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

OPENING BRIEF OF NRG ENERGY, INC.

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NRG Energy, Inc. ("NRG") respectfully submits this opening brief in Track 4 of the Long-Term Procurement Plan ("LTPP") proceeding pursuant to Rule 13.11 of the Rules of Practice and Procedure of the California Public Utilities Commission ("Commission" or "CPUC") and the schedule set forth by Administrative Law Judge ("ALJ") David M. Gamson.

I. EXECUTIVE SUMMARY

NRG recommends that the Commission approve incremental procurement authority as advocated by the California Independent System Operator ("CAISO"), the Southern California Edison Company ("SCE") and the San Diego Gas & Electric Company ("SDG&E"). NRG recommends this for the following reasons:

- The contingency used to define the proposed Western LA Basin and San Diego sub-area local capacity requirements (the overlapping non-simultaneous outage of the 500-kV Southwest Power Link and 500-kV Sunrise Power Link) is appropriate, given the history of and future possibility of fires east in San Diego.[1] Additionally, the proposal to *not* use firm load shedding to mitigate the impacts of, and, consequently, the local capacity requirements stemming from this

[1] *See* Ex. ISO-7, Millar Rebuttal (for CAISO), p. 9:18-21.

contingency, which is supported by the two entities (the CAISO and SDG&E) most directly responsible for maintaining reliability in the San Diego area, is appropriate. Relying on load shedding as a resource planning tool limits future flexibility. Further, the consequences of shedding the amount of firm load necessary to address the contingency would almost certainly impose severe financial, civil and human costs.

- The procurement authorization amounts sought by the CAISO, SCE and SDG&E do not foreclose the development of transmission alternatives into, or preferred resources within, these local areas. As a result, there is no reason to defer authorizing this incremental procurement until transmission alternatives can be fully evaluated. Additionally, it is prudent to move forward with incremental procurement sought sooner rather than later because of the press of once-through-cooled ("OTC") generation retirement schedules.
- Given the current uncertainty with regards to the ability of preferred resources to meet local capacity requirements and ensure local area reliability, incremental procurement authorized should not be limited to preferred resources, nor should any portion of the authorized procurement be "carved out" expressly for preferred resources.
- Authorizing procurement now will allow SCE and SDG&E to take timely advantage of opportunities to repower existing coastal generation. Such repowering projects provide significant "win-win" opportunities to cost-effectively lever existing bulk power infrastructure, eliminate the use of ocean water for cooling, and locate modern, efficient resources that provide multiple

benefits (energy, voltage support, renewable integration and network flow management) within urban load centers.

In Section VIII of this brief, NRG provides answers to Administrative Law Judge David M. Gamson's questions.[2]

II. THE ANALYSIS UNDERLYING THE DETERMINATION OF NEED IS SOUND

The permanent retirement of SONGS Units 2 and 3 has removed two high capacity factor generating resources from a critical location within one of the nation's most populous urban load centers.[3] Combined, these two generating units provided approximately 2,250 MW of real power output and over 1,100 MVAR of dynamic reactive power output.[4] Because these resources were located at an important transmission interface between two utility service areas (the Southern California Edison Company and San Diego Gas & Electric Company), the value provided by these resources at this critical location within the Southern California bulk power transmission system goes beyond mere measures of the units' output.[5] SONGS Units 2 and 3 provided multiple benefits, and care must be taken when procuring resources to replace these units to ensure that the services needed to maintain reliability in their absence are secured.

The need for additional resources to address the loss of these critical energy and voltage support resources will be exacerbated by the scheduled retirement of an additional approximately 5,874 MW of once-through-cooled (OTC) coastal generating resources in the San Diego and Western LA Basin areas.[6] Like SONGS, these OTC resources provide the multiple reliability

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[2] These questions were attached to a November 4, 2013 e-mail from ALJ Gamson to parties in the above-captioned proceeding.
[3] *See* Ex. ISO-7, Millar Rebuttal (for CAISO), p. 6:23-26.
[4] *See* Ex. ISO-1, Sparks Opening (for CAISO), p. 16:4-6.
[5] *See* Ex. NRG-1, Theaker Opening (for NRG), p. 4:14-21.
[6] *See* Ex. ISO-1, Sparks Opening (for CAISO), pp. 11-13, Table 7.

services needed to ensure the integrity of Southern California's bulk power delivery system, and they must be replaced by units that provide similar services.

