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.12-03-014 (Filed March 22, 2012)

COMMENTS OF THE CALIFORNIA ENVIRONMENTAL JUSTICE ALLIANCE IN RESPONSE TO QUESTIONS RAISED BY ALJ GAMSON DURING THE SEPTEMBER 4, 2013 PRE-HEARING CONFERENCE

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Pursuant to the Administrative Law Judge's direction given at the Pre-hearing Conference held September 4, 2013, California Environmental Justice Alliance ("CEJA") respectfully submits these Comments regarding questions raised by the ALJ during that Conference.

1. **How much of the 1400-1800 MW authorized procurement for the LA area from the Track 1 Decision should be assumed in Track 4? Does it matter which resources are procured or what the mix of resources would be.**

The decision in Track 1 authorized Southern California Edison Company ("SCE") to procure between 1400 and 1800 MW of electrical capacity in the West Lost Angeles sub-area of the Los Angeles basin local reliability area to meet long-term local capacity requirements by 2021. At least 1,000 MW but no more than 1,200 MW of that authorized capacity was required to be procured in the form of gas-fired generation. The Decision also required procurement of 50MW of energy storage resources and at least 150 and up to 600 MW of preferred resources consistent with the Loading Order or energy storage resources.

CEJA submits that all of these resources must be assumed to be available in considering local capacity requirements for SONGS. As ALJ Gamson noted during the pre-hearing conference, "essentially, Track 1 and Track 4 are kind of the same thing [in] that they're both involving LCR for Southern California, the SONGS area . . . ."[1] There is no basis for assuming that previously authorized procurement will not occur, and such an assumption creates obvious potential for over-procurement, undue burden on ratepayers, and the potential for stranded assets. The Track 4 analysis should further assume that SCE procures all of the preferred resources authorized in the Track 1 decision, and that they are procured sooner than any gas-fired resources. The reason for this is simple -- preferred resources can be procured much more quickly to fill need. The recent new decisions on Energy Storage and Demand Response increase the Commission's emphasis on these preferred resources, which will further speed along the expansion of these processes.[2]

As to whether it matters which resources are procured or what the mix of resources is, one answer is that the choice of resources to be procured will affect California's drive toward a clean, environmentally sustainable power sector. Procurement of the full amount of preferred resources and/or storage resources clearly advances that goal more than procurement of carbon emitting plants. Moreover, preferred resources/storage can be developed and deployed more quickly, which also argues for more procurement of those resources wherever possible.

However, it is unnecessary for the Commission to assign any particular mix or character to the Track 1 authorizations for purposes of its decision-making in Track 4.

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[1] RT at p. 316, lines 23-26.

[2] For example, the proposed new Decision on Energy Storage targets (also discussed later) begins in 2014, and proceeds with new targets every two years until 2020, at which point only 20% of the goals may be deferred (and only based on a clear showing that this is necessary). Therefore at least the 2018 and 2020 Energy Storage proceeding targets should be assumed available by those years. Also, the recent Demand Response (DR) decision of the commission found that the utilities are currently underutilizing DR resources, and that the commission plans to focus attention on this key area (which is perfectly suited to address peak needs).

The Commission has already directed that such procurement take into account the Loading Order. CAISO is currently developing methodologies pertaining to the integration of preferred resources, including demand response and energy efficiency, while the Commission is conducting proceedings concerning energy storage and distributed energy generation that will likely result in significant targeting of those resources.

CEJA submits that these various processes will determine what resources and what mix of resources SCE will ultimately procure. Any attempt to foresee the future at this stage is more likely than not to be inaccurate and potentially harmful. It is enough, for purposes of Track 4, to assume that the procurement authorized in Track 1 will occur no later than 2021 and that procurement of all authorized preferred resources will occur by 2018.

2. Should the proposed decision in the storage proceeding (R10-12-007) be considered with regard to Track 4 procurement?

Yes.

Storage can and will play a key role in the future of California's electricity grid. "Energy storage has the potential to transform how the California electric system is conceived, designed and operated. In so doing, energy storage has the potential to offer services needed as California seeks to maximize the value of its generation an transmission investments; optimizing the grid to avoid or defer investments in new fossil fuel-powered plants integrating renewable power, and minimizing greenhouse gas emissions."[3]

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[3] R10-12-007, Assigned Commissioner's Ruling Proposing Storage Procurement Targets and Mechanisms, June 10, 2013, at p. 2.

