**BEFORE THE PUBLIC UTILITIES COMMISSION**
**OF THE STATE OF CALIFORNIA**

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| Order Instituting Rulemaking to Continue Implementation and Administration of California Renewables Portfolio Standard Program. | Rulemaking 11-05-005 (Filed May 5, 2011) |

# REPLY COMMENTS OF SIERRA CLUB CALIFORNIA, THE UNION OF CONCERNED SCIENTISTS, AND THE NATURAL RESOURCES DEFENSE COUNCIL ON ASSIGNED COMMISSIONER'S RULING IDENTIFYING ISSUES AND SCHEDULE OF REVIEW FOR 2014 RENEWABLE PORFOLIO STANDARD PROCUREMENT PLANS


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Pursuant to the Assigned Commissioner's Ruling ("ACR") of April 8, 2014, Sierra Club California ("Sierra Club"), the Union of Concerned Scientists ("UCS"), and the Natural Resources Defense Council ("NRDC") hereby submit these reply comments regarding the RPS Procurement Plans and Specific Topics for Parties' Comments.

## I. As Set Forth by Numerous Parties, a Positive Value to System Resource Adequacy Capacity in the RPS Procurement Process Continues to Be Justified.

Sierra Club, UCS, and NRDC agree with the numerous parties including Southern California Edison ("SCE"), the Center for Energy Efficiency and Renewable Technologies ("CEERT"), and Pacific Gas & Electric ("PG&E") calling for maintaining a positive value for system resource adequacy ("RA") capacity in the RPS procurement process in 2014. Continuation of a positive resource adequacy value offers benefits to both billpayers and the environment. As stated by SCE, "if the amount of resources available to meet the system RA is indeed a surplus, one would expect that the prices for system RA would decrease."[1] CEERT similarly notes that "[a]t a minimum, contracting for a new RPS facility with RA value allows the Load Serving Entity ("LSE") to let its most expensive RA contract lapse."[2] Consistent with the principle of supply and demand, awarding a positive RA value to renewables will increase the supply of system capacity and lower the market value for system RA and utility RA compliance costs.

Sierra Club, UCS and NRDC believe that a positive RA value for renewables is also

[1] SCE Opening Comments at 9.
[2] CEERT Opening Comments at 21.



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critical for reducing the carbon intensity of the fleet of resources used to meet California's capacity needs by enabling investor-owned utilities ("IOUs") to avoid renewing RA contracts with older polluting facilities. Older, largely inflexible generation that is not needed to provide reliability services can and should retire.[3] Denying renewables RA value so that inefficient and polluting resources can continue to receive capacity payments is a needless subsidy to the state's dirtiest generation.. A positive RA value for renewables provides IOUs with carbon-free resources to meet system capacity needs and should continue in the 2014 RPS procurement process.

## II. Sierra Club, UCS, and NRDC Support a Public Process to Develop a Renewable Integration Adder Methodology to Improve the Least-Cost Best-Fit Process in the Context of RPS Procurement.

The purpose of developing a renewable integration adder methodology is to improve the least-cost best-fit ("LCBF") analysis used to procure renewable energy resources under the state's Renewables Portfolio Standard ("RPS") program. Refining the LCBF process will help ensure that as the state moves forward with additional renewable energy procurement, integration issues are adequately addressed and RPS portfolios can be optimized to minimize integration challenges, reduce greenhouse gasses, and reap the greatest environmental benefits of the RPS.[4,5] In order for California to successfully decarbonize its electricity system and meet its current objective to reduce greenhouse gas pollution to 80 percent below 1990 levels by 2050[6], the state must significantly and promptly increase its renewable penetration beyond the minimum

[3] To the extent the Commission is concerned with "disorderly" retirement of fossil fuel generation, implementation of the Joint Reliability Plan and flexible capacity procurement are the mechanisms intended to ensure high value resources do no prematurely retire. Restricting access to RA for renewables is inequitable and distorts market signals.
[4] Public Utilities Code Section 399.11(4).
[5] Public Resources Code 25740.5
[6] Exec. Order S-03-05.



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33 percent RPS requirement. Indeed, the Commission has recently clarified that the RPS program represents a floor for renewable energy procurement, that retail sellers have the ability to voluntarily procure additional renewables, and that the Commission may require additional procurement under its authority granted by Assembly Bill ("AB") 327.[7] Accordingly, a thoughtful discussion of strategies to optimize procurement and minimize integration costs is timely and should be conducted in the context of deploying much higher levels of renewables on the grid.

