

**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

R.11-10-023
(Filed October 27, 2011)

**COMMENTS OF SAN DIEGO GAS & ELECTRIC
COMPANY (U 902 E) ON PHASE 2**

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December 26, 2012

#273859

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In accordance with the *Phase 2 Scoping Memo and Ruling of Assigned Commissioner and Administrative Law Judge* (“*Scoping Memo*”) issued December 6, 2012, San Diego Gas & Electric Company (“SDG&E”) respectfully submits these comments in response to the “Questions on the Joint Parties’ Proposal” posed in Attachment B of the *Scoping Memo*. SDG&E is one of the Joint Parties and joins with Southern California Edison (“Edison”) and the California Independent System Operator (“California ISO” or “ISO”) in proposing the manner in which the Commission should coordinate refinements to its resource-adequacy requirements with the CAISO’s emerging operational requirements regarding “flexible” resources; the proposed framework is appended to the *Scoping Memo* as Attachment A.

I. Introduction

Two years ago, the California ISO requested that the Commission expand the scope of the instant rulemaking to direct load-serving entities to procure and deliver to the ISO the minimum level of resource-adequacy resources with certain operational attributes, dubbed

“flexible resources”, necessary to meet the ISO’s operating requirements.¹ The ISO argued this new requirement was necessary to ensure that the ISO could maintain system reliability as increasing volumes of variable energy resources were integrated under the California renewable portfolio standard. The Commission deferred consideration of the California ISO’s proposal and the Joint Parties, *i.e.*, SDG&E, Edison and the ISO, worked together to produce the proposal which is the focus of these Comments.

The Joint Proposal builds off lessons learned from nearly two years of discussions and SDG&E submits the proposal is a workable framework for quantifying flexibility needs on a going-forward basis, reflecting those needs within the annual resource-adequacy requirements imposed on specific load-serving entities, and providing clear eligibility criteria for resources.

In developing the proposal, SDG&E intended to define flexibility requirements in a way that yields tight, measurable and reasonable flexible-capacity targets for individual load-serving entities and impose strict requirements defining which resources were capable of satisfying those requirements. This approach would provide the California ISO with a pool of the resources meeting its operational requirements, minimize the need for backstop procurement to be conducted by the ISO, minimize the potential for cross-subsidies between load-serving entities with “highly flexible” portfolios and those with “less flexible” portfolios, ensure that resources meeting the ISO’s flexibility needs are compensated accordingly and, importantly, incentivize resource investment in a manner which would meet the evolving security needs of the grid. As explained below, SDG&E believes the Joint Proposal satisfies these purposes and therefore supports it.

¹ See *Motion of the California Independent System Operator Corporation for Expansion of the Phase 2 Scope to Include a Proposal for Procurement of Non-Generic Capacity Through the Resource Adequacy Program*, November 30, 2010.

II. SDG&E's Responses to Questions Posed in Attachment B

A. Reliability Risk

1. What is/are the most critical grid reliability risk/risks that should be evaluated and managed through the flexible capacity procurement initiative?

As outlined in the Joint Proposal, addressing the grid-management and –reliability issues posed by the simultaneous addition of large amounts of variable generation and retirement of generation subject to the State's once-through-cooling ("OTC") regulations should be the Commission's top priority in adopting a flexible-capacity procurement requirement. As the California ISO has made clear, the intersection of these two trends could create a portfolio of resources which may not allow the ISO to meet applicable reliability criteria and standards, requiring load shedding in violation of these criteria and standards.

2. This proposal attempts to address reliability risk by recommending that the CPUC establish a monthly interim flexible capacity obligation that is based on the ISO's identified flexible capacity needs.
 - a. Identify the key tasks required to implement this proposal. Propose the order in which they should be addressed, and discuss whether they should be taken up simultaneously or sequentially.

