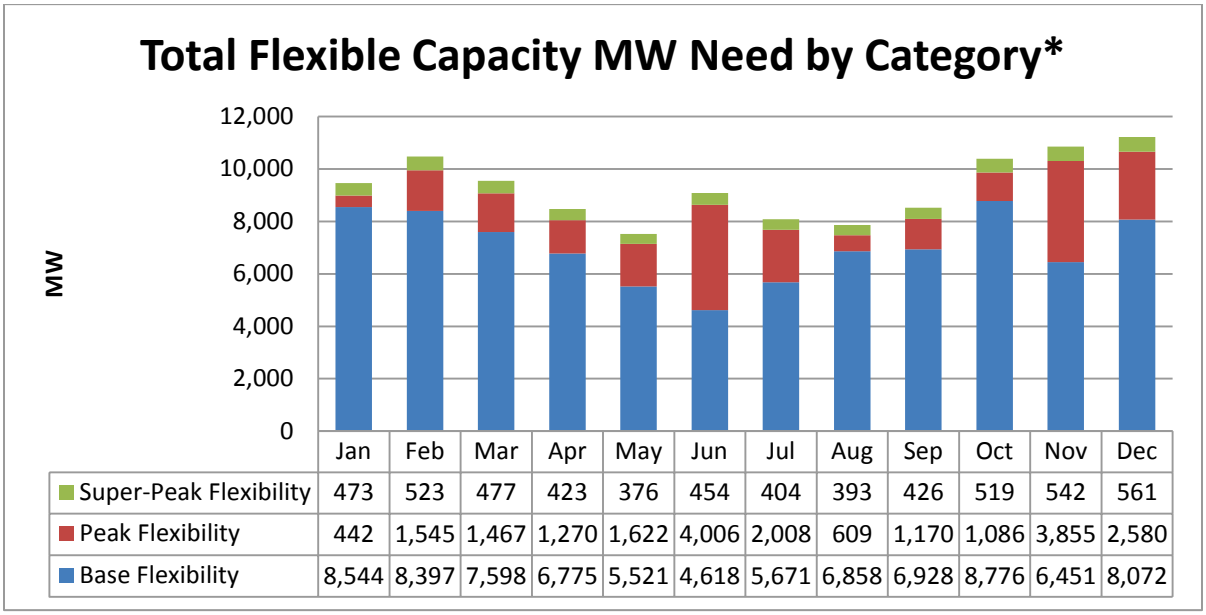
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015 Total	8984	10131	9080	8158	7248	8754	7814	7588	8160	9880	10482	11042
2016 Total	9056	10227	9162	8229	7295	8835	7742	7719	8307	10141	10806	11175

Based on the categories defined above, the ISO calculated the system level needs for 2015 based only on the preliminary maximum monthly 3-hour net-load calculation. Then the ISO calculated the quantity needed in each category in each

[4] The ISO's tariff filing on the flexible resource adequacy criteria and must-offer obligation will include provisions to implement the defined categories, and is subject to approval by the Federal Energy Regulatory Commission.

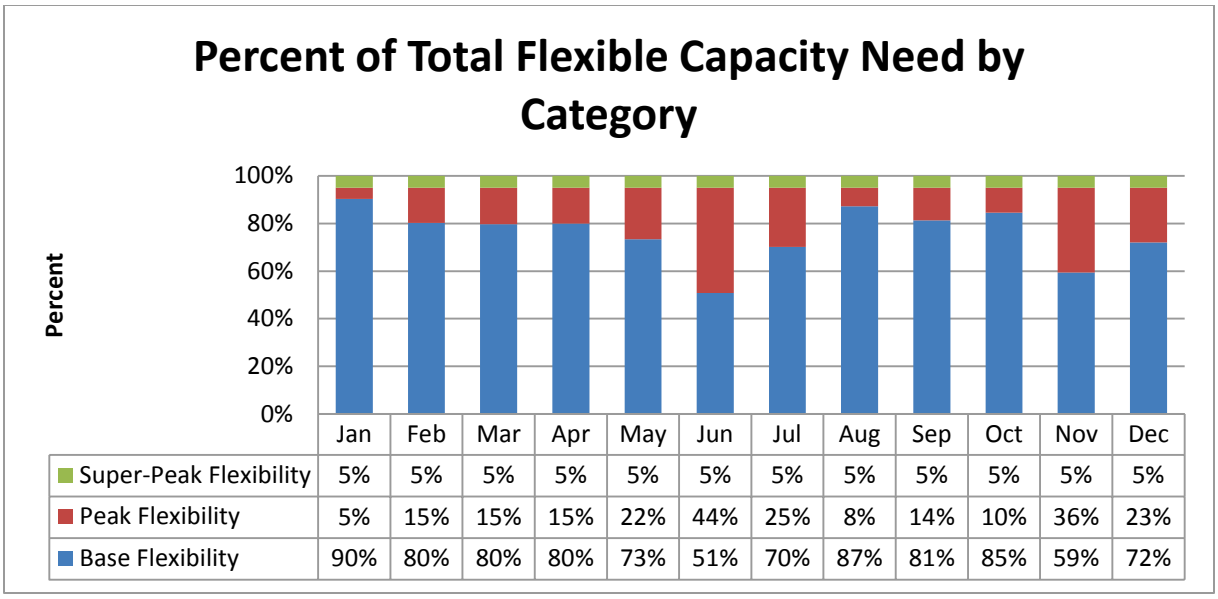
month based on the above descriptions. The ISO then added the contingency requirements into the categories proportionally to the percentages established by the maximum 3-hour net load ramp. For example, for the month of January, the ISO added 90 percent of the contingency reserves portion into the category 1, 5 percent into category 2, and the final 5 percent into category 3. The calculation of flexible capacity needs for each category are shown in Figure 2. As with the flexible capacity needs assessment, these results are preliminary and the ISO is still reviewing them. The ISO will provide its final calculations in its final flexible capacity needs assessment report.[5]

