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| Rulemaking: | 12-03-014 |
| Exhibit No.: | SC-X-SDG&E- |
| Commissioner: | Michel Florio |
| ALJ: | David Gamson |

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| Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans. | Rulemaking 12-03-014 (DMG) (Filed March 22, 2012) |

**PREPARED TRACK 1 TESTIMONY OF SAN DIEGO GAS & ELECTRIC COMPANY (U 902 E)**

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Application No: R.10-05-006
Exhibit No.: SDG&E-1
Witness: Robert Anderson

| Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans. | Rulemaking 10-05-006 (Filed May 6, 2010) |
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# PREPARED TRACK I TESTIMONY

# OF SAN DIEGO GAS & ELECTRIC COMPANY (U 902 E)

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

July 1, 2011

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# PREPARED TRACK I TESTIMONY OF

# SAN DIEGO GAS & ELECTRIC COMPANY

## I. INTRODUCTION AND BACKGROUND

In the *Assigned Commissioner and Administrative Law Judge's Joint Scoping Memo and Ruling* issued December 3, 2010 ("Scoping Memo"), the Commission directed the investor-owned utilities ("IOUs") to consider four "required" scenarios (the "CPUC-Required Scenarios") using an analytic framework developed by the California Independent System Operator ("CAISO") in order to perform a system need determination in Track I.[1/] Separate testimony sponsored by the CAISO provides a detailed description of the methodology, input assumptions and results for the CPUC-Required Scenarios analysis.

As a supplement to the CPUC-Required Scenarios, San Diego Gas & Electric Company, Pacific Gas and Electric Company ("PG&E") and Southern California Edison Company ("SCE") developed three alternative scenarios (the "IOU Common Scenarios") and a sensitivity analysis using the same input databases used for the four CPUC-Required Scenarios. Certain variables in the input databases were modified, however, to reflect alternative assumptions that align with the IOUs' expectations. In addition, all of the IOU Common Scenarios include new resources necessary to meet SDG&E's Local Capacity Requirement ("LCR").[2/]

The IOUs have prepared joint testimony (the "Joint IOU Testimony") that provides modeling analysis and results of the CPUC-Required Scenarios and the IOU Common Scenarios and sensitivity (the "Joint Analysis"). SDG&E submits this testimony concurrently with the Joint IOU Testimony in order to support the calculation of the LCR for SDG&E's service

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1/ Scoping Memo, p. 24.

2/ In Application ("A.") 11-05-023, SDG&E identified a need for additional new generation in the San Diego Local Capacity Area.

territory included in both the CAISO's analysis of the CPUC Required Scenarios and the IOU Joint Analysis, and to address the need for new units to meet LCR in SDG&E's service area.

## II. PURPOSE

The purpose of this testimony is to provide a calculation of the LCR requirements based on the CPUC Required Scenarios and the IOU Joint Analysis and show whether the assumed additions will meet the LCR or if, instead, additional resources are needed.

## III. CAISO LOCAL RESOURCE ADEQUACY REQUIREMENT

Since the creation of the CAISO, SDG&E's service area has been treated as a single load pocket. Accordingly, the CAISO determines on an annual basis if there are sufficient resources in the load pocket to meet grid reliability criteria, referred to as the G-1, N-1 criteria. These criteria require that SDG&E be capable of serving the entire load in its service area on a hot summer day – which is defined as a summer day that is expected once every ten years – while the largest transmission line and the largest generator are both out of service. These criteria have been endorsed by the Commission, which has used them to set the LCR requirement in its resource adequacy program.[3/] The Commission also applied these criteria in determining the authorization for new resources approved in the 2006 LTPP proceeding.[4/] Thus, even if system-wide studies do not identify a need for additional resources on a statewide basis, there may nevertheless still be a need for new resources to meet local resource adequacy criteria.

[3/] *See* R.09-10-032.
[4/] D.07-12-052, *mimeo*, p. 113.

## IV. LOCAL CAPACITY REQUIREMENTS IN THE CPUC-REQUIRED SCENARIOS

As noted above, the Scoping Memo requires the IOUs to develop a system need determination using the four CPUC-Required Scenarios, and includes standardized planning assumptions to be used for the CPUC-Required Scenarios.[5/] A table with the loads and resources for SDG&E for the "Trajectory" Case is located on page 19 of Attachment A to the Scoping Memo (the "Attachment A Table"). The table provides no information, however, regarding whether the LCR would be met in the SDG&E load pocket. Therefore, SDG&E performs this calculation below.