In order to implement the Joint Proposal, the Commission must define the flexibility attributes serving the ISO's operational requirements and reflect those attributes within the context of the "resource-adequacy product" load-serving entities must procure and deliver to the ISO. Once the flexibility requirements are defined, the Commission must, as it has for previous iterations of the resource-adequacy product, define the criteria resources must meet in order to qualify as a "flexible resource" for some or all of their generating capacity, develop counting rules, and set appropriate performance penalties. These tasks should be addressed as the first orders of business and simultaneously. From an administrative perspective, the Commission should establish timelines for implementing flexibility requirements, allocating specific requirements to specific load-serving entities, monitoring program performance, evaluating backstop needs, and managing future changes. The Joint Proposal outlines a workable framework for accomplishing these key tasks.

- b. Can the difference between load and net-load be met partially by introducing curtailment provisions in renewable contracts (particularly solar resources)? What are the implications of doing so?

While contractual curtailment provisions can be used to lower the difference between load and net-load, curtailments would likely reduce flexible requirements only slightly and only under certain conditions.

The Commission should keep in mind that contractual curtailment provisions would not be cost-free: variable resources typically have relatively high capital costs and low production costs, implying that future contracts would reflect terms making renewable resources indifferent to system-imposed curtailments in order to protect the financial viability of the variable resources subject to curtailment. Further, curtailments would likely need to be implemented at very large scale to reduce the ISO's need for flexible resources significantly. The daily peak net-load is expected to occur in the winter as the sun goes down and solar generation drops off. Solar or wind would have to be curtailed for the entire mid-day valley period (more than five hours per day) to lower the ISO's flexibility requirements. This is not an issue confined to a few days a year, but one which is implicated for most of the days of many months. Addressing flexibility requirements through curtailment portends high costs and additionally would threaten the ability of load-serving entities to meet their renewable portfolio requirements.

SDG&E believes the curtailment of renewable energy may be more cost-effective in addressing possible mid-day over-generation problems. Load levels, outages and system import-export balances interact to determine the days on which the ISO may experience over-generation issues. These factors will make over-generation less likely to occur – renewable curtailment could be used under these infrequent conditions to reduce the spread between load and net-load.

- c. What are other options to alleviate the underlying reliability risk(s) (e.g., modified bidding behavior, incentives within procurement programs to procure resources that reduce identified reliability risks)? What are the benefits and drawbacks of addressing reliability risk by developing a flexible capacity obligation for load-serving entities relative to the alternatives?

In a future with increasing levels of intermittent generation, the ISO's need for flexible resources will also increase, but in addition the degree to which the ISO can take advantage of

the flexibility attributes of those resources will become increasingly important. A flexible resource that is self-scheduled to its P*max would not be available to contribute ramping capability and can add to midday over-generation problems. SDG&E recommends that self-scheduling (from both imports and resources within the California ISO system) by flexible resources should be minimized and any permitted self-scheduling should support the expected daily load shape. A self-schedule across only the evening peak should reduce reliability risks.

Aside from imposing flexible-capacity requirements and limiting self-scheduling, the Commission might consider other options to alleviate the underlying reliability risks, although SDG&E considers these options more drastic. For example, the amount of solar power without storage could be limited if it would cause significant over-generation problems during the day (that said, cost-effective storage mid-day with release in the evening would be beneficial). Similarly, programs or rate designs that encourage shifting of load to sunset should be eliminated and the shifting of load from the evening to other periods (even mid-day) should be encouraged. Finally, exporting power to other markets would lessen reliability risks and costs related to midday over-generation.

One benefit of developing a flexible-capacity obligation for load-serving entities is it should prevent dropping firm load in situations where reliability standards do not allow it and customers would not expect it. Proactively addressing this issue early should result in lower costs for customers.

A drawback of developing a flexible-capacity obligation for load-serving entities is that such an obligation could prove premature and unnecessary. A very large number of assumptions have to be made to determine the flexibility need, and it is possible that things will work out such that the future fleet of resources will provide sufficient operational flexibility to the California ISO. For example, some combination of dynamic-pricing schedules, energy storage, smart vehicle charging and injections, westwide market dynamics, and other unforeseen developments could allow the operational impacts of variable generation to be managed by the ISO even in the absence of a flexible-capacity obligation. On balance, however, SDG&E recommends not leaving grid reliability to chance and therefore supports developing flexible-capacity requirements along the lines suggested in the Joint Proposal.

