

Further, several of the changes provide minimal operational benefits to the CAISO, but significantly increase the costs and risks of providing generation service in California.

The NRG Companies protest four specific aspects of the RSI Amendments that needlessly increase costs and harm the competitiveness of generation resources that are already facing an extremely challenging market in California. *First*, the CAISO proposes to insert a blanket prohibition on generator self-scheduling if the resource has sold “flexible” Resource Adequacy (“RA”) capacity. Eliminating the ability for resources to self-schedule even to their minimum load represents a significant loss of economic value and operating flexibility to generators in California, while providing the CAISO no additional operational benefits. This blanket prohibition ignores the physical realities of managing physical resources in the CAISO footprint.

Second, the RSI Amendments significantly increase generator availability requirements. The existing availability requirements are based on actual historic generator performance parameters and thus represent a reasonable estimate of forced generator outage levels. By contrast, the CAISO provides no analytic support for its revised availability targets. The end result is that generators will be subject to additional penalties because they are unable to meet the arbitrary availability metrics proposed in this docket.

Third, the NRG Companies object to the CAISO’s proposal to amend rules governing how generation owners can “substitute” one resource adequacy resource for another resource from the tariff. The ability to substitute a resource without an RA obligation for another RA unit that experiences an outage both promotes reliability and allows generators to manage the risk of underperforming units. However, the CAISO has consistently sought to degrade the ability of generators to take advantage of the existing tariff provisions by adopting “business practices” that openly conflict with the existing tariff. Allowing the CAISO to amend these provisions

from its tariff will simply allow it to unilaterally reduce the ability of generators to engage in substitution of resources without Commission review.

Fourth, the NRG Companies protest the proposed elimination of the exemption for maintenance outages submitted less than seven and more than four days in advance. This rule has long been a feature of the CAISO markets, and the CAISO will derive no benefit from further penalizing generators for taking necessary maintenance outages.

Finally, the NRG Companies do strongly support one aspect of the RSI Amendments, namely, the proposal to lower the Resource Adequacy Availability Incentive Mechanism (“RAAIM”) non-availability penalty rate from \$5.90/kW-month to \$3.79/kW-month, which better reflects the risk-reward profile of selling this service.⁴ However, on balance, the NRG Companies respectfully request that the Commission reject the CAISO’s RSI Amendments, subject to the CAISO modifying its proposal to bring the costs imposed on generators in line with the benefits.

II. BACKGROUND

The California Public Utilities’ RA program was developed to meet the reliability needs of the bulk power system operated by the CAISO. As those needs have changed, the RA program has evolved as well, incorporating local area capacity requirements in 2006, and flexible capacity requirements in 2014.

At its core, the RA program requires a load serving entity (“LSE”) to acquire, and demonstrate that it has acquired, sufficient capacity to meet (1) a portion of its projected system peak demand, plus a reserve margin; (2) a portion of its peak capacity requirements in certain constrained zones (known as “local RA”); and (3) system ramping needs, as defined by the need to meet the largest three-hour ramp within each month. This LSE-procured capacity is then

⁴ RSI Amendments Transmittal Letter at 64-67.

required to be offered into the CAISO's energy and ancillary service markets, either through economic bid or self-schedule. The CAISO then uses these offers to clear its markets and dispatch resources.

In the RSI Amendments, the CAISO seeks to:

- (1) Modify the criteria for which certain resources qualify to provide RA capacity and modify the offering obligations for those resources;
- (2) Replace the current availability incentive system for RA capacity (the Standard Capacity Product ("SCP")) with a new RAAIM (unlike the SCP, which assesses availability based on a unit's mechanical availability as recorded through various CAISO systems, the RAAIM measures availability based on a resource's compliance with the highest quality offering obligation that attaches to its system, local or flexible RA capacity);
- (3) Modify the treatment of forced outages and how substitute capacity can be provided to mitigate the impacts of those outages; and
- (4) Make various other clarifications and clean-up modifications.

The CAISO requests that the Commission issue an order on its proposed new provisions by September 21, 2015, and that these new provisions take effect on either January 10, 2016 or March 1, 2016, depending on the provision.