Development of an integration adder is an extremely complicated topic that should not be fast-tracked so that it can be used in the 2014 RPS solicitation. Sierra Club, UCS, and NRDC object to PG&E and SCE's request that a proxy integration adder be adopted before the Commission has a chance to develop a methodology in a public process. The application of an integration adder for use in the LCBF analysis to assess renewable energy contract bids should only be considered following workshops and a robust public process.

In addition, some parties appear to view renewable integration costs as tied exclusively to costs associated with operating fossil-based generation resources. Sierra Club, UCS, and NRDC believe that the Loading Order can and should provide the appropriate framework to seek and assess resources that can assure reliability is maintained and enhanced as greater quantities of renewables come online. Any meaningful discussion about renewable integration costs and solutions must include potentially lower-cost and zero or lower-emitting greenhouse gas intensive solutions including geo-temporal-targeted energy efficiency measures (such as residential lighting), automated demand response ("DR") (including behavioral "load modifying" DR resulting from time-of-use rates), energy storage, the emergence of the Energy Imbalance Market ("EIM"), and limited renewable energy curtailment.

[7] *Administrative Law Judge's Ruling on Renewable Net Short*, May 21, 2014, p.11 and 18.



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Sierra Club, UCS, and NRDC emphasize that an integration adder should only be used to compare renewable energy bids to each other. More specifically, we do not believe that the potential integration implications of additional renewable energy procurement should be used to justify the procurement of more fossil-fueled generation. Integration challenges and solutions is something the state must take seriously if we are to successfully interconnect and use large amounts of renewable energy to meet our electricity needs. But a focus on integration costs should be used to refine and improve the renewable energy procurement process, not dismantle it. Additionally, it is not appropriate to apply an integration adder to renewable energy bids in an all-source solicitation that may include fossil generation unless and until other factors such as climate implications, the Loading Order and integration costs of fossil fuels are also developed and applied. As CEERT observes, "[t]here is no basis to disadvantage renewable resources by imposing a 'cost' on that preferred resource that is not applied to non-preferred, gas-fired generation….that may, at times and under certain circumstances, impose greater costs to the system than any renewable fuel type."[8]

## III. It is Neither Necessary Nor Appropriate to Adopt an Interim Adder Before a Methodology is Adopted Following a Robust Public Process.

In response to Question 5 of the Energy Division's July 17th email regarding "Questions to Guide Reply Comments," Sierra Club, UCS, and NRDC do not believe it is necessary for the Commission to adopt a methodology to calculate renewable integration adders in time for the 2014 RPS Solicitation. Neither SCE nor PG&E have provided a reasonable or defensible argument for developing a proxy adder prior to a public process to develop a methodology. To

[8] CEERT Opening Comments at 24, 25.



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the contrary, available evidence suggests that to the extent renewable integration costs exist, they are nominal at this point and do not merit a fast-tracked adoption of a proxy value. Sierra Club, UCS, and NRDC are concerned that any proxy could be premature, speculative, and likely overstate any actual cost.

### A. Potential Costs Identified by SCE Do Not Support Imposing a Proxy Integration Adder at this Juncture

SCE suggests a renewable integration adder should include costs associated with: 1) flexible capacity resource adequacy ("RA") obligations; 2) new flexible generation; 3) increased reserve requirements; and 4) wear and tear on conventional generation. However, a closer look at these components illustrates why imposition of an interim adder in not appropriate. As explained below, 1) the significant surplus of flexible capacity suggests costs for flexible RA will be minimal; 2) there is likely no need for new flexible generation based on SCE's own analysis; 3) implementation of the CAISO/PacificCorp EIM will reduce costs associated with reserve requirements; and 4) wear and tear costs would already be largely captured in flexible RA procurement and may be overstated, based on analyses that reflect wear and tear costs associated with a generation fleet that is less flexible than California's.

