

UCAN's 2nd Set of Data Requests

A. 05-12-014

Computer Modeling process

1. Pursuant to PUC Rule 74.4 that provides that any party using a computer model as the basis for its testimony shall provide reasonable access to that computer model to all parties who submit a written request, UCAN requests that SDG&E agree either to (1) make Gridview available to UCAN to run ourselves, (2) run cases for UCAN, or (3) have ABB run cases for UCAN. Please provide guidance as to the process that SDG&E chooses to employ and the contact person to which we should provide specific model runs.

Data requests re Communications with others

2. Please provide copies of all communications between SDG&E and the CAISO (staff or Board) since 1/1/05 regarding the proposed Sunrise project or any other new 500 KV lines in the SDG&E service area.
3. Please identify any ISO role in the technical analyses underlying SDG&E's Sunrise testimony.
4. Please provide copies of all communications between SDG&E and the CPUC (DRA or Energy Division or Commissioner's offices or Commissioners) since 1/1/05 regarding the proposed Sunrise project or any other new 500 KV lines in the SDG&E service area.
5. Please provide copies of all communications between SDG&E and the CEC (staff or Commissioners) since 1/1/05 regarding the proposed Sunrise project or any other new 500 KV lines in the SDG&E service area.

Data requests re Chapter V

6. SDG&E testifies that its Sunrise energy savings calculations "elected to enforce only the higher voltage limits." (p. V-18, fn. 15). In relation to this statement, please provide a list of all paths for which flow limits were enforced, identifying the path name, the transmission lines comprising that path, and the Mw limits which was enforced in 2010 and in 2015.
7. What south-of-SONGS limit was enforced in the north-to-south direction?

8. What north-of-SONGS limit was enforced in the south-to-north direction?
9. What limits were enforced for the south-of-Lugo path in the north-to-south direction?
10. What limits were enforced for SCIT?
11. What limits were enforced for Path 45 in each direction?
12. For each of the years 2010 and 2015, for each path for which limits were enforced and the enforced limits were ever constraining, please provide a list stating the path name, the Mw limit enforced, the year in which the Mw limit was constraining, and the number of hours in that year that flows were at that limit.
13. SDG&E testifies that in its Sunrise energy savings calculations “CAISO consumer costs are approximated by the quantity of load at each bus times the LMP at the respective bus.” (p. V-18) In relation to this statement, please provide the following:
 - a. For each of Case 00 and Case 1, for each hour of the years 2010 and 2015, please provide the load-weighted average LMP for busses in the SDG&E service area, in Excel format. Please indicate whether your responses are in nominal dollars or 2005 dollars, and provide annual inflation rates from 2005-2015 if the latter.
 - b. For each of Case 00 and Case 1, what was the maximum range of LMP’s between busses in the SDG&E area in each of the years 2010 and 2015? (In other words, for each hour of the year there is a range of LMPs at SDG&E-area busses; the question asks for just one number per year, the maximum out of the 8760 different ranges over the course of the year)
 - c. For each of Case 00 and Case 1, for each hour of the years 2010 and 2015, please provide the LMP at the Imperial Valley 230 KV and 500 KV busses, in Excel format. Please indicate whether your responses are in nominal dollars or 2005 dollars, and provide annual inflation rates from 2005-2015 if the latter.
 - d. For each of Case 00 and Case 1, for each hour of the years 2010 and 2015, please provide the load-weighted average LMP for busses in the SCE service area, in Excel format. Please indicate whether your responses are in nominal dollars or 2005 dollars, and provide annual inflation rates from 2005-2015 if the latter.
 - e. For each of Case 00 and Case 1, for each hour of the years 2010 and 2015, please provide the load-weighted average LMP for busses in the CAISO’s SP15 zone, in Excel format. Please indicate whether your responses are in

nominal dollars or 2005 dollars, and provide annual inflation rates from 2005-2015 if the latter.

- f. For each of Case 00 and Case 1, for each hour of the years 2010 and 2015, please provide the load-weighted average LMP for the major (16 or so) regions including regions outside of CAISO control area which were tracked by the Grid view study model in Excel format. Please indicate whether your responses are in nominal dollars or 2005 dollars, and provide annual inflation rates from 2005-2015 if the latter.

14. SDG&E testifies that in its Sunrise energy savings calculations, it calculates the “producer surplus for generation that is owned by utilities serving load in the CAISO control area” and generation under contract to CAISO-area utilities such as SDG&E’s share of Boardman plant generation. (p. V-19 and V-19, fn. 16). For each of Case 00 and Case 1, for each of the years 2010 and 2015, please provide a list of all the facilities which SDG&E included in its calculation of the “Less Utility-Owned Producer Surplus” line in Table V-6 on p. V-19, indicating:

- a. Facility name
- b. Facility capacity, in Mw
- c. Mw share of the facility capacity deemed under the control of a utility serving load in the CAISO control area (either by ownership or contract rights)
- d. Annual producer surplus dollars from that facility incorporated into the “Less Utility Owned Producer Surplus” line of Table V-6.

15. For 2010, please explain why plants supplying capacity pursuant to CERS contracts were or were not included in the calculation of the “Less Utility-Owned Producer Surplus” line in Table V-6 on p. V-19.