Figure 2: ISO System-Wide Flexible Capacity Monthly Calculation by Category for 2015*



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Super-Peak Flexibility	473	523	477	423	376	454	404	393	426	519	542	561
Peak Flexibility	442	1,545	1,467	1,270	1,622	4,006	2,008	609	1,170	1,086	3,855	2,580
Base Flexibility	8,544	8,397	7,598	6,775	5,521	4,618	5,671	6,858	6,928	8,776	6,451	8,072

[5] The methodology and annual process for the ISO's flexible capacity needs assessment are discussed in the ISO's FRAC-MOO stakeholder initiative. Additional information on this process can be found at http://www.caiso.com/informed/Pages/StakeholderProcesses/FlexibleCapacityRequirements.aspx



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Super-Peak Flexibility	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Peak Flexibility	5%	15%	15%	15%	22%	44%	25%	8%	14%	10%	36%	23%
Base Flexibility	90%	80%	80%	80%	73%	51%	70%	87%	81%	85%	59%	72%

To determine the seasonal percentages for each category, the ISO analyzed the distributions of both largest three-hour net-load ramps for the primary and secondary net load ramps to determine appropriate seasonal demarcations for the base flexibility category. The secondary net-load ramps provide the ISO with the frequency and magnitude of secondary net-load ramps. Assessing these distributions helps the ISO identify seasonal differences that are needed for the final determination of percent of each category of flexible capacity that is needed. While this year's assessment focused on the data produced in this study process, the ISO also referred back to last year's assessment to confirm that the patterns persist. The primary and secondary net-load ramp distributions are shown for each month in figures 3 and 4 respectively.