California's bulk power system is in the midst of a transformation prompted by state policy goals dealing with climate change, namely, a move towards renewable sources of energy and away from undue reliance on fossil fuels. At the same time, California's economy and its standard of living is built upon a foundation of reliable and affordable electricity. The loss of SONGS should not and does not require California to abandon its path towards a less carbon-intense bulk power supply system. However, the path towards that new world cannot undermine the reliability of the electric supply system on which Southern California depends.

A. THE NON-SIMULTANEOUS OVERLAPPING N-1-1 OUTAGE OF THE 500-KV SOUTHWEST POWER LINK (SWPL) AND 500-KV SUNRISE POWER LINK (SUNRISE) SHOULD DEFINE THE TRACK 4 LOCAL AREA REQUIREMENTS

Much of the attention in Track 4 has been focused on the transmission contingency the CAISO has used in its technical analysis to define the Western LA Basin and San-Diego sub-area needs.

Some parties have asserted that the CAISO should use the single transmission line, single generator (N-1, G-1) contingency scenario. Still others assert that the proposed overlapping N-1-1 contingency is really a NERC Category D contingency, and, correspondingly, requires no mitigation either through maintaining a certain amount of local capacity in the affected area, or by any other means.

These parties would seek to substitute their judgment for the experienced judgment of the entities that have been operating the system, not because of any superior technical analysis or insight but because doing so would further the particular result they seek, namely, the hasty and ill-considered demise of all gas-fired generation. As it strives to seek the right balance between

state policy goals and ensuring reliable, affordable electric rates, the Commission should not be swayed by such arguments.

Most notably, with regards to the San Diego sub-area, the two entities with primary responsibility for ensuring reliability in that area (the CAISO and SDG&E) agree the local sub-area need should be defined by the overlapping N-1-1 contingency of the 500-kV SWPL and Sunrise transmission lines without using firm load shedding to mitigate the impacts of that contingency.[7] This contingency scenario proposed to define the local area capacity requirement in Track 4 is completely consistent with the contingency scenario used to establish the Southern California local capacity requirements in Track 1 of this proceeding.[8] While the soundness of using a similar approach (the Category C, N-1-1 contingency) to determine the local capacity requirements for Track 4 aligns Track 4 with the policy decisions already made in Track 1, what distinguishes Track 4 and Track 1 is that SONGS Units 2 and 3 are assumed to be operating in Track 1, but are known to be permanently retired in Track 4. The permanent loss of these key resources, which provided multiple benefits within the Southern California bulk power system, warrants that the reasonable approach to defining local capacity requirements undertaken in Track 1 should, at least, be used for Track 4.

Nevertheless, a number of witnesses try to cloud the facts around the CAISO's assessment of need. The Commission should not be persuaded by their arguments.

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[7] *See* Ex. SDG&E-4, Jontry Rebuttal (for SDGE&E), p. 1:15-21 ("SDG&E and the CAISO are in agreement that load shedding is not a proper or prudent mitigation for the contingency event in this proceeding (the N-1-1 of the ECO-Miguel portion of the 500 kV Southwest Powerlink, followed by the Ocotillo Express-Suncrest portion of the 500 kV Sunrise Powerlink). This recommendation is reflected in SDG&E's procurement authorization request, which is based on the "no load shed" scenario. Controlled load shedding may be appropriate as short-term mitigation or in certain specific, localized instances, but it is not appropriate for the contingency event at issue in this proceeding.")

[8] D.13-02-015 at 39-40.

Despite what Sierra Club witness Bill Powers[9] and CEJA Witness Julia May[10] represented, the non-simultaneous overlapping outage of the SWPL and Sunrise lines is NOT a Category D outage.[11] The overlapping outage of these two lines is *not* a Category D outage even when a 230 kV transmission line in the Comision Federal de Electricidad ("CFE") service area is tripped to prevent that line from being overloaded by power seeking to find its way to San Diego from the east following the loss of the 500-kV import paths. CAISO witness Robert Sparks' October 14 rebuttal testimony accurately and completely refutes these assertions.[12]

It is completely appropriate to use the N-1-1 contingency as the contingency that defines the Western LA Basin and San Diego sub-area needs. As CAISO witness Neil Millar noted in his rebuttal testimony, there is a significant history of fires in the area east of San Diego.[13] Moreover, CAISO witness Robert Sparks observed that "…[b]ased on information documented in a study performed by SDG&E, over a period of 13 years of fire data, there were 11 fires in the area where the two lines are only four to eight miles apart. One of those fires could have taken out both lines."[14] The prevailing wisdom is that climate change will exacerbate the number and severity of extreme weather events, including the kind of heat storms that create the conditions ideal for such large wildfires to spread. Armed with this understanding, it would be unreasonable to assume that the likelihood of losing the two 500-kV lines to the same fire will

