

In the Matter of the Application of San Diego Gas & Electric Company (U 902 E) for Approval of its Proposals for Dynamic Pricing and Recovery of Incremental Expenditures Required for Implementation.

Application 10-07-009  
(Filed July 6, 2010)

Application of San Diego Gas & Electric Company (U 902 E) for Authority to Update Marginal Costs, Cost Allocation, and Electric Rate Design

Application 19-03-002  
(Filed March 4, 2019)

Application: 10-07-009/A.19-03-002  
Exhibit No.: \_\_\_\_\_

**CHAPTER 6**

**PREPARED REBUTTAL TESTIMONY OF**

**BENJAMIN A. MONTOYA**

**ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY**

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

**MAY 4, 2020**



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1 **PREPARED REBUTTAL TESTIMONY OF**

2 **BENJAMIN A. MONTOYA**

3 **CHAPTER 6**

4 **I. INTRODUCTION AND PURPOSE**

5 This rebuttal testimony chapter addresses the following testimony regarding the  
6 development of marginal commodity costs from other parties:

- 7 • The Public Advocates Office (“Cal Advocates”) of the California  
8 Public Utilities Commission (“CPUC”), submitted by Ben Gutierrez  
9 (Chapter-1A), dated February 13, 2020, Amended April 6, 2020.
- 10 • The Utility Reform Network (“TURN”), as submitted by Jaime  
11 McGovern (Exhibit TURN-01), dated April 6, 2020, amended April  
12 23.
- 13 • The Utility Consumer’s Action Network (“UCAN”), as submitted by  
14 Mary Neal, dated April 6, 2020.
- 15 • Solar Energy Industries Association (“SEIA”), as submitted by  
16 Thomas Beach, dated April 6, 2020.
- 17 • Federal Executive Agencies (“FEA”), as submitted by Maurice  
18 Brubaker, dated April 6, 2020.
- 19 • California Farm Bureau Federation (“Farm Bureau”), as submitted by  
20 Brandon Charles, dated April 6, 2020.

21 Failure to address any individual issue in this rebuttal testimony does not imply  
22 agreement by SDG&E with any proposal made by these or other parties.

1           This rebuttal testimony addresses parties’ concerns with SDG&E’s Marginal  
2 Generation Capacity Cost and Marginal Energy Cost methodology and input assumptions.  
3 Specifically, several parties disagree with SDG&E’s choice of an advanced combustion  
4 turbine (“CT”) as the marginal resource for marginal generation capacity costs. SDG&E  
5 believes that the costs associated with a CT are a reasonable proxy for marginal generation  
6 capacity costs in this proceeding and it will consider 4-hour battery or hybrid resources in  
7 the next General Rate Case (“GRC”) Phase 2.

8           My testimony also responds to several parties’ arguments that there is not a need for  
9 new capacity in SDG&E’s territory and, therefore, there is no justification for a marginal  
10 generation capacity cost that reflects new build resources. There is, in fact, a need for new  
11 CPUC-mandated capacity, as described below.

12           I also address several parties’ arguments that SDG&E’s Loss of Load Expectation  
13 (“LOLE”) analysis should be revised or excluded. My testimony shows why these  
14 arguments do not have merit and that SDG&E’s Top 100 hour LOLE method is reasonable.

15           My testimony also responds to TURN’s argument that SP-15 is not the correct price  
16 to use for marginal energy costs. I also rebut parties’ arguments that net load is not the right  
17 price profile for marginal energy costs but agree to consider UCAN’s proposal to use a  
18 production cost model in the next GRC Phase 2. Finally, my testimony agrees with several  
19 parties that flexible capacity should be considered as a marginal cost metric in the next GRC  
20 Phase 2.

1           **A.     Cal Advocates**

2           Cal Advocates submitted amended testimony on April 6, 2020.<sup>1</sup> The following is a  
3 summary of Cal Advocates’ positions:<sup>2</sup>

- 4           •       Cal Advocates proposes mixing short-run/long-run marginal generation  
5                   capacity costs (“MGCC”) approach and an MGCC value of \$53.53/kW-yr.
- 6           •       Cal Advocates recommends rejecting SDG&E’s proposed top 100 LOLE  
7                   hours allocation method and instead adopting an all LOLE hours approach,  
8                   which, it argues, adequately captures risk and its seasonal and hourly  
9                   distribution.
- 10          •       Cal Advocates argues that SDG&E should gather data on the timing, load,  
11                   and resource availability of flexible capacity (“flex capacity”) needs events  
12                   and closely monitor Pacific Gas and Electric Company’s (“PG&E”) and  
13                   SoCal Edison’s (“SCE”) flex capacity proposals and changes to the  
14                   California Independent System Operator’s (“CAISO”) flexible Resource  
15                   Adequacy (“RA”) framework, in order to develop its own flex capacity  
16                   proposal in the next GRC Phase 2.