Table 1 below shows the calculation of the LCR for the San Diego load pocket based on the Trajectory Case. Since most of the assumptions regarding loads and resources that are required in order to calculate the LCR are identical in all of the CPUC-Required Scenarios, SDG&E calculated the LCR only for the Trajectory Case. However, the other cases would produce similar results. Table 1 includes two components: 1) expected need for resources based on loads and changes to existing resources; and 2) a showing as to whether the assumed additions, including uncommitted energy efficiency ("EE") and demand response ("DR") would be sufficient to meet the LCR.

The analysis started with the data included in the Attachment A Table. It is important to note, however, that the Scoping Memo defined the SDG&E service area as including all resources in the SDG&E load pocket plus all the generation that would be connected to the Imperial Valley substation. This is inconsistent with the CAISO definition of the current

[5/] *See* Scoping Memo, Attachment A.

SDG&E local capacity area.[6/] Under CAISO's definition, resources connected to the Imperial Valley substation and imports delivered to the SDG&E load pocket over the Sunrise Powerlink and the Southwest Powerlink are not located in the load pocket and therefore are not used to meet LCR. Thus to calculate the LCR, these resources must be excluded from the supply.[7/]

The analysis set forth in Table 1 demonstrates that in the Trajectory Case, after accounting for the retirement of the local once-through cooling ("OTC") facilities, a local capacity need of 522 MW in 2017 growing to 722 MW in 2020 is identified. The Trajectory Case meets this need by assuming substantial amounts of uncommitted EE, growth in DR, new local RPS resources, and allocating a portion of a state-wide CHP goal to be in SDG&E's service area. The addition of these resources results in the Trajectory Case meeting the CAISO LCR with a cushion of approximately 300MW.

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[6/] This analysis addresses SDG&E's current Local RA area. The CAISO may also create a new San Diego–Imperial Valley local area after the Sunrise Powerlink transmission line goes into service, which in some years might be more constraining and determine a given years LCR. Any capacity in the current SDG&E Local RA area will count towards meeting requirements for the new, larger area.

[7/] This required that the generation located in Mexico, Imperial Valley and some East San Diego County resources that will be connected to the proposed ECO substation be excluded from the supply. The addition of the Sunrise Powerlink increases the import capability in 2013, thus reduces the need for local resources.

## Table 1

| **Peak Load Calculations (MW):** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** |
|---|---|---|---|---|---|---|---|---|---|
| Forecast Peak-Hour 1-in-2 | 4658 | 4738 | 4797 | 4856 | 4911 | 4973 | 5032 | 5094 | 5157 |
| Forecast Peak-Hour 1-in-10 | 5124 | 5212 | 5277 | 5341 | 5402 | 5470 | 5535 | 5603 | 5673 |
| Transmission Capability (-) | 2500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 |
| Generation Contingency (+) | 604 | 604 | 604 | 604 | 604 | 604 | 604 | 604 | 604 |
| **Local Resource Need** | **3228** | **2316** | **2381** | **2445** | **2506** | **2574** | **2639** | **2707** | **2777** |
| | | | | | | | | | |
| Existing Local Supply Resources | 1894 | 1894 | 1894 | 1894 | 1894 | 1894 | 1894 | 1894 | 1894 |
| Existing OTC | 1271 | 1271 | 1271 | 1271 | 1271 | 1271 | 1271 | 1271 | 1271 |
| Small Hydro | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Existing CHP | 136 | 136 | 136 | 136 | 136 | 136 | 136 | 136 | 136 |
| Local Renewable Energy | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |
| **Total Existing Capacity** | **3326** | **3326** | **3326** | **3326** | **3326** | **3326** | **3326** | **3326** | **3326** |
| OTC Retirement | 311 | 311 | 311 | 311 | 311 | 1271 | 1271 | 1271 | 1271 |
| Other Retirements | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Net Local Capacity** | **3015** | **3015** | **3015** | **3015** | **3015** | **2055** | **2055** | **2055** | **2055** |
| **Capacity (Need) or Surplus** | **-213** | **699** | **634** | **570** | **509** | **-519** | **-584** | **-652** | **-722** |
| | | | | | | | | | |
| **Proposed Resources** | | | | | | | | | |
| Known High Probability Adds | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| RPS in service area | 0 | 34 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| Additional Supply CHP | 6 | 8 | 11 | 14 | 17 | 20 | 22 | 25 | 28 |
| Additional Demand Side CHP | 13 | 19 | 25 | 32 | 39 | 45 | 51 | 57 | 64 |
| Uncommitted EE | 4 | 73 | 133 | 197 | 272 | 353 | 438 | 518 | 598 |
| Demand Response | 226 | 270 | 277 | 285 | 289 | 293 | 298 | 302 | 302 |
| **Total Assumed Additions** | **305** | **458** | **569** | **650** | **739** | **834** | **931** | **1025** | **1115** |
| **Capacity (Need) or Surplus** | **92** | **1157** | **1203** | **1220** | **1248** | **315** | **347** | **373** | **393** |