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[9] *See* Ex. SC-1, Powers Opening (for Sierra Club).
[10] *See* Ex. CEJA-1, May Opening (for CEJA).
[11] *See* Ex. SC-1, Powers Opening (for Sierra Club), p. 2; see also Ex. CEJA-1, May Opening (for CEJA), p. 30.
[12] *See* Ex. ISO-2, Sparks Rebuttal (for CAISO), pp. 10:13 – 11:19.
[13] *See* Ex. ISO-7, Millar Rebuttal (for CAISO), p. 9:4-6. According to the California Department of Forestry and Fire Protection (Cal Fire), three of the ten largest fires in California history have occurred in San Diego County, including the October 2003 Cedar Fire at #1 (which burned over 273,000 acres), the October 2007 Witch Creek fire at # 6 (which burned over 197,000 acres) and the September 1970 Laguna fire at # 9 (which burned over 175,000 acres). 640 acres is one square mile; at 273,000 acres, the Cedar fire amounted to over 426 square miles. According to Cal Fire, power lines were the cause of the Witch Creek and Laguna fires. *See* http://www.fire.ca.gov/communications/downloads/fact_sheets/20LACRES.pdf.
[14] *See* Ex. ISO-2, Sparks Rebuttal (for CAISO), p. 5:26-29.

decrease. As a result, it is appropriate to base the Track 4 local area requirements on the overlapping, non-simultaneous loss of the SWPL and Sunrise lines.

For all of these reasons, and especially due to the combined judgment of the two entities with the most experience and the most at stake with regards to the reliability of the area under concern, the Commission should base the Western LA Basin and San Diego needs determinations on the overlapping, non-simultaneous outage of the Sunrise and SWPL 500-kV lines.

B. THE COMMISSION SHOULD NOT RELY ON INVOLUNTARY FIRM LOAD SHEDDING TO MITIGATE THE IMPACT OF THE CONTINGENCY DEFINING THE LOCAL GENERATION NEEDS

Various parties (California Environmental Justice Alliance,[15] the Office of Ratepayer Advocates,[16] and the Sierra Club[17]) advocate using a remedial action scheme to intentionally black out at least 500 MW of firm customer load to mitigate the impacts of the Category C.3 N-1-1 outage.

For several reasons, the Commission should not adopt procurement targets that rely on intentional blackouts to mitigate the impact of this contingency and reduce the local capacity requirements.

First, as San Diego witness Jontry notes, the difference in the local capacity needs between using 500 MW of firm load shedding and not using that amount of firm load shedding is only 150 MW.[18]

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[15] *See* Ex. CEJA-1, May Opening (for CEJA), p. 34-36.
[16] *See* Ex. ORA-3, Fagan Reply (for ORA), p. 11.
[17] *See* Ex. SC-1, Powers Opening (for Sierra Club).
[18] *See* Ex. SDG&E-4, Jontry Rebuttal (for SDG&E), pp. 2:22-3:3. *See also* Ex. SDG&E-3, Jontry Opening (for SDG&E) (1470 MW for line 1 in Table 2 vs. 1320 MW for Line 1 in Table 1).

Second, no party has provided any reliable evidence as to what the true costs – financial, civil, or human - of blacking out that much firm customer load within a dense urban area would be.[19] The impacts of shedding 500 MW of firm customer demand or more in a high-density urban area will certainly be severe. The sudden and unannounced disconnection of 500 MW of demand or more will detrimentally impact traffic control, elevators, communication, food preparation and storage, security, banking, and health care systems, to name just a few. It is not difficult to find estimates of the financial costs of blackouts or anecdotes about the civil and human costs of such blackouts. And yet the advocates for load shedding brought none of those costs to bear as part of their advocacy.

Third, the parties advocating the use of load shedding to mitigate the impacts of the overlapping N-1-1 outage are not the parties who will have to deal with the aftermath of such widespread outages. In contrast, the parties to this proceeding that will be most immediately held responsible following such an outage event – SDG&E and the CAISO – do *not* advocate the use of load shedding to mitigate the impacts of the N-1-1 outage.

Fourth, while load shedding is permitted (but not required) for a Category C.3 contingency, allowing the outage to cascade is absolutely *not* permitted.[20] Voltage collapse due to loss of reactive margin is not a phenomenon to be taken lightly. The failure to shed enough load under contingency conditions could still lead to voltage collapse. Margin can be provided

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[19] Sierra Club witness Powers acknowledged that while he advocated using load shedding to mitigate the impacts of the N-1-1 contingency, he had not conducted a cost/benefit analysis regarding the use of load shedding. TR., at 1951:10-15. Sierra Club witness Powers conflictingly noted that he expected that some of the customers who would be blacked out by such load shedding would have advance notice of such an event (TR., 1950:2-12) but that, because the probability of such an event was so remote, no one actually had an obligation to notify such customers (TR., 1950:22-1951:2).

