

Application No.: 14-07-009

Exhibit No.: _____

Witness: Robert Sparks

Application of San Diego Gas & Electric Company (U902E) for Authority to Partially Fill the Local Capacity Requirement Need Identified in D.14-03-004 and Enter into a Purchase Power Tolling Agreement with Carlsbad Energy Center, LLC.

Application 14-07-009

**TESTIMONY OF ROBERT SPARKS
ON BEHALF OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR
CORPORATION**

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

Application of San Diego Gas & Electric Company
(U902E) for Authority to Partially Fill the Local
Capacity Requirement Need Identified in D.14-03-
004 and Enter into a Purchase Power Tolling
Agreement with Carlsbad Energy Center, LLC.

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Q. What is your name and by whom are you employed?

10 **A.** My name is Robert Sparks. I am employed by the California Independent System
11 Operator Corporation (CAISO), 250 Outcropping Way, Folsom, California as
12 Manager, Regional Transmission.

13

14 **Q. Please describe your educational and professional background.**

15 **A.** I am a licensed Professional Electrical Engineer in the State of California. I hold a
16 Master of Science degree in Electrical Engineering from Purdue University, and a
17 Bachelor of Science degree in Electrical Engineering from California State
18 University, Sacramento.

19

20 **Q. What are your job responsibilities?**

21 **A.** I manage a group of engineers responsible for planning the CAISO controlled
22 transmission system in southern California to ensure compliance with NERC,
23 WECC, and CAISO Transmission Planning Standards in the most efficient cost
24 effective manner.

25

26 **Q. What is the purpose of your testimony?**

27 **A.** The purpose of my testimony is to address the following issues set forth in Assigned
28 Commissioner's September 12, 2014 Scoping Memo and Ruling (Scoping Memo):

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- 1 1. Whether the local capacity requirement (LCR) identified for San Diego Gas
2 & Electric (SDG&E) in D.14-03-004 should be adjusted to account for
3 transmission projects identified in the CAISO's 2013-2014 transmission
4 planning process (TPP); and
5 2. Whether SDG&E's proposed purchase power tolling agreement (PPTA)
6 with Carlsbad Energy Center, LLC (Carlsbad) is electrically effective at
7 meeting the 600 megawatt (MW) of identified LCR need that D.14-03-004
8 determined may be met with conventional resources.

9

10 **Q. What are your recommendations in this proceeding?**

11 **A.** I recommend that the Commission find that:

- 12 1. SDG&E's LCR identified need should not be adjusted based on the results
13 of the CAISO's 2013-2014 TPP; and
14 2. The Carlsbad PPTA is an electrically effective means to meet the identified
15 need.

16 These recommendations are discussed in detail below.

17

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1 **I. THE COMMISSION SHOULD NOT ADJUST SDG&E’S LCR NEED BASED**
2 **ON 2013-2014 TPP RESULTS**

3
4 **Q. Describe SDG&E’s LCR need identified by the Commission in D.14-03-004.**

5 **A.** The Commission authorized SDG&E to procure between 500 and 800 MW of
6 capacity and authorized up to 600 MW of the overall 800 MW cap to be “procured
7 through any set of resources appropriate to meet LCR needs in the SDG&E
8 territory.”¹ The Commission also directed SDG&E to procure a minimum of 25
9 MW of capacity from energy storage resources and an additional 175 MW of
10 capacity from preferred resources consistent with the Loading Order of the Energy
11 Action Plan.

12
13 **Q. Briefly describe how the CAISO modeled SDG&E’s LCR needs identified in**
14 **D.14-03-004 in the CAISO’s 2013-2014 TPP analysis of the southern California**
15 **bulk transmission system.**

16 **A.** The CAISO’s bulk transmission system reliability, policy and economic analyses
17 modeled the CPUC-authorized Track 1 procurement (1,800 MW for SCE’s LA
18 Basin and 308 MW for SDG&E), as well as SCE’s and SDG&E’s proposals for
19 Track 4 additional procurement (500 MW for SCE and 500 – 550 MW for SDG&E)
20 in the CPUC’s 2012-2013 Long Term Procurement Plan (LTPP) process. In the
21 bulk transmission system reliability studies, the CAISO specifically modeled
22 SDG&E’s Track 4 component as a 558 MW combined cycle generation project in
23 the Carlsbad area to address numerous thermal overloads and voltage stability
24 problems identified without Carlsbad modeled.² The Track 4 procurement the
25 CAISO modeled in the TPP is roughly equivalent to the Carlsbad 600 MW PPTA.

26

¹ D.14-03-004 at pg. 97.