16. For each of Case 00 and Case 1, for each of the years 2010 and 2015, please supply the annual producer surplus dollars associated with the following generation plants or groups of plants:

- a. Sempra’s Termoelectrica de Mexicali unit
- b. Mesquite units in Arizona
- c. Copper Mountain units in Nevada
- d. Silver Hawk units in Nevada
- e. Geothermal units in the Imperial Valley
- f. Wind generation in the SDG&E service area

17. For each of Case 00 and Case 1, for each of the years 2010 and 2015, please supply the annual Consumer surplus in dollars for each region tracked in the study (e.g. 16 regions) and explain if any adjustments were made to the gross consumer surplus for the non-dispatchable (e.g., take or pay) long term power purchase commitments made by the LSEs on behalf of their customers. If not explain why not? If yes please explain the adjustments made to each LSE's consumers surplus in \$ for each hour and the corresponding power purchase agreement.
 - a. Please list by name and MWs all dispatchable (e.g., take or pay) power purchase agreements SDG&E has entered into on behalf of its customers for the years 2010 through 2015 including non-dispatchable DWR contrasts assigned to SDG&E.
18. SDG&E testifies that in its Sunrise energy savings calculations, it calculates the "congestion rents that are generated on transmission that is subject to the CAISO's congestion management protocols."
 - a. Please explain in detail how the congestion rents were calculated in SDG&E's modeling.
 - b. Please explain why adding Sunrise causes congestion rents to go up in 2010 but down in 2015 (in Table V-6).
 - c. Please explain how congestion rents will actually be calculated and collected after the CAISO's MRTU is implemented.
19. *For voltage support and other reasons, a certain amount of generation is always required to be running near load centers without regard to whether cheaper energy may be available elsewhere.* Please indicate whether SDG&E agrees with the foregoing statement, and if not, explain in detail why not.
20. Please state whether SDG&E's Sunrise energy savings calculations observe minimum generation constraints within CAISO-identified local areas? If so, please explain how such constraints were modeled.
21. Please identify the minimum generation within the SDG&E service area which was required by SDG&E's Sunrise energy savings modeling?
22. For each of Case 00 and Case 1, for each of the years 2010 and 2015, what was the minimum hourly generation within the SDG&E service area which occurred in the modeling?
23. *In the real world, generating units are subject to ramp rate constraints and startup/shutdown duration constraints which result in, inter alia, minimum load costs for generation run out of economic order in order to be available at a future hour.* Please indicate whether SDG&E agrees with the foregoing statement, and if not, explain in detail why not.

24. Please state whether SDG&E's Sunrise energy savings calculations observe minimum generation, ramp rate, and startup/shutdown time constraints? If so, please explain how these constraints are modeled.
25. For each of Case 00 and Case 1, for each of the years 2010 and 2015, how many times were each of the following units dispatched below 20% of their maximum capacity and above 80% of their maximum capacity in the same day?
 - a. Palomar
 - b. Otay Mesa
 - c. Encina 5
26. Table V-6 shows nominal net consumer energy savings of \$45 million in 2010 and \$101 million in 2015. Please provide the values used for all of the other years between 2010 and 2049 that resulted in the levelized figure of \$96 million.
27. Is SDG&E's Sunrise energy cost savings methodology capable of providing data disaggregated to subareas of the CAISO? If so, please supply the same data as in Table V-6 disaggregated by:
 - a. CAISO Zone (NP15, ZP26, SP15)
 - b. Historic IOU service area (PG&E, SCE, SDG&E)
28. SDG&E testifies that with its Sunrise energy cost savings methodology "changes in overall energy cost levels" and "changes in producer surplus" can be identified for areas "outside of the CAISO control area." (p. V-20) In relation to this statement, please provide the following:
 - a. For each of Case 00 and Case 1, for each of the years 2010 and 2015, for the state of Arizona, please provide the same data shown on Table V-6.
 - b. For each of Case 00 and Case 1, for each of the years 2010 and 2015, for the entire WECC excluding the CAISO, please provide the same data shown on Table V-6.
29. Please provide a copy of the "Appendix N" referred to on p. V-21, or a link to where it can be found online.
30. Please describe how the adjustments described in Appendix N (cited on p. V-21) were implemented in SDG&E's Sunrise energy savings analysis.
31. SDG&E testifies that its Sunrise energy savings analysis incorporates hourly load curves at the regional level and at the level of individual buses within each region (pp. V-21, -22). Please provide the aggregated hourly load curves for 2010 and 2015 for the SDG&E service area, the CFE service area, and the CAISO area.

32. SDG&E testifies that it evaluated a total of 31 scenarios (p. V-22) which are “depicted in Table V-11” (p. V-23). Table V-11 lists cases 00, 1, 5, 7, 9, 11, 13, 15, 17, and 22-30. Please describe cases 2, 4, 6, 8, 10, 12, 14, 16, and 18-21 and explain why they were excluded from Table V-11.
33. Please provide a copy of the CAISO DPV2 technical appendix referenced on p. V-23, or a link to where it can be found online.
34. SDG&E testifies that it understands that the current LEAPS project sponsors’ proposal for integrating the LEAPS project into the CAISO grid involves a 500/230 KV substation on the “existing SONGS-Talega 230 KV line.” (p. V-28)
 - a. Should this refer to Talega-Escondido rather than SONGS-Talega?
 - b. If SDG&E meant SONGS-Talega, please provide all documents supporting its claim that the LEAPS transmission is intended to interconnect to the SONGS-Talega line.
 - c. How many miles of transmission line does SDG&E believe would be required to connect the LEAPS project to the SONGS-Talega line?
35. SDG&E testifies that it “has assumed that the cost of the 500/230 KV substation on the existing SONGS-Talega 230 kV line and the cost of the additional 500 kV transmission necessary to reach Central substation are approximately equal.” (p. V-28).
 - a. Please provide the quantitative basis for this assumption.
 - b. Is this assumption independent of the location of the Central substation?
36. Please identify how many extra miles of 500 kV transmission line would be required to terminate the line from LEAPS at Central instead of the proponents planned termination if:
 - a. Central is at the easternmost location currently being considered?
 - b. Central is at the westernmost location currently being considered?
37. Please provide SDG&E’s estimate of the cost per mile to build a 500 KV transmission line between the easternmost and westernmost locations currently being considered for the Central substation?
38. SDG&E testifies that LEAPS, as compared to a no project reference case, “does produce a modest price reduction for CAISO customers” which is “offset by a loss of revenues from utility-owned generation and by a decline in congestion revenues.” For each of the years 2010 and 2015, please supply data on the energy cost to CAISO consumers, the revenues from utility-owned generation, and the congestion revenues associated with the LEAPS case evaluated by SDG&E. The data should be presented in the same format as in Table V-6.