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In considering the Trajectory Case, and indeed all the CPUC-Required Scenarios, however, the Commission must remain mindful of the fact that the LCR is met in these cases through reliance on assumptions that may not be realized in the future. These include:

- **Energy Efficiency ("EE")**: The CPUC-Required Scenarios assume substantial new energy efficiency reductions, including reductions from programs that have not yet been defined or shown to be cost effective. As a practical matter, a high degree of uncertainty continues to exist regarding whether these reductions will be achieved. While proposing stretch goals and aggressive new measures such as those reflected in the Energy Efficiency Strategic Plan's Big Bold Energy Efficiency Strategies ("BBEES") may be appropriate in certain non-LTPP contexts, the need to preserve system reliability makes it imperative that future uncommitted EE impacts not be overstated for purposes of resource planning. Public Utilities Code § 454.5 makes clear that the IOUs' procurement plans should include only those energy efficiency resources ". . . that are ***cost effective, reliable and feasible***."[8/] Thus, resource planning assumptions must take into account what is reasonably expected to occur.
- **Demand Response ("DR")**: the DR assumptions were based on early estimates of the impact of future DR programs. Subsequent filings have forecasted peak reductions that were significantly less than those included in the CPUC- scenarios.
- **Combined Heat and Power ("CHP")**: The incremental CHP assumption is based on a straight allocation across all the service areas rather than an analysis specific to the SDG&E service area. It also assumes 100% of the demand side capacity will be performing at the time of peak and the resource adequacy value of the supply side

8/ Pub. Util. Code § 454.5(b)(9)(C) (emphasis added).

will be 100% of the installed capacity. This is wholly inconsistent with current projects and is not likely to occur with future projects.

The Trajectory Case also includes assumptions regarding existing and future resources that are likely not to be realized in the long term.

- **Cabrillo II Peakers**: In all of the CPUC-Required cases, these peaker facilities are assumed to be in service for the entire planning period. It is anticipated, however, that these units will retire in 2013 when their current land leases expire. This will result in the elimination of 188 MW of supply.
- **Celerity Contract**: The Trajectory Case assumes as a "likely addition" 15 MW of new supply from the Celerity contract. This contract has not been able to obtain Resource Adequacy value, and ends in 2016. Thus it is not reasonable to expect that this resource will be available over the planning period.

With the removal of the 188 MW Cabrillo II peakers and the 15 MW "likely addition" of Celerity, SDG&E's LCR is met by only 112 MW in 2017 growing to about 190 MW in 2020. Thus the Trajectory Case, as modeled, did meet the LCR, however it did so with substantial assumptions about new resources that may not be realized.

## V. LOCAL CAPACITY REQUIREMENTS IN THE IOU COMMON SCENARIOS

For the IOU Common Scenarios, SDG&E developed assumptions and calculated an LCR table based upon its current outlook regarding loads and resources in its service area. It includes updates to the load forecast, energy efficiency, demand response, and existing resources, including the retirement of the Cabrillo II units.[9/] Table 2 below shows the local capacity need and proposed solutions as included in the IOU Joint Analysis. As can be seen, this analysis

[9/] A more detailed discussion of these inputs is in the Joint IOU testimony, in Chapter 5.

identifies a need for 573 MW in 2017 growing to 846 MW in 2020. Adding high probability additions adjusted for contract end dates, uncommitted EE, DR, new CHP and local renewables, the case shows a shortage of 41 MW growing to 180 MW in 2020. Thus, under the Joint Analysis, SDG&E added 300 MW of new resources to address this shortage and add a slight cushion.