[20] *See, e.g.,* FAC-010-2.1E.1.2.1 ("System Operating Limits shall be established for multiple Facility Contingencies in E.1.1 through E.1.5 shall provide system performance consistent with the following: Cascading does not occur."). See also TOP-004 R3 ("Each Transmission Operator shall operate to protect against instability, uncontrolled separation, or cascading outages resulting from multiple outages, as specified by its Reliability Coordinator.") Finally, *see* TPL-001-0.1 Table 1, which does not allow for cascading outages in performance categories A, B or C.

by tripping more load than precisely estimated to be necessary, but the more load that is tripped, the higher the financial, civil and human costs.

Finally, as SCE noted, relying on load shedding as a primarily resource balance tool leans on an inflexible and complex remedial scheme and paints the sustained reliability of Southern California's electric supply into a corner with few avenues of future escape should conditions change – *e.g.,* increased load growth due to a more robust economic recovery or the more widespread adoption of electric vehicles, or more volatile and hotter weather resulting from climate change.[21]

For all of these reasons – including the severe but un-quantified consequences of blacking out 500 MW or more or firm load, the recommendation to not use load shedding from the parties with primary responsibility for maintaining reliability in these areas, and the limitations associated with relying on load shedding as a supply-demand balancing tool – the Commission should reject the use of load shedding to mitigate the impacts of the contingency that appropriately defines the local area requirements in Track 4.

C. SNAP-SHOT POWER-FLOW ANALYSES DO NOT CAPTURE ALL OF THE BENEFITS OF MEETING LOCAL CAPACITY REQUIREMENTS THROUGH GAS-FIRED GENERATION

While the focus of the needs determination is a single scenario – the overlapping Category C.3 outage – the Commission should bear in mind that highly available and dispatchable generating capacity within a local area provides benefits beyond ensuring reliability during times of peak demand. While the specific power-flow analyses on the record in this proceeding are snapshot power-flow analyses focused at times of local area peak demand, the local generation that will be procured as a result of the decisions that take these analyses into

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[21] *See* Ex. SCE-2, Various Witnesses Opening (for SCE), pp. 15:14 – 16:19.

account will not simply be used at times of peak demand. The local generation that will be procured as a result of this proceeding will have to provide a suite of reliability benefits, such as allowing for the regular maintenance of other generation or transmission within the local area, continuously following variations in demand or variable renewable generation, providing contingency reserve to respond to sudden changes in demand or the loss of a generating or transmission resource, maintaining transmission voltages within acceptable levels by producing or absorbing reactive power as needed, or providing or standing by ready to provide real power output to maintain network flows within safe limits.[22]

The Commission should bear in mind that while the annual local Resource Adequacy capacity requirements are established through peak demand snapshot power-flow analyses such as those conducted to inform the procurement decisions in this proceeding, the local capacity requirements that result from such snapshot analyses are currently enforced on a twelve-month basis.[23] The majority of generation that currently meets local capacity requirements is gas-fired generation, which is presumed to be available unless on forced outage, a reasonable assumption given that the current Planning Reserve Margin includes a margin for an average forced outage rate. Conversely, preferred resources, which depend on the availability of variable "fuel" sources (such as the sun or the wind) or the amount and type of demand (for demand response), cannot be assumed fully available at all times, even when such resources are not on forced outage. This, of course, does not mean that preferred resources cannot be used to meet local capacity area requirements. But it does mean that relying on preferred resources to meet local area requirements and still provide the same level of reliability requires more complex analyses

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[22] *See, e.g.,* Ex. AES-1, Ballouz Opening (for AES Southland), pp. 6-7; Ex. NRG-1, Theaker Opening (for NRG), pp. 7:1-10:5.
[23] *See* D.06-06-064 (June 26, 2006, pp. 38-41.

than simple peak-demand snapshot power flow analyses to ensure that reliability is maintained across all hours even if the peak hour is deemed to be reliable. The CAISO is beginning to undertake such analysis, but, as SCE observes, that work has only just begun.[24] Until processes are in place to be able to assess the bulk power system's reliability under all conditions, deeming a MW of preferred resources to be the equivalent of a MW of gas-fired generation with regards to ensuring local area reliability under all conditions is an unreasonable and simplistic assumption.