39. Is it SDG&E's testimony that LEAPS would reduce congestion, and thus congestion revenues, and in so doing would harm CAISO consumers? Please explain the basis for your answer.
40. SDG&E testifies that its analyses "are likely to significantly understate the energy benefits associated with the LEAPS project," as evidenced by the fact that its analyses imply that LEAPS would be "run at a net operating loss," which is "an illogical outcome." (p. V-29). Does SDG&E have any quantitative estimate of the energy cost savings associated with LEAPS which it believes the Commission could rely upon? If so, please provide it.
41. SDG&E testifies that it has analyzed a scenario in which "400 Mw of wind generation is built in the northern Baja region of Mexico." (p. V-30). In this scenario, are any new transmission facilities added in Mexico or between Mexico and the U.S.? If yes, please describe what facilities and what associated cost SDG&E modeled.
42. In this scenario, for each of the years 2010 and 2015, please indicate the number of hours per year in which transmission constraints limit generation from the Mexican wind projects
- a. Within Mexico.
 - b. At path 45 between Mexico and the U.S.
43. In this scenario, what is the assumed Mw generation from the 400 installed Mw of Mexican wind generation?
44. SDG&E testifies that interconnecting 500 Mw of in-area wind generation at the 230 kV level at Central rather than the 500 kV level in the Boulevard/Crestwood area would save CAISO consumers "at least \$50 million per year on a levelized basis." (p. V-31). Please identify the assumed date and capital costs of the Warners and Boulevard/Crestwood wind interconnections, respectively, which underlie the \$50 million figure? Also, please provide the expected annual revenue requirements of the Warners and Boulevard/Crestwood wind interconnections, respectively, which underlie the \$50 million figure?
45. In SDG&E's CPCN for the Valley-Rainbow 500 kV line, what was SDG&E's expected date and capital cost for the 230/500 kV substation and interconnection between the proposed Rainbow-Valley transmission line and SDG&E's existing 230 kV transmission grid?
46. SDG&E testifies that it used a February 2005 WECC case as one of the inputs into its "Phase 1 study" after that WECC case was "reviewed and significantly modified by the CAISO, SCE, IID, and CFE." (p. V-32). In relation to this statement please indicate:

- a. When was the February 2005 WECC case circulated to the CAISO, SCE, IID, and CFE for their review and modification for use in the Phase 1 study?
- b. When were all reviews and modifications by SCE, CAISO, IID and CFE received by SDG&E?
- c. Please identify any suggested modifications by the CAISO, SCE, IID, or CFE which were not adopted by SDG&E in its Phase 1 study?
- d. When did SDG&E complete the process of incorporating all accepted modifications of the WECC case from the CAISO, SCE, IID, and CFE?
- e. When did SDG&E complete the Phase 1 study?
- f. Please provide a copy of the Phase 1 study final report.

47. SDG&E testifies that its “Phase 2 study” incorporated “further changes ... to all the powerflow cases for all seasons to reflect newer information available since the Phase 1 study.” (p. V-32)

- a. When did the Phase 2 study begin?
- b. When were the “further changes” made?
- c. When were the Phase 2 study “powerflow cases” run?
- d. Please provide a listing of each of the “further changes ... to all of the powerflow cases for all seasons” which were made between the Phase 1 and Phase 2 studies.

48. SDG&E testifies that its “economic analysis of the Sunrise Powerlink incorporates the existing and planned resources depicted in the ...SSG-WI’s... data base as of 2002....These additions are shown in Table V-17...” (p. V-32).

- a. Does SDG&E actually mean Table V-15, p. V-xxix, entitled “WECC Generation Capacity Additions by Region”?
- b. Is there an SSG-WI data base more recent than 2002, and if so why did SDG&E not use it?
- c. Table V-15 lists “Rocky Mountain EC” units 1-3 as both 2010 additions and 2015 additions. Were these units added twice by mistake or not? If not, when were they added?
- d. Table V-15 lists “Mesquite CC” units 3-4 as additions by 2010. Mesquite 1-2 are Sempra-owned units. Does SDG&E believe that Mesquite 3-4 will be online by 2010? By 2015?
- e. Table V-15 lists “Panda Gila River” units 5 and 6 as online by 2010.
- f. Table V-15 lists the Mountainview project as 1132 Mw. Mountainview recently entered commercial operation. What is SDG&E’s most recent information as to the actual capacity of Mountainview?
- g. Table V-15 lists Otay Mesa as 510 Mw. What is SDG&E’s most recent information as to the capacity of Otay Mesa?