**Table 2**

| **Peak Load Calculations (MW):** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** |
|---|---|---|---|---|---|---|---|---|---|
| Forecast Peak-Hour 1-in-2 | 4438 | 4536 | 4615 | 4696 | 4772 | 4851 | 4930 | 5014 | 5099 |
| Forecast Peak-Hour 1-in-10 | 4882 | 4990 | 5077 | 5166 | 5249 | 5336 | 5423 | 5516 | 5609 |
| Transmission Capability (-) | 2500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 |
| Generation Contingency (+) | 604 | 604 | 604 | 604 | 604 | 604 | 604 | 604 | 604 |
| **Local Resource Need** | **2986** | **2094** | **2181** | **2270** | **2353** | **2440** | **2527** | **2620** | **2713** |
| | | | | | | | | | |
| Existing Local Supply Resources | 1894 | 1894 | 1894 | 1894 | 1894 | 1894 | 1894 | 1894 | 1894 |
| Existing OTC | 1271 | 1271 | 1271 | 1271 | 1271 | 1271 | 1271 | 1271 | 1271 |
| Small Hydro | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Existing CHP | 136 | 136 | 136 | 136 | 136 | 136 | 136 | 136 | 136 |
| Local Renewable Energy | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |
| **Total: Existing Capacity** | **3326** | **3326** | **3326** | **3326** | **3326** | **3326** | **3326** | **3326** | **3326** |
| OTC Retirement | 311 | 311 | 311 | 311 | 311 | 1271 | 1271 | 1271 | 1271 |
| Other Retirements | 0 | 0 | 188 | 188 | 188 | 188 | 188 | 188 | 188 |
| **Net Local Capacity** | **3015** | **3015** | **2827** | **2827** | **2827** | **1867** | **1867** | **1867** | **1867** |
| **Capacity (Need) or Surplus** | **29** | **922** | **647** | **557** | **474** | **-573** | **-660** | **-752** | **-846** |
| | | | | | | | | | |
| **Proposed Resources** | | | | | | | | | |
| Known High Probability Adds | 55 | 55 | 55 | 55 | 55 | 40 | 40 | 40 | 40 |
| RPS in service area | 0 | 34 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| Additional Supply CHP | 0 | 3 | 5 | 8 | 10 | 31 | 34 | 36 | 39 |
| Additional Demand Side CHP | 0 | 2 | 3 | 5 | 7 | 12 | 14 | 16 | 17 |
| Uncommitted EE | 0 | 34 | 60 | 87 | 126 | 169 | 213 | 251 | 284 |
| Demand Response | 158 | 196 | 205 | 208 | 210 | 212 | 214 | 217 | 219 |
| **Total Assumed Additions** | **213** | **324** | **396** | **430** | **475** | **532** | **582** | **627** | **666** |
| **Capacity (Need) or Surplus** | **242** | **1245** | **1042** | **987** | **949** | **-41** | **-78** | **-126** | **-180** |

## VI. LOCAL CAPACITY NEED FOR SDG&E SERVICE AREA

The above analysis establishes that there will be a substantial need for new resources in the SDG&E LCR area in order to meet key planning criteria. The need will result from load growth and the likely retirement of existing capacity associated with OTC facilities and older peaker plants. In addition to uncertainty regarding underlying load growth, it is not clear how much of this resource need will be met through demand-side resources such as EE and DR. Thus, in considering the authorization for new local resources, SDG&E believes it is prudent for the Commission to consider a number of factors in addition to the pure resource need calculation shown above.

The need shown in this filing is based on conservative demand forecasts. The expected peak load forecast, after EE and demand side CHP, actually declines by 14 MW in the CPUC-Required Scenarios and increases at 1.1% annual growth for the years between 2011 and 2020 in the IOU Common Scenarios.[10/] This growth rate is very low when compared with historical peak load growth. Looking at the average growth rate for the ten-year periods ending in 2000 through 2010, the historical ten-year growth has been approximately 2%, or about twice as high as the IOU Common Scenarios forecast.

Moreover, there was only one ten-year period – the period ending in 2001 – in which load growth was as low as 1.1% on average. This unusually low load growth was mainly driven by substantial load decreases due to the energy crisis in 2000 and 2001. Examination of load growth rates over 5-year periods for the periods ending in 2000 through 2010 produces a similar result – the growth rate averages 2%. It is important to note, however, that load growth does not typically occur in a steady pattern. SDG&E has observed 5-year growth rates as high as 5.5%

[10/] The load after all demand-side reductions are taken into account is used since this is the best to compare to historical load, which also reflects reductions from the same demand-side resources. Although not called out, the load forecasts are also reduced for growth in roof top photovoltaics.