² See Appendix A to the TPP, Table A3-1: Planned Generation, and Appendix C-25 to the TPP: San Diego Gas & Electric Reliability Assessment Study Results.

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1 **Q. How do the results of the CAISO’s 2013-2014 TPP bulk transmission reliability**
2 **study relate to SDG&E’s LCR needs?**

3 **A.** Notwithstanding inclusion of the aforementioned assumptions regarding Track 1
4 and Track 4 resource procurement, the CAISO reliability assessment of the southern
5 California bulk transmission system yielded the following reliability issues:

- 6
- 7 • Post-transient voltage instability that affects the San Diego and LA Basin
8 area under the overlapping outage of the ECO – Miguel 500kV line, system
9 readjusted, followed by the next contingency of Ocotillo – Suncrest 500kV
10 line (i.e., Category C.3, or N-1-1) under post-transient conditions.
 - 11 • Overloading on the Otay Mesa – Tijuana 230kV line under an N-1
12 contingency of the ECO – Miguel 500kV line;
 - 13 • Low voltage at Miguel 500kV bus under normal conditions for 2018 and
14 2023 summer peak loads (0.998 per unit, or 499kV, and 0.974 per unit, or
15 487kV, respectively).
 - 16 • Potential overloading concerns on the Ellis – Johanna and Ellis – Santiago
17 230kV lines under an overlapping outage (N-1-1) of the Imperial Valley –
18 North Gila 500kV line, followed by either the Ellis – Santiago or Ellis –
19 Johanna 230kV line. This overloading concern was identified for summer
20 2018 peak load conditions under the scenario in which the Encina power
21 plant is retired due to compliance with the State Water Resources Control
22 Board’s Policy on once-through-cooling plants and SDG&E does not
23 receive authorization from the Commission for its requested LCR needs to
24 be in operation prior to summer 2018.

25
26 Table 1 summarizes the CAISO staff recommended transmission projects that were
27 approved by the CAISO Board of Governors to partially mitigate the identified
28 transmission and resource deficiencies. The CAISO selected these projects because
29 they provided material reductions in local capacity requirements, without the
30 addition of new transmission rights of way. They provide the best use of existing

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1 transmission lines and transmission rights of way, as well as minimizing risk about
2 permitting and the timing of permitting. However, they do not obviate the need for
3 the procurement of authorized Track 1 and Track 4 resources. In other words,
4 transmission upgrades are needed in addition to the MW of procurement the
5 Commission authorized for SCE and SDG&E in Tracks 1 and 4.

Table 1

No.	Transmission Upgrade Option	Proposed In-Service Date
1	Additional 450 MVAR of dynamic reactive support at San Luis Rey (i.e., two 225 MVAR synchronous condensers)	June 2018
2	Mesa Loop-In Project	December 2020
3	Imperial Valley Flow Controller (IV B2BDC or Phase Shifter) – for emergency flow control to prevent overloading on CFE line and voltage collapse under Category C.3 contingency	May 2017
4	Miguel 500 kV Voltage Support 375 MVAR of reactive support at Miguel substation	June 2017

9
10 In fact, the CAISO’s modeling in the 2013-2014 transmission plan indicated that
11 completion of these projects, in addition to development of the Track 1 and Track 4
12 approved resource procurement will not address all of the requirement identified for
13 the San Diego and LA Basin area. Instead, even with their implementation, there
14 would still be a residual need of up to 900 MW, assuming conservative estimates for
15 their overall effectiveness. Notably, the CAISO Board of Governors approved
16 transmission solutions do not address the potential overloading concerns on the Ellis
17 – Johanna and Ellis – Santiago 230kV lines. The TPP assumes that SDG&E will
18 have Track 4 resources operational prior to 2018 peak load conditions to resolve this
19 constraint.

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1 The residual need leaves room in future planning and procurement cycles to take
2 into account changes in load forecasting as well as anticipated increases in forecasts
3 for preferred resources – energy efficiency in particular. Further analysis in the
4 2014-2015 transmission planning cycle will be necessary to assess residual need in
5 light of more current load forecast information and further clarity on the specifics
6 of conventional and preferred resources and storage. The CAISO’s preliminary
7 reliability analyses in the 2014-2015 transmission planning cycle, which assume the
8 operation of the Carlsbad facility, all other authorized Track 1 and Track 4 resources
9 and the transmission solutions found in Table 1, indicate there may not be a
10 residual need. However, the CAISO is continuing its analyses to complete and
11 refine these preliminary analyses.