Figure 3: Distribution of Daily Primary

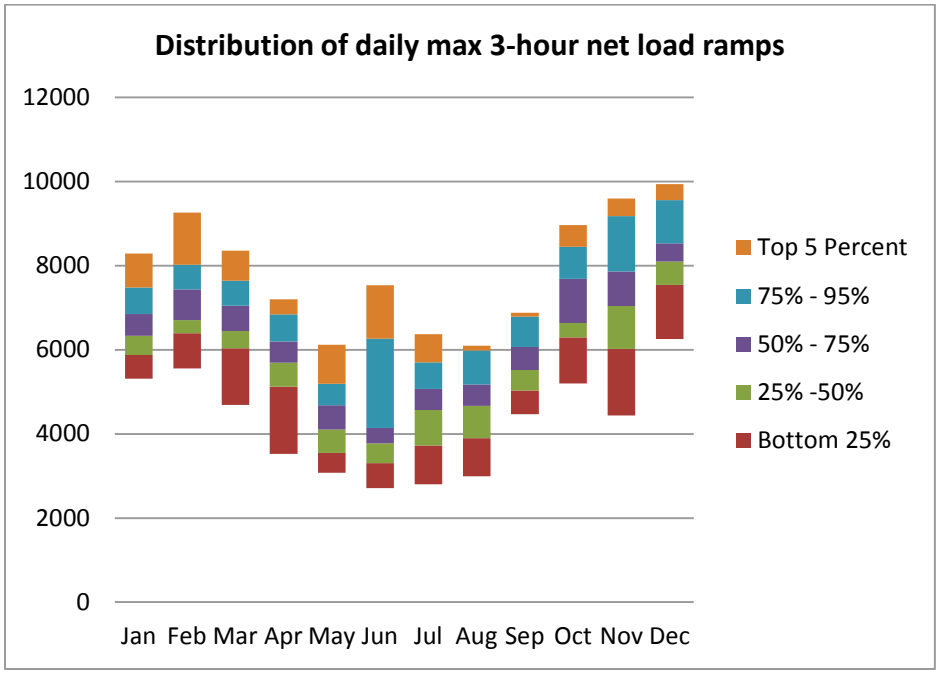
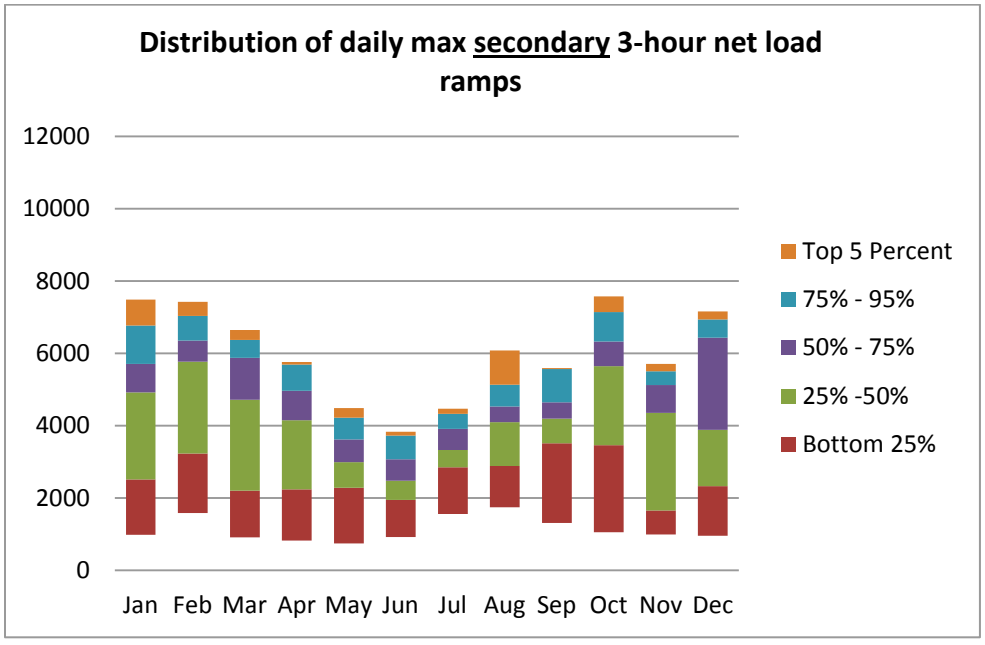


Figure 4: Secondary 3-hour Net-Load Ramps for 2015



As Figure 3 shows, the distribution (i.e. the width of the distribution for each month) of the daily maximum 3-hour net-load ramps is reasonably consistent across the

year. However, the same cannot be said for the daily secondary 3-hour net load ramps. This distribution indicates two things. First, given the breadth of this distribution, it is unlikely that all base flexible capacity resources will be used for two ramps every day. The base flexibility resources were designed to address days with two separate significant net load ramps. The distributions of these secondary net load ramps indicates that the ISO need not set seasonal percentages in the base flexibility category at the percentage of the higher month within that season. Second, because there are still numerous bimodal ramping days in the distribution, many of the base flexibility resources will still be needed to address bimodal ramping needs. Accordingly, the ISO cannot discount this level too much.

Figure 2 does not show any clear delineation that would allow the year to be partitioned into seasons for purpose of seasonal allocations. However, Figure 4 shows a distinct seasonal difference. In that regard, the distributions of the secondary net-load ramps from May through September are much more compact than the secondary net-load ramps in the other months. This distribution change is a reflection of changes in the seasons and weather patterns. Accordingly, the ISO proposes to divide the flexible capacity needs contribution into two seasons that mirror the existing summer (May through September) and non-summer (January through April and October through December) seasons used for resource adequacy.[6] This approach has two benefits.

First, it mitigates the impact that variations in the net load ramp in any given month can have on determining the amounts for the various flexible capacity categories for a given season. For example, a month may have either very high or low