The storage proceeding in question was instituted in response to California Public Utilities Code ("the Code"), sections 2836.[4] Section 2836.2 of the Code provides that in adopting and evaluating appropriate energy storage system procurement targets the Commission "shall do all of the following:

> (a) Consider existing operational data and results of testing and trial pilot projects from existing energy storage facilities.
>
> (b) Consider available information from the California Independent System Operator derived from California Independent System Operator testing and evaluation procedures.
>
> (c) Consider the integration of energy storage technologies with other programs, including demand-side management or other means of achieving the purposes identified in Section 2837 that will result in the most efficient use of generation resources and cost-effective energy efficient grid integration and management.
>
> (d) Ensure that the energy storage system procurement targets and policies that are established are technologically viable and cost effective.

The Commission most likely will have completed this process before testimony is complete and before evidentiary hearings are held in this proceeding.[5] Commissioner Peterman's thoughtful and thorough Proposed Decision in R.10-12-007 sets forth targets that allow for procurement that are believed to be technologically viable and cost effective.[6] Those targets, once finalized, will require the procurement of new energy

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[4] Id.

[5] While the Proposed Decision in R-10-12-007 has not been formally adopted by the Commission, it is on the October 3, 2013 agenda for final approval.

[6] R-10-12-007 Proposed Decision September 3, 2013 at pp. 22, 24-25.

storage systems by SCE and SDG&E that are in excess of the 50MW total storage procurement ordered in Track 1 of this proceeding.[7]

The targets set by the Proposed Decision include a total of 580 MW of storage procurement targets for SCE by 2020. The SONGS study area, however, does not include the entire SCE service area: the LA Basin portion comprises about 77% of that territory. Seventy seven percent of SCE's 580 MW target for 2020 amounts to 447 MW in the LA Basin; add that to SDG&E's 165 MW and the total Energy Storage target for the SONGS study area comes to 612 MW for 2020. The ruling phases in these levels over time, with targets increasing every two years beginning in 2014. While SCE and SDG&E are allowed, under the term of the Proposed Decision, to defer certain portions of their storage targets if they can demonstrate unreasonableness of cost or a lack of bids. Those allowable deferments diminish over time, however, and by 2020 only 20% of the total may be deferred. And, as SDG&E has noted, as the development of storage technology continues to progress, it is likely that prices will decline over time.[8] Consequently, it is reasonable to assume that by 2022, the entire 2020 target will be available, i.e. 612 MW. Those 612 MW of energy storage should be taken into account when formulating a decision in Track 4.

3. Are there any updates to assumptions that should be considered in Track 4.

Yes. For the reasons set forth above, the assumptions for Track 4 should be updated to reflect the new energy storage targets set forth in the Storage Decision for 2018 and 2022. In addition to this additional energy storage, the Track 4 assumptions should be

[7] See sections 2837 and 2838 of the Code regarding utilities' obligations to comply with the energy storage system procurement targets and policies adopted pursuant to section 2836.
[8] Opening Comments of San Diego Gas & Electric Company Concerning Proposed Decision in R.10-12007 dated 9-23-2013 at p. 4.

updated to reflect new information regarding possible transmission solutions to be provided by CAISO and the recently revised demand forecasts by the California Energy Commission. All of this updated information is essential to a reasoned consideration of need in the SONGS area.

A. Transmission Solutions

The SONGS retirement presents California with a crucial opportunity to ensure that the State meets its energy needs while complying with its environmental laws and advancing its environmental goals and policies. California is one of the largest greenhouse gas (GHG) emitters in the world and a leader in climate policy, making its GHG mitigation efforts important both nationally and globally. California has committed to mitigating the impacts of climate change by reducing greenhouse gas emissions to 1990 levels by 2020, and to reducing GHG emissions by 80 percent below 1990 levels by 2050. Making the right decisions related to SONGS will be critical to achieving those commitments, as well as to protecting communities that already live with the health consequences of power generation based on the burning of petroleum products.

The Code specifically recognizes that transmission upgrades may be necessary in order to achieve this goal.[9] In Track 4, CAISO has not recommended any procurement at this time and has recommended waiting for further information regarding available transmission solutions (including reactive power) that would reduce and most likely eliminate further procurement need in the SONGS area.[10] SCE has suggested that the transmission mitigation solutions exist that could eliminate further procurement need in

[9] California Public Utilities Code, section 399.11(d): "New and modified electric transmission facilities may be necessary to facilitate the state achieving its renewables portfolio standard targets."
[10] See Track 4 Testimony of Robert Sparks on behalf of CAISO, August 26, 2013, at pp. 30-31.

its portion of the SONGS area.[11] SDG&E also has identified potential transmission solutions that would significantly reduce need.[12] CAISO's modeling of possible transmission solutions should be available in January, 2014. Until that time, CEJA submits that the assumptions in Track 4 should, at a minimum, include those transmission solutions identified by SCE and SDG&E and the resulting diminution of need.