12
13 **Q. Did the Commission consider the need to update LCR need identified in D.14-
14 03-004 based on the results of the 2013-2014 TPP?**

15 **A.** Yes, the Commission understood that the 2013-2014 TPP had the potential to
16 reduce “the total amount of overall procurement needed in the SONGS service
17 area,” however it recognized that such results would not necessitate a change or
18 update to the decision.³ The Commission recognized that the range of procurement
19 authorized in Track 4 was intended to provide flexibility to meet a variety of
20 circumstances. The Commission noted that the results of the 2013-2014 TPP were
21 unlikely to result in major changes to the analysis in its decision regarding LCR
22 procurement needs. The results of 2013-2014 TPP confirm that changes to the need
23 identified in D.14-03-004 are not necessary.

24
25 **Q. Based on the results of the 2013-2014 TPP, should SDG&E’s LCR need
26 identified in D.14-03-004 be adjusted?**

27 **A.** No. The 600 MW of new resource capacity is needed before summer 2018 along
28 with the transmission projects in Table 1 to ensure LCR needs are met.

³ D.14-03-004, at pg. 116.

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1 **II. THE CARLSBAD PPTA IS AN ELECTRICALLY EFFECTIVE MEANS TO**
2 **MEET SDG&E'S LCR NEED.**

3

4 **Q. Does the Carlsbad PPTA fit SDG&E's identified LCR need?**

5 **A.** Yes. The Carlsbad facility is a new 600 MW natural-gas fired, simple cycle peaking
6 generating facility that is located within the San Diego load pocket. Its location is
7 electrically equivalent to the Encina generation that is expected to retire prior to
8 2018 and electrically very close to the location of the recently retired SONGS units.
9 Therefore, it is ideally located to complement the transmission system in the area
10 that was designed to have generation in these locations.

11

12 **Q. Is the Carlsbad PPTA consistent with the CAISO's modeling of the Track 4**
13 **resources in its 2013-2014 TPP?**

14 **A.** Yes. The facility is expected to be operational in November, 2017, prior to the
15 summer 2018 period in which the CAISO has identified system reliability issues. In
16 the 2013-2014 reliability studies, the CAISO modeled the addition of a 558 MW⁴
17 combined cycle gas turbine in the Carlsbad area in 2016. Although it is not the
18 exact resource the CAISO studied in the 2013-2014 TPP reliability studies, the
19 Carlsbad PPTA provides similar, and in some cases superior, operational benefits in
20 terms of capacity and flexibility. More generally, the CAISO has prepared studies
21 and testimony showing the benefits of replacing once-through cooling generation
22 with flexible generation with the following characteristics: (1) quick response to
23 changes in load and renewable resource intermittency, (2) the ability to provide
24 ancillary services, (3) inertia or governor control to respond to changes in frequency
25 and provide system stability and (4) faster starting to respond to changes more
26 quickly, rather than having to be online prior to the change in condition.⁵ It is my
27 understanding that Carlsbad has these characteristics.

⁴ The 2014-2015 ISO Transmission Planning Process Unified Planning Assumptions document lists the Carlsbad project as 520 MW.

⁵ R.12-03-014, Ex. ISO-4, page 8, lines 13-30. *See also*, R.12.-03-014, Opening Brief of the California Independent System Operator, Sept. 24, 2012 at pg. 48.

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1 **Q. Are there any other additional benefits provided by the Carlsbad PPTA?**

2 **A.** The CAISO's policy studies found that the change of flow patterns caused by the
3 loss of the San Onofre Nuclear Generating Station adversely impacted the
4 deliverability of new renewable resources in the Imperial zone which are now
5 limited by Category B and C overloads on 500 and 230 kV facilities in the Imperial
6 Valley/Ocotillo/ECO/Suncrest and Otay Mesa/Tijuana/La Rosita areas. Imperial
7 zone deliverability would have been further reduced if the CAISO TPP policy
8 studies had not assumed that the Carlsbad⁶ generation project would be in-service
9 Having the 600 MW Carlsbad plant in-service before summer of 2018 will help
10 mitigate the degradation of deliverability of renewable generation in the Imperial
11 zone expected to be in-service at that time.

12

13 **Q. Please summarize your recommendations.**

14 **A.** For the reasons stated above, the Commission should find that:

- 15 1. SDG&E's LCR identified need should not be adjusted based on the results
16 of the CAISO's 2013-2014 TPP; and
17 2. The Carlsbad PPTA is an electrically effective means to meet the identified
18 need.

19

20 **Q. Does this conclude your testimony?**

21 **A.** Yes, it does.

⁶ The 2013-2014 TPP policy studies assumed updated capacity information of 520 MW for the capacity of the Carlsbad combined cycle project to be located at the current Encina power plant site.