D. IT IS APPROPRIATE TO PROCEED WITH AUTHORIZING PROCUREMENT NOW RATHER THAN WAITING FOR TRANSMISSION PLANNING PROCESS RESULTS

The reliability challenges brought on by the permanent retirement of SONGS Units 2 and 3 are significant. More importantly, the challenges are *already here*.

The CAISO's 2014 Local Capacity Study identifies that a deficiency of 458 MW exists within the San Diego sub-area *for 2014*.[25] This deficiency will be exacerbated by the scheduled December 31, 2017 retirement of 949 MW of once-through-cooled units at the Encina Power Plant in accordance with the State Water Resources Control Board's OTC policy. The CAISO's opening testimony establishes a need for 920 MW of additional generation in the San Diego sub-area by 2018,[26] In light of the immediate and future needs and time frames identified in the

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[24] *See* Ex. SCE-1, Various Witnesses Opening (for SCE), p. 52:1-22.

[25] *2014 Local Capacity Technical Analysis Final Report and Study Results* ("2014 Local Capacity Technical Analysis"), dated April 30, 2013, pp. 2 and 101. This report is available at http://www.caiso.com/Documents/Final2014LocalCapacityTechnicalStudyReportApr30_2013.pdf. CEJA witness Julia May alleged that it was improper to bring this current San Diego sub-area deficiency into the record of this proceeding (See Ex. CEJA-3, May Rebuttal (for CEJA), p. 12). While Ms. May further asserted that the CAISO found that there was adequate reserve to prevent load shedding (*Id.*), Ms. May has confused the CAISO's 2013 Summer Assessment (which looks only at load and resource balance within an area) with the CAISO's Local Capacity Technical Assessment (which evaluates the need for local generation within an area due to transmission system performance). The CAISO's 2014 Local Capacity Technical Analysis clearly shows that there is not adequate capacity within the San Diego sub-area in 2014 to provide adequate performance for the overlapping, non-simultaneous outage of the 500-kV SWPL and Sunrise lines.

[26] *See* Ex. ISO-1, Sparks Opening (for CAISO), p. 19, Table 9.

CAISO's testimony, additional procurement authorization in Track 4 is not only reasonable but necessary.

Several parties advocate waiting for the results from the CAISO's 2013-2014 Transmission Planning Process[27] before proceeding to authorize initial levels of procurement in Track 4.[28] Notably, other parties – including the utilities seeking the procurement authorization – do not advocate waiting until the TPP results are complete to authorize procurement.[29]

The Commission should not wait until the CAISO 2013-2014 TPP results are approved to authorize procurement for the following reasons:

First, the incremental procurement being requested does not foreclose evaluating transmission alternatives, notably, what is likely the most viable transmission alternative, SCE's Mesa Loop-In.

Second, approval of a transmission project in the CAISO TPP process does not amount to a definitive conclusion of that project's viability.

Third, the uncertainty regarding the transmission projects that could affect the local area capacity requirements is substantial. Of the transmission projects offered by SCE and SDG&E that could reduce the local capacity needs in the Western LA Basin (Mesa Loop-In, Imperial Valley to SONGS HVDC, Devers to a new 230-kV North San Diego County Substation, Valley-Alberhill-SONGS, or sub-surface LA Basin to San Diego), the Mesa-Loop-In, which would use an existing right-of-way- would seem to hold the most promise. The prospects for siting new transmission through urban corridors are unknown, but could not be described as promising. An

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[27] While preliminary results will be released in January, if the 2013-2014 TPP proceeds as in the past, those results likely will not be approved by the CAISO Board of Governors until the Board meets in March – currently scheduled for March 27-28, 2014.

[28] *See, e.g.*, Ex. ORA-3, Fagan Reply (for ORA), p. 18:1-26; Ex. ISO-1, Sparks Opening (for CAISO), pp. 29:28-31:7; Ex. SC-1, Powers Opening (for Sierra Club), p. 16.

[29] *See* Ex. SCE-1, Various Witnesses Opening (for SCE), p. 11:1-9.

undersea cable might face less "not in my backyard" opposition, but likely would not be without any detractors.

