

**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 20, 2011)

**COMMENTS OF NRG ENERGY, INC.
ON PHASE 2 ISSUES**

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For
NRGE NERGY, INC.

April 5, 2013

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In accordance with the March 11, 2013 *Administrative Law Judge’s Ruling Resetting Schedule for Comments on Phase 2 Resource Adequacy Issues and Scheduling a Prehearing Conference* (“March 11 ALJ Ruling”), NRG Energy, Inc.¹ (“NRG”) hereby submits these comments on (1) the October 29, 2012 *Resource Adequacy and Flexible Capacity Procurement Joint Parties’ Proposal*; (2) the January 14, 2013 *R.11-10-023 Energy Division Resource Adequacy Proposals*; and (3) the *Energy Division Flexible Capacity Procurement Revised Proposal* (appended to the March 11 ALJ Ruling), as discussed in the January 23, 2013 and March 20, 2013 workshops.

I. COMMENTS

NRG’s comments focus on incorporating flexible capacity procurement into the Resource Adequacy (“RA”) program.

¹ NRG Energy, Inc. is the parent of NRG Power Marketing LLC, GenOn Energy Management, LLC, Cabrillo Power I LLC, Cabrillo Power II LLC, El Segundo Power LLC, GenOn Delta, LLC, GenOn Marsh Landing, LLC, GenOn West, LP, High Plains Ranch II, LLC, Long Beach Generation LLC, NRG Solar Alpine LLC, NRG Solar Borrego I LLC, NRG Solar Blythe LLC, NRG Solar Roadrunner LLC and Avenal Solar Holdings LLC, each of which owns and operates generating resources in California. Because the focus of this proceeding is on California market issues, NRG Energy, Inc. appears on behalf of these entities.

At the January 23, 2013 workshop, Administrative Law Judge David Gamson requested parties' comments to the following questions (as presented in the March 11 ALJ Ruling):

First, does the Commission need to make a decision on the matters this year? We have a Commission decision in resource adequacy which will occur in June of this year, the last Commission meeting in June. Second, does the Commission need to make a decision on either the DG deliverability or flexible capacity procurement issues this year? Is there a need? If there is such a need to make a decision in those proceedings, in those matters, what decision should it be? Should it be a policy decision? Should it be an implementation decision? And, third, then the question will be if you believe that there is a detailed decision that needs to be made either on policy or implementation, what should that be? Regarding flexible capacity, should it be the ISO proposal? Should it be the Energy Division proposal? Should it be something in between? Should it be something completely different?²

NRG's response to these questions is as follows:

Response to Question 1

NRG supports implementing flexibility requirements into the RA program on a trial basis for RA compliance year 2014. While there are a number of substantive implementation issues (*e.g.*, the nature of the must-offer obligation that will attach to use-limited resources that are providing flexibility, how use-limited resources providing flexibility will be treated; whether the flexibility attribute and the RA capacity attribute must be bundled) that remain open, implementing flexibility requirements for 2014 will allow all parties to gain experience with these requirements before such requirements significantly affect RA procurement.

Additionally, implementing these requirements on a trial basis will, during the initial year, likely surface other issues that will be better dealt with prior to a year in which the flexibility requirements affect RA procurement. Deferring implementation of flexibility requirements to a year in which those requirements may affect procurement is imprudent.

² March 11 ALJ Ruling at 2.

The differences between the Joint Parties' approach and Energy Division's approach to implementing flexibility requirements have narrowed to the point that either approach could be implemented on a trial basis. Given the expectation that implementing either proposal will not affect RA procurement for 2014, NRG supports implementing either proposal on a trial basis for 2014.

Regardless of which proposal is implemented, or whether the Commission defers implementing either proposal, the CAISO and the Commission must begin work immediately to address the issues that remain unresolved, which NRG identifies below. These issues must be resolved by the end of Q1 2014 to allow flexibility requirements to be enforced beginning with compliance year 2015.

Response to Questions 2 and 3

NRG agrees that flexibility will be a more critical, if not *the* most critical operational attribute over the coming years as California's generation resource mixes changes with the implementation of the 33 percent Renewables Portfolio Standard. While the need for capacity ties closely to adequacy issues, the need for flexibility ties more closely to operational issues. Ideally, therefore, the CAISO's spot ancillary service markets should be the markets that signal the need, and provide suitable compensation for, flexibility.