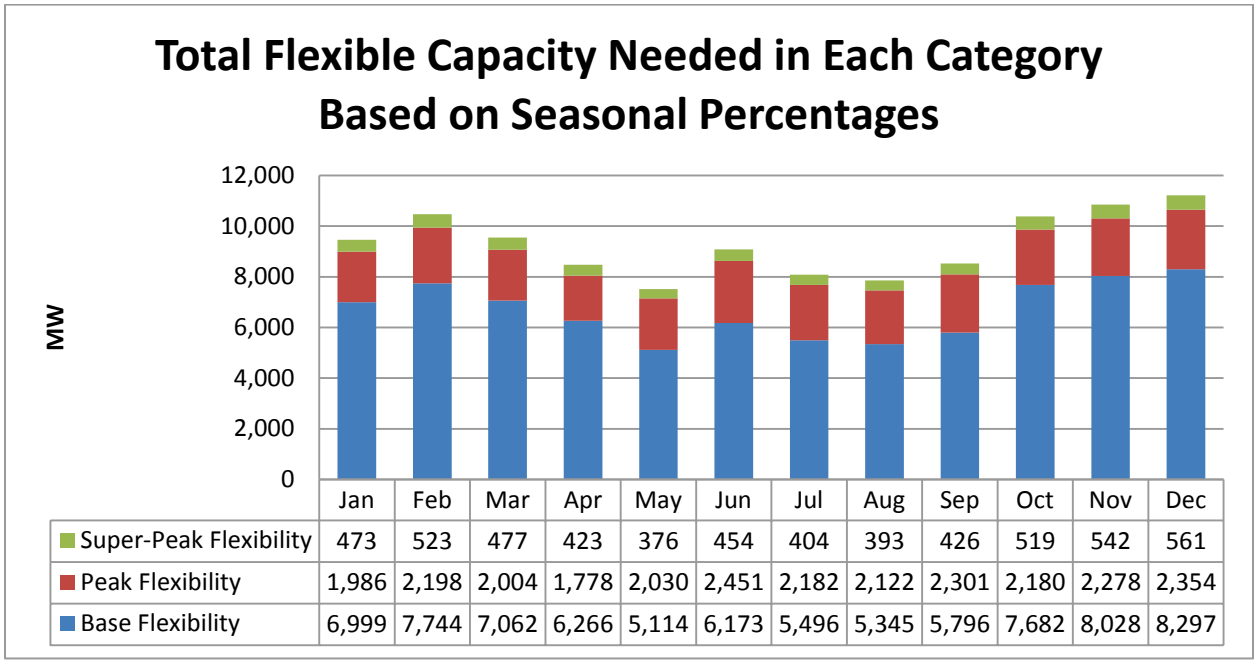
[6] The ISO also reviewed the results of the initial calculations for categories used in the 2013 Flexible Capacity Needs Assessment to determine if the categories aligned with the previous assessment as well.

secondary ramps that are simply the result of the weather in a given year. However, because differences in the characteristics of net load ramps are largely due to variations in the output of variable energy resources, and these variations are predominantly due to weather conditions, it is reasonable to breakout the flexibility categories by season. Because the main differences in weather in the ISO system are between the summer and non-summer months, the ISO proposes to use this as the basis for the seasonal breakout of the needs for the flexible capacity categories.

Second, adding flexible capacity procurement to the RA program will increase the process and information requirements. Maintaining a seasonal demarcation that is consistent with the current RA program will reduce the potential for errors in resource adequacy showings.

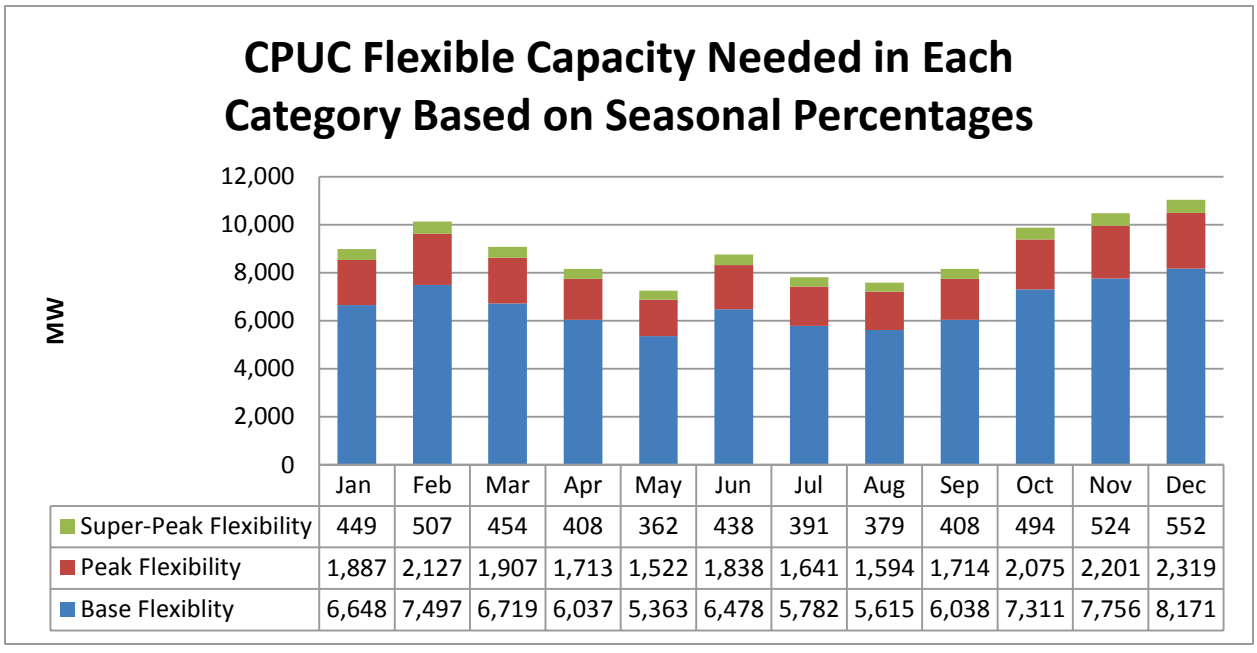
The ISO calculated the percentage of base flexibility needed using a simple average of the percent of base flexibility needs from all months within a season. Based on that calculation, the ISO proposes that flexible capacity meeting the base-flexibility category criteria comprise 68 percent of the ISO system flexible capacity need for the summer months and 74 percent for the non-summer months. Given this proposal, peak flexible capacity resources could be used to fulfill up to 32 percent of summer flexibility needs and 26 percent of non-flexible capacity needs. The super-peak flexibility category is fixed at a maximum five percent across the year. The ISO's proposed system-wide flexible capacity categories are provided in Figure 5 and the CPUC contribution to each category is provided in Figure 6:

