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

Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans	R.13-12-010 (Filed December 19, 2013)

COMMENTS OF CALIFORNIA ENVIRONMENTAL JUSTICE ALLIANCE ON THE PROPOSED STANDARDIZED PLANNING ASSUMPTIONS FOR THE 2014 LTPP

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Key Technical Question for Parties in Response to December 18th, 2013 Workshop on Planning Assumptions and Scenarios for use in the CPUC 2014 Long Term Procurement Plan Proceeding and the CAISO 2014-2015 Transmission Planning Process

The California Environmental Justice Alliance (CEJA) respectfully submits this response to the questions raised by the ALJ in his December 19, 2013 ALJ Ruling in the order they were presented. CEJA reserves the right to respond to questions in its reply that are not discussed in this initial set of comments.

QUESTION 1 - Is the current range of scenarios sufficient to cover current policy issues facing the CPUC?

No, the Commission should include a scenario with the realistic RPS and demand side reductions necessary to achieve greenhouse gas goals and requirements. Scenarios are tools that can help evaluate policy goals. As the Attachment to the December 19, 2013 ALJ Ruling sets forth: "Assumptions should…track progress toward resource policy goals."[1] To evaluate policy goals, "[s]cenarios should be designed to inform useful policy information including tracking greenhouse gas reduction goals."[2] To track progress towards meeting GHG goals, the Commission should focus on realistic RPS and demand-side reductions. Not only are these reductions necessary to make progress related to the GHG goals and requirements, but information demonstrates that these reductions are achievable and realistic. Additionally, *all* scenarios should show their estimated GHG reductions so the results can be compared not just on cost, but on climate as well.

California law recognizes that "[g]lobal warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California."[3] To mitigate these impacts, California has made its commitment to reduce GHG emissions clear: AB 32

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[1] *See* Attachment to December 19 Ruling at p. 6.
[2] Planning Assumptions ACR, Attachment at p. 8 (emphasis in original).
[3] Cal. Health & Safety Code § 38501(a).

mandates that California reduce GHG emissions to 1990 levels by 2020,[4] and Executive Order S-3-05 requires an 80 percent GHG reduction below 1990 levels by 2050.[5] These goals are considered aggressive, but achievable.[6] However, reaching these goals "will require that GHG reduction rates be significantly accelerated. Emissions from 2020 to 2050 will have to decline at more than twice the rate needed to reach the 2020 emissions limit."[7] To achieve these reductions, it is imperative to come up with detailed plans and targets, and require significant emission reductions in the utility sector.[8]

It is also crucial to remember CO_2 emissions continue to accumulate in the atmosphere every year, constantly increasing the atmospheric burden, and worsening impacts. CO_2 has a variable, but very long atmospheric lifetime, and a portion lasts for millennia.[9] Consequently, it is essential that we use all practical tools at our disposal to set realistic targets to achieve those goals, and carry them out, to keep as much CO_2 as possible out of the atmosphere.

Critically, the Commission has committed to study "AB 32 constraints on investor owned utilities' electricity portfolios" in the long term planning proceeding.[10] The Commission has also found that "[s]ince AB 32 was enacted…reduction in GHG emissions is a key policy objective for the utility industry."[11] Thus, meaningful consideration of California's GHG goals and

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[4] Cal. Health & Safety Code § 38550.
[5] *See* Executive Order S-3-05 (June, 2005) http://www.dot.ca.gov/hq/energy/ExecOrderS-3-05.htm .
[6] *See, e.g.,* Executive Order S-3-05 (designed to require an "aggressive, but achievable" target).
[7] Climate Change Scoping Plan – First Update, Discussion Draft for Public Review and Comment, Prepared by California Air Resources Board (Oct. 1, 2013), p. 3-4; *available at* http://www.arb.ca.gov/cc/scopingplan/2013_update/discussion_draft.pdf.
[8] Health & Safety Code § 38505(i); Health & Safety Code § 38561(b) (AB 32 requires "direct emission reduction measures" from sources such as utilities).
[9] D. Archer, University of Chicago, Carbon is Forever, Nature Reports, Climate Change, Vol 2, December 2008, www.nature.com/reports/climatechange "The lifetime of fossil fuel CO2 in the atmosphere is a few centuries, plus 25% that lasts essentially forever."
[10] *See* CPUC and CEC Final Opinion on Greenhouse Gas Regulatory Strategies, at p. 88, http://www.energy.ca.gov/2008publications/CEC-100-2008-007/CEC-100-2008-007-F.PDF
[11] D.10-12-035 at p. 38, *citing* D.07-12-052 at pp. 2-5, 243; D.08-10-037 at pp. 2-3.

requirements should be evaluated in this LTPP; otherwise, the significant modeling work done in this proceeding will not be a useful tool in assisting policy-makers with measuring these goals.