In any case, whether any of these projects could be designed, sited, licensed and built by 2018 (in the case of the emerging need in San Diego) or 2022 (for the LA Basin) remains to be seen. As SCE notes, the Mesa Loop-in would reduce the need for additional generation in the LA Basin but would not be effective in addressing San Diego area contingencies or the need for local generation in San Diego.[30]

Finally, transmission projects do not eliminate the need for local generation. Transmission lines serve an important purpose – they provide a region access to electrical power generated outside of that region. But transmission lines are not a panacea. They introduce their own multitude of environmental and societal impacts. Moreover, the service they provide, while important, is somewhat limited. Transmission lines do not produce real power, and certainly do not produce the dispatchable real power that will be needed to integrate increasing levels of renewable resources. While lightly loaded transmission lines produce reactive power, transmission lines loaded above their surge impedance loading level (as they would be under high demand, high import conditions) require reactive power support from the bulk power system. Transmission lines do not provide the rotating inertia that allows the system to remain stable following faults. Transmission lines are vulnerable to weather and fires over long distances. Simply put, transmission lines, while an integral part of a reliable and economic bulk power system, do not provide all of the characteristics needed to ensure reliable service to load. It would be unreasonable to expect that an optimum level of service reliability could be maintained and the need for generation within the Southern California load center could be

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[30] *See* Ex. SCE-1, Various Witnesses Opening (for SCE), p. 37:17-22.

eliminated simply through building of transmission – even if building transmission did not pose any environmental or societal challenges.

For all of these reasons, the Commission should not defer authorizing the procurement requested by SCE and SDG&E until after the CAISO TPP results are approved.

III. REPOWERING EXISTING ONCE-THROUGH-COOLED GENERATION SITES PROVIDES MULTIPLE COST-EFFECTIVE BENEFITS

As the Commission considers what procurement to authorize in Track 4, it should keep in mind the substantial synergies afforded by the current opportunities to repower the existing coastal power plants within the San Diego and Western LA Basin areas.

Repowering coastal generation sites will prove these benefits:

- Because it will inject predictable and controllable amounts of real and reactive power into the bulk power network at precisely known locations, repowered generation will be the most dependable tool available to the CAISO to manage bulk power network reliability. Unlike the disperse effects of distributed resources, such injections will be completely visible to and controllable by the CAISO.
- Repowered generation on brownfield sites will not disturb new lands.
- Repowered generation preserves the value of the ratepayer-financed high voltage delivery system already in place.
- Repowered generation obviates the need for expensive new electric or gas transmission infrastructure. New gas and transmission infrastructure in dense urban areas may face significant public opposition, may cause significant disruptions (e.g., road closures or transmission lines clearance), and therefore may be difficult to site, license and construct.
- Repowering existing generation provides a path to securing the necessary air credits (by shutting down existing boilers).

- Repowered generation will further state policy addressing the use of ocean water for cooling.
- Repowered generation will be more efficient and will result in lower emissions than existing generation on a per-MWh basis.
- Repowered coastal generation in urban load centers provides dispatchable resources to follow variations in renewable resource output.
- Repowered coastal generation provides all of these service in proximity to load.

Recent history points to several recent repowering successes, namely, Marsh Landing Generating Station and El Segundo Energy Center, where modern, more flexible, more efficient, much cleaner gas plants that do not use ocean water for cooling but continue to support the existing high voltage transmission system replaced aging OTC plants. Similar "win-win" opportunities exist within the Western LA Basin and San Diego sub-areas.

IV. REPOWERING WITH GAS-FIRED GENERATION WILL PRESERVE RELIABILITY WITHOUT "CROWDING OUT" THE FUTURE DEVELOPMENT OF PREFERRED RESOURCES

The Office of Ratepayer Advocates asserts that authorizing the procurement of additional gas-fired generating resources based on the record in the proceeding to date, even to replace the existing gas-fired resources slated to be retired under the SWRCB's OTC policy, will "crowd out" the development of preferred resources capable of reducing LCR need. [31]

While it is true that a MW of gas-fired generation that meets a local capacity area need will reduce the need for a MW of any other kind of generation to meet that need, any vision of the future in which gas-fired generation crowds out preferred resources misapprehends the future direction of California policy in general and the collective vision of the CAISO, the CPUC and

[31] *See* Ex. ORA-2, Ciupagea Rebuttal (for ORA), p. 1:14-17.

the California Energy Commission for meeting post-SONGS reliability needs in particular. Those three agencies have put forth a plan which calls for the development of 3,250 MW of preferred resources to meet post-SONGS local reliability needs – a figure equivalent to approximately half of the projected local area need. The commitment of the two lead California energy agencies and the state's grid operator to ensure that preferred resources have a place in meeting post-SONGS local area needs should assuage any concerns about gas-fired generating resources "crowding out" preferred resources.

Further, as noted elsewhere, the processes for determining how preferred resources will count towards meeting local capacity requirements have not fully played out yet. Until it is understood how preferred resources will count towards meeting local capacity requirements, it is premature to irrevocably carve out any particular amount of preferred resource procurement for meeting local area needs.