Figure 5: System-wide Flexible Capacity Need in Each Category for 2015



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Super-Peak Flexibility	473	523	477	423	376	454	404	393	426	519	542	561
Peak Flexibility	1,986	2,198	2,004	1,778	2,030	2,451	2,182	2,122	2,301	2,180	2,278	2,354
Base Flexibility	6,999	7,744	7,062	6,266	5,114	6,173	5,496	5,345	5,796	7,682	8,028	8,297

Figure 6: CPUC Flexible Capacity Need in Each Category for 2015



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Super-Peak Flexibility	449	507	454	408	362	438	391	379	408	494	524	552
Peak Flexibility	1,887	2,127	1,907	1,713	1,522	1,838	1,641	1,594	1,714	2,075	2,201	2,319
Base Flexiblity	6,648	7,497	6,719	6,037	5,363	6,478	5,782	5,615	6,038	7,311	7,756	8,171

The ISO's Draft Final Proposal in its stakeholder initiative on flexible resource adequacy criteria and the must-offer obligation also proposed to establish by season the

specific hours, comprised of a five-hour period, for which flexible capacity counted in the peak and super-peak categories would be required to submit economic energy bids to the ISO (*i.e.* have an economic bid "must-offer" obligation). Whether the ISO needs peak and super-peak category resources more in the morning or afternoon depends on when the larger of the two ramps occurs. The ISO believes that the average net-load curves for each month provide the most reliable assessment of whether a flexible capacity resource would be greatest benefit in the morning or evening net load ramps. As such, the ISO looked at the average ramp over the day to see if the bigger ramp was in the morning or afternoon and then set the hours for the must-offer obligation accordingly. The ISO calculated the maximum three-hour net load for all months. Table 1 shows the hours in which the maximum monthly average net-load ramp began.

Table 1: Hour in Which Monthly Maximum 3-Hour Net-Load Ramp Began

Month	Starting Hour	Month	Starting Hour
Jan	15	Jul	4
Feb	15	Aug	12
Mar	16	Sep	4
Apr	17	Oct	16
May	17	Nov	14
Jun	4	Dec	14

Given these parameters, the ISO's Draft Final Proposal in its flexible capacity and must-offer obligation stakeholder initiative proposes morning must-offer obligations from May through September and evening must-offer obligations from January through

May and October through December.[7] Under the proposal, the ISO will impose a flexible capacity must-offer obligation for peak and super-peak flexible capacity categories for the five-hour periods of 7:00 a.m. to 12:00 p.m. for May through September, and 3:00 p.m. to 8:00 p.m. for January through May and October through December. The average morning and afternoon ramps for May were fairly comparable, with the evening ramps being slightly larger. This demonstrates that May is a transitional month when the ISO's ramping needs shift from the evening hours to the morning hours. However, the ISO believes it is appropriate to align the must-offer obligations with the summer/non-summer demarcation used for the RA program and contributions to the categories described above. Because these months align with the with the summer/non-summer demarcation in the RA program and aforementioned contributions to the categories, the ISO expects that this will also make the procurement process less complicated.

III. COMMENTS ON THE ENERGY DIVISION PROPOSALS

A. Proposal on Implementation of the Flexible Capacity Procurement Framework

The ISO generally supports the Energy Division's proposed modifications to its flexible capacity procurement framework proposal. The ISO particularly commends the following modifications:

1) The change in the proposed treatment of hydro resources to mirror the ISO's proposal;[8]

[7] Of note in this table are May and August. May represents a transition month. While the average net-load ramp occurred in the evening, it was fairly close to the morning ramp. Additionally, while August ramps occurred later in the day than most summer months, this ramp is still considered a morning ramp.

[8] Staff Proposal on the Implementation of the Flexible Capacity Procurement Framework, p.7.