There is no scenario under consideration that attempts to study how to meet California's goal of 80% GHG reductions by 2050. In order to meet that goal, interim targets are needed beyond existing 2020 targets, starting with goals for 2030. These should include realistic RPS, EE/DR, and energy storage goals. With an RPS of at least 50% by 2030, it is important to assume high energy efficiency ("EE") since that lowers costs and makes achievement of higher RPS goals more likely. If the scenarios keep EE constant while assuming a higher RPS, they may erroneously conclude there are high RPS costs whereas with greater amounts of EE, the overall RPS costs will be lower. Lower RPS costs will be important in reducing GHGs.

Several well-respected scientists recently published a roadmap that identifies where GHG reductions need to occur to meet the State's 2050 goal.[12] Two of the primary measures necessary to meet it are directly related to energy usage. Specifically, the study found that "energy efficiency had to improve by at least 1.3% per year over 40 years" and that "electricity supply had to be nearly decarbonized, with 2050 emissions intensity less than 0.025 kg CO2e/kWh."[13] Presently, the CEC's proposed IEPR forecast has rather conservative assumptions about EE, utilizing the mid-AAEE forecast for system planning and the even more conservative mid-low AAEE forecast for local reliability. The Commission should note in its Planning Assumptions and Scenarios that the CEC's EE numbers are very conservative. Moreover, in light of the study results discussed above, the Commission should include more than one scenario in this proceeding sustaining higher levels of EE than the CEC IEPR forecast.

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[12] *See* J. Williams, et. al, The Technology Path to Deep Greenhouse Gas Emissions Cuts By 2050: The Pivotal Role of Electricity, 355 Science 6064, at 53-59 (Jan. 2012).
[13] *Id.* at 53.

This LTPP is the opportunity to evaluate the policy road-map to determine what steps are necessary to meet the State's goals. To this end, the long-term target in the scenarios should not be set at a static 40% RPS. Under California's RPS law, California is planning to increase its RPS requirements in the Code from 20% in 2013 to 33% in 2020.[14] If a 13% increase can be achieved in seven years, more than an additional 7% should be a target in the long-run. Not only is a higher target feasible, but a significantly higher target will be necessary to meet California's long-term GHG goals.[15] A minimum 50% RPS target for 2030 is consistent with the current growth rate in renewables, and is likely still conservative given that the costs of solar and other renewable resources are expected to continue to decrease. CAISO consultant E3 recently pointed out that a "50% RPS by 2030 would maintain [the] current trajectory for renewable penetration[,]" as shown in the chart below:[16]

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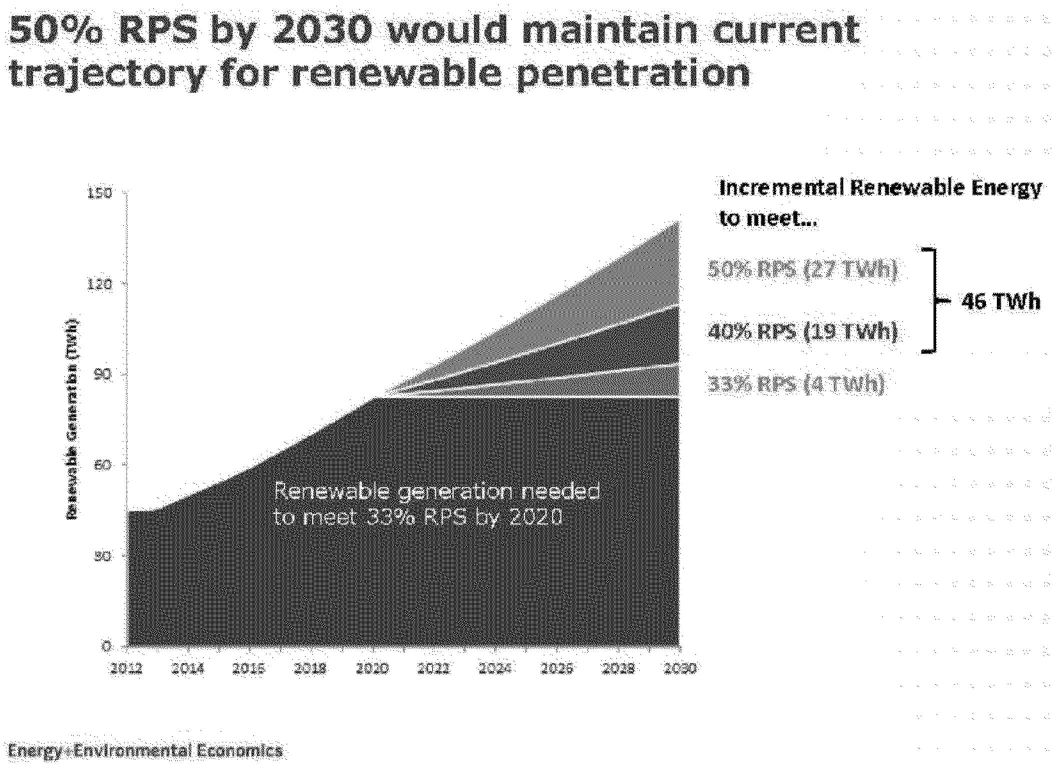
[14] Cal. Pub. Util. Code §399.11(a).