17           **B.     TURN**

18           TURN submitted testimony on April 6, 2020 and submitted revised testimony on  
19 April 23.<sup>3</sup> The following is a summary of TURN’s positions:

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<sup>1</sup> April 6, 2020, Cal Advocates Amended Prepared Testimony on San Diego Gas & Electric Company’s 2019 General Rate Case Phase 2, Chapter 3 – Marginal Generation Capacity Costs (Ben Gutierrez).

<sup>2</sup> Cal Advocates Amended Prepared Testimony (Gutierrez), p. 3-2 at 16-27.

<sup>3</sup> April 23, 2020, Prepared Direct Testimony of Jaime McGovern Addressing Application of San Diego Gas & Electric Company for Authority to Update Marginal Costs, Cost Allocation, and Electric Rate Design, on behalf of The Utility Reform Network [TURN].

- 1 • TURN argues that SDG&E overstates the Marginal Generation Capacity Cost  
2 by ignoring alternatives to a Combustion Turbine and that SDG&E should  
3 conduct a Long Run Marginal Cost (“LRMC”) study to determine the  
4 marginal unit.
- 5 • TURN agrees with Cal Advocates that there is no near-term need for  
6 additional capacity.
- 7 • TURN posits that interruptible load should not count toward LOLE  
8 calculations and that SDG&E’s method for determining additional capacity  
9 cost should include curtailing interruptible load.
- 10 • TURN believes that the predictive power of the LOLE approach using  
11 SDG&E’s current load resource profile is not as robust as it should be.

12 **C. UCAN**

13 UCAN submitted testimony on April 6, 2020.<sup>4</sup> The following is a summary of  
14 UCAN’s positions:

- 15 • UCAN recommends SDG&E review all its marginal cost estimation  
16 methodologies prior to its next GRC Phase 2 proceeding and update them to  
17 better reflect important system trends.
- 18 • UCAN believes that, if a cost study is used, at a minimum it should include  
19 the use of hourly price curves from CAISO instead of net demand curves to  
20 shape monthly prices into hourly prices used to calculate marginal energy  
21 costs. They suggest using production cost modeling in the future.

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<sup>4</sup> April 6, 2020, Prepared Direct Testimony of Mary Neal on Behalf of the Utility Consumers’ Action Network [UCAN] Concerning San Diego Gas & Electric Company’s Application for Authority to Update Marginal Costs, Cost Allocation, and Electric Rate Design.

- 1           •       UCAN argues that SDG&E’s LOLE study has unreasonably high unserved  
2                   energy amounts and should not be relied upon in this proceeding unless  
3                   SDG&E provides further explanation.

4           **D.    SEIA**

5           SEIA submitted testimony on April 6, 2020. The following is a summary of SEIA’s  
6 positions:

- 7           •       SEIA proposes to move to the use of capacity shadow prices in 2020-2023,  
8                   from the adopted Reference System Plan in the Integrated Resource Plan  
9                   (“IRP”), as SDG&E’s marginal generation capacity cost (MGCC). SEIA’s  
10                  calculation of the MGCC for SDG&E is \$151.51 per kW-year.<sup>5</sup>
- 11          •       SEIA recommends the CPUC adopt its proposed higher \$/kw-year MGCC  
12                  that represents primarily the costs of new solar and battery storage resources,  
13                  based on the logic that a gas-fired CT is unlikely to be built in California in  
14                  the future.
- 15          •       SEIA argues Cal Advocates’ MGCC based on RA costs do not reflect the  
16                  utility’s real and immediate need for new capacity.

17          **E.    FEA**

18          FEA submitted testimony on April 6, 2020.<sup>6</sup> The following is a summary of FEA’s  
19 position:

- 20          •       FEA believes that SDG&E’s “advanced CT” has the effect of understating  
21                  the MGCC, because it is not widely used, and the costs are not supported.