2) The commitment to examine generic and flexible capacity showings independently to allow for the possibility that a resource may provide flexible capacity only and would not be subject to the full RA must-offer obligation;[9]

3) Clarifying the flexible capacity categories to mirror those proposed by the ISO;[10]

4) Requiring LSEs with flexible capacity needs of less than 25 MW to provide flexible capacity in each of the categories;[11] and

5) Retaining the Maximum Cumulative Capacity buckets.[12]

The modifications are clear improvements in the proposal. The ISO believes that three additional areas require further clarification: the determination of the percentages required in each flexible capacity category; the distinction between "Flexible Capacity" and "Effective Flexible capacity" as the Energy Division uses those terms; and the treatment of Combined Heat and Power ("CHP") resources for determining flexible capacity.

1. Seasonal Percentages

Above, the ISO identified the seasonal contributions for each flexible capacity category. The Energy Division proposal suggested establishing a fixed requirement that 80 percent of flexible capacity meet the base flexibility criteria. Given discussions at the April 9, 2014 workshop, the ISO interprets this number as a place holder until the ISO provides the Commission with its determination of the seasonal category needs. Given

9 *Id.* at 10.
10 *Id.* at 15.
11 *Id.* at 15.
12 *Id.* at 17.

that the ISO has provided the preliminary calculations for each category (with final calculations to follow shortly), the ISO recommends that the Commission apply the percentages identified above to each of the categories.

2. EFC

In several places in the previous version of this proposal, Energy Division Staff used the term “flexible capacity,” or “FC,” to define how the Commission would determine a resource’s flexible capacity contribution. However, in its revised proposal, Energy Division has changed the reference to “effective flexible capacity”, or “EFC”. The ISO seeks clarification regarding the EFC term. The ISO has used the term “EFC” to describe the flexible capacity amount the ISO will calculate for each flexible capacity resource and will apply for purposes of determining whether there is a collective deficiency in the annual or monthly flexible capacity plans as part of the ISO’s assessment of the need for flexible capacity backstop procurement. While the ISO understands that currently the proposed treatment of flexibility by the Energy Division and the ISO differs only for energy storage resources, it is still important to understand whether and what distinction may exist between the term “EFC” as used by the ISO and as used by Energy Division. For that reason, the ISO requests the Energy Division to clarify its usage of the term.

3. CHP Flexible Capacity

CHP resources represent a diverse pool of resources with a variety of different ways to provide energy and flexibility to the ISO. However, the ISO is concerned that the Energy Division proposal allows each CHP resource to set its own EFC. The ISO is particularly concerned that such an approach could lead to widely differing values, and

would be unreasonably burdensome to administer given the number of CHP resources on the system. Despite the diversity of resources, the Commission was able to design a systematic methodology for determining a CHP resource's qualifying capacity. The ISO believes the same can be done for flexibility.

On March 20, 2014, the ISO Governing Board approved a method for counting the EFC of a CHP resource as the minimum of the NQC or Pmax minus Pmin. The ISO urges the Commission to adopt a similar counting convention to maintain alignment, avoid confusion, and ease the administrative burden of assessing the submitted EFCs of CHP resources. This methodology allows for an accurate representation of a CHP resource's flexibility that is based on its ability to provide power back to the grid. For example, this methodology is able to distinguish between a CHP resource that has excess on-site generation from a CHP resource that relies on industrial processes to produce electricity as a byproduct.

B. Proposal on Qualifying Capacity and Effective Flexible Capacity Calculation Methodologies for Energy Storage and Supply-Side Demand Response Resources

The provision of flexible capacity by demand response and energy storage resources, and the provision of even generic capacity by storage resources, raises many new and complicated questions. The ISO commends Energy Division for their efforts at tackling these questions and remains committed to working with Energy Division to resolve these matters.

1. Resource Aggregation

The ISO continues to support the Energy Division's goal of resource aggregation for storage and demand response resources. The ISO is committed to working with the

Commission to ensure that such aggregations are possible and can provide benefits to the grid. The ISO plans to initiate a stakeholder process for a combined non-generation resource /proxy demand resource product in the third quarter of 2014. Further, the ISO supports Energy Division's proposal that any aggregated resources "be located in within a single Sub-LAP or custom LAP and within a single Local Capacity Area."[13] This will align the Commission's rules with the ISO's tariff.

2. Demand Response

The Energy Division's revised proposal recommends methodologies for calculating the qualifying capacity and effective flexible capacity for energy storage and supply-side demand response resources, as well as testing requirements for those resources to demonstrate initial and continued performance. The revised proposal also outlines the process the ISO should follow to provide advance notice of tests and conduct the testing, and suggests that resources should be paid for a test event as if it were a regular dispatch by the ISO.[14]

The proposal states that it applies only to energy storage and demand response resources that submit bids or self-schedules in the ISO markets and are subject to a must-offer-obligation.[15] As resources participating in the ISO markets, these resources will be subject to the testing and verification provisions in the ISO tariff.