B. Updated CEC Forecast

The Scoping Memo identifies the California Energy Commission's mid-range 1-in-10 forecast from August 2012 as the most recent forecast. However, this forecast has since been revised significantly downward in September 2013 by the California Energy Commission (CEC) [13], and the Track 4 assumptions should be modified to reflect these updates.

The CEC's most recent baseline forecast (again using the mid-case for 1-in-10 year peak) reduced the total demand for the LA Basin and San Diego regions by 1,208 MW for 2018, and 1,321 MW for 2022, compared to the 2012 forecast used by CAISO and SCE as further detailed below. In addition, the CEC provided another updated forecast – the AAEE forecast – which reduced the need by 2,234 MW for 2018, and 3,203 MW for 2022 (again the mid-range forecast 1-in-10 peak) compared to the 2012 forecast used by CAISO. EE reductions beyond those in the AAEE forecast are achievable, but any

[11] Track 4 Testimony of Southern California Edison before the CPUC at 3:10-16, August 26, 2013. [hereinafter SCE Track 4 Testimony]
[12] See SDG&E Track 4 Testimony at p.
[13] Mid Case LSE and Balancing Authority-AAEE adjustment.xlsx excel spreadsheet, revised 9/20/2013, Form 1.5d, available at: http://www.energy.ca.gov/2013_energypolicy/documents/2013-10-01_workshop/spreadsheets/ (last accessed September 28, 2013).

calculation of need in the SONGS area should be updated to reflect, at a minimum, the AAEE forecast.[14]

4. What is the appropriate timeline for new resources procurement authorized in Track 4. Do some resources have to come on line sooner than others? (Note that this may also be a locational issue).

CEJA notes that the testimony to date, when properly adjusted for resources omitted by CAISO and the utilities, show that no new resource procurement beyond that already authorized in Track 1 will be needed.[15] However, to the extent that any need for procurement is found, that need should be satisfied with preferred resources and energy storage resources, which can be placed online more quickly and are consistent with California public policy. One timeline that certainly is appropriate for purposes of Track 4 is contained in the new energy storage framework, which sets forth target dates for procurement of energy storage systems beginning in 2014 and continuing through 2022.[16]

5. Should there be contingency plans in case certain resources have not materialized in a timely fashion (e.g. construction of gas-fired plants delayed or other resources slow to develop).

CEJA submits that no contingency plan which includes contingent RFO's for new fossil-fuel generation is appropriate at this time. Such RFO's have the potential to raise expectations that may substantially undermine the required attention to available preferred resources. Moreover, there are options for contingency planning other than new gas power plant construction. For example, in the unlikely event that preferred

[14] See Track 4 Testimony of Julia May on behalf of California Environmental Justice Alliance, September 30, 2013, at p. __.

[15] See generally Prepared Direct Testimony of Julia May on Behalf of the California Environmental Justice Alliance Regarding SONGS Retirement, Track IV, before the California Public Utilities Commission, September 30, 2013.

[16] R-10-12-007 Proposed Decision September 3, 2013 at pp. 22, 24-25.

resources are not available to meet anticipated need, the CPUC extend the retirement date of the Cabrillo 2 peaking facilities.

7. If you are recommending preferred resources or energy storage to fill any need, it would be helpful to indicate how the attributes of such resources will meet LCR needs.[17]

A. Energy Storage:

Storage makes intermittent sources such as renewables available when needed. Storage is much more effective than conventional generation in meeting ramping requirements, and also solves some reduced system inertia issues that could occur as the proportion of conventional generation is reduced.[18] Storage also has the following additional benefits: grid optimization, including peak reduction, contribution to reliability needs, deferment of transmission and distribution upgrade investments and the reduction of greenhouse gas emissions to 80 percent below 1990 levels by 2050, which is consistent with California's goals.[19] In addition, energy storage is ideal for providing reserve capacity[20] and load following functions.[21]