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<sup>5</sup> SEIA Direct Testimony (Beach), p. i.

<sup>6</sup> April 6, 2020, Prepared Direct Testimony of Maurice Brubaker Addressing Application of San Diego Gas & Electric Company for Authority to Update Marginal Costs, Cost Allocation, and Electric Rate Design, on behalf of The Federal Executive Agencies [FEA].

1 FEA also believes that the California Energy Commission (“CEC”) Staff  
2 Report understates the cost of CT resources.

3 **F. Farm Bureau**

4 Farm Bureau submitted testimony on April 6, 2020.<sup>7</sup> The following is a summary of  
5 Farm Bureau’s position:

- 6 • Farm Bureau believes that SDG&E should be directed to conduct detailed  
7 studies of: 1) the drivers behind the flattening of its LOLE from 2016 to  
8 2020; and 2) the appropriate treatment of system versus flexible generation  
9 capacity. Farm Bureau also argues that the Commission should direct  
10 SDG&E to present these studies and their results to stakeholders in a  
11 workshop for discussion and comment at least 60 days prior to filing its  
12 subsequent GRC Phase 2 application.

13 **II. REBUTTAL TO PARTIES’ PROPOSALS**

14 **A. Marginal Generation Capacity Cost Methodology**

15 **1. A Combustion Turbine (“CT”) continues to be reasonable to use**  
16 **as the marginal resource for the marginal generation capacity**  
17 **cost calculation.**

18 In direct testimony, SDG&E proposed continuing to use a CT as the marginal  
19 resource for the marginal generation capacity cost calculation. TURN, SEIA, and UCAN  
20 disagree with SDG&E and argue that the marginal resource should be changed from a CT to  
21 either energy storage or renewable generation paired with energy storage. FEA does not  
22 disagree that the CT should be the marginal resource but states that SDG&E understates the

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<sup>7</sup> April 6, 2020, Prepared Direct Testimony of Brandon Charles on behalf of the on behalf of the California Farm Bureau Federation [Farm Bureau] Concerning San Diego Gas & Electric Company’s 2019 General Rate Case Phase 2 Application.



1 cost of a CT. SDG&E disagrees with TURN, SEIA, UCAN, and FEA and believes that the  
2 CT and its associated costs are a reasonable proxy for MGCC in this proceeding, because: 1)  
3 the cost of a CT is comparable, if not slightly less than, the cost of alternative marginal  
4 resources being proposed; and 2) storage paired with renewable generation is an emerging  
5 technology that is still being evaluated. SDG&E will consider energy storage or renewable  
6 generation paired with storage in the next GRC Phase 2.

7 TURN states that if “SDG&E did potentially need to provide capacity, a Combustion  
8 Turbine (CT) may not be the most efficient means of meeting this capacity, especially if the  
9 need is short term.”<sup>8</sup> TURN adds that “storage may prove to be more cost effective than a  
10 CT for purposes of capacity cost allocation.”<sup>9</sup> SEIA “recommends that the marginal  
11 generation resource for SDG&E should be the same as the predominant capacity resource  
12 selected in the last two IRPs. The state’s IRP assumes that 4-hour battery storage will be the  
13 primary future capacity resource for California in the 2020s, not a gas-fired CT.”<sup>10</sup>

14 SEIA recommends an alternative marginal generation cost using the IRP 4-year  
15 period 2020-2023. SEIA “levelize[s] the 2020 shadow price over 25 years and the 2021  
16 shadow price over 20 years. Based on these inputs, SEIA’s calculation of the MGCC for  
17 SDG&E is \$151.51 per kW-year.”<sup>11</sup> Although SEIA utilized a different marginal resource  
18 and a different methodology for calculating the marginal capacity cost, the value is within a  
19 similar range of SDG&E’s MGCC of \$140.43 per kW-year for a CT. This calculation

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<sup>8</sup> TURN Direct Testimony (McGovern), p. 25 at 13-15.

<sup>9</sup> *Id.*, p. 27 at 4-5.

<sup>10</sup> SEIA Direct Testimony (Beach), p. 15 at 21-24.

<sup>11</sup> *Id.*, p. 18 at 6-8.

1 supports SDG&E’s conclusion that its proposed marginal capacity cost in this proceeding is  
2 a reasonable proxy for the MGCC, regardless of which marginal resource is used.