As explained in the Revised Draft Final Proposal issued by the ISO in the flexible capacity and must-offer obligation stakeholder initiative, the ISO proposes to determine the effective flexible capacity of demand response resources through the use of a test

[13] Energy Division proposal, Qualifying Capacity and Effective Flexible Capacity Calculation Methodologies for Energy Storage and Supply-Side Demand Response, p.3.
[14] *Id.* at 4-5.
[15] *Id.* at 1.

event during the demand response resource's selected flexible capacity must-offer obligation window. The ISO would conduct test events on a random basis and would use the previous ten days load data for a proxy demand resource to measure the load reduction and pay the resource's bid price for the testing period.[16]

The ISO is committed to working with the Commission to develop appropriate test and verification criteria for flexible capacity provided by demand response resources. Nevertheless, the ISO currently has provisions in its tariff regarding the testing and verification of a resource's capacity as well as compensation for the test event.[17] The ISO is bound by these provisions and must follow the tariff requirements for administering resource testing and paying the resources for the test event.

The Energy Division proposal states that a demand response resource's performance would be "measured ex-post… analysis of testing and dispatches using the load impact protocol."[18] The ISO remains concerned that the existing load impact protocols are not well designed to assess the impacts or contributions of flexible capacity provided by demand response resources. The load impact protocols work well for demand response providing generic resource adequacy capacity because they are specifically targeted at load reductions during high demand periods. However, the same cannot be said for demand response providing flexible capacity. For example, rebound effects (*i.e*. spikes in demand when the demand response event ends) or load shifting that could result in higher peak demand may not be accurately captured in trying

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[16] ISO Revised Draft Final Proposal, Flexible Resource Adequacy Criteria and Must-Offer Obligation, (March 7, 2014), p. 37.

[17] ISO Tariff Section 34.9.2.

[18] Energy Division Proposal on Qualifying Capacity and Effective Flexible Capacity Calculation Methodologies for Energy Storage and Supply-Side Demand Response, p. 5.

to apply the existing load impact protocols to flexible capacity. They could actually exacerbate the need for flexible ramping capacity. The ISO believes it would be prudent to undertake additional evaluation of using the existing load impact protocols before the proposal is adopted.

3. Energy Storage

The ISO recognizes that the Energy Division is seeking to maintain consistency with the existing RA counting provisions for energy storage resources. As such, the ISO does not oppose the current Energy Division proposal for determining the qualifying capacity of an energy storage resource, at least as a preliminary step, until the Commission, the ISO and other stakeholders are able to answer some of the outstanding questions, and reach a better understanding of what "deliverable" means for energy storage resources.

In its proposal, the Energy Division identifies five perceived differences between its recommendations and the ISO's proposal for determining the EFC for energy storage resources in the flexible capacity and must-offer obligation stakeholder initiative. Specifically, the Energy Division notes the following differences:

1) Resources with negative operating capability (dispatchable charging or load increase) need not be registered as non-generating resources.
2) Resources need not ramp over three hours; sustained output is also acceptable.
3) Up to 45 minutes of transition time between negative (charging or load increase) and positive (discharging or load curtailment) operational modes is permitted, and does not count towards the three hour period.…

Discontinuity in dispatchable output is also permitted during this transition time (e.g., due to minimum pump loads).

4) For resources that have both negative and positive operating capability (dispatchable charging or load increase and dispatchable discharging or load curtailment), charging or load increase energy is limited to double the discharging or load curtailment energy.

5) Positive generation is limited to the PmaxRA calculated for System RA eligibility (in accordance with the currently adopted policy of bundling System and Flexible RA) and remains subject to NQC derating.[19]

The ISO does not agree that these items represent differences between the Energy Division and ISO proposals. Items 2 and 4 are both compatible with the ISO's proposal. For example, with respect to Item 2, the ISO would allow either ramping or sustained output for calculating the EFC of a storage resource. Likewise, with respect to item 4 a storage resource would be bound by the maximum charge and discharge levels of the resource. Therefore, limiting a resource to double the charge rate is consistent with the ISO's proposal**.**

Additionally, item five is not contrary to the ISO's proposal. For example, to the extent that the CPUC considers the Pmax to be measured on a four-hour sustained discharge, it is not clear that the Pmax of the resource would ever be greater than the proposed rules applied by the ISO. In this case, the load-serving entity would only submit the lower CPUC number and the ISO would utilize that number.

[19] *Id.*at 7.

Thus, the ISO only sees two items on Energy Division's list, items 1 and 3, as being different from the ISO's proposal in its stakeholder initiative.