- h. Table V-15 lists 13,823 Mw of additions “by year 2015.” Do these projects represent new generation added during the years 2011-2015, and if not, what are they?
 - i. Table V-15 lists 5025 Mw of new Arizona generation in the “By Year 2015” column, but Table V-7 lists only 2327 expected Mw of peak demand growth in Arizona in 2010-2015. Please explain why it is reasonable to expect 5025 Mw of resource additions in Arizona if loads are only growing 2327 Mw?
- 49. For each of the years 2010 and 2015, for each of the load regions shown in Table V-7, please indicate the total installed Mw of capacity modeled by SDG&E in that region in that year (not just the resource additions shown in Table V-15).
- 50. SDG&E testifies that it has modeled 315 Mw of new geothermal resources in the Imperial Valley in 2010 (p. V-33). Does “new” mean resources not in commercial operation as of 2005 or 2006? If not, what does it mean?
- 51. SDG&E testifies that it has “assumed that by 2010 there will be ... 285 Mw of solar thermal resources” added in the Imperial Valley (p. V-33). Does this represent the existing Stirling contract with SDG&E?
- 52. SDG&E testifies that it has “also incorporated into the year 2010 grid configuration certain transmission upgrades to the IID system (p. V-33). Please list all IID transmission upgrades modeled by SDG&E for the IID system in 2010.
- 53. SDG&E testifies that the IVSG also identified a long-term renewable resource build-out scenario that includes 2200 Mw of new renewable resources...SDG&E has incorporated these resource and transmission additions into the year 2015 analysis.” (p. V-34). Please respond to the following questions:
 - a. Did the IVSG study a scenario with 2200 Mw of new renewable resources by 2015?
 - b. How many Mw of new renewable resources did the IVSG scenarios have by 2015?
 - c. Does SDG&E expect that there will actually be 2200 Mw of new renewable resources online in the Imperial Valley by 2015?
- 54. SDG&E testifies that has modeled certain “additions to the IID transmission system SDG&E assumed for years 2010 and 2015” and listed them in Table V-20 (p. V-34). In relation to this statement, please respond to the following subparts:
 - a. Is SDG&E aware of the IID-LADWP Green Path 500 KV line proposal?
 - b. Is the IID-LADWP 500 KV interconnection intended to be on line by 2015?
 - c. Why did SDG&E not model the proposed IID-LADWP 500 KV interconnection proposal in its 2015 modeling?

- d. Does SDG&E expect that IID and LADWP will be able to successfully operate their planned 500 KV interconnection by 2015?
- e. Table V-20 shows a Bannister to San Felipe 230 KV line in operation in 2015. Did SDG&E model this 230 KV line as interconnected to the Sunrise project with a 230/500 KV transformer at the San Felipe substation?
- f. Without the Sunrise project, would there be any reason to build a 230 KV line to the San Felipe substation to deliver geothermal output?
- g. Does SDG&E consider a Bannister-San Felipe transmission line to be part of the Sunrise project?
- h. Does SDG&E consider a San Felipe interconnection between the Sunrise project and a Bannister-San Felipe line to be part of the Sunrise project?
- i. Has SDG&E done any modeling of the Sunrise project in 2015 which does not include a Bannister-San Felipe line and 230/500 KV substation at San Felipe? If yes, please provide the modeling results and the resulting benefit/cost ratio for Sunrise.

55. SDG&E testifies that the “no project” case 00 “does include exactly the same quantity and mix of resources in 2010 and 2015 as the case with the Sunrise Powerlink (“Case 1”)” (p. V-34). To that end:

- a. Does Case 00 contain the same transmission facilities as Case 1, except for the Sunrise Powerlink?
- b. Does Case 00 include a 230 KV transmission line from Bannister to San Felipe in 2015? If not, why not, in light of the claim that Cases 00 and 1 are the same except for Sunrise?
- c. Does Case 00 include the proposed 500 KV interconnection between IID and LADWP in either 2010 or 2015?
- d. Does Case 00 include 1400 Mw of new geothermal resources in the Imperial Valley between the years 2010 and 2015, as shown in Table V-19 (units SS10_1 through SS16_1, inclusive, at 200 Mw each)?

56. SDG&E testifies that renewable energy development in areas other than the Imperial Valley “would likely involve different renewable resource technologies with capital costs that are different, and likely higher, from those of renewable resources assumed for the Imperial Valley (for example, wind in the Tehachapi area versus geothermal in the Imperial Valley).” (p. V-35).

- a. What is SDG&E’s expectation as to the capital cost of Imperial Valley geothermal per Mw?
- b. What is SDG&E’s expectation as to the capital cost of Tehachapi wind (per Mw).
- c. What is SDG&E’s basis for the phrase “likely higher”?
- d. Does SDG&E also believe that Tehachapi wind would have total costs, not just capital costs, which would be higher per delivered Mwh higher than those for Imperial Valley geothermal?