(for the period ending in 2006). Given that the Commission expects reliability standards to be met in *every* year, not just on average, and that SDG&E is currently escalating the loads from the low point in an economic cycle, the load growth shown in both cases is very conservative. If load growth returns to historical averages, the need for resources will be increased by over 900 MW in 2020 in the Trajectory Case, and by about 400 MW in the IOU Joint Analysis.

The Commission has made clear that it does not support "just in time" capacity procurement, and that planning for and procuring new resources must occur well in advance of the need for the resources. In D.07-12-052, for example, the Commission noted that "recent experience suggests that the time required to develop and carry out competitive long-term RFOs, then finance, permit and construct new generation resources – including a cushion to account for unanticipated delays – requires that these procurement decisions be made up to seven years in advance of when the resources are needed."[11/] Similarly, the Commission emphasized in D.09-01-008 the need to take proactive steps to prevent development of a reliability crisis in which there exists insufficient time to engage in additional procurement:

> We carefully reviewed and considered IEP and WPTF's comments and although we are approving MEF II, we are also admonishing SDG&E to have **adequate procedures in place to ensure that they do not again find themselves in a reliability crisis without sufficient time to follow the procurement protocols set forth in D.07-12-052.**[12/]

To address the Commission's clear directive to avoid "just in time" resource additions, need authorizations must be made far enough in advance to allow sufficient time to carry out the Commission's procurement protocols, including the time needed to conduct a second round of procurement, to the extent it is necessary to do so. Should any one or more of the units included in SDG&E's LCR analysis not reach commercial operation, SDG&E would then have greater

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[11/] D.07-12-052, *mimeo*, p. 21.
[12/] D.09-01-008, *mimeo*, p. 18 (emphasis added).

opportunity to identify and explore options that follow the preferred Commission methods. Given the long lead time to add new resources – which can easily be 5 years or more – by the time these adjustments might be fully recognized, it will be too late to add the resources needed to address the shortage. Thus, it is essential that the need for additional local resources be addressed in this LTPP proceeding. This will encourage prudent planning and will help to protect system reliability – an obligation shared by the Commission and the IOUs. Thus, taking into account future load growth, the uncertainty in the amount of demand-side resources, the lead time required to add new plants and the State's OTC policy, it is clear that new resources must be added to SDG&E's local area in this LTPP planning cycle.

In terms of filling the local need reflected in Table 2 and the IOU Joint Analysis, SDG&E notes that currently pending before the Commission is SDG&E's Application ("A.") 11-05-023, in which SDG&E requests approval of contracts with three new facilities located in the SDG&E load pocket. Together, these new facilities would add 450 MW of local RA. These units are being pursued under the new generation allocation from the 2006 LTPP, adjusted for additional potential retirements that were not assumed in the 2006 authorization.[13/] One of these is the repower of an existing facility that was not shown as retired in the LTPP cases, and thus a 35 MW plant would retire, for a net gain of 415 MW.[14/] If approved, these units would meet the anticipated need for local units in SDG&E's service area reflected in Table 2 and the IOU Joint Analysis. Although the capacity requested in A.11-05-023, is slightly greater the 300 MW shown in this filing, SDG&E believes it prudent to plan for a bit more of cushion above the minimum requirements, given the load and resource uncertainty. Accordingly, the Commission

[13/] *See* D.07-12-052, *mimeo*, p. 113.

[14/] The Wellhead Escondido Project would retire the existing 35 MW combustion turbine and replace it with a new 45 MW combustion turbine. This existing unit was included in the IOU Joint Analysis since the net change was not critical to the Joint Analysis results, and because the contract for the repowering had not been publicly announced at the time the Joint Analysis assumptions were being locked in.

should authorize in the instant LTPP proceeding the need of 415 MW of new generation, which will be met by the approval of A.11-05-023.

This concludes my prepared testimony.

## VII. WITNESS QUALIFICATIONS

My name is Robert B. Anderson. My business address is 8330 Century Park Court, San Diego, California, 92123.

I am employed by San Diego Gas & Electric Company as Director - Resource Planning. My responsibilities mainly include electric resource planning. I have been employed by SDG&E since 1980, and have held a variety of positions in resource planning, corporate planning, power plant management, and gas planning and operations.

I have a BS in Mechanical Engineering and a MBA - Finance. I am a registered professional engineer in Mechanical Engineering in California.

I have previously testified before this Commission.