[17] Numbering corresponds to the ALJ's questions. CEJA is not submitting comment regarding the sixth question posed by the ALJ during the pre-hearing conference.
[18] *See Johannes Rittershausen & Mariko McDonagh, Moving Energy Storage From Concept to Reality: Southern California Edison's Approach to Evaluating Energy Storage, at pp. 14. 21 (May 20, 2011), available at http://www.edison.com/files/WhitePaper_SCEsApproachtoEvaluatingEnergyStorage.pdf,*
[19] For a list of storage end uses prepared by the CPUC staff, see figures 2 and 4 appended to these comments; see also R-10-12-007 Proposed Decision September 3, 2013 at pp. 10.
[20] Generation resources used as reserve capacity must be online and operational (i.e., at part load), which increases emissions and constitutes wasted expense. Unlike generation, in almost all circumstances, storage used for reserve capacity does not discharge at all – it just has to be ready and available to discharge if needed.
[21] Storage is well-suited to load following for several reasons. First, most types of storage can operate at partial output levels with relatively modest performance penalties. Second, most types of storage can respond very quickly (compared to most types of generation) when more or less output is needed for load following. SCE has stated that "storage is two to three times more effective than conventional generation in meeting ramping requirements." Storage can be used effectively for both load following up (as load increases) and for load following down (as load decreases), either by discharging or by charging.

B. Distributed Generation, Including Solar PV and Wind

Distributed generation ("DG") provides significant benefits as a resource that can be installed with shorter lead times and on a wider variety of sites compared to large-scale fossil generation resources. DG combines with other small-scale, short-lead-time, demand-side resources such as EE and demand response (DR) programs to reduce the need for supply-side generation, both in the near- and long-terms.

One obvious benefit of solar DG in particular is the relationship between solar DG and the type of peak loads that are assumed in this Track 4 analysis. The 1 in 10 heat wave assumed in Track 4 cannot take place without a massive local solar energy influx. In essence, the peak load driver is also the fuel powering solar electric technologies. Because of this natural synergy, the solar technologies deliver hard-wired peak shaving capability in regions with the appropriate demand mix-peak loads driven by commercial/industrial A/C. The SONGS area certainly fits that demand profile.

CAISO and others have frequently highlighted concerns that there will be a higher need for flexible resources (generally assumed to be conventional resources) to balance intermittent renewables such as solar and wind. But DG actually needs ***lower*** levels of flexible resources compared to conventional resources.[22]

In the CPUC June 4, 2012 flexibility workshop, the presenters explained why the "Environmentally Constrained" case had much lower need for flexibility than the "All Gas"[23] scenario modeled for comparison. Assumptions that the high solar case would need higher levels of flexible resources (fast ramp up provided by conventional sources)

[22] See "Deep Dive" study presented by E3 and CAISO at the CPUC flexibility workshop, June 4, 2012.
[23] The All Gas scenario is based on the Trajectory scenario, with renewables subtracted out to 2009 levels, so that this scenario is dominated by conventional natural gas generation facilities.

that would have to kick in when solar resources dropped out as the sun descended were shown to be incorrect. Instead, the time of day that renewables are available (mainly during peak needs) changes the "constrained hours" in the renewables scenario to off-peak time when there is lower load. Thus more existing flexible resources are available at the time when the steep ramp occurs, alleviating the need to add new flexible resources. In other words, solar provides resources when they are most needed and drops out when other flexible resources are available.

This result is neatly illustrated in E3's Slide 35 of the presentation:

Breakdown of Differences – Environmental vs. All Gas (Slide 35)

Component	Environmental Case	All-Gas Case	Difference
Load	46,685	49,437	2,752
- Baseload Generation	9,045	9,012	(33)
- RPS Generation	8,339	4,982	(3,356)
+ Contingency Reserves	2,794	2,888	94
+ Regulation Up	668	619	(49)
+ Load Following Up	1,941	1,616	(325)
= **Flexibility Requirement**	**34,704**	**40,565**	**5,861**

High solar penetration pushes constrained hours off the peak period in the environmental case

Low RPS penetration in the All-Gas case results in much less RPS generation during constraints

Regulation and load following requirements are slightly higher in the Environmental case, driven by the higher penetration of intermittent resources

Table shows average requirements and resource performance over the top 50 constrained hours

E3 generally concluded that determination of needs is actually based on other factors that were bigger drivers of need than flexibility (load level, imports, hydroelectric resources, and renewables during critical hours).

On a local basis there are opportunities for electric utilities to use DG to reduce peak loads, reduce transmission line loss, to provide ancillary services such as reactive power and voltage support, and to improve power quality. Using DG to meet these local system needs can add up to improvements in overall electric system reliability. Moreover, reducing peak demands on the system avoids not only the need for that amount of generating capacity but also the associated reserve margin.[24]

C. Energy Efficiency and Demand Response

Other preferred resources can and do currently meet local area needs. Energy efficiency ("EE") lowers overall need, while demand response ("DR") meets needs at peak times. While DR in particular has been underutilized in the SONGS region[25], the impact of these resources continues to expand rapidly.[26]

"There are a variety of demand response resources. Non-dispatchable (i.e., non-event based) demand response resources reduce the Utilities' demand forecast, thereby reducing the Resource Adequacy requirement indirectly. Demand response also has potential value as a flexible capacity resource for renewable integration (through increasing or decreasing demand), a balancing energy and ancillary service resource; and as an alternative to transmission upgrades."[27] The Commission has stated its intention

[24] Associated benefits of DG that are not directly related to LCR needs include fuel price certainty, since DG has no fuel costs and is not susceptible to fuel price volatility, and grid security that comes from the fact that many small distributed systems are less likely to fail at the same time than larger generation facilities.