The procurement advocated in Track 4 is a relatively small amount of incremental procurement relative to the need that is (1) already created by the loss of SONGS Units 2 and 3 and (2) will be created by the retirement of OTC generation and additional projected load growth. The Commission should authorize incremental procurement without any concerns about such procurement crowding out preferred resources.

V. THE DEPENDABLE CONTRIBUTION THAT PREFERRED RESOURCES CAN MAKE TOWARDS RELIABLY MEETING LOCAL CAPACITY REQUIREMENTS HAS NOT BEEN DETERMINED

Some parties recommend that any additional procurement authorized in Track 4 be limited to preferred resources.[32] NRG strongly agrees that preferred resources will play an important role in California's electrical future, both in helping to meet California's current (and

[32] *See* Ex. ORA-3, Fagan Reply (for ORA), p. 21:13-14.

likely future higher) renewable portfolio standards and in providing the location-specific reliability services necessary to meet local area capacity requirements. There is, however, nothing yet developed, let alone in the record of this proceeding, that defines how preferred resources will meet local area capacity needs with the certainty and precision necessary to meet all local capacity needs through preferred resource procurement. Proposed work by Energy Division's staff to establish qualifying capacity (QC) values for energy storage and demand response through Effective Load Carrying Capability (ELCC) analysis is just underway in proceeding R.11-10-023. *Preliminary* work from the CAISO to determine how preferred resources could meet local capacity requirements has just begun; the CAISO acknowledges that such future work will be necessary.[33] Further, from comments submitted by parties in October, it is clear that there is no consensus about whether ELCC analysis will provide robust and reliable QC values. Finally, even if a methodology for determining QC values for energy storage and demand response had been developed, approved, and implemented, QC values do not necessarily define how effective such resources are in meeting local area capacity needs. Again, a resource's ability to serve peak demand is different than a resource's ability to ensure local area reliability. As a case in point, there may be plenty of air conditioner-driven demand available to be curtailed to ensure overall system balance on a hot weather day, but there may be little if any curtailable load available to provide the ability to regulate flows on the bulk power system to facilitate taking transmission lines or generators out of service during off-peak system conditions.

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[33] The CAISO's November 5, 2013 Revised Stakeholder Initiatives Catalog – its list of current and potential initiatives – lists "Preferred Operating Resource Characteristics", intended to provide a coordinated forum for determining how preferred resources can count towards meeting RA requirements. The catalog is available at: http://www.caiso.com/Documents/2013StakeholderInitiativesCatalogRevisedNov5_2013.pdf.

The work needed to reliably determine how preferred resources will contribute towards meeting local area capacity needs is complex. It will involve looking at local capacity needs at times other than at system peak and under bulk electric system network conditions other than with the network fully intact. These analyses are not impossible to foresee and perform, but they will require studies beyond simple snapshot analyses under peak conditions. Consequently, there is nothing on the record in this proceeding that will reliably allow local capacity requirements to be met solely through preferred resources.

VI. THE COMMISSION SHOULD NOT SIMPLY ASSUME THE CONTINUED OPERATION OF EXISTING RESOURCES

The assessment of local capacity need in the San Diego and Western LA Basin sub-areas hinges, in part, on assumptions made about the continued operation of existing resources in or near those areas.

For example, the CAISO's analysis assumes that the 640 MW Etiwanda generating facility will remain in operation beyond 2018, but will cease operation prior to 2022.[34] The CAISO also assumes that the Long Beach generating facility will be retired by 2022.[35] Sierra Club witness Bill Powers asserts that "…CAISO is currently negotiating an extension of the proposed shutdown date of the Cabrillo II combustion turbines (188 MW), yet these units are assumed retired in Track 4 modeling."[36] CEJA observes that existing resources could meet the emerging local capacity needs by keeping the Cabrillo II peakers in service.[37]

As NRG offered in its opening testimony, any assumptions about the continued operation of existing resources hinge on whether those resources can recover the costs needed to keep them

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[34] *See* Ex. ISO-1, Sparks Opening (for CAISO), p. 19:13.
[35] *Id.*
[36] *See* Ex. SC-1, Powers Opening (for Sierra Club), p. 15.
[37] *See* Ex. CEJA-1, May Opening (for CEJA), p. 26.

in operation.[38] Under California's current Resource Adequacy structure, any assumption about whether a unit will remain in operation beyond the period for which it is contracted is unreliable. In particular, any assumptions about whether OTC units will remain in operation beyond their scheduled retirement dates that hinge on recovery of extraordinary costs associated with OTC compliance (such as the installation of mitigation measures like screens, or other substantial modifications to intake water structures) must be thoroughly tested and verified before they are relied upon to inform procurement decisions.