- d. In addition to addressing reliability risk, does the flexible capacity obligation have other market impacts?

Limiting self-scheduling will expose customers to the risks of price volatility and certain generators to an increased number of starts. Further, it is also possible that imposing flexible-capacity requirements will reduce the value of non-flexible, non-local resource-adequacy resources. Also, the risk flexible resources will threaten retirement or retire becomes a larger problem because flexible obligations may increase substantially in future years, but the resource-adequacy program and the flexibility requirement under review here remain annual in nature and may be insufficient to stave off potential resource retirements. For this reason, SDG&E continues to support a forward capacity mechanism that will prevent uneconomic retirements.

- e. How does this type of proposal, as compared to others, satisfy the Guiding Principles as set forth in the August workshop? (See Draft Guiding Principles in the Appendix to these questions.)

The Joint Proposal meets the Guiding Principles better than previously articulated alternatives. Generally, the Joint Proposal overlays the more specific, additional operating requirements of the California ISO on top of the existing structure of the Commission's resource-adequacy program. This provides simplicity and transparency to the process and new program requirements.

B. Interim RA solution (Section 2)

3. The proposed flexibility procurement initiative institutes an interim RA solution for 2014-2017. What are the anticipated impacts of an interim approach on resource adequacy contracts? What factors should the CPUC consider in deciding whether an interim approach is appropriate?

Impacts on existing resource-adequacy contracts will vary depending on which counting convention is ultimately adopted and the final definition of the enhanced must-offer obligation for flexible resources. Obviously, the desire is to have as little impact as possible.

One factor to consider in assessing the interim nature of the Joint Proposal is whether it can be easily leveraged into a permanent solution. SDG&E believes the methodology for determining the flexible capacity need and the eligibility criteria for resources outlined in the Joint Proposal are durable and could be folded into a permanent solution or a forward capacity

market. SDG&E believes the Joint Proposal would provide a solid platform for future iterations of a flexibility requirement and would provide valuable experience by the time once-through-cooling units begin retiring in 2018.

4. Should the flexible capacity start in 2014? Explain why or why not.

The long-term (beyond 2017) solution for flexible capacity is very complex. It may take three or four years of experience with an interim solution to develop and implement a long-term solution for 2018. The earlier the Commission initiates the flexibility requirement the earlier the long-term solution can be developed. With the compliance dates for the State's once-through-cooling regulation fast approaching, time is of the essence.

C. Development of Eligibility and Needs Methodology (Section 3.1 and Section 3.2)

5. According to the proposal, "flexible capacity need" is defined as the need of the ISO to meet ramping and contingency reserves. (Section 3.1)
 - a. Is this an appropriate definition of flexibility? If not, please explain what might be an appropriate definition and why.

The Joint Proposal definition is simple and can be implemented by the Commission in coordination with the ISO. SDG&E agrees that the full definition of "flexible capacity need" could entail additional complexities and attributes because the concept encompasses many associated products the California ISO needs to meet reliability requirements, including regulation and load following.

- b. Should flexible capacity needs encompass all of the contingency reserves (e.g., Spin, Non-spin, Regulation Up/Down)?

Flexibility should not be defined so as to include all of the various contingency reserves identified in the California ISO tariff. Including all of the various aspects of contingency reserves would expand the universe of resources as well as the eligibility of specific units to be "counted" toward meeting the ISO's flexibility needs. In striking the balance between the flexible-capacity need and defining the eligibility criteria resources must meet in order to be counted, SDG&E proposes to limit the definition of "need" as a method of controlling the units and degree to which units will be considered as meeting that need – loosening the standards for

both need and availability will dilute the market signals the Commission should be creating and lead a less efficient market.