3 UCAN also disagrees with SDG&E and states that “renewable generation paired  
4 with battery or other energy storage should be the marginal resource for new capacity.”<sup>12</sup>  
5 However, UCAN conceded “that this is difficult now with the CPUC still evaluating the  
6 resource adequacy value of so-called hybrid resources (solar plus storage resources), but by  
7 the next GRC Phase 2 proceeding, new renewable energy and storage should be the standard  
8 resource to meet reliability needs.”<sup>13</sup> SDG&E agrees with UCAN that it would be difficult  
9 to make this change now, since this technology is currently being evaluated for its resource  
10 adequacy value. SDG&E agrees with evaluating new renewable energy paired with storage  
11 as the marginal resource in SDG&E’s next GRC Phase 2.

12 FEA disagrees with SDG&E’s assumption and believes that “SDGE’s selection of  
13 the ‘Advanced’ proxy CT resource has the effect of understating the MGCC.”<sup>14</sup> FEA states  
14 that “the selected proxy CT is not in wide use and the costs are not supported.”<sup>15</sup> FEA also  
15 states that “the CEC Staff Report (which was the source of SDG&E’s capital cost estimate)  
16 understates the cost of CT resources.”<sup>16</sup>

17 SDG&E disagrees with FEA’s position. SDG&E selected the “Advanced” CT since  
18 it represented the Land Marine Supercharged (“LMS”) 100 technology which SDG&E had  
19 recently installed in 2017 and 2018 in its territory. FEA incorrectly states that the CEC  
20 report “also includes estimates for a conventional 100 MW LMS 100 CT, and a nominal 50

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<sup>12</sup> UCAN Direct Testimony (Neal), p. 15 at 13-14.

<sup>13</sup> *Id.*, p. 16 at 11-15.

<sup>14</sup> FEA Direct Testimony (Brubaker), p. 17 at 18-19.

<sup>15</sup> *Id.*, p. 18 at 3-4.

<sup>16</sup> *Id.*, p. 18 at 4-5.

1 MW conventional LM 6000 CT.”<sup>17</sup> SDG&E’s reading of the report is “The assumed design  
2 configurations of the three CT cases are 1) a 49.9 MW plant that uses one LM6000 gas  
3 turbine with chiller air pretreatment, 2) a 100 MW plant that uses two LM6000 gas turbines  
4 with chiller air pretreatment, and 3) a 200 MW plant that uses two LMS100 gas turbines  
5 with evaporative cooler air pretreatment.”<sup>18</sup> SDG&E selected choice #3 which is referred to  
6 as the “Advanced 200 MW CT” in the tables SDG&E referred to as the cost source. From  
7 its experience, SDG&E also found that the total annual cost in 2020 dollars that was derived  
8 from this report was a reasonable representation of the cost of a CT.

9       When SDG&E began development of this marginal generation capacity cost study in  
10 2018, SDG&E had just installed 800 MWs of LMS100 CTs that began operation in 2017  
11 and 2018. At that time, the CT was the marginal unit. CTs not only provide reliability  
12 requirements such as resource adequacy, but they also provide renewable integration and  
13 flexible capacity needs. SDG&E had also just installed 37.5 MW of battery storage in 2017.  
14 At that time, battery storage was considered an emerging technology and storage costs were  
15 still relatively uncompetitive with gas-fired resources to meet capacity needs.

16       Over the past two years, SDG&E’s view has evolved, as storage costs have become  
17 more competitive and as the Integrated Resource Planning (“IRP”) process has identified  
18 storage as a marginal resource. In fact, SDG&E, along with other parties, agreed to a Joint  
19 Stipulation in the Avoided Cost Calculator proceeding, R.14-10-003, supporting 4-hour  
20 battery storage as the marginal generating unit for estimating avoided generation capacity  
21 costs.<sup>19</sup>

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<sup>17</sup> *Id.*, p. 18 at 18-19.

<sup>18</sup> California Energy Commission, *Estimated Cost of New Renewable and Fossil Generation in California* (March 2015) at 136.

<sup>19</sup> D.20-04-010 at 23.

1 In the next GRC Phase 2 proceeding, SDG&E plans to analyze and consider battery  
2 storage and renewable generation paired with storage as the marginal unit. In the meantime,  
3 SDG&E believes that the CT is a reasonable proxy for marginal generation costs in this  
4 GRC Phase 2 as its costs are now comparable with battery storage and additional analysis is  
5 needed before considering a hybrid battery storage/renewable resource in this proceeding.