- e. What is SDG&E's expectation as to the total delivered cost per Mwh of Imperial Valley geothermal?
 - f. What is SDG&E's expectation as to the total delivered cost per Mwh of Tehachapi wind?
57. SDG&E testifies that "energy from renewable energy sources has relatively low variable operating costs and is therefore unlikely to be physically curtailed in the event congestion arises." (p. V-36). Please indicate for each of Case 00 and Case 1, and for each of the years 2010 and 2015, how many gwh of Imperial Valley renewable generation are curtailed due to transmission congestion in SDG&E's Sunrise energy cost analysis.
58. Please provide a copy of the Appendix J referred to on p. V-38, or identify a link to where it can be found online.
59. SDG&E testifies that, in a simplified example, increasing east-to-west import capacity by less than 40% decreases losses (p. V-41).
60. Isn't it true that adding Sunrise will increase the east-to-west import capacity into SDG&E (currently SWPL only) by more than 40%?
61. If the answer to the previous subpart is "yes" why doesn't adding Sunrise increase losses rather than decrease them?
62. SDG&E testifies that "demand response programs are designed to target the top 80-100 hours of the year" (p. V-vi). SDG&E testifies that Sunrise is needed to meet a reliability shortfall under the "Baseline Planning Scenario" of 262 Mw in 2010, growing to 737 Mw in 2015 (Table III-1, p. III-3). The reliability shortfalls in Table III-1 are based on a load forecast of 5038 Mw in 2010 and 5513 Mw in 2015 (Table III-2, p. III-4).
- a. How many hours in the year 2010 does SDG&E forecast its load to be over 4776 Mw (5038 Mw minus 262 Mw):
 - i. Under 90/10 conditions
 - ii. Under 80/20 conditions
 - iii. Under 50/50 conditions
 - b. How many hours in the year 2015 does SDG&E forecast its load to be over 4776 Mw (5513 Mw minus 737 Mw):
 - i. Under 90/10 conditions
 - ii. Under 80/20 conditions
 - iii. Under 50/50 conditions

63. SDG&E testifies that “some [demand response] programs can only operate during summer months and many are restricted to weekdays only.” (p. V-vi).

a. How many non-summer hours in the year 2010 does SDG&E forecast its load to be over 4776 Mw (5038 Mw minus 262 Mw):

- i. Under 90/10 conditions
- ii. Under 80/20 conditions
- iii. Under 50/50 conditions

b. How many non-summer hours in the year 2015 does SDG&E forecast its load to be over 4776 Mw (5513 Mw minus 737 Mw):

- i. Under 90/10 conditions
- ii. Under 80/20 conditions
- iii. Under 50/50 conditions

c. How many non-weekday hours in the year 2010 does SDG&E forecast its load to be over 4776 Mw (5038 Mw minus 262 Mw):

- i. Under 90/10 conditions
- ii. Under 80/20 conditions
- iii. Under 50/50 conditions

d. How many non-weekday hours in the year 2015 does SDG&E forecast its load to be over 4776 Mw (5513 Mw minus 737 Mw):

- i. Under 90/10 conditions
- ii. Under 80/20 conditions
- iii. Under 50/50 conditions

64. SDG&E testifies to the expected RMR generation in 2005-2016 with 1000 Mw of new in-area generation but no Sunrise project (Table V-3(a)). In relation to this statement, please provide responses to the following subparts.:

- a. Table V-3(a) lists the Palomar Combined Cycle, the Otay Mesa Combined Cycle, and the 1000 Mw of new combined cycle generation as RMR in every year that they are online. Is it SDG&E’s testimony that ratepayers would have to pay RMR costs for all three of these generation sources in this scenario? If the answer is anything other than “yes,” please explain in detail.
- b. In its CPUC application seeking approval for the Palomar and Otay Mesa projects, did SDG&E testify truthfully that construction and operation of those projects would reduce RMR costs?
- c. Is it SDG&E’s belief today that construction and operation of Palomar and Otay Mesa would each reduce RMR costs?

- d. Please explain why 1000 Mw of new combined cycle under financial structures equivalent to either Otay Mesa (a PPA) or Palomar (cost of service-equivalent) would not also reduce RMR costs.
65. Please confirm that the RMR requirements listed in Table V-3(a) are identical to those in Table V-2 (the with-Sunrise case) except for the inclusion of 1000 Mw of new combined cycle as RMR in Table V-3(a).
 66. Please confirm that the shading for Encina 1-5 is in error in Table V-3(a), but the numbers are correct, so that all cells showing a numerical value of zero should be unshaded, and all cells showing a numerical value other than zero should be shaded.
 67. In Table V-7, the question “Is this coincident or non-coincident?” appears in the title. Please clarify the table.
 68. In Tables V-7 and V-8, please confirm that the reference to “Aquila (Canada)” is incorrect, and the Aquila service area is actually in Colorado. Please confirm that Aquila loads were assigned to the correct buses in SDG&E’s modeling.
 69. In Table V-9, the implicit cost of gas transport from Arizona to Southern California is 37 cents per million Btu, based on the price differential between Arizona gas prices in the medium scenario and California prices in the medium scenario for IID, SCE, LADWP, and SDG&E.
 70. Please confirm that 37 cents per million Btu is close to the cost-based transportation charge levied by Sempra for gas deliveries from Arizona to Southern California, and is thus an appropriate assumption to use. If you do not agree that 37 cents is a reasonable estimate, please explain why not, and further explain why it was used in Table V-9.
 71. Please explain why it is reasonable to double the implicit gas transport rate from Arizona to California in going from the medium case to the high case in Table V-9.
 72. Please explain why it is reasonable to cut the implicit gas transport rate from California to Arizona in half in going from the medium case to the low case in Table V-9.
 73. In table V-11, cases 27 and 11 (and in Table VI-1, case 10), the high electricity demand scenarios, are assigned probabilities of 17.7% although they contain SDG&E loads which approximate very closely to SDG&E’s 90/10 load forecast.
 - a. Why shouldn’t these cases have probabilities of about 10% if they are effectively 90/10 load cases?