III. PROTEST

A. The Blanket Prohibition on Self-Scheduling for Resources Providing Flexible Capacity is Not Reasonable.

The RSI Amendments would penalize resources selling "flexible" resource adequacy attributes in the CPUC's resource adequacy program for submitting self-schedules.⁵ Self-

⁵ RSI Amendments Transmittal Letter at 35, 43,46-51.

schedules are a standard risk management technique used by generation (and load) resources across the country in both the organized and unorganized markets to minimize costs and cover financial positions in the physical market. Prohibiting resources from self-scheduling should be adopted as a last resort, and only upon a compelling showing that the ISO needs to eliminate this practice. Specifically, the RSI Amendments would deem flexible capacity that is fully mechanically available, but self-scheduled to minimum load, unavailable. Restricting a unit's ability to self-commit itself to the market is an extremely troubling development and has not been shown to be just and reasonable.

As a preliminary matter, the NRG Companies note that there is no merit to the argument that resources should avoid selling "flexible" RA if they intend to self-schedule. Given that California's RA market is dominated by a three large buyers, sellers often face the Hobson's choice of either selling capacity with the flexible capacity attribute included, or not selling any capacity at all. If and when the flexible capacity attribute is "unbundled," this choice may become less stark.⁶ Until then, capacity suppliers have limited choice as to whether to sell flexible capacity.

1. Self-Scheduling a Resource to its Minimum Load Configuration Increases Access to Unit Flexibility and Decreases Costs.

Thermal generating resources typically are modeled by the CAISO and dispatched in "stages," with the lowest stable configuration known as the "minimum load" or "no load" stage. Below minimum load, the generator typically cannot operate in accordance with its system design parameters or would violate its environmental permits. However, once the unit reaches its stable minimum load configuration, the unit is then dispatchable above the minimum load

⁶ The May 26, 2015 Proposed *Decision Adopting Local Procurement and Flexible Capacity Obligations for 2016, and Further Refining the Resource Adequacy Program*, at 53-56, defers a decision on a proposal to "unbundle" the system/local and flexible attributes of RA capacity. This proposed decision is available at <http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M152/K045/152045521.PDF>.

point according to its stated ramp rate (typically measured in megawatts/minute).⁷ Thus, once a unit is online and in a stable minimum load configuration, the CAISO can dispatch the resource to any point between its minimum and maximum ability to generate.

The crucial principle is that a generator committing itself to its minimum load continues to make 100% of its flexible attributes available to the market. Indeed, a resource self-scheduled to minimum load actually provides a greater degree of flexibility than an off-line resource, because the resource is already pre-stationed to respond to dispatch instructions without having to take the time to reach minimum load.

Further, the financial risk to ratepayers *decreases* when a generator self-schedules its resource. This is because a self-scheduling resource bears the financial risk that its generation, including start-up and minimum load costs, will be earned back from the market. By contrast, a resource dispatched to minimum load by the CAISO typically receives a bid-production cost guarantee that ensures that the unit is kept whole to its costs. In the case where the CAISO commits the resource, it is the ratepayers that are ultimately on the hook for any bid production costs. Hence, there are numerous benefits to the market of allowing generators to self-schedule to their minimum load configuration.

2. Self-Scheduling a Resource is a Critical Tool for Managing Risk.

NRG finds it necessary to self-schedule its generating resources for a variety of legitimate reasons that reduce the cost of operating generating units in California or to arrange for environmental testing of resources. The RSI Amendments do not adequately address how generators will engage in a variety of normal operations if the ability to self-schedule is removed.

For example:

⁷ Multiple State Generating units, or MSG units, typically have multiple stable “minimum load” configurations. However, MSG units are similarly flexible across the entire range between the minimum and maximum dispatch points within a given MSG configuration.

First, self-scheduling provides generators a critical tool to manage natural gas risk. As the Commission is well aware, NRG and other generators have been burned in the past several years by the inability to reflect intra-day gas risk (particularly in the minimum load and start-up component of their offers). Self-scheduling of resources to minimum load allows generators to meet Commission-approved natural gas tariffs that require minimum gas burns or when pipelines shorten the gas balancing periods. Without the ability to self-schedule a unit to its minimum load configuration, it becomes impossible to address these legitimate natural gas pipeline constraints.