6 **2. SDG&E has reasonably proposed that the marginal capacity**  
7 **price be the full cost of a new CT generation resource reflecting a**  
8 **long term need for capacity.**

9 **a. Cal Advocates and TURN’s position incorrectly assumes**  
10 **that there is no need for new load-related capacity.**

11 Cal Advocates disagrees with SDG&E’s proposed marginal cost price and “proposes  
12 a mixed short-run/long-run approach to calculating MGCC.... which yields an MGCC of  
13 \$53.53/kW-yr.”<sup>20</sup> One of its primary arguments that SDG&E should not use the full cost of  
14 new long term capacity is that “Cal Advocates finds no need for new load-related capacity  
15 within the six-year time horizon.”<sup>21</sup> TURN agreed with Cal Advocates on this issue, stating  
16 “this cost [of a CT] is an upper bound.”<sup>22</sup> Cal Advocates’ and TURN’s positions are based  
17 on an incorrect premise, as explained below.

18 SDG&E disagrees with Cal Advocates’ premise that there is no need for new load-  
19 related capacity. Cal Advocates states,

20 the Commission’s most recent Integrated Resource Planning Decision  
21 (D.19-11-006) ordered all CPUC-jurisdictional load-serving entities  
22 (“LSE”) to add 3,300 MW of additional peak-related system generation  
23 capacity by August 1, 2023 in order to meet System RA needs and to  
24 integrate growing renewables generation. D.19-11-006 assigns 292.9 MW

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<sup>20</sup> Cal Advocates Amended Prepared Testimony (Gutierrez), p. 3-1 at 10-21.

<sup>21</sup> *Id.*, p. 3-1 at 14-15.

<sup>22</sup> TURN Direct Testimony (McGovern), p. 25 at 11; *see also id.*, p. 24 at 19-20 (“TURN agrees with Public Advocates Office that SDG&E’s MGCC should be low to reflect that there is no need for new load-related capacity in SDG&E’s territory From 2019-2025”).

1 of procurement responsibility to SDG&E, not based on peak demand  
2 conditions specific to SDG&E's service territory, but rather on SDG&E's  
3 share of load (GWh) of all CPUC-jurisdictional entities' total load.<sup>23</sup>

4 This need is clearly identified as being driven by System Resource Adequacy, even  
5 if it additionally provides renewable integration. The fact that it is allocated based on load  
6 share does not discount the fact that it is needed to meet System RA, which is peak driven.  
7 This mandate will still result in new long-term capacity being built and allocated to the  
8 LSE's in SDG&E's territory. The fact that this new long-term capacity meets system RA  
9 means that it should be allocated as such and that SDG&E's marginal cost should represent  
10 the cost of a new build resource. Cal Advocates and TURN's position should thus be  
11 rejected.

12 **b. SEIA correctly supports the need for long-term capacity.**

13 SEIA agrees with SDG&E's position by stating a disagreement with Cal Advocate's  
14 position. SEIA believes "there is an immediate need for capacity in SDG&E's service  
15 territory, and indeed throughout the CAISO system. Such a need is based on an imbalance  
16 between supply and demand, and it should not matter whether the cause of that imbalance is  
17 changes in supply, demand, or both."<sup>24</sup>

18 SDG&E agrees with SEIA's argument supporting the need for long-term capacity,  
19 which also supports the full cost of a new generator as the marginal capacity cost.

20 **3. SDG&E's Loss of Load Expectation (LOLE) study for generation**  
21 **capacity cost allocation is reasonable.**

22 **a. Cal Advocates' proposed all LOLE hours approach is an**  
23 **ineffective allocation methodology for marginal capacity**  
24 **costs.**

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<sup>23</sup> Cal Advocates Amended Prepared Testimony (Gutierrez), p. 3-5 at 10-16.

<sup>24</sup> SEIA Direct Testimony (Beach), p. 12 at 6-10.

1 Cal Advocates recommends that “the Commission should reject SDG&E’s proposed  
2 top 100 LOLE hours allocation method and instead adopt an all LOLE hours approach,  
3 which adequately captures risk and its seasonal and hourly distribution.”<sup>25</sup>

4 SDG&E disagrees with Cal Advocates’ recommendation. The LOLE is a method of  
5 calculating the relative need for capacity in every hour. SDG&E only uses the top 100 hours  
6 of LOLE to allocate generation capacity marginal costs, as this is a method of allocating  
7 capacity that is typically driven by need in peak hours. If SDG&E were to use all hours with  
8 a positive LOLE, as Cal Advocates suggests, it would allocate peak driven capacity costs  
9 across all hours and all customer classes. This defeats the intent of the LOLE method as an  
10 allocation method for marginal capacity costs, distinct from energy costs, which occur in  
11 every hour.