The same thing, however, could be said for capacity – that the CAISO's spot markets, ideally, should provide the prices that signal the need for capacity – not just capacity to meet ancillary service needs, but capacity to ensure resource adequacy. The sobering reality is that the CAISO markets have provided nothing close to the kind of price signals and compensation that would meet California's capacity needs. Consequently, the CAISO's need for capacity is met through programs outside of the CAISO's spot markets – the RA program, and the Long-Term

Procurement Planning process – and the CAISO’s markets are now merely a tool for committing and dispatching the resources brought to them from outside. Consequently, the CAISO itself is advocating for the need to incorporate flexibility requirements into the RA program.

Because of the expectations that the CAISO’s markets will neither reliably signal the need for or adequately compensate flexible capacity, nor provide the CAISO adequate assurance that such flexible capacity will be there when needed, NRG is all but fully resigned to the reality that California will ensure the sufficiency of this increasingly important attribute through means other than the CAISO’s markets. NRG therefore supports implementing flexibility requirements in the RA program.

A. Flexibility Requirements Should Be Incorporated Into the RA Program on a Trial Basis for 2014 and Enforced Beginning in 2015

NRG agrees that the changing resource mix, and the resulting operational challenges, brought on by the progress towards achieving California’s 33 percent Renewable Portfolio Standard warrant modifying the RA Program to ensure that the resources procured are not only capable of serving peak demand, but also capable of following changes in net load (*i.e.*, load net of variable energy resource production) in all seasons, not just the peak demand season. It is unreasonable to assume that the flexibility inherent in the current bulk power supply fleet will be maintained, let alone that the increasing need for flexibility driven by increasing deployment of intermittent renewable resources will be met, absent intentional, forward-looking modifications to current CAISO markets and RA procurement practices.

In that vein, and under the expectation that the CAISO markets will not provide the needed price signals or compensation to ensure sufficient flexibility, NRG supports implementing flexible capacity requirements into the RA program. The key question then becomes – it is necessary and prudent to do so for the 2014 RA compliance year?

As NRG understands, it is unlikely that the need for flexibility would constrain, or even affect, RA procurement for 2014. The CAISO's projected net load shapes show that the 2014 projected net load shape is shaped similarly to the 2013 load shape. However, the CAISO projects a significantly different net load shape for 2015 – one in which the need for flexibility sharply increases.³ Beyond 2015, the need for flexibility may become the key procurement constraint as (1) the addition of variable resources continues to inflate planning reserve margins, and (2) flexible once-through-cooled (OTC) resources retire in compliance with the State Water Resources Control Board's OTC policy. While it does not appear *operationally* critical to incorporate flexibility needs into RA procurement for 2014, it does appear *operationally* critical to do so beginning in 2015.

NRG nevertheless believes that there is value to implementing flexibility requirements for 2014 before the need for flexibility begins to constrain or affect RA procurement. Doing so will allow all parties to gain experience with how the requirements are developed, and how they would be implemented and, ultimately, enforced. Implementing flexibility requirements on a trial basis for 2014 will create a useful, real-world workbench on which the flexibility issues that currently remain unresolved can be better considered and addressed. Further, NRG expects that implementing flexibility requirements on a trial basis will surface other concerns and issues that can then be dealt with prior to implementing requirements with which parties would be expected to comply and for which sanctions for non-compliance could result.

Deferring incorporating flexibility requirements into the RA program to a year in which the flexibility requirements are expected to significantly affect or constrain procurement is not a

³ See Joint Parties' Proposal at Figure 1, in which the projected net load curve shape changes dramatically from 2014 to 2015. See also Long-Term Resource Adequacy Summit presentation of CAISO Vice President of Market Quality and Renewable Integration Mark Rothleder at slide 3 (available at http://www.caiso.com/Documents/Presentation-Mark_Rothleder_CaliforniaISO.pdf).

prudent course of action. NRG foresees troubling outcomes in such a scenario: (1) unacceptably high levels of CAISO backstop procurement and (2) an unwillingness to adopt proper flexibility procurement targets going forward.

If, NRG's recommendation notwithstanding, the Commission defers incorporating flexibility requirements into the RA program for 2014, the Commission should require the unresolved issues to be closed, and flexibility requirements incorporated into the RA program, for 2015 and beyond.