6. Flexibility needs are calculated according to the following formula (Section 3.2)

$$\text{Flexibility Need}_{MTHy} = \text{Max}[(3RR_{HRx})_{MTHy}] + \text{Max}(\text{MSSC}, 3.5\% * E(\text{PL}_{MTHy})) + \epsilon$$

Where,

Max[(3RR_{HRx})_{MTHy}] = Largest three hour contiguous ramp starting in hour x for month y

E(PL) = Expected peak load

MTHy = Month y

MSSC = Most Severe Single Contingency

ε = annually adjustable error term to account for uncertainties such as load following

- a. Is the above formula an appropriate measure to calculate flexibility needs and why?

E.g., the ISO included the max of either a 3.5% of monthly expected peak load (EPL) or Most Severe Single Contingency (MSSC) factor to the need calculation. This is supposed to ensure that the ISO gets 100% of spinning reserve capacity needed to cover the MSSC.

- o What evidence supports using a 3.5% of EPL to provide the spinning reserve needs in an N-1 contingency?
- o Is it reasonable to require spinning reserves equal to 100% of MSSC? Please explain.

The formula in the Joint Proposal reflects the strict eligibility criteria resource-adequacy resources must meet in order to be counted as flexible capacity.

By itself, the 3.5 percent of EPL is insufficient to cover an N-1 contingency when EPL is below 32,857 megawatts (1150/3.5%). The MSSC for the California ISO is normally the loss of one of the Diablo Canyon units, which is close to the 1150 megawatts used for the N-1 limit. So when EPL is below 32,857 megawatts, the MSSC limit will provide the needed N-1 protection. Both 3.5 percent of EPL and MSSC are needed to protect for an N-1 contingency.

- b. According to the proposal, flexible capacity need is based on how much ramp capability a resource can offer and sustain over a continuous three hour period. Is three hours an appropriate duration in which to measure ramping? Support your answer with empirical data when possible.

Three hours appears appropriate with the limited data available so far. A different period may prove more appropriate with further research.

- c. Is adding an annually adjustable error to ramping requirements term to account for uncertainties appropriate?

Should the error factor be capped? If so, what is an appropriate cap level and why?

What criteria should be stipulated to provide appropriate boundaries on what can be included in the error factor (i.e. proportion of wind generation, or distributed generation)?

The simplified assumptions for both eligibility and need could cause either over- or under-procurement of flexible resources – a negative or positive error adjustment could be needed annually. Not integrating imports into this proposal makes the need for the adjustment factor likely.

SDG&E suggests the error factor could be capped at the non-spin reserve level of 3.5 percent. The error factor should be driven by annual review of the overall excess or deficiency in flexible capacity rather than the specific criteria identified by the Energy Division.

- d. The ISO proposes to use minute-by-minute estimate of load to calculate flexibility needs. Please discuss the suitability of this approach and if this is not suitable, what are the other options?

Minute-by-minute estimates must be used to ensure all reliability needs are properly addressed. The flexibility need is reduced to a simple, single monthly requirement but is used by the CAISO for many different purposes to maintain reliability (e.g., regulation and load following). Longer time periods could miss an important restriction and lead to a reliability violation.

- e. It appears flexible capacity procurement is overlapping with the determination of operating reserves. Is this appropriate? Can some amount of the PRM be offset, and how can the CPUC manage the overall RA obligation if portions are met with more flexible resources?

Importantly, the Planning Reserve Margin (“PRM”) is not offset by implementation of the proposed flexible-capacity requirement. The two concepts are used to address different problems with little or no overlap. The PRM sets how much total capacity is needed regardless

of its flexibility and is a planning construct. Flexibility is an operating requirement and will count towards meeting the PRM, but it will not reduce the overall PRM.

7. What process(es) or proceeding should be used to calculate capacity flexibility needs as load and supply change over time?

The California ISO should run annual flexible-capacity studies as is the case for Local Capacity Requirements.

- a. Currently the annual LCR process results in a determination of local capacity needs on an annual basis. Should flexible capacity needs be included within the LCR process, or should a separate but similar process be established to update flexible capacity needs? Please explain.

Flexible capacity should be rolled into an expanded annual LCR process. Since flexibility requirements are a function of ISO operational requirements, they are similar in this respect to the operating needs addressed by the local capacity requirement. Further, the level of need is a function of changes to load, grid configuration and resources. These similarities indicate that the ISO should be charged with frequently, i.e., annually, assessing the changes to its operating requirements and its translation into the resource-adequacy requirements imposed on load-serving entities.