Second, self-scheduling allows units to commit themselves to minimum load and hedge bilateral market sales when the CAISO market will not commit units. The CAISO energy markets are notoriously unreliable about committing resources, even when economic, so self-scheduling to a unit's minimum stable configuration (often referred to as "PMin") is often the only reliable means of covering financial positions. Bilateral energy sales benefit both buyers and sellers, and further loss of liquidity in the day-ahead bilateral markets benefits no one.

Third, NRG and other generators often self-schedule generating resources to meet environmental testing or other operational reasons. By denying resources the ability to self-schedule (as well as increasing the availability metrics necessary to avoid penalties, discussed below), the CAISO would make it significantly more difficult for resources to do routine testing without suffering unreasonable performance penalties. Such penalties serve no purpose and actually discourage generator owners from conducting routine testing of their resources.

Fourth, self-scheduling a unit to its PMin has proven to be a critical tool for NRG in managing risk surrounding use-limited resources. In August of 2014, NRG realized that the CAISO was quickly using up the 200 annual starts allowed for its El Segundo Energy Center facility located in the LA Basin. Market conditions at the time indicated the units would be

strongly in demand for the balance of the year. Had the CAISO's erratic dispatch continued, the El Segundo Energy Center units would have run out of starts sometime between late October and early November. However, NRG was able to self-schedule the units to their PMin and avoid the daily startups. Indeed, self-scheduling was the only way NRG could ensure the units would remain available to the market over the entire year.

Fifth, self-scheduling to PMin is often required in order for a unit to manage its obligations related to maintenance contracts. NRG, like many owners of combustion turbines (whether they are in simple or combined cycle configuration), has third-party agreements in place (usually with the turbine manufacturer) which stipulate major maintenance cycles for the equipment. Most of these agreements require the operator/owner of the resource to cease operations after a specific number of starts be reached. Once the unit's cap is reached, the unit must perform a pre-determined maintenance task (*i.e.*, a hot gas path or combustion turbine inspection) before a unit can be returned to service. In order to stave off required maintenance when a pre-determined number of starts is reached, an operator will often keep a unit online at minimum load in order to better plan the upcoming necessary outage to a non-critical time period. Of course, keeping a unit on at minimum load requires that the generating resource have the ability to self-schedule.

Finally, the limitation on self-scheduling becomes even more problematic with the continued growth in the number of Multi-Stage Generating resources, or "MSG Resources." Given the limitations of the CAISO's bidding systems, the problem of trying to operate MSG resources is significant, as each MSG unit has multiple minimum load levels across the full operating range of the resource. For example, if the MSG unit is a combined cycle resource in which the configurations are defined by various combinations of combustion turbines and heat recovery steam generators, and the combustion turbines can be started up within 90 minutes, the

entire capacity of the resource is considered flexible and no self-schedules can be submitted for this resource.

B. The Proposal to Set New Availability Standards is Not Adequately Supported and is Not Just and Reasonable.

The RSI Amendments also include a proposal to replace the current monthly availability standards with a single annual availability standard. CAISO's current availability metrics are based on an analysis of actual outage data, whereas the proposed availability mandated by the RSI Amendments appears to have no factual basis. This unwarranted change should be rejected as excessively punitive, particularly when combined with the inability for resources to count self-scheduled hours against a flexible resource's availability.

Under the current Standard Capacity Product rules, the CAISO establishes monthly availability targets, which are determined from the historical availability of Resource Adequacy Resources during the CAISO's Availability Assessment Hours over the previous three years.⁸ Resources whose monthly availability is more than 2.5% above the monthly availability target are eligible to receive availability incentive payments. Resources whose monthly availability is more than 2.5% below the monthly availability target will be assessed a non-availability charge.⁹

The CAISO now proposes to eliminate the monthly availability targets in favor of a annual availability target of 96.5%.¹⁰ Further, the CAISO proposes to narrow the "dead band" in which availability will neither be rewarded nor penalized from plus or minus 2.5% around the 96.5% annual target to plus or minus 2.0% around this target.¹¹ This means that resources must

⁸ CAISO Tariff, Section 40.9.4.1.