#### 1. *Flexible Capacity Needs*

While SCE states that a renewable integration adder should include costs associated with increased flexible capacity requirements, the inclusion of an adder that reflects these requirements needs to be discussed as part of a public process. Available flexibility in the system currently exceeds flexibility need by approximately 3:1. The maximum flexible need in



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CAISO's Final 2014 Flexible Capacity Needs Assessment is 11,212 MW in December.[9] Available flexible capacity for that month is 32,180 MW.[10] Given the significant surplus of flexible capacity in relation to actual need, it is unclear what, if any, integration costs should be attributed to variable renewable generation. If anything, the existing system is equipped to integrate renewables with little or any additional cost. While this may change in the future with higher levels of renewable penetration, the current oversupply of flexible capacity militates against an arbitrary cost adder attributable to increased flexible capacity needs at this time.

*2. Need for New Flexible Generation*

Given the existing abundance of flexible capacity in the system, procurement of additional flexible resources is highly unlikely and inappropriate for inclusion in a proxy integration adder at this time. With regard to the potential need for additional flexible resources, as SCE recently stated in a July 11th status conference in the LTPP proceeding:

> We prepared a stochastic study in the 2012 LTPP of this trajectory scenario that is described in a white paper that is posted on our website, and we found no resource need. A stochastic study of the 2014 LTPP trajectory scenario, which has an even lower demand forecast than the 2012 LTPP trajectory scenario, will likely also show no resource need.[11]

While SCE is now modeling what additional flexibility need may exist under a high demand scenario, even if a need for flexibility is found, given that the trajectory (mid-case) scenario has been jointly adopted by the CEC, CAISO, and since at least 1990, the end-point of every adopted demand forecast has overestimated actual energy

[9] *See* D.14-06-050, Decision Adopting Local Procurement and Flexible Capacity Obligations for 2015, and Further Refining the Resource Adequacy Programs (July 1, 2014), p. 72, Ordering Paragraph 4.
[10] CAISO, Final Effective Flexible Capacity Report for Compliance Year 2014, *available at http://www.caiso.com/planning/Pages/ReliabilityRequirements/Default.aspx.*
[11] R.13-12-010, Reporter's Transcript, July 11, 2014 at 11-12.



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consumption,[12] use of a high demand scenario is unrealistic and should not be used to justify procurement of additional flexible generation.[13]

Furthermore, a need for new flexible capacity is largely driven by fluctuations in load, with renewables contributing only minimally to the overall need. For example, the CAISO identified that load fluctuation was responsible for, on average, three-quarters of the flexible capacity needed in 2015 and 2016.[14] Integration is a system function caused by numerous factors, which makes placing responsibility (and cost) on only one type of resource analytically unsupportable. Therefore, if and when new flexible resources are needed, the bulk of these costs should be allocated to the system (as it is load fluctuations that is the overall cause), not solely on renewables.

*3. Increase in Reserve Requirements*

SCE references a National Renewable Energy Laboratory ("NREL") study estimating the increase in operating reserves with a 33 percent wind and solar penetration across the Western Electricity Coordinating Council ("WECC").[15] The study found that "contingency reserves were unchanged with wind and solar because no wind or solar plant was the single largest contingency."[16] Regulating reserves were "modest" in the high-penetration scenario and

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[12] *See,* California Energy Commission, California Energy Demand 2010-2020 Adopted Forecast, p. A-10 (Dec. 2009), *available at* http://www.energy.ca.gov/2009publications/CEC-200-2009-012/CEC-200-2009-012-CMF.PDF.
[13] *See,* California Energy Commission, California Energy Demand 2010-2020 Adopted Forecast, p. A-10 (Dec. 2009), *available at* http://www.energy.ca.gov/2009publications/CEC-200-2009-012/CEC-200-2009-012-CMF.PDF.
[14] Delta load was responsible for approximately 73% of the need for flexible capacity in both 2015 and 2015, fluctuating from 53% to 111% throughout the year. (111% is possible because in that month, July, solar actually reduced the need for flexible capacity, or placed a negative need on the grid.) California Independent System Operator, *Final 2014 Flexible Capacity Needs Assessment*, Table 2: Contribution to Maximum 3-hour Continuous Net-Load Ramp, p. 16 (May 2014). Available at: http://www.caiso.com/Documents/Final_2014_FlexCapacityNeedsAssessment.pdf.
[15] SCE Opening Comments at 5.
[16] NREL, The Western Wind and Solar Integration Study Phase 2 (Sept. 2013) at xv, *available at http://www.nrel.gov/docs/fy13osti/55588.pdf.*