- b. Who should determine flexibility needs annually– the ISO or some other third party?

Determining flexible capacity needs should be handled like the current determination of Local Capacity Requirements, where the California ISO conducts the analysis and recommends the requirements for Commission approval.

C. Allocation of Flexible Capacity Requirements (Section 3.3 and Section 3.4)

8. The proposal recommends the CPUC allocate flexible capacity procurement obligations to Load-serving entities based on each LSE’s relative share of monthly system peak. Is this a suitable approach? Explain why or why not.

On balance, SDG&E submits the approach taken in the Joint Proposal is sound. While other approaches would likely yield allocations more in line with causation, the parties to the Commission’s processes have ample experience and comfort with allocations based on monthly system peak, and the approach is easily implementable. On these grounds, the Joint Proposal

comports with the first and second Guiding Principles outlined in the August 17, 2012, workshop.² The approach is administratively simple and imposes no new or unnecessary burdens on regulators or market participants. Additionally, by leveraging the existing System Resource-Adequacy framework, the approach results in minimal disruption to the existing resource-adequacy program.

- a. What other alternatives exist within CPUC jurisdiction that allows load-serving entities to demonstrate compliance of flexible capacity obligations? Please discuss the relative costs and benefits of different approaches. (Section 3.3)

As the Joint Proposal notes, allocation schemes based on load factors, load-serving entity resource portfolios, or both, would more precisely address the drivers for flexible capacity procurement, and thus tie cost allocation more closely to cost causation. SDG&E certainly supports ultimately allocating requirements and costs based on causation. However, doing so at this time would impose significant new administrative burdens on regulators, forecast and validation burdens on the California Energy Commission, and compliance burdens on load-serving entities. In short, while ultimately preferable, the alternatives do not align with Guiding Principles 1 and 2.

D. Flexible Capacity Must-offer Obligations (Section 4)

9. In addition to the must-offer obligations that currently apply to RA resources, the flexible capacity must-offer obligation for flexible resources would require resources to submit economic bids into the ISO's real-market between a predetermined set of hours (i.e., 5AM to 10PM).
 - a. What is the impact of this more stringent must-offer obligation for flexible resources on specific resources?

As the joint proposal indicates, the single biggest proposed change from the existing resource-adequacy must-offer obligation is the prohibition on self-scheduling across a given set of hours each day. Other performance and availability impacts must be addressed in the future, and these are being addressed in a parallel stakeholder process at the California ISO.

² Those Guiding Principles provide that: "1.) The Flexible Capacity Procurement initiative should be administratively simple. It should not impose an unnecessary administrative burden on the regulator, load serving entities (Load-serving entities), or market participants; and 2) The Flexible Capacity Procurement initiative should result in minimal disruption to the RA program."

- b. Is the proposed set of hours suitable? Does limiting the hours in which a resource must submit economic bids enable more resources to participate in the flexible capacity initiative?

SDG&E believes the proposed set of hours is suitable. While broad, the set of hours ensures that the California ISO will be able to adequately address not one but two distinct daily ramps which will vary by season. Of course, reducing the amount of hours a resource must submit economic bids would likely increase the number of resources that could then provide “flexibility.” SDG&E cautions, however, that the overall goal here must not be simply to ensure resources can “participate,” but instead to ensure the CAISO has the operational flexibility it needs. Decreasing the economic bid requirement in order to to increase participation likely yields an oversupply of flexible resources to manage a part of the California ISO’s need, and an undersupply of flexible resources to manage the remainder. Neither outcome is desirable. If the ISO’s actual operating needs are not met by the new flexible resource-adequacy requirement, the likely outcome is increased California ISO backstop procurement, a result SDG&E would like to avoid.

- c. Is it appropriate to exclude self-scheduled resources from counting towards flexibility?