12 Cal Advocates incorrectly focuses on the relative quantity of unserved energy that  
13 occurs outside (versus inside) of the top 100 hours, stating “The top 100 hours method only  
14 captures 14.5% of the total risk resulting from SDG&E’s LOLE modeling as compared to  
15 capturing 62% of total risk in its 2016 GRC Phase 2.”<sup>26</sup> The important metric in LOLE  
16 analysis is the relative magnitude of loss of load in each hour. Summing the cumulative risk  
17 of multiple hours does not increase the risk in each of the hours summed. The cumulative  
18 risk of many hours of relatively insignificant loss of load, while it might add up to a  
19 significant total, does not present any greater risk than the fewer hours with greatest risk.  
20 Therefore, SDG&E should continue to use the top 100 hours LOLE approach for marginal  
21 generation capacity cost allocation.

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<sup>25</sup> Cal Advocates Amended Prepared Testimony (Gutierrez), p. 6 at 8-11.

<sup>26</sup> *Id.*, p. 3-1 at 24-26.

1                                 **b.         SDG&E agrees with TURN's proposed modification to the**  
2                                 **LOLE analysis in future GRC Phase 2 proceedings.**

3                     TURN proposed a modification to SDG&E's LOLE analysis, stating: "[S]ince non-  
4 interruptible ratepayers pay for this flexibility by subsidizing interruptible rates, TURN  
5 argues that interruptible load should not count toward LOLE calculations."<sup>27</sup> TURN also  
6 raised a concern with SDG&E's LOLE analysis by stating "TURN believes that it is  
7 problematic that there is a similar LOLE in the super off-peak period as in the on-peak  
8 period."<sup>28</sup>

9                     SDG&E agrees in principle that interruptible load should be removed from the  
10 LOLE analysis. However, SDG&E has very few customers taking interruptible rates, and  
11 interruptible load is called on for a limited number of hours per year. This deduction would  
12 thus not materially revise the results of the analysis in this case. For this reason, SDG&E  
13 does not propose to make this deduction in this proceeding but agrees that it would be  
14 appropriate to exclude interruptible load in its future GRC Phase 2 LOLE analysis.

15                     TURN's observation that there are similar LOLE's in a super off-peak hour and an  
16 on-peak hour can be explained. The unserved energy in the super off-peak period coincides  
17 with a forecasted increase of electric vehicle charging load. It is not inconceivable that a  
18 portion of the loss of load in the super off-peak period could be equivalent to the loss of load  
19 in the early hours of the peak period. The two periods in question represent the beginning  
20 and the end of the distribution of loss of load, which occurs primarily in the peak period but  
21 carries over just past midnight where electric vehicle charging occurs during the super off-  
22 peak period.

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<sup>27</sup> TURN Direct Testimony (McGovern), p. 26 at 5-6.

<sup>28</sup> *Id.*, p. 28 at 10-11.

1 **c. UCAN misunderstands SDG&E’s LOLE analysis.**

2 UCAN states that “Marginal generation capacity costs should be weighted based on  
3 a reasonable loss of load analysis, but SDG&E’s loss of load study has unreasonably high  
4 unserved energy amounts and should not be relied upon in this proceeding unless SDG&E  
5 provides further explanation. I encourage SDG&E to respond to this issue in rebuttal  
6 testimony.”<sup>29</sup> UCAN also states that “if the Expected Unserved Energy (“EUE”) is zero for  
7 the San Diego region, then I would expect that the measured unserved energy in a loss of  
8 load study would be zero, and SDG&E could not use this approach to weight marginal  
9 capacity costs in this analysis.”<sup>30</sup>