B. Significant Issues Regarding the Implementation of Flexibility Requirements Remain Unresolved.

Both the CAISO and Energy Division offered very different initial proposals for incorporating flexibility requirements into RA procurement for the 2013 RA compliance year. The initial CAISO proposal focused on setting procurement targets for three types of flexibility – maximum ramp, load following and regulation. The initial Energy Division proposal focused on modifying the existing Maximum Cumulative Capacity (“MCC”) “buckets” to ensure that load-serving entities’ (“LSEs”) procurement provided adequate flexibility. Ultimately, neither approach was adopted for the 2013 RA compliance year.

The Joint Parties’ and Energy Division’s approaches to incorporating flexibility into the RA program converged significantly in 2013. The Joint Parties’ approach moved from three types of flexibility to a single type of flexibility. Energy Division moved from the modified MCC bucket approach to meeting flexibility needs to the approach proposed by the Joint Parties. Both Energy Division and the Joint Parties adopted the “Differentiated Capacity” approach to determining how much each of individual generating resource’s capacity could count towards meeting flexibility needs. NRG is encouraged that the differences in approaches have sharply

diminished. To allow parties to gain experience with flexibility requirements, either approach could and should be implemented on a trial basis beginning in 2014.

However, significant issues still remain with regards to enforcing flexibility requirements in the RA program. These include:

- **Flexibility as a purely “system” requirement.** Both the Joint Parties’ Proposal and Energy Division’s proposal treat flexibility as a “system” attribute, in which a MW of flexibility has the same value no matter where it is procured. Intuitively, given that the location of generic capacity matters, the location of flexible resources very well could matter. Locating flexible resources electrically distant from the variable resources they are expected to balance will create network flows that the CAISO will have to manage. Network constraints also could strand some flexibility under some conditions, as ramping up those flexible resources could exacerbate transmission overloads. The RA program began as a system-wide program, but quickly evolved to include specific capacity requirements for transmission-constrained areas. Similarly, failing to ensure flexibility is in the right location could have detrimental consequences.
- **Rules for counting how use-limited resources – both hydro-electric generation, and use-limited thermal generation - count towards meeting flexibility needs.** While the Pacific Gas & Electric Company (“PG&E”) participated in the development of the Joint Parties’ Proposal, PG&E did not join the Joint Parties’ Proposal, and Southern California Edison (“SCE”) declined to sign on to the part of the Joint Parties’ Proposal that deals with determining how hydro resources count towards meeting flexibility requirements. The flexibility

treatment of hydro resources is one of the major differences between the Joint Parties' Proposal and the Energy Division Proposal. How use-limited resources will count towards meeting flexibility requirements is one of the major issues that must be resolved before such requirements are enforced.

- **The nature of the offering obligation that attaches to use-limited resources that are meeting flexibility needs.** In December 2012, the CAISO published a straw proposal in its Flexible Resource Adequacy Criteria and Must-Offer Obligation (“FRACMOO”) stakeholder process.⁴ That straw proposal deferred to a second phase the issues of (1) the bidding obligations for flexible capacity, (2) compensation for flexible capacity backstop procurement designations, and (3) the development of a standard flexible capacity product.⁵ The CAISO, however, has since indefinitely postponed both the release of an updated FRACMOO proposal and a follow-up meeting to discuss the updated proposal. As NRG understands, the CAISO is not advocating applying a must-offer obligation to resources that are providing flexibility in 2014, while Energy Division is advocating applying a must-offer obligation to such resources. Given the requirement in both proposals to “bundle” flexible and RA capacity, and further given that the projected 2014 net load shape (which is very similar to the 2013 load shape) makes it likely that implementing flexibility requirements, even if such requirements were enforced for 2014, would not likely affect RA procurement, it is not clear whether applying the must-offer obligation to flexible

⁴ December 13, 2012 *Flexible Resource Adequacy Criteria and Must-Offer Obligation Straw Proposal* (“FRACMOO Straw Proposal”), available at <http://www.caiso.com/Documents/StrawProposal-FlexibleResourceAdequacyCriteriaMustOfferObligation.pdf>

⁵ FRACMOO Straw Proposal at Section 9.

capacity, even if enforced, would have any meaningful effect on 2014 RA procurement. Thus, while NRG does not support the “bundling” requirement (as discussed below), and believes that further discussion is needed with regards to the nature of the must-offer obligation that would be imposed on use-limited resources providing flexibility, NRG’s expectation that implementing flexibility requirements for 2014 will not affect RA procurement for 2014 means that the parties have time to work these issues out before flexibility requirements *will* affect RA procurement.