[25] "[H]istorically, SCE and SDG&E underutilized demand response programs and dispatched their power plants to meet peak demand far more frequently in comparison to demand response programs. The demand response programs were not utilized to their full Resource Adequacy capacity even during extremely hot weather conditions. Staff found that SCE also deployed a dispatch strategy for its residential air conditioning cycling program that was intended to minimize customer fatigue but resulted in the program delivering less demand response capacity." Order Instituting Rulemaking Proceeding R.13-09-011, at p. 7.

[26] See Track 4 Testimony of Julia May dated September 30, 2013 at pp. 48-51 for more detail regarding the benefits of EE and DR.

[27] Order Instituting Rulemaking Proceeding R.13-09-011 at p. 8.

"to build upon the body of work completed to date and retool demand response to align with the grid's needs and enhance the role of demand response in our energy policy. Since the grid's needs are no longer limited to shaving peak electricity load, the potential that demand response resources offers must be exploited to the fullest extent possible and desirable."[28]

CAISO also has concluded that the growth of DR and EE will play a crucial role in the transition to a clean, environmentally sustainable power sector in California. DR and EE resources can contribute to the reliable, efficient management of a green electricity grid while reducing the need to rely on conventional generating resources. CAISO envisions that DR and EE will become integral, dependable and familiar resources that support a reliable transition to an environmentally sustainable electric power system that features increased penetration of new and diverse types of energy resources. CAISO intends to conduct pilot programs in the 2014-15 timeframe and announced a goal of having the required technologies in operation by 2020.[29]

September 30, 2013

Respectfully submitted,

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[28] Id. at 16.
[29] Id at10.

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Category		Storage 'End Use'
Describes at what point in the value chain storage is being used		Describes what storage is being used for i.e. its application.
ISO/Market	1	Ancillary services: frequency regulation
	2	Ancillary services: spin/ non-spin/ replacement reserves
	3	Ancillary services: ramp
	4	Black start
	5	Real time energy balancing
	6	Energy price arbitrage
	7	Resource Adequacy
Generation	8	Intermittent resource integration: wind (ramp/voltage support)
	9	Intermittent resource integration: photovoltaic (time shift, voltage sag, rapid demand support)
	10	Supply firming
Transmission/ Distribution	11	Peak shaving
	12	Transmission peak capacity support (upgrade deferral)
	13	Transmission operation (short duration performance, inertia, system reliability)
	14	Transmission congestion relief
	15	Distribution peak capacity support (upgrade deferral)
	16	Distribution operation (voltage / VAR support)
Customer	17	Outage mitigation: micro-grid
	18	Time-of-use (TOU) energy cost management
	19	Power quality
	20	Back-up power

Figure 2: Energy Storage 'End Uses

Energy Storage "End Use"[30]		Scenarios			
		A. Renewables Support/ Dispatchability	B. Distributed Storage	C. Demand-side Management	D. Ancillary Services
1	Ancillary services: frequency regulation				**X**
2	Ancillary services: spin/ non-spin/ replacement reserves			x	**X**
3	Ancillary services: ramp			x	**X**
4	Black start				
5	Real time energy balancing				x
6	Energy price arbitrage		x		
7	Resource Adequacy		x		
8	Intermittent resource integration (ramp/voltage support)	**X**			
9	Intermittent resource integration (time shift, voltage sag, rapid demand support)	**X**			
10	Supply firming	**X**			
11	Peak shaving		x		
12	Transmission peak capacity support				
13	Transmission operation				
14	Transmission congestion relief				
15	Distribution peak capacity support (upgrade deferral)		**X**		
16	Distribution operation (voltage / VAR support)		**X**		
17	Outage mitigation: micro-grid		x	x	
18	TOU energy cost management			**X**	
19	Power quality			**X**	
20	Back-up power			**X**	

Figure 4: Energy Storage Deployment Scenarios

[30] R.10-12-007 Energy Storage Framework Staff Proposal (Final), April 3, 2012 at p.