⁹ CAISO Tariff, Section 40.9.6.

¹⁰ RSI Amendments at 60.

¹¹ RSI Amendments at 62.

have monthly availability greater than 98.5% to be eligible for incentive payments. It also means that resources with monthly availability less than 94.5% will incur a financial penalty.

The CAISO asserts that this new annual 96.5% target is comparable to the 96.4% average monthly availability across all months for the last four years. The CAISO holds that these changes are needed to better address looming operational changes:

As the resource mix in the CAISO region changes rapidly and raises new and significant performance challenges, the tolerance for sub-par performance needs to be minimized. Reducing the dead band will slightly broaden the reach of potential availability charges, thereby incenting more resources to be available and meet their must-offer obligations. This change will result in a more robust “pay for performance” mechanism.¹²

The CAISO is clearly using this proposed transition from an availability standard based on mechanical availability to an availability standard that is based on compliance with the highest offering obligation that attaches to the capacity as an opportunity to require higher availability from RA resources. This means that, in a given 30-day month, a resource that is providing “base” flexible capacity will incur a penalty if its RA capacity is unavailable (or self-schedules) more than 28 hours per month. Similarly, a resource that is providing “peak ramping” flexible capacity will incur a penalty if it is unavailable (or self-schedules) more than eight hours per month. A resource that is providing “super-peak” flexible capacity will incur a penalty if it is unavailable (or self-schedules) more than six hours per month.

The pernicious interplay between the decrease in availability rules and the CAISO’s proposal to eliminate the right to self-schedule units raises serious concerns about the proposal. For example, under the RSI Amendments, a generator seeking to self-schedule in order to conduct an environmental test would be deemed “unavailable” for the period of the test. Such a resource providing “base” flexibility would quickly blow through the 28 grace hours of

¹² *Id.*

unavailability permitted under the RSI Amendments proposal. If the resource was providing “peak” or “super-peak” flexibility instead, it could easily exhaust the very small number of grace hours permitted under the CAISO’s proposal.

1. The RSI Amendments Conflate Availability with Performance.

The CAISO suggests that “significant new performance challenges” are driving the need for greater availability. It is not clear, however, to what “performance” challenges the CAISO is referring. To be clear, the CAISO is proposing to assess availability based on how a resource complies with its offer obligation by submitting bids into the CAISO’s energy markets, not how the resource performs when dispatched according to those energy bids. These are distinct issues. For example, if no resource participating in the CAISO’s markets submitted an economic bid, the CAISO could still dispatch resources to operate the system reliably. Conversely, if every resource complied with its offering obligation by submitting economic bids, but failed to comply with its subsequent dispatch instructions, operational havoc would ensue. By bringing the term “performance” into the discussion, the CAISO is conflating resource performance with compliance with its offering obligation to try to justify its proposed 96.5% annual standard. This conflation of standards makes no sense and should be rejected.

Moreover, the CAISO has submitted no supporting statistical or operational analysis that demonstrates why the proposed 96.5% – as opposed to some other annual standard – is the just and reasonable value.

2. Moving from a Monthly to Annual Availability Target Increases Financial Risks to Generators.

While the CAISO has proposed to set an annual availability target, it still proposes to assess availability on a monthly basis. The impacts of this change are that a resource that is unavailable in a given month, but is perfectly available in every other month, will experience significantly greater financial penalties, even though the resource’s performance is unchanged.

While it proposes an annual standard, the CAISO has provided no discussion as to why it is reasonable to set an annual standard but continue to assess availability on a monthly basis.