- b. Did SDG&E ever compare the load forecasts in these cases to its 90/10 forecast before assigning 17.7% probabilities to them?
74. Table V-17 lists 10 projects at the bottom of p. V-xxxii and another 13 projects at the top of page V-xxxiii which are not included as capacity resources in Table III-9. Please explain why not, particularly for the non-wind projects.
75. Table V-17 lists 4 projects as 0 Mw each on p. V-xxxiv (Electrovest (Otay), Electrovest (Escondido), Larkspur Border 1-2) which are collectively listed as 176 Mw in Table III-9. Please explain this discrepancy.
76. Table V-17 lists 222 Mw of “demand reduction items” on p. V-xxxv for this year – 2006. How much of this 222 Mw does SDG&E expect to actually be implemented and capable of reducing peak demand during the highest 50 load hours of the year, if 2006 is a 90/10 load year?

Data requests re Chapter VI

77. Please provide a copy of the TCS referenced on p. VI-2, fn. 2, or a link to a location where it can be found online.
78. Please identify the dates, locations, and attendance at all meetings of the “Technical Working Group” identified on p. VI-4.
79. Please provide any communications from or with non-SDG&E members of the Technical Working Group which address the eighteen alternatives referenced on p. VI-4 and which suggest elimination of any of them from further consideration.
80. Please provide copies of any SDG&E analyses of the 18 transmission alternatives referenced on p. VI-4 which were distributed to the Technical Working Group prior to the time when the “18 alternatives were narrowed to the four alternatives listed below.” (p. VI-4).
81. Please identify the date(s) when was the Technical Working Group formed?
82. Please identify the date(s) when the 18 alternatives were identified?
83. Please identify the date(s) when the 18 alternatives were “narrowed” to four?
84. SDG&E testifies that it defined the in-basin generation alternatives as 1650 Mw of new generation, with 750 Mw in 2010 and 900 Mw in 2015 (Table VI-2).
- a. Please explain why SDG&E chose 1650 Mw of generation as the alternative to 1000 Mw of new transmission.

- b. Did SDG&E's economic analysis include the full lifecycle carrying costs of the cost to construct 1650 Mw of new generation?
 - c. SDG&E's RMR analysis assumes only 1000 Mw of new combined cycle, not 1650 Mw (Table V-3(a)). How would the RMR cost savings estimates in Table V-4B differ if they were based on the same 1650 Mw of in-basin resource additions shown in Table VI-2?
85. SDG&E shows new transmission costs of \$271 million associated with siting 1650 Mw of new in-basin generation (Table VI-2). In relation to this cost:
- a. Please provide all the analysis which underlies this figure.
 - b. How much of the \$271 million is for the 750 Mw in 2010 and how much is for the 900 Mw in 2015?
 - c. What site(s) are assumed for the 2010 and 2015 resource additions?
 - d. What transmission facilities are assumed for the 2010 and 2015 additions?
 - e. If the 2010 additions were at the South Bay site, where SDG&E assumes 702 Mw of retirements in 2010, what transmission costs would be required?
 - f. If the new generation in either 2010 or 2015 were at the Sycamore Canyon substation, where SDG&E proposes to deliver 100 percent of the power flowing over Sunrise, what transmission costs would be required?
86. If the new generation were at the Penasquitos substation, what transmission costs would be required?
87. SDG&E shows combined cycle capital costs of \$1613 million for 1650 Mw, or almost \$1000 per kw, in nominal dollars (Table VI-2).
- a. What is the source of this number?
 - b. Please provide all analysis which underlies this figure?
 - c. How much of the \$1613 million is for the 750 Mw project in 2010, and how much is for the 900 Mw project in 2015?
88. SDG&E shows fixed O&M costs of \$5.69/kw-year for a GT and \$12.93/kw-year for a CC, in 2005 dollars (Table VI-2).
- a. What are the sources for these numbers?
 - b. What fixed O&M costs, in 2005 dollars per kw-year, does SDG&E expect to pay in 2010 for Otay Mesa, for Palomar, and for the Miramar GT, respectively?
89. Table VI-3 shows RMR benefits for a "Full Loop" scenario no greater than for a Sunrise scenario (Table V-4A). In relation to these alleged benefits:

- a. Please explain why adding Sunrise and a new 500 KV transmission link to the SCE system would not have any RMR-reducing benefits over those from Sunrise alone.
- b. In SDG&E's Valley-Rainbow CPCN, did SDG&E claim at that time that the Valley-Rainbow line would reduce RMR costs?
- c. Does SDG&E believe today that a Valley-Rainbow line would reduce RMR costs?
- d. Quantify how much the "Full Loop" scenario would increase import capacity into SDG&E over the 3500 Mw shown in Table V-2 on p. V-xv? Please provide the analytic basis for your answer.

90. Table VI-3 shows Levelized Energy Savings for "in-area Combined Cycle and gas Turbines (2010) and in-area combined cycle (2015) to be \$101 and \$84 million respectively. Do these figures include any savings from these generation's capacity and ancillary services (i.e., black start, VAr support, spinning reserve, non-spinning reserve and regulation)? If not why not? Please explain if SDG&E estimated any value for these services offered by either Palomar or Miramar CT units in the economic justification of these units. If yes, what values were estimated for each of these services.

91. SDG&E testifies that "a logical "full loop" grid configuration would be to substitute the 500 KV transmission associated with the LEAPS project for most or all of the Central-Serrano/Valley portion of the Full Loop alternative. This configuration would eliminate the need for the LEAPS project's planned 500/230 kV substation on SDG&E's Talega-Escondido line." (p. VI-8).