- **Self-scheduling.** Within both the Joint Parties’ and Energy Division’ approaches to the nature of the offering obligation, there appears to be questions about whether resources that are providing flexibility should be allowed to self-schedule in the CAISO markets.⁶ In general, NRG strongly supports efforts to reduce the amount of self-scheduling in the CAISO markets. Self-schedules distort market outcomes and increase the likelihood for administrative, rather than economic, pricing outcomes. However, in NRG’s experience, generating unit owners – especially owners that have generating units registered as multi-stage generating units – sometimes self-schedule their resources to avoid irrational or arbitrary CAISO market outcomes that can have real financial consequences. The CAISO should more fully examine the underlying reasons why parties self-schedule, and take steps to address the underlying fundamental issues that encourage parties to self-schedule, prior to imposing restrictions on self-scheduling resources’ ability to provide flexibility.

⁶ Joint Parties’ Proposal at 13-14; Energy Division Revised Proposal at 5.

- **Implications for use-limited resources providing flexibility.** The CAISO’s FRACMOO Straw Proposal holds that use-limited resources that provide flexibility will be subject to Standard Capacity Product (“SCP”) non-availability penalties if that resource exhausts its allowable use limit.⁷ While the CAISO asserts that this is simply an extension of its current SCP authority, NRG neither agrees with the CAISO that it is reasonable to apply SCP non-availability penalties to use-limited resources in the current paradigm, nor agrees that such treatment should be extended to resources providing flexibility. The owners of use-limited resources have limited ability to control how much the CAISO actually uses their resources. Further, efforts to ration CAISO use of use-limited resources through bid prices may be considered economic withholding. Finally, such efforts to ration use through bid prices may prove completely ineffective if the CAISO mitigates the resource’s bid or exceptionally dispatches the units anyway. While the owners of use-limited resources are required to submit use plans to the CAISO, it is not clear to NRG how, or even if, the CAISO takes those use plans into account. This is a significant issue which NRG considers to be unresolved. Further, Energy Division considers this to be an issue which warrants further consideration.⁸
- **“Bundling” the RA capacity attribute and the flexibility attribute.** Both the Joint Parties’ Proposal and the Energy Division Revised Proposal require that the flexibility attribute and the RA capacity attribute be bundled together into an

⁷ FRACMOO Straw Proposal at 20.

⁸ “Staff supports further discussion through workshops and comments to explore this rule [regarding use-limited resources] in the 2014 annual RA proceeding and through Phase II of the “Flexible Resource Adequacy and Must-Offer Obligation” initiative at the ISO. There is time to develop rules regarding how use-limited resources can be more economically dispatched while abiding by their use limitations.” Energy Division Revised Proposal at 6.

inseparable, single product.⁹ Both proposals assert that this bundling is necessary to simplify the tracking needed to validate compliance. Energy Division additionally offers that this bundling is necessary to address “increase[d] potential for market manipulation and exercise of market power”.¹⁰

NRG is concerned that requiring bundling of these two attributes under the guise of reducing administrative burden will restrict an asset owner’s opportunities to maximize the value of their assets and will inevitably diminish what should be a goal of incorporating flexibility into RA procurement, namely, to provide incentives to increase the flexibility that can be provided from existing resources. While the Joint Parties and Energy Division support bundling as a necessary simplification, at least in the near-term (and quite likely in the long-term, as well), NRG does not support bundling as a necessary consequence of incorporating flexibility requirements into RA procurement. Further discussion of this issue is necessary.

- **Counting flexibility not compensated.** On March 28, The Utility Reform Network (“TURN”) and the Sierra Club submitted an updated request for evidentiary hearings in the instant proceeding.¹¹ The updated request focuses on the facts and assumptions regarding the CAISO’s estimate of the supply of available flexibility. While it appears that TURN and the Sierra Club have gotten more comfortable with the CAISO’s calculation of the monthly flexibility need, the questions raised in the updated request themselves raise other questions. For

⁹ Joint Parties’ Proposal at Section 5.2; Energy Division Revised Proposal at Section 8.

¹⁰ Energy Division Revised Proposal at 7.