[15] *See* J. Williams, et. al, The Technology Path to Deep Greenhouse Gas Emissions Cuts by 2050: The Pivotal Role of Electricity, Science, Vol. 335, no. 6064 at p. 53-59 (Jan. 2012).

[16] Arne Olson – Partner E3, *Reliance on Renewables: A California Perspective*, Harvard Electricity Policy Group, Seventy-Third Plenary Session (Dec. 13, 2013), slide 5; *available at* http://www.hks.harvard.edu/hepg/Papers/2013/Olson_HEPG_2013-12-13_v2.pdf. *See also*: Arne Olson – Partner E3, *After 2020: Prospects for Higher RPS Levels in California*, Northwest Power and Conservation Council California Power Markets Symposium (Sept. 5, 2013), slide 18; *available at* https://www.ethree.com/documents/Olson_NWPCC_2013-09-04_AM-RPS.pdf.



For similar reasons, Sierra Club, Union of Concerned Scientists, Community Environmental Council, and NRDC have all argued that a 55% RPS target and aggressive demand side targets are the most appropriate for long-term modeling in the LTPP.[17] Not only is a higher target feasible, but a significantly higher target will likely be necessary to meet California's long-term GHG goals, which will likely require the electricity generating capacity of the state to be almost entirely replaced with near zero-emission technology by 2050.[18]

Since it has already been demonstrated that much higher levels of renewable energy can be generated than we are achieving here, even in places with far fewer natural resources (e.g. solar

[17] R. 12-03-014, Comments of Sierra Club and Union of Concerned Scientists on the Revised Scenarios for use in Rulemaking 12-03-014 (Oct. 5, 2012), p. 4, *available at* http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M030/K329/30329413.PDF; R. 12-03-014, Comments of the Natural Resources Defense Council (NRDC) and Community Environmental Council on the Revised Assigned Commissioner's Ruling Setting Forth Standardized Planning Scenarios (Oct. 5, 2012), p. 9, *available at* http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M030/K325/30325014.PDF.

[18] See J. Williams, et. al, The Technology Path to Deep Greenhouse Gas Emissions Cuts By 2050: The Pivotal Role of Electricity, 355 Science 6064, at 53-59 (Jan. 2012). *See, e.g.*, Cal. Council on Sci. and Tech., "California's Energy Future – The View to 2050," p. 35 (May 2011).

radiation), such as Germany,[19] it is only right that California complies with its own state policies to reach our state goals.

QUESTION 4 - Is the treatment of energy storage for capacity value reasonable?

No. Storage should count for its maximum capacity value and be dispatchable. Given the diversity of options in each of the three categories from which D.13-10-040 allows utilities to procure (transmission, distribution and customer-side of the meter) and the diversity of capacity values within each option, energy storage should be assumed at its maximum capability. Assuming maximum capability will result in modeling outputs that better inform future procurement and policy decisions.

Energy storage also provides capacity that can be used to meet peaking needs through superior operating flexibility. As the California legislature has found:

> Expanded use of energy storage systems will reduce the use of electricity generated from fossil fuels to meet peak load requirements on days with high electricity demand and can avoid or reduce the use of electricity generated by high carbon-emitting electrical generating facilities during those high electricity demand periods.[20]

It is appropriate to model this capability in order to better address issues of reliability.