Self-schedules do not provide the California ISO with any operational flexibility, so excluding self-scheduled resources from qualifying as flexible capacity is appropriate. Taken to the extreme, if every flexible resource were to self-schedule, the ISO would have zero ability to manage daily ramps. Additionally, as stated above, self-schedules can contribute to rather than alleviate ramping needs. Indeed, a flexible resource that is self-scheduled to its P*max increases the reliability risk because it does not contribute any ramping ability and adds to midday over-generation problems.

- d. Can this risk be alleviated partially by incentivizing resources with Must-Offer Obligations to submit economic bids in the ISO market instead of self-scheduling? What changes could be contemplated within regulatory proceedings at the ISO and the CPUC, to make it conducive for resources to submit economic bids instead of self-scheduling their energy?

Presumably, the California ISO could restrict self-scheduling and subject all resource-adequacy resources to the enhanced must-offer obligation contemplated in the Joint Proposal. With the existing fleet of resources, this would likely eliminate the need to adopt monthly

flexible capacity requirements. But this is a rather blunt solution to a discrete problem and would not create the proper incentives to meet the ISO's increasing flexibility requirements.

E. Eligibility (Section 5.1)

10. According to the proposal, a resource must be able to ramp and sustain energy output for a minimum of three hours to qualify as flexible. Is this a suitable condition to determine eligibility for flexible resource? (Section 5.1) Please explain why or why not.

As the Joint Proposal indicates, the ability to meet a three-hour ramp is the single most valuable characteristic to address near-term ramping and contingency needs. In this light, it is prudent to base eligibility on the ability to sustain energy output for a minimum of three hours. Otherwise, resources could end up creating, rather than solving, flexibility needs. And while it would be possible to subdivide the three-hour need into segments and base eligibility on some lower sustained energy requirement (*e.g.*, 1.5 hours, 1 hour, *etc.*), such an approach would necessarily increase the overall flexible capacity requirement and lead to overprocurement and increased costs. The three-hour output requirement ensures that a new peak is not created as flexible resources shut down when their obligations end. The expectation is that after three hours load has dropped enough that allowing flexible generation to shut down will not cause a new peak.

It is likely that ramping and contingency needs will evolve as more intermittent generation is added to the system. At that time, some need other than the ability to meet the three-hour ramp might emerge and prove critical. Until then, SDG&E supports the Joint Proposal's requirement that eligible resources be capable of sustaining output for three hours.

11. Is the ISO proposed mechanism to modify the resource's master file to note flexible capacity as "dispatchable" appropriate? Please explain why or why not.

It is appropriate that the master file differentiate resources that meet the minimum criteria for providing flexibility from resources that do not.

- a. What, if any, capacity procurement impacts on current resources due to the bundling requirement can be anticipated (positive and negative)? (Section 5.2)

There are arguable positive and negative impacts to bundling. Nevertheless, SDG&E believes the bundling requirement is necessary to simplify contracting for this interim period.

12. How can the integrity of the master file be maintained?

This issue is being addressed in the parallel California ISO stakeholder process.

13. “Dispatchability” is as much a contractual term (i.e. bidding behavior) as it is a physical characteristic of a resource. How can generators list contractual terms in the Master File?

This issue should be addressed in the parallel California ISO stakeholder process.

F. Flexible Counting Conventions (Section 5.3.2)

14. Joint parties evaluated three options for counting how a resource’s flexible capacity quantity would satisfy a flexible capacity procurement obligation. The three options are: 1) Pro-rata Option: Pro-rata sharing of flexible and generic capacity; 2) Differentiated Capacity Option: Distinguish flexible capacity from generic capacity; and 3) Count-all Option: Count all capacity from “dispatchable” generators as flexible.

a. Which option do you think is better and why? (Section 5.3.2)

As stated above, SDG&E approached this proposal with the intention of defining flexibility needs in a way that yields tight, measureable and reasonable flexible capacity targets and imposing strict eligibility requirements on resources capable of satisfying those requirements. Meeting these principles ensures the California ISO is provided a pool of genuinely flexible resources, ensures resources that provide flexibility are rewarded, minimizes backstop procurement, minimizes the potential for cross-subsidization among load-serving entities with highly flexible portfolios and those with somewhat less flexible portfolios and, importantly, incentivizes investment in resource mixes capable of meeting the evolving needs of the grid.