3. The RSI Amendments Move Away from Fact-Based Availability Metrics.

Under the CAISO’s Standard Capacity Product, the monthly availability standards, which are set by three-year historical averages, are informed by the fleet’s performance. The CAISO’s new proposed RAAIM, which uses a static 96.5% annual standard, is not informed by actual data. Apart from noting the proposed annual availability standard’s proximity to a historical average availability number of 96.4%, the CAISO has provided no supporting analysis or rationale as to why the annual availability target should be a static 96.5% instead of some other number, or why the annual target should be a static number at all. The CAISO’s historical availability targets are shown below:

	2015	2014	2013	2012	2011¹³	'12-'15 average	Seasonal Average
Jan	97.95%	97.71%	97.48%	97.20%	98.00%	97.59%	96.81%
Feb	97.02%	96.95%	97.70%	97.76%	98.00%	97.36%	
Mar	97.26%	96.77%	97.02%	95.74%	96.00%	96.70%	
Apr	96.67%	96.24%	95.77%	95.38%	95.00%	96.02%	
May	96.36%	95.34%	94.89%	94.03%	95.00%	95.16%	95.97%
Jun	96.64%	96.28%	96.30%	96.64%	97.00%	96.47%	
Jul	97.07%	96.87%	96.56%	95.96%	96.00%	96.62%	
Aug	95.46%	95.10%	95.34%	96.83%	96.00%	95.68%	
Sep	96.35%	95.89%	95.52%	95.80%	96.00%	95.89%	96.81%
Oct	95.99%	95.34%	96.34%	97.20%	98.00%	96.22%	
Nov	96.07%	95.90%	96.11%	97.07%	96.00%	96.29%	
Dec	97.31%	97.36%	97.75%	97.65%	98.00%	97.52%	

Of particular concern to the NRG Companies is that the proposed 96.5% annual availability standard is higher than the average (2012-2015) availability in the RA months (May

¹³ The 2011 numbers are in graycolor because those values appear to be rounded to the nearest integer value and lack the two digit precision present in the 2012-2015 data. Those 2011 values are not used in the analysis described below.

through September, 95.97%), and significantly higher than the average (2012-2015) availability in the end-of-summer RA months August (95.68%) and September (95.89%). Intuitively, one would expect the August and September availability numbers to be lower to reflect the reality that generating units will be running more frequently during the peak summer season. Through its proposal, the CAISO is proposing to hold generators to higher standards in these months without adequately justifying the need for higher standards in these months.

Coupled with the proposed narrowing the “dead band” from 2.5% to 2.0%, the CAISO’s proposed new RAAIM annual availability standard would yield minimum availability standard levels (below which generators would be penalized) that are greater than the 2012-2015 average minimum availability levels in every month except January, February, and December:

	Min Availability (SCP)*	Min Availability (RAAIM)
Jan	95.09%	94.50%
Feb	94.86%	94.50%
Mar	94.20%	94.50%
Apr	93.52%	94.50%
May	92.66%	94.50%
Jun	93.97%	94.50%
Jul	94.12%	94.50%
Aug	93.18%	94.50%
Sep	93.39%	94.50%
Oct	93.72%	94.50%
Nov	93.79%	94.50%
Dec	95.02%	94.50%

*Determined by subtracting the SCP dead band of 2.5% from the average monthly availability from 2012-2015.

The overall effect of the CAISO’s proposal to move from monthly availability standards to an annual standard, and to narrow the dead bands around that standard, is to impose a higher availability requirement without providing adequate justification for doing so. Apart from references to a “zone of reasonableness” and unspecified “significant performance challenges,”

the CAISO provides no empirical evidence as to why it is suddenly reasonable to impose higher minimum availability performance requirements, and the corresponding threat of financial penalties, on generators in three-fourths of the months of the year. Given the lack of empirical justification for the new higher standards, the Commission cannot find that the CAISO's proposal to implement an annual availability standard of 96.5% with narrower dead bands is just and reasonable.

C. The Proposal to Demote Rules Around Resource Substitution from the Tariff Should be Rejected.

The ability to provide substitute capacity for generating resources that are on outage is a critically important function that allows generators to mitigate the risk of incurring CAISO non-availability penalties, both under the existing Standard Capacity Product and under the new RAIIM. NRG has in fact found the CAISO's RA replacement rules to be one of the more important commercial issues it has faced over the past several years, and the ability to substitute an uncommitted unit for a poorly performing unit has saved the company significant amounts of money.