QUESTION 5 - For existing resources that do not have announced retirement dates, Staff may assume a resource retires based on facility age. Facility age is calculated from Commercial Online Date, but the COD may not be available for some resources. If no COD is available, is it reasonable to assume the resource does not retire within the planning horizon? If not, please provide an alternate methodology and justification from a public data source as needed.

Facility age may not be the best predictor of retirement dates. Operational information such as operational hours can provide a better predictor of the remaining life of a facility. For example, the Cabrillo turbines have an operational lifetime of up to 100,000 hours.[21] Although installed in 1968 and 1972 respectively, the current turbines have only accrued about 36,000

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[19] *See infra* at p. 9.
[20] Assembly Bill No. 2514 Section 1(d); *available a*t http://www.leginfo.ca.gov/pub/09-10/bill/asm/ab_2501-2550/ab_2514_bill_20100929_chaptered.pdf.
[21] Ex. 19 in A.11-05-023 at pp. 24-25 (B. Powers Test. on behalf of CEJA).

hours of operating time; i.e. to date, the turbines have only been used to reach one-third of their full operating potential.[22] San Diego Gas & Electric recently filed an advice letter to contract with these facilities to meet a need it has identified. In that advice letter, SDG&E "proposed to optimize its procurement and minimize ratepayer costs by procuring the [Cabrillo] II units to satisfy its SD-IV Area requirement and avoid the more expensive backstop procurement that the CAISO would likely undertake."[23] Given the changing landscape of the grid, facilities will be utilized differently than they have been in the past. This change in operations will also change the lifetime of the facilities. In order to better predict the retirement of facilities, intended operational hours based on current operations can be reviewed. Operational information is regularly reported to government agencies such as the U.S. Energy Information Administration.[24]

QUESTION 6 - How should the capacity value of energy storage, demand response, and demand side resources (PV, CHP) be allocated to small geographic regions and/or busbars and how should the capacity value be adjusted to account for locational and operational characteristics uncertainty?

In this modeling effort, the capacity value of energy storage, demand response, and demand side resources should not be adjusted downward to account for locational and operational uncertainty. Uncertainties have already been taken into account in the assumptions. Counting additional uncertainties would lead to an artificially high estimate of need and likely to lead to over-procurement.

When modeling energy storage in particular, the Commission and IOUs have substantial control over the location of deployment through the upcoming RFO process. Since the storage procurement process includes a finding of cost-effectiveness, there should be a basic assumption that storage will be deployed in high-value locations. The most cost-effective deployment of

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[22] *Id.*
[23] SDG&E Advice Letter 2528-E at p. 5 (filed October 21, 2013).
[24] U.S Energy Information Administration; *available at* http://www.eia.gov/electricity/.

energy storage will be in LCR areas that help avoid procurement of new generation (e.g. LA Basin and SDG&E service territory). Since peak capacity is not needed on a system-wide basis, capacity from energy storage is not as valuable outside these areas. Therefore, the Commission should assume that most energy storage is deployed in these smaller transmission constrained regions. Moreover, making this assumption now tells developers and IOUs that the cost-effective deployment of energy storage in LCR areas is a Commission expectation as the storage procurement process commences, and an important one at that.

> ***QUESTION 7 - Decision (D.13-10-040) established storage goals for each of three categories – transmission, distribution, and customer-side of the meter, but does not specify the function(s) to be provided. Should storage modeling be focused on deep multi-hour cycling to support operational flexibility or rapid cycling for ancillary services? How should the production profile of each category of storage identified in the CPUC Storage Target Decision be modeled – as a fixed profile or as a dispatchable resource?***

D.13-10-040, and the more specific "Energy Storage Procurement Framework and Design Program" adopted as its Appendix A, identify three critical functions energy storage should be evaluated for procurement by the utilities: grid optimization, renewables integration and GHG attributes (shifting or removing load from GHG-emitting generation sources). Because the utilities' procurement programs are in development, energy storage should be modeled as a dispatchable resource that can meet either capacity or ancillary needs. Indeed, the Commission stated that "energy storage resources can be synchronized and available to respond to dispatch instructions without minimum generation or emissions constraints," making them available at all times.[25] As such, statically modeling energy storage only for capacity or ancillary needs will avoid placing artificial constraints on its capability. Assuming that energy storage is dispatchable will better inform locations and types of storage needed for the grid.