- a. What would the N-1/G-1 import capability into SDG&E be with a full loop whose northern portion was terminated at Central?
- b. What would the N-1/G-1 import capability into SDG&E be with Sunrise plus a LEAPS project terminated at a 500/230 kV substation on the Talega-Escondido line?
- c. What would the SDG&E import capacity be for RMR purposes with a full loop whose northern portion was terminated at Central?
- d. What would the SDG&E import capacity be for RMR purposes with Sunrise plus a LEAPS project terminated at a 500/230 kV substation on the Talega-Escondido line?
- e. What would the SDG&E import capacity be for RMR purposes without Sunrise power link and with LEAPS project terminated at a 500/230 kV substation on the Talega-Escondido line?

92. SDG&E estimates transmission costs for a Full Loop case on the top of p. VI-9. How much of the estimate is the transmission cost for the northern 500 KV line?

93. SDG&E testifies that 1650 Mw of new in-area gas-fired generation could require capital costs of up to \$364 million for up to 86 miles of new gas pipe. (p. VI-11).

- a. Please provide all quantitative analyses underlying these numbers.
- b. Please indicate how much of the costs and miles would be required for the assumed 750 Mw of 2010 additions, and how much for the assumed 900 Mw of 20915 additions.
- c. If the 750 Mw of 2010 additions were located at the South Bay site, currently occupied by 702 Mw of gas-fired generation, how many miles of new pipe and dollars of capital investment would be required?
- d. What is the maximum gas consumption rate of the 702 Mw South Bay powerplant, in millions of cubic feet per day?
- e. What would the maximum gas consumption rate be for 750 Mw of new GTs at a heat rate of 8500 Btu/kwh (Table VI-2), in millions of cubic feet per day?
- f. What would the maximum gas consumption rate be for 750 Mw of new combined cycle at a heat rate of 7000 Btu/kwh (Table VI-2), in millions of cubic feet per day?

94. SDG&E testifies that “the reliability and availability of natural gas supplies on a long-term basis are uncertain.” (p. VI-11). For Case 00 and Case 1, for each of the years 2010 and 2015, please indicate the total MMBtu of gas fuel consumed WECC-wide.

95. SDG&E testifies that when SDG&E area loads are low, “the output of in-area generation combined with imports into the San Diego area on the Imperial Valley-Miguel 500 kV line, and from Mexico on the 230 kV line, could easily exceed loads within the San Diego area and result in a northbound export on the five south of SONGS lines. These northbound exports would combine with the SONGS generation and easily consume all the remaining south to north capability on the north of SONGS path.” (p. VI-13).

- a. Did SDG&E’s economic analyses of Sunrise monitor line flows on the north-of-SONGS path? If not, why not, given the concern expressed on p. VI-13?
- b. If Sunrise increases SDG&E N-0 import by at least 1150 Mw, from 2850 Mw to 4000 Mw, why would that 1150 Mw increase in import capability have the same tendency or greater to overload the north of SONGS path as 750 Mw of new generation in 2010?
- c. In SDG&E Case 1, in how many hours per year does that north of SONGS flow exceed 2440 Mw in the south to north direction?
- d. In SDG&E Case 00, in how many hours per year does that north of SONGS flow exceed 2440 Mw in the south to north direction?
- e. Would the LEAPS project, by itself, increase or decrease south-to-north flows on the north of SONGS transmission lines?

96. SDG&E testifies that “if significant amounts of new baseload generation are added within the San Diego basin, it is reasonable to assume that the older, inefficient boiler generation will be retired.” (p. VI-14).
- a. In each of Case 3 (new in-basin combined cycle, per Table VI-2) and Case 1 (Sunrise), in each of the years 2010 and 2015, what is the average annual LMP at the Encina powerplant bus?
 - b. In each of Case 3 and Case 1, in each of the years 2010 and 2015, what is the average annual LMP at every other bus where “older, inefficient boiler generation” is located?
97. SDG&E testifies that the Miguel bus is “one of the most heavily congested buses in the region.” (p. VI-ii). In this regard:
- a. Will this statement still be true after completion of the Otay Mesa-Old Town and Otay Mesa-Sycamore lines?
 - b. For each of Case 00, Case 1, and Case 3, for each of the years 2010 and 2015, please indicate how many hours per year the Miguel bus will experience flows greater than 90% of its capacity.
 - c. For each of Case 00, Case 1, and Case 3, for each of the years 2010 and 2015, please indicate how many hours per year flows at the Miguel bus will reach its full capacity.
 - d. What will the capacity of the Miguel bus be in the years 2010-2016, and what will be the limiting constraint (import limit on SWPL, transformer capacity, downstream line limits on the Miguel-Mission and Miguel-Sycamore lines, or other)?
98. SDG&E testifies to Sunrise benefits “when looking at just SDG&E customers.” (p. VI-iv). Please explain which part of SDG&E’s analysis in this proceeding allows the quantification of benefits “when looking at just SDG&E customers.”
99. SDG&E testifies that “if two [SWPL] lines are determined to be subject to common mode outages – for example as a result of a fire passing under the lines – they would be treated as a single facility for purposes of applying reliability criteria.” (p. VI-v; emphasis added). In relation to this testimony:
- a. Does SDG&E believe that two SWPL lines not on common towers **should** be treated as a single facility for purposes of applying reliability criteria?
 - b. In the Full Loop case where the northern portion of the loop is terminated at Central, should an outage of the two 230 KV lines from Central to Sycamore Canyon which carry all imports from either Sunrise or SCE (figure on p. VI-ii) be treated as a single contingency for purposes of applying reliability criteria?
 - c. Do the WECC planning criteria require the treatment of common corridor outages of two transmission lines not on common towers as a single contingency?