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"flexibility reserves, specifically to address load-following needs for wind and PV, were held to cover 70% of the 60-minute forecast errors of wind and PV." The NREL study did not assign costs for increased reserves. The study also assumed that load forecasts were "perfect because we lacked a consistent set of load forecasts; as a result, all the uncertainty in operations came from wind and solar. This assumption may result in putting more of a burden on wind/solar than is realistic."[17] The extent to which the NREL report assessed reductions in reserve requirements due to "EIM" implementation is also unclear. Benefits of a PacifiCorp-CAISO EIM include "reduced flexibility reserves, by aggregating the two systems' load, wind, and solar variability and forecasting errors" and "reduced renewable energy curtailment."[18]

Because the NREL study cited by SCE does not include a cost for increased reserves, it likely overstates requirements by failing to attribute reserve needs to deviations in load, and may not incorporate anticipated benefits from an EIM, therefore it does not provide a sufficient basis for an interim integration adder.

*4. Increase in Wear and Tear from More Frequent Cycling on Conventional Generation*

The only monetary value SCE provides for integration costs relates to wear and tear on conventional generation derived from the NREL study. There are several reasons why this study should not form the basis for an interim integration adder. First, wear and tear costs will already be incorporated into the value for flexible RA. To receive flexible RA, a resource must commit to must-offer and performance requirements set by the CAISO. To the extent these requirements result in wear and tear costs beyond those associated with meeting system RA, these costs will largely be captured in a generators' flexible RA bid.

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[17] *Id.*

[18] CAISO, PacifiCorp-ISO Energy Imbalance Market Benefits (Mar. 13, 2013) at 7, *available at* http://www.caiso.com/Documents/PacifiCorp-ISOEnergyImbalanceMarketBenefits.pdf.



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In addition, the wear and tear costs in the NREL study are overstated for California because the study includes coal-fired generation, which has higher wear and tear impacts than gas-fired generation and is not part of the California IOU fleet of resources. Finally, an integration adder that includes costs associated with wear and tear to conventional generation would seem to create a perverse subsidy for generation that is the least capable of efficiently providing ramping and load following services.

### B. The Commission Should Reject PG&E's Suggestion to Adopt a Proxy Adder Using Values from Integration Studies Conducted for Other Areas in the West.

PG&E suggests that the Commission adopt an interim adder based on publicly-available integration cost studies conducted for entities in the WECC region.[19] While methodologies used in western integration studies may provide examples of how the Commission should approach such an adder for California, simply using these values to represent the integration costs associated with California's current and future renewable energy investments is not appropriate given the vastly different resource mixes and generation capabilities among balancing areas. As explained above, California has a significant oversupply of flexible capacity. For a small balancing area like Arizona Public Service ("APS"), with a much larger share of inflexible nuclear and coal-fired generation and a much smaller balancing area, integration costs will be vastly different. Applying integration costs from one balancing authority to California is like comparing oranges to apples and has little value.

## IV. Methods for Calculating Renewable Integration Adders

With regard Question 7 in Energy Division's July 17th email concerning the use of

[19] PG&E Opening Comments at 6.



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PG&E's production cost modeling framework to develop an integration adder, Sierra Club, UCS, NRDC reemphasize the need to hold a workshop to discuss the benefits and challenges of various integration calculation methodologies and how the system needs analysis currently being conducted in the long-term procurement planning proceeding can inform this process, prior to committing to a particular approach. The results of a production cost modeling, including the methodology proposed by PG&E, are very influenced by provided inputs, which include the tools used to integrate renewables. If a model is only provided inputs related to costs of fossil fuels, its output will be limited to the costs of running that generation. Non-generation solutions must be incorporated into any model to ensure results consider low carbon integration solutions.

Sierra Cub, UCS, and NRDC thank the Commission for this opportunity to provide comments and look forward to additional participation in this proceeding.

Respectfully submitted,


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**VERIFICATION**

I, Laura Wisland, am a representative of the Union of Concerned Scientists and am authorized to make this verification on the organization's behalf. The statements in the foregoing document are true to the best of my knowledge, except for those matters which are stated on information and belief, and as to those matters, I believe them to be true.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on July 30, 2014 in Berkeley, California.

Laura Wisland



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