In addition to testing the assumptions about the continued operation of certain units, the Commission should consider whether it is reasonable to continue the operating life of older, inefficient resources, even if technically feasible to do so.

In sum, the Commission should not assume the continued operation of any particular resource beyond the period for which it is currently contracted. To the extent that the Commission does consider such operation, it must thoroughly assess the feasibility and cost of doing so, and, more importantly, ensure that the resource can recover the costs of continued operation.

VII. THE COMMISSION SHOULD ISSUE A TRACK 4 DECISION THAT AUTHORIZES ADDITIONAL PROCUREMENT AS SOON AS POSSIBLE

According to the CAISO's 2014 Local Capacity Technical Analysis, a deficiency of 458 MW currently exists within the San Diego sub-area. Additionally, the CAISO's analysis in this proceeding shows a need for an additional 920 MW of resources in the San Diego sub-area in 2018 and an additional 565 MW beyond that amount by 2022.[39]

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[38] *See* Ex. NRG-1, Theaker Opening (for NRG), p. 12:4-9.
[39] See Ex. ISO-1, Sparks Opening (for CAISO), p. 23:3. This additional 565 of Northwest San Diego generation could be replaced by an additional 500 MW of generation in the SCE areas, depending on where that generation is located.

Given the relatively modest incremental procurement authorization requested in this track, the existing need, the multiple benefits of local generation, and the timing of the projected future need, the Commission should approve the Track 4 procurement authorization advocated in this proceeding as soon as possible.

VIII. ANSWERS TO ADMINISTRATIVE LAW JUDGE QUESTIONS

1. Should the CPUC authorize SCE and/or SDG&E to procure additional resources at this time for the purposes within the scope of this proceeding?

   Yes.

2. If so, what additional procurement amounts should be authorized at this time? What additional resources, if any, should be authorized to fill procurement needs?

   The Commission should, at a minimum, authorize the procurement amounts requested by SCE (500 MW) and SDG&E (820 MW).[40] *Moreover, the Commission should allow SCE and SDG&E to slightly increase these authorized amounts as needed to facilitate multi-benefit, cost-effective repowering projects that may respond to the solicitations that include this incremental authorization.*

3. Should there be any requirements or restrictions on procurement amounts for any specific resources or categories of resources?

   Yes. Because of the uncertainty with regards to preferred resources' ability to meet local capacity requirements and ensure local area reliability, the Commission should not limit procurement to preferred resources, nor should the Commission dedicate any particular procurement authorization amount to preferred resources.

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[40] *See* Ex. 1, Joint Comparison Exhibit. SDG&E actually advocates for 1,320-1,470 incremental megawatts without major new transmission improvements.

4. What process should the utilities use to fill any procurement amounts authorized at this time?

   Utilities should procure new resources consistent with processes authorized in Commission precedent.[41]

5. Are there other determinations the CPUC should consider, or conditions the CPUC should impose, regarding Track 4 procurement?

   Yes. The procurement amounts authorized by any Track 4 initial decision should not be reduced by any later determination made in Track 4 or other Commission proceeding.

IX. PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW

NRG proposes the following.

Findings of Fact:

- It is reasonable to base the determination of need for local capacity in the Western LA Basin and San Diego sub-areas on the CAISO's Track 4 power-flow analysis, which uses the overlapping, non-simultaneous outage of the 500-kV Southwest Power Link and the 500-kV Sunrise Power Link, allowing for system readjustment between the two outages.
- The severe economic, civil and human impacts make it inappropriate to shed large blocks of firm customer load to mitigate the impacts of the contingency that defines the local area capacity needs in Track 4.
- Meeting San Diego and Western LA Basin local capacity needs by repowering existing inefficient coastal generation plants to eliminate the use of ocean cooling water is a cost-effective way to preserve the needed reliability services within these local capacity areas while leveraging the substantial investment in bulk power system infrastructure already present in these areas.
- The ability of preferred resources to meet local capacity requirements and ensure local area reliability has not been fully determined.

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[41] *See, e.g.*, D.13-02-015 (February 13, 2013).

Conclusions of Law:

- SCE should be authorized to procure at least 500 MW of local capacity resources in addition to the procurement already authorized in D.13-02-015.
- SDG&E should be authorized to procure at least 820 MW of local capacity resources in addition to the procurement already authorized in D.13-03-029.
- The procurement amounts authorized for SCE and SDG&E may be slightly increased to facilitate securing repowering projects within their local areas.

X. CONCLUSION

Based on the foregoing, the Commission should authorize Track 4 procurement amounts as soon as possible.

Respectfully submitted,

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