With regard to item 1, the ISO's proposed flexible capacity rules will require energy storage resources that provide flexible capacity to register as a non-generation resource. The primary benefit of the non-generation resource model is that it allows the ISO to optimize both the energy storage resource's charge and discharge ranges as a single resource. This is needed to ensure that the ISO can maintain the state of charge in a manner that is consistent with operational and market conditions. For example, if the ISO forecasts a need for a resource to discharge at a given time, it must first make sure that the resource is already charged or can be charged. The ISO does not object to counting the discharge portion of storage resources as flexible capacity: however, for the ISO to reasonably rely on both the charge and discharge capabilities of a resource, the ISO's market must be able to optimize both sides as a supply resource.

In addition to the above items, although it is not specifically identified on the Energy Division's list of differences, there is no Energy Division proposal to address the difference between an energy storage resource that only provides regulation energy management and a resource that provides both energy and regulation. The ISO proposal makes a clear distinction between these two types of resources because they provide very different services to the ISO that lead to separate must-offer obligations. For example, a regulation energy management resource does not have to provide the ISO with an energy bid and would only provide regulation from a set point of charge. However, a fully flexible capacity resource would be required to submit bids for both

energy and regulation. The ISO recommends that any future treatment energy storage resources consider the services that resource will provide to the ISO

With regard to item 3, the Energy Division has stated that resources would be allowed up to a 45-minute transition time between charging and discharging of storage resources. Based on the discussion in the ISO's stakeholder initiative, the ISO elected to defer this item until it had an opportunity to fully address the operational impacts of any transition between charging and discharging. The ISO has agreed to address this issue in its recently started Reliability Services Initiative. Further, 45 minutes seems to be a fairly long transition time, and Energy Division did not provide a basis, operational or otherwise, as to why 45 minutes is the correct amount of time for a transition. The ISO and parties need more time to determine the operational impacts of transition times and recommends that the Commission defer this particular item to a later date.

The Energy Division proposal states that: "Staff does not recommend adoption of the EFC counting convention described in the CAISO FRAC-MOO initiative as a methodology for limiting P_{minRA}, unless that approach is revised in the future to be based on deliverability or operational studies."[20]

In the flexible resources adequacy criteria and must-offer obligation stakeholder initiative, the ISO provided a detailed proposal on how it will use the EFC values calculated by the ISO for assessing the need for backstop procurement. The ISO continues to believe that its proposal is the appropriate approach, as the ISO explained in its stakeholder initiative and its previous comments in this proceeding. The ISO discussed several reasons why it is essential for the ISO to set the effective flexible

[20] *Id.* at p. 7.

capacity value for resources, similar to how the ISO sets the NQC value for RA resources today. Those reasons include the fact that the ISO is uniquely situated to calculate the effective flexible capacity of a resource and that a uniform EFC value set by the ISO for each resource is necessary to equitably assess the collective flexible capacity showings by the local regulatory authorities.[21]

C. Revised RA Implementation Staff Proposal

The ISO is generally supportive of this proposal and offers no additional comments at this time.

IV. UNBUNDLING GENERIC AND FLEXIBLE CAPACITY

At the April 9, 2014 workshop, SDG&E presented a proposal to allow the unbundling of flexible and generic capacity. The ISO agrees with many of the statements made by SDG&E in support of this proposal. Specifically, there are potential market inefficiencies created by prescriptively requiring the two products be bundled. Allowing a resource to sell the flexible and generic attributes separately allows both the LSEs and the resources to make better procurement decisions and could lead to more efficient bilateral market outcomes.

The Energy Division, as noted above, has taken a step toward allowing unbundling by stating that it will review the flexible and generic showings separately and not require a resource that provides flexible capacity to automatically provide system capacity as well. However, this still seems to imply that "a resource may be sold only once as either flexible or inflexible" and could lead to over procurement. For example, if LSE 1 needs 100 MW of flexible capacity and LSE 2 needs 100 MW of generic

[21] See the ISO comments in this proceeding available at http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M088/K954/88954506.PDF.

capacity, then they would each have to buy this capacity from two separate resources, totaling 200 MW. This would also likely mean that LSE 1 would have to procure 100 MW of generic capacity that it does not need. Allowing unbundling would allow the same needs to be addressed by a single 100 MW resource.

It may be too late in the current RA proceeding to develop the rules for unbundling flexible and generic capacity for the 2015. However, the ISO believes that Commission should further consider the prospect of unbundling in the next phase of the RA proceeding.

V. CONCLUSION

For the foregoing reasons, the ISO respectfully requests that the CPUC issue an order consistent with the ISO's comments.

Respectfully submitted,

By*: /s/ Beth Ann Burns*

Roger E. Collanton
General Counsel
Anna A. McKenna
Assistant General Counsel
Beth Ann Burns
Senior Counsel
California Independent System
Operator Corporation
250 Outcropping Way
Folsom California 95630
Tel.: (916) 351-4400
Fax.: (916) 608-7222
bburns@caiso.com

Attorneys for the California Independent
System Operator Corporation

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