The timing of when substitution requests must be submitted is a key piece of the substitution process. It is common for the CAISO to request generating units to start up in the morning to be able to meet the morning load "pull." To the extent that generating units suffer unexpected forced outages, it is common for those outages to occur during the start-up process – *i.e.*, during the morning hours. The current CAISO Tariff specifies that resource substitutions can be made "prior to the close of the Day-Ahead Market for the next trading day," which

provides generators the maximum amount of flexibility to replace resources that fail during the morning ramp.¹⁴

The CAISO, however, is now seeking to eliminate the reference to substitutions being allowed “prior to the close of the Day-Ahead Market” and replace it with a reference to its Business Practices Manual. While this change sounds innocuous, the CAISO has stated that this change is intended to allow it to lengthen the period of time required to make a resource adequacy substitution, while evading direct Commission review of this proposed change. NRG submits that the timing of substitution is a critical rate, term and condition that should not be demoted to a Business Practices Manual over which the CAISO has complete discretion.

D. The Proposal to Eliminate the Exemption from Non-Availability Penalties for Maintenance Outages Submitted between Seven and Four Days in Advance is Unreasonable.

Currently, if a market participant requests a maintenance outage between seven and four days in advance, and the CAISO approves this outage, the CAISO treats this outage as a forced outage (because it was submitted fewer than seven days in advance), but exempts this forced outage from SCP non-availability penalties.¹⁵ The RSI Amendments would eliminate this exemption and instead penalize maintenance outages as if they were forced outages, unless scheduled seven days in advance.

There are ample reasons for rejecting the proposed changes. The RSI Amendments discourage generators from taking preventive maintenance outages by making the generator financially indifferent to whether it proactively schedules a maintenance outage during periods when the CAISO does not need the resource or simply waiting for a piece of equipment to break,

¹⁴ CAISO Tariff Section 40.9.4.2.1 (c) (2). This language is also shown in the struck-through tariff language shown in Appendix B of the RSI Amendments (at 47) (emphasis added)

¹⁵ RSI Amendments Transmittal Letter at 83-84.

which often occurs when the CAISO does need the resource. Indeed, the Commission initially accepted the current tariff language with the expectation that generator owners would take short-term maintenance outages where those outages would not impact system reliability.

The need for this kind of exemption has not gone away. What the CAISO is proposing to be changed, however, is how the it measures availability. The CAISO had to address these kinds of outages separately in order to exempt them from the SCP calculations. Just because the CAISO is changing the nature of how it measures availability is neither a just nor reasonable reason for suddenly eliminating this exemption.

E. Comments in Support of Lowering Penalties.

The CAISO is proposing to set the RAIM non-availability payment at 60% of the Capacity Procurement Mechanism compensation rate.¹⁶ This would yield a RAIM penalty rate of \$3.79/kW-month.

The NRG Companies strongly supports this proposal. The current SCP non-availability penalty rate of \$5.90/kW-month creates a strong disincentive for parties to transact RA system capacity at current prices, which are more in the range of \$1/kW-month to \$2/kW-month. A party that sells RA capacity at \$1/kW-month with the non-availability penalty rate nearly six times higher than that value takes on significant risk for disproportionately little reward.

California's opaque bilateral RA program pays the exact same product (local, system or flexible RA capacity) very different prices. This makes it difficult to assign the "right" penalty price to all RA capacity. Still, the CAISO has made a rational proposal and supported it with some analysis of current RA contract prices. The CAISO's proposal reduces the disproportional risk faced by parties selling system RA capacity but still leaves the penalty price high enough to

¹⁶ The current SCP non-availability rate is the same as the Capacity Procurement Mechanism rate of \$70.88/kW-year, a rate established by settlement in 2011.

encourage availability. NRG supports this proposal and respectfully urges that the Commission approve it.

IV. CONCLUSION

For the aforementioned reasons, the NRG Companies respectfully request that the Commission reject the RSI Amendments without prejudice to the CAISO coming back and proposing RSI Amendments that ensure that cost incurrence is matches the increased costs being imposed on generating resources.

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Respectfully submitted,

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Certificate Of Service

I hereby certify that I have served a copy of the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Princeton, New Jersey this 19th day of June, 2015.

/s/ Abraham Silverman
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