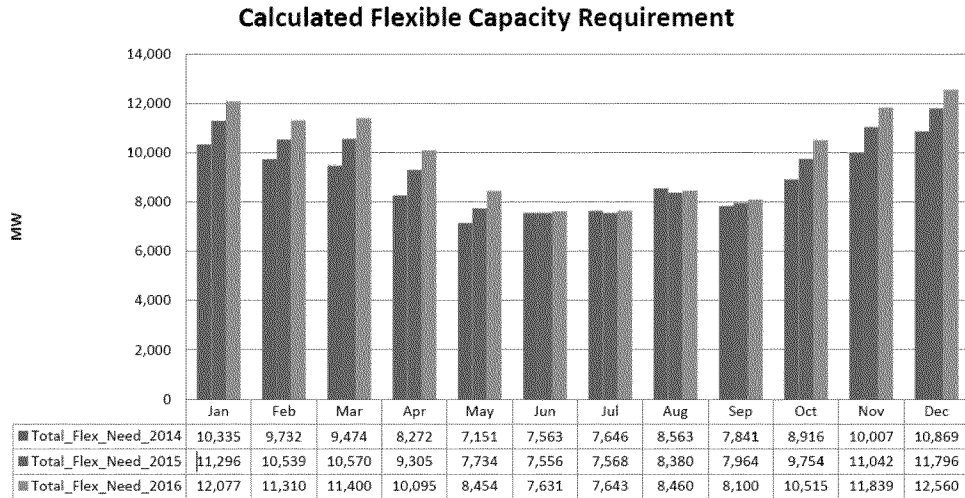
¹¹ *Amended Request For Evidentiary Hearings of Sierra Club and The Utility Reform Network*, submitted March 28, 2013 in the above-captioned proceeding (“Amended Sierra Club/TURN Hearing Request”).

example, TURN and the Sierra Club question the CAISO's assumption that only flexible capacity that is compensated through the RA program can be counted to meet flexibility needs. Instead, TURN and the Sierra Club assert that "[...] if an 800 MW combined cycle facility received RA payments for only 300 MW of its capacity, it should be expected to provide at least some portion of its additional 500 MW of remaining capacity should that capacity be needed."¹² NRG strongly disagrees that the CAISO should be allowed to count any attribute, including flexibility or capacity, which has not been explicitly procured and compensated, towards meeting any operational or procurement requirement. This issue also directly touches on the "bundling" issue discussed above. Both warrant further consideration.

- **Determining the monthly flexibility requirement.** The Joint Parties propose to determine the monthly flexibility need as the sum of (1) the maximum three-hour ramp projected for that month and (2) the maximum of (a) the capacity required for the Most Severe Single Contingency ("MSSC") and (b) 3.5 percent of the monthly peak load, plus an error factor. The Joint Parties have not explained to NRG's satisfaction why this formula uses only half of the contingency reserve requirement (3.5%) and not the full contingency reserve requirement. If the CAISO had to deploy all of its contingency reserve due to a contingency that took place at the beginning of the maximum three-hour ramp period for that month, by the Joint Parties' formula the CAISO would not have sufficient ramping capability to meet its contingency reserve need and its ramping need – unless the contingency reserve need was set by the size of its MSSC.

¹² Amended Sierra Club/TURN Hearing Request at 4.

- The proposed three-hour flexibility requirement and its relation to the “peak-to-trough” change in net load. The CAISO’s revised presentation for the March 20, 2013 workshop presents two charts showing projected monthly data. One projects the monthly flexibility requirement calculated using the formula in the Joint Parties’ Proposal.¹³



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

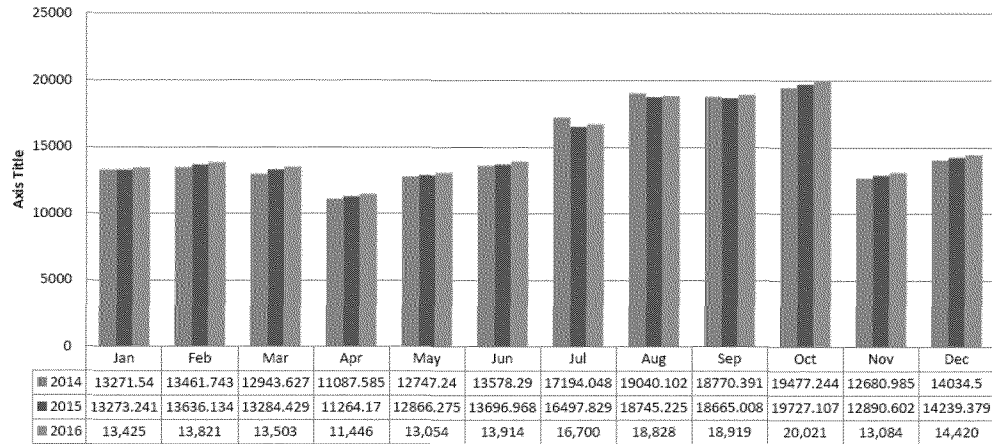
Note: In the 2014-2016 assessments, the MSSC is never larger than the 3.5%*E(PL_{MTHy})