Of the three options, the Differentiated Capacity approach best met SDG&E’s policy objectives. The “Count All” approach would require the ISO to account for the difference between a resource’s net qualifying capacity and the amount of that capacity eligible and available to meet the ISO’s flexibility requirements. The Count All approach would necessarily require that the California ISO artificially increase the overall flexible capacity requirement in order to account for inflexible capacity included in the approach. Similarly, while not increasing the overall target, the “Pro Rata” option potentially increases a seller’s offer obligations in an attempt to account for inflexible capacity associated with P*min. Increasing

procurement targets and/or offer obligations would likely increase overall costs without providing any additional contribution to reliability or operational flexibility.

To be sure, the Differentiated Capacity option requires increased coordination between buyers and sellers as to precisely what is bought and sold and will have increased reporting and compliance requirements. While not perfect, the Differentiated Capacity option keeps procurement and performance obligations in line with actual need, and attempts to minimize the risks and costs of overprocurement.

- b. What would the impact(s) be on RA contracting for each approach?

See Answer 14(a), above.

- c. What would be the impact of each approach on different types of resources, and particularly on preferred resources?

Each counting approach is more or less equally neutral to resource type, including preferred resources. As a threshold matter, whether a resource is eligible to provide flexible capacity – that is, whether it is “dispatchable” as defined in the Joint Proposal – is likely (and necessarily) a more limiting factor to participation than any of the proposed counting conventions.

- 15. Please comment on the proposed counting conventions for –

- a. Non-use limited thermal resources (Section 5.3.3.1)

- i. The proposal states that resources with start-up times greater than 90 minutes would be eligible to offer flexible capacity between PMin and NQC. Is 90 minutes an accurate threshold for startup time? What resources would be at an advantage or disadvantage if this threshold was adopted?

- ii. What would be the impact on flexible generators with slightly longer startup time (120 minutes – 180 minutes)?

SDG&E cautions against viewing an eventual flexible-capacity requirement as something that “advantages” or “disadvantages” certain resources or resource types. The goal here must not be to ensure resources can “participate,” but instead to ensure the California ISO has the operational flexibility it needs to satisfy operational requirements in a quickly evolving

environment. The impacts of a flexibility requirement will vary by resource and is largely a function of that resource's P*min or its average ramp rate. Under the proposal, a resource with a start-up period greater than ninety minutes is eligible to sell flexible capacity, however the amount of flexible capacity it is able to sell is the minimum of net qualifying capacity less P*min, or 180 minutes times the resource's average ramp rate.

In theory, a generator with a 120-minute startup time and a ramp rate fast enough to reach P*max in another sixty minutes could contribute to the three-hour ramping need, but in practical terms the California ISO would be severely restricted in how it could use this resource. Also the regulation and load-following ability of this resource would be close to zero. If the class of units including such resources were large, the ISO would need other products to make up for these restrictions. Future refinements of the flexibility program may allow participation by this kind of resource.

b. Use-limited thermal resources (Section 5.3.3.3)

Use-limited thermal resources, particularly peaking resources, provide flexibility yet are limited by run-time restrictions. Accordingly, these resources should be eligible to meet flexible resource-adequacy requirements and should also be subject to the same enhanced must offer obligations as other flexible resources, including the obligation to submit economic bids. Of course, some consideration of the resource's annual maximum run times must be considered and effective unit-substitution rules should be crafted. Again, SDG&E's goal is for eligibility criteria to reflect a high level of confidence that the flexible resource is capable of meeting the ISO's operational needs. This allows overall requirements to remain low. If the ISO lacks confidence that a flexible resource provides needed operational attributes, then requirements (and compliance costs) will rise. SDG&E seeks to avoid this outcome and looks forward to addressing bidding and substitution rules for use-limited resources in the parallel California ISO stakeholder process.

c. Multi-stage generation resources (Section 5.3.3.2)