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[25] Comments of the California Energy Storage Alliance on Administrative Law Judge's Ruling Seeking Comment on Workshop Topics, at Appendix A, p. 2, R.12-03-014 (Oct. 9, 2012).

QUESTION 8 - Should incremental small PV and small CHP on the customer side of the meter be modeled as demand-side load reduction or supply side generation? How should the production profile of each resource type by modeled? Should the same modeling convention be used in all 2014 LTPP and 2014-15 TPP studies or may specific studies make this decision in a manner best suited to the topic being studied?

Incremental small PV and small CHP – to the extent they are on the customer side of the meter – can be treated as demand-side load reductions. These demand-side resources should be a load reduction. While specific studies should be able to make individual decisions, for the 2014 LTPP unless otherwise specified, these resources should be subtracted as a demand-side load reduction.

QUESTION 9 - Is the forecast of incremental small PV (beyond what is embedded within the IEPR forecast) on the demand side reasonable? If not, please provide an alternate forecast and justification from a public data source as needed.

The forecast of PV is likely to prove low given the significant deployment of distributed generation that has already begun. Germany has successfully started transitioning its grid to a significant portion of distributed generation. In fact, Germany installed a record 7,400 MW of solar photovoltaic facilities in *one* year.[26] Recent estimates show that Germany has installed approximately 20,000 MW of distributed generation resources, providing an example of large-scale deployment of solar photovoltaic resources for the rest of the world.[27] The scale of the installations, while impressive, is not surprising, and similar expansion is feasible in California.

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[26] Paul Gipe, *New Record for German Renewable Energy in 2010*, RENEWABLE ENERGY WORLD (March 25, 2011), http://www.renewableenergyworld.com/rea/news/article/2011/03/new-record-for-german-renewable-energy-in-2010??cmpid=WNL-Wednesday-March30-2011. The German installation rates dwarf the installation rates in the United States: "In December alone, Germans installed more than 1,000 MW of solar PV, enough solar capacity to generate 1 TWh of electricity under German conditions. While they represented only half that installed in June 2010, the December installations were 50% greater than total solar PV installed in the USA in 2010 and as much as that rumored to have been installed in Japan last year." *Id.*

[27] *See generally* KEMA, *Distributed Generation in Europe: Physical Infrastructure and Distributed Generation Connection* (April 2011), http://www.energy.ca.gov/2011_energypolicy/documents/2011-05-09_workshop/documents/Memo%201_Physical%20Infrastructure%20and%20DG%20Interconnection.pdf (describing the distributed generation system in Germany); *see also* John Landers, *Germany's Solar Photovoltaic Market: The World's Installed Capacity Leader*, ENERGYTREND (Apr. 10, 2011), http://www.energytrend.com/Germany_Solar_Installation_20111004 (describing Germany as having a total capacity of 17,193 MW at the end of 2010).

As the Commission has recognized, distributed generation projects have many benefits including the "relative ease and certainty of deployment."[28] In addition, prices for solar PV have dropped drastically in the last few years, and projections estimate that PV will further drop in upcoming years as deployment of photovoltaic systems increase.[29] Finally, the Commission's net metering decision is expected to significantly increase distributed generation.[30]

Respectfully submitted,

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[28] D.10-04-052 at p. 19 (April 2010). This benefit is important as viability concerns continue to plague renewable development. *See* D. Huard & J. Stoddard, Murphy's Law and Renewable Energy Products: If It Can Go Wrong, It Probably Will, 42 Envtl. Rep. 1790 (Aug. 5, 2011) (detailing ways energy projects can and have failed).

[29] *See* S. Lacey, *Why Clean Energy Can Scale Today*, CLIMATE PROGRESS (May 9, 2011), http://thinkprogress.org/romm/2011/05/09/208051/clean-energy-scale-stephen-lacey/ (discussing projections of PV prices by industry leaders). Prices of photovoltaic systems dropped by half since 2004 in Germany, and prices in Germany are currently 61 percent prices in the United States. *See* Paul Gipe, *Should California Simply Adopt German Solar Tariffs*, RENEWABLE ENERGY NEWS (July 8, 2011), http://www.renewableenergyworld.com/rea/news/article/2011/07/should-california-simply-adopt-german-solar-tariffs.

[30] D.12-05-036.