100. SDG&E testifies that the “Serrano/Valley-Northern alternative had weak technical performance, very limited access to renewable resources, and the lowest economic benefit to CAISO ratepayers.” (p. VI-viii).
- a. Isn't this alternative electrically equivalent to SDG&E's Valley-Rainbow proposal of a few years ago? If not, please explain why not?
 - b. Is it SDG&E's position that the Valley-Rainbow proposal “had weak technical performance, very limited access to renewable resources, and the lowest economic benefit to CAISO ratepayers”? If not, why not?
101. SDG&E testifies that the Serrano/Valley-Northern alternative “is essentially equivalent to the transmission line portion of the proposed LEAPS project (p. VI-viii) and would “require an Interconnection Application” with SCE ... which might possibly delay a 2010 in-service date.”
- a. Haven't an interconnection requests already been filed by LEAPS with both SDG&E and SCE?
 - b. Hasn't LEAPS already filed a FERC application seeking a December 2007 on-line date for the transmission portion of each project?
 - c. Isn't the LEAPS project DEIS due to be released in early 2006?
102. SDG&E testifies that the “Imperial Valley-Miguel 230 KV through Mexico alternative had the poorest technical performance of all in the TCS with one of the highest number of overloaded elements for all contingencies studied” (p. VI-ix). For each of the scenarios studied in the TCS, please list the overloaded elements and the contingencies causing them to overload, separated by the following causes:
- a. N-1 contingencies
 - b. Credible N-2 outages
 - c. Bus failures
 - d. Corridor contingencies
103. SDG&E testifies that the Imperial Valley-Miguel 230 kV through Mexico alternative “required the most total transmission miles of new or upgraded transmission facilities. (p. VI-ix).
- a. Please list all the new or upgraded transmission facilities required by this alternative, including the number of transmission miles of each facility.
 - b. Please indicate the total capital cost of this alternative, separated by the cost of transmission lines entirely in Mexico, the cost of any Path 45 upgrades, and the cost of any “new or upgraded transmission facilities” required in the U.S. “to mitigate N-0 or N-1 overloads on SDG&E's system.”

104. SDG&E testifies that the Imperial Valley-Mexico 230 kV alternative “also resulted in the highest flow into the Miguel 230 kV substation which is already heavily loaded. (p. VI-ix)
- a. Please confirm that the 230 kV alternative would not cause any increase in flows on SWPL or the Miguel 500/230 kV transformers because it uses the underlying 230 kV system.
 - b. Please provide powerflows for each of the TCS alternatives.
 - c. For each of the years 2010 and 2015, please indicate the maximum flow into the Miguel substation under this alternative, and indicate what percentage of Miguel capacity that flow represents.
 - d. If delivering generation to the Miguel substation is undesirable, why did SDG&E not study terminating one or both of the two new 230 kV lines from Tiajuana to SDG&E at Otay Mesa rather than Miguel, since Otay Mesa has two transmission lines to the rest of SDG&E’s system which bypass Miguel (see figure on p. VI-viii).
105. SDG&E testifies that the “Imperial Valley – Miguel 230 kV through Mexico alternative provided no stability improvement, performing no better than the existing system.” (p. VI-ix). Please answer the following subparts:
- a. Does “performed no better than” mean that stability performance under this alternative was basically the same as under the existing system?
 - b. Does SDG&E’s current system fail to meet any WECC or NERC reliability criteria with regard to stability?
 - c. Does SDG&E’s current system fail to meet any CAISO reliability criteria with regard to stability?
 - d. Do the CAISO’s reliability criteria with regard to stability differ from those of the WECC/NERC? If so, please explain how.
106. SDG&E testifies with regard to the Mexico 230 kV alternative that “the Technical Working Group eliminated this alternative.” (p. VI-x). Please respond to the following questions with documentation, if available:
- a. How did the Technical Working Group eliminate this alternative (e.g., at a formal meeting with a record, at a meeting with minutes, by e-mail vote, etc)?
 - b. On what date did the Technical Working Group eliminate this alternative?
 - c. Please provide all documents circulated to the Technical Working Group which formed the basis for eliminating this alternative, and indicate when they were circulated.
 - d. Which working group participant(s) proposed eliminating this alternative?
 - e. Which working group participants affirmatively endorsed eliminating this alternative?
 - f. Which working group members were part of the decision to eliminate this alternative but did not support it?

- g. Which working group members were part of the decision to eliminate this alternative, but opposed it?

Data requests re SDG&E Community Outreach & Technical Support efforts

107. Please identify the offices/departments at Sempra and SDG&E which are currently working or have worked since December 2005 on regulatory or community outreach relating to the Sunrise Powerlink.
108. Please provide the specific names of employees and their titles of those currently working or have worked since December 2005 on regulatory or community outreach relating to the Sunrise Powerlink.
109. Please provide the estimated annual budget of SDG&E expenditures on regulatory or community outreach relating to the Sunrise Powerlink for 2005 and 2006.
110. Please identify any and all consultants retained by SDG&E who are currently working or have worked since December 2005 on regulatory, community outreach or public affairs consultants relating to the Sunrise Powerlink. In regards to those consultants, please provide a summary of their billings to SDG&E since November 2005 and/or their allocated budgets for 2006-7 work, if any.
111. Please identify any and all regulatory, community outreach or public affairs consultants retained by SDG&E who had worked on the Sunrise Powerlink application prior to the application filing in December 2005. For these consultants, please provide a summary of their billings to SDG&E.
112. Please identify any and all electrical engineering consultancy firms that have been retained by SDG&E to provide technical support on matters relating to the Sunrise Powerlink. For each of these firms, please provide a summary of their billings since January 2005.