The characteristics of multi-stage generation vary by resource. A simplifying assumption is needed or the administrative burden of defining the flexibility of such generation will be overwhelming. The Joint Proposal uses a middle ground that may give some multi-stage

generation resources too much credit for providing flexibility and others too little, but on average the California ISO should be getting the flexibility determined for such resources as a class. Future refinement should be able to more accurately determine the flexibility of these resources.

d. Hydro resources (Section 5.4)

i. The ISO and SDG&E recommend that the ISO establish a baseline output for hydro resources using the average hydro output over the previous five years. Is using an average output appropriate and what are the other approaches that can be adopted to calculate this value?

As with other use-limited thermal resources, hydro resources are: 1) undoubtedly “flexible” at times; and 2) incapable of strictly complying with the enhanced must-offer obligations envisioned for flexible resources. SDG&E anticipates significant stakeholder discussion on this issue. SDG&E supports the Joint Proposal’s interim recommendations for counting hydro resources largely because it fosters the goal of ensuring the eventual flexible resource-adequacy requirement yields a pool of genuinely flexible resources, ensures resources that provide flexibility are rewarded, minimizes backstop procurement, minimizes the potential for cross-subsidization between load-serving entities with highly “flexible” portfolios and those with “somewhat” flexible portfolios, and incentivizes investment in resource mixes capable of meeting the evolving needs of the grid.

SDG&E recognizes the recommendation in the Joint Proposal is not the only way to achieve the above objective(s). SDG&E looks forward to exploring alternative frameworks in this process and anticipates developing specific bidding and substitution rules for hydro resources in the parallel CAISO stakeholder process. SDG&E suspects the eventual solution for hydro resources could apply to all use-limited resources and solve issues raised by fossil units with emissions, run time, or startup restrictions. This will improve the entire flexible capacity program.

e. Intertie resources (Section 5.5)

SDG&E believes the treatment of intertie resources outlined in the Joint Proposal is appropriate at this time.

- f. Any other resources for which counting conventions should be developed.

Not at this time. The Commission's initial objective should be adopting a single framework for eligibility with limited exceptions.

- 16. In order to increase transparency over RA capacity procurement, what data could be made public within confidentiality restrictions?

SDG&E believes this question is best addressed in the parallel California ISO stakeholder process.

- a. What constraints should be imposed on sharing data such as ramp rate, P_{Min}, P*_{max}, or other values that may be considered confidential?

SDG&E believes the current confidentiality provisions should apply.

- b. What are the best options to resolve disclosure concerns?

SDG&E believes commercial rules adequately address disclosure concerns and that no new rules are needed.

- c. What tariff or BPM rules restrict data release?

SDG&E believes this question is best addressed in the parallel California ISO stakeholder process.

- 17. Should there be different qualitative and quantitative metrics of flexibility for demand response and storage resources?

SDG&E does not believe there should be different qualitative and quantitative metrics for flexibility for demand-response and/or storage resources at this time. As stated above, the ability to meet a three-hour ramp is the single most valuable characteristic to address near-term ramping and contingency needs. Eligibility and resource effectiveness should be determined on the resource's ability to sustain energy output for a minimum of three hours. Allowing resources that do not satisfy the three-hour sustained energy criteria to "count" could end up creating rather than solving flexibility needs. Similarly, to the extent strict eligibility criteria are diluted in favor of participation, the likely outcome will be a need to increase the overall flexibility requirement

to ensure operating requirements are met. Such a regime increases overall procurement costs without any meaningful contribution to system reliability.

Lastly, it is important to note that while storage and demand-response resources which cannot meet the three-hour sustained energy requirement are ineligible to provide flexible capacity, these resources still provide value as local and/or system resource-adequacy resources.

- a. If so, what characteristics or criteria could be used to quantify flexibility for storage devices and demand response?

See response, above.

- b. What demand response programs or types are most suitable for flexible resource eligibility?

Demand-response programs that can sustain load reduction for three hours would be the most suitable for flexible-resource eligibility.

Respectfully Submitted,

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December 26, 2012
San Diego, California