Another slide in the same presentation shows the monthly peak “peak-to-trough” change in net load:¹⁴

¹³ CAISO March 20, 2013 Presentation – *Methodology for Determining Flexible Capacity Procurement Requirements (revised March 22, 2013 to reflect 80% fixed tilt solar fleet)* (“CAISO Revised March 20 Presentation”) at Slide 15.

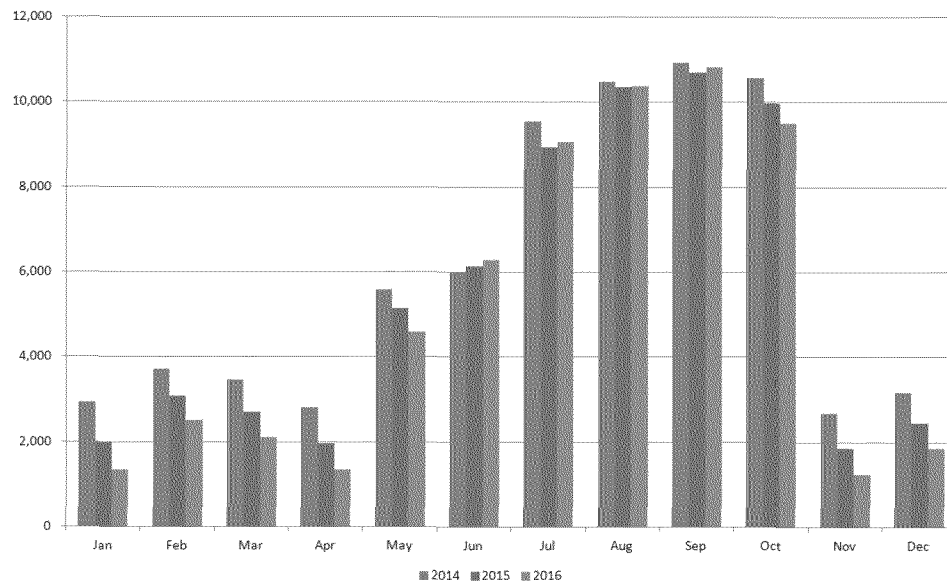
¹⁴ *Id.* at Slide 29.

**Peak-to-Trough: Largest Differences in Net load in a Single Day
(Independent of Continuity and Duration)**



The difference between the three-hour-based flexibility requirements and the “peak-to trough” change in net load is substantial, especially in the summer months:

**Difference between Peak-To-Trough Variations and
Proposed Flexibility Requirements**



Because the “peak-to-trough” changes in net load do not represent a continuous, uni-directional change in net load, these values do not define a need for ramping

capability. Nevertheless, it is not clear that these daily changes in net load will be adequately met simply by meeting the three-hour-based flexibility target.

- **The threshold for the “differentiated capacity” approach.** In general, NRG agrees with the Joint Parties and Energy Division that the “differentiated capacity” approach is the superior approach to determining an individual unit’s effective flexible capacity. However, NRG does not yet believe that a critical component of this approach – the 90-minute start up time threshold, which determines when a resource’s entire Net Qualifying Capacity counts as being flexible or when the flexibility is determined from its ramp rate – has been fully explained and supported.

None of these issues, in and of itself, is un-solvable and should prevent the implementation of flexibility requirements, especially on a trial basis. NRG’s support for implementing requirements on an interim approach for 2014 is primarily based on the expectation that doing so will increase the chances that these unresolved issues will be dealt with and resolved prior to 2015, when, given the projected change in net load shape, flexibility requirements likely will affect RA procurement.

II. CONCLUSION

NRG thanks the Commission for this opportunity to submit these comments and respectfully asks the Commission take action consistent with the discussion herein.

Respectfully submitted,

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