10 SDG&E disagrees with UCAN’s characterization of SDG&E’s LOLE analysis.  
11 SDG&E’s analysis is probabilistic and intended to produce relative values of loss of load per  
12 hour, so that the hours of highest expectation of loss of load are identified. UCAN is  
13 incorrectly focused on the absolute value of unserved energy when, in fact, the absolute  
14 value of unserved energy is not relevant in this analysis. As UCAN understands, SDG&E’s  
15 system is designed for a single loss of load event in ten years, which would indicate that  
16 there should be no expected loss of load. As UCAN observes, if SDG&E’s LOLE study  
17 measured actual LOLE, this approach could not be used to weight marginal capacity cost.  
18 But since SDG&E’s analysis is intended to produce relative values of loss of load per hour,  
19 so that the hours of highest expectation of loss of load are identified, SDG&E assumes a  
20 conservative regional import capability of 500 MW in its analysis, so that a measurable loss  
21 of load is generated in multiple hours of the study year. Then the unserved energy in a given  
22 hour is divided by the total unserved energy in the year to give a relative loss of load

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<sup>29</sup> UCAN Direct Testimony (Neal), p. 37 at 10-14.

<sup>30</sup> *Id.*, p. 37 at 3-6.



1 expectation for that hour relative to the rest of the year. The relative value is used in this  
2 analysis, not the absolute value of unserved energy.

3 **B. Marginal Energy Cost Methodology**

4 **1. SDG&E's use of SP-15 forward electric prices to calculate**  
5 **marginal energy costs is reasonable.**

6 TURN disagrees with SDG&E's method of using SP-15 forward electric prices to  
7 calculate marginal energy costs and "recommends that SDG&E use a weighted price which  
8 accounts for the amount of energy that it purchases in the market and the amount that it  
9 provides to customers with system resources."<sup>31</sup>

10 SDG&E disagrees with TURN's proposed method, as it does not accurately reflect  
11 SDG&E's marginal energy costs. Regardless of whether energy is produced by SDG&E's  
12 resources or purchased from the market, all of SDG&E's bundled load is served by the  
13 CAISO through SDG&E's market purchases. Conversely, SDG&E's generation resources  
14 are dispatched economically by the CAISO to serve CAISO needs in the aggregate  
15 throughout the CAISO. The CAISO dispatch is not specific to the service territory where  
16 the generation is located. Additionally, the CAISO market price is the market clearing price,  
17 or marginal price, of energy in that hour and generation resources are dispatched  
18 economically relative to that market price. Therefore, the CAISO market clearing price is  
19 the appropriate price for determining marginal energy costs and it is not relevant whether the  
20 energy was produced by resources in SDG&E's service territory or otherwise purchased  
21 from the CAISO market.

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<sup>31</sup> TURN Direct Testimony (McGovern), p. 33 at 1-3.

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**2. SDG&E’s use of net load to develop the marginal energy price profile is reasonable.**

**a. TURN’s proposed alternative to use load instead of net load would send inaccurate price signals.**

TURN disagrees with SDG&E and states that “SDG&E should not be using net demand to determine the allocation of capacity revenues.”<sup>32</sup> TURN further states that “SDG&E does not distinguish between decreased usage and increased BTM generation, storage, or flexibility.”<sup>33</sup> TURN states that “while using Net Load profiles is sufficient for determining overall resource constraints, it is not appropriate for determining inter-class revenue allocation, and peak or TOU pricing.”<sup>34</sup> “TURN argues that load, and not net load be used to calculate customer cost allocation.”<sup>35</sup>

SDG&E disagrees with TURN’s proposed alternative to use load, and not net load, to calculate marginal energy cost and cost allocation. SDG&E agrees with TURN that using net load profiles is sufficient for determining overall resource constraints, because determining the cost of resource constraints is the definition of marginal costs. To use a different profile would distort the correct price signal to customers. For example, using the full load profile, instead of net load, would send a high price signal during hours when there is an abundance of resources to serve load. The reason market prices are zero or negative during mid-day is that there is an abundance of generation mid-day and no need to send a price signal to dispatch additional resources.

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<sup>32</sup> *Id.*, p. 33 at 5.  
<sup>33</sup> *Id.*, p. 33 at 6-8.  
<sup>34</sup> *Id.*, p. 34 at 12-14.  
<sup>35</sup> *Id.*, p. 33 at 16-17.

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**b. UCAN’s proposal to use hourly price curves would not adequately reflect the impacts of future new resources on net demand.**

UCAN recommends the “use of hourly price curves from CAISO instead of net demand curves to shape monthly prices into hourly prices used to calculate marginal energy costs.”<sup>36</sup> UCAN also recommends that “[i]n future GRC Phase 2 proceedings, it [SDG&E] could also explore the use of a production cost model to estimate hourly marginal energy costs.”<sup>37</sup>

SDG&E disagrees with UCAN’s proposal to use hourly historical CAISO price curves instead of forward-looking net load demand profiles. SDG&E believes that, for the most part, CAISO price curves do represent net load demand and are well correlated. Therefore, using historical CAISO prices are more representative of historical net demand and do not represent the impacts of future new resources on net demand. Forward-looking net load curves are the best proxy for CAISO prices going forward, as they attempt to represent the impact of load changes and new generation resources on prices in the future.

SDG&E is open to UCAN’s proposal to explore the use of production cost modeling to generate forward prices for marginal energy cost studies in the future. SDG&E cautions that even a comprehensive CAISO-wide network nodal model may not produce accurate market price profiles. With that acknowledgement, the relative price estimation of production cost modeling can be tested and used if reasonable correlation is observed.

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<sup>36</sup> UCAN Direct Testimony (Neal), p. 4 at 4-6.  
<sup>37</sup> *Id.*, p. 33 at 7-9.

1           **C.     Alternative Marginal Cost Analysis**

2                   **1.     SDG&E’s Flexible Capacity proposal and other marginal cost**  
3                   **analysis**

4                           **a.     SDG&E agrees with Cal Advocates’ proposal regarding**  
5                           **Flexible Capacity.**

6           Cal Advocates states that SDG&E should gather data on the timing, load, and  
7 resource availability of flexible capacity needs events and closely monitor PG&E’s and  
8 SCE’s flex capacity proposals and changes to the CAISO’s flexible RA framework in order  
9 to develop its own flex capacity proposal in the 2022 GRC Phase 2.<sup>38</sup>

10           SDG&E agrees with Cal Advocates and plans to perform an analysis of flex capacity  
11 in SDG&E’s 2022 GRC Phase 2. SDG&E participated in the Flex Capacity Working Group  
12 hosted by SCE in 2019, with the intent of subsequently monitoring PG&E’s and SCE’s  
13 proposals in their respective GRC Phase 2 proceedings and providing an SDG&E proposal  
14 in our next GRC Phase 2.

15                           **b.     SDG&E agrees with TURN’s proposal regarding Flexible**  
16                           **Capacity.**

17           TURN identifies incremental multi- value-added components such as flexibility,  
18 storage, proximity, low-to-zero marginal cost, Renewable Portfolio Standards (“RPS”), and  
19 other regulatory benefits and states that “[t]hese benefits need to be quantified in order to  
20 obtain a more appropriate proxy for capacity.”<sup>39</sup>

21           SDG&E agrees with TURN that flexible capacity should be analyzed to evaluate the  
22 potential of a flex capacity proposal in SDG&E’s 2022 GRC Phase 2. To the extent that

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<sup>38</sup> Cal Advocates Amended Prepared Testimony (Gutierrez), p. 3-21 at 1-4.

<sup>39</sup> TURN Direct Testimony (McGovern), p. 29 at 6-7.

1 other characteristics can be quantified and validated as tangible drivers of marginal capacity  
2 costs, SDG&E will include them in its analysis.

3 **c. Farm Bureau’s proposal regarding Flexible Capacity is**  
4 **not necessary.**

5 “Farm Bureau recommends that the Commission direct SDG&E to conduct detailed  
6 studies of 1) the drivers behind the flattening of its LOLE from 2016 to 2020 and 2) the  
7 appropriate treatment of system versus flexible generation capacity and to file them with the  
8 Commission prior to SDG&E’s subsequent GRC Phase 2 application. Furthermore, these  
9 studies should be presented to stakeholders during a workshop for discussion and comment  
10 prior to SDG&E filing its next GRC Phase 2 application.”<sup>40</sup>

11 While SDG&E agrees with the Farm Bureau that flexible capacity should be studied  
12 as a marginal cost component, we do not believe that providing a separate analysis prior to  
13 the next GRC Phase 2 is necessary or warranted. SDG&E participated in the Flexible  
14 Capacity Working Group that was hosted by SCE in 2019 and included broad participation  
15 by parties. As both PG&E and SCE have done, SDG&E plans to analyze and consider  
16 including a flexible capacity proposal in SDG&E’s 2022 GRC Phase 2.

17 SDG&E does not believe a detailed study of the drivers behind the flattening of its  
18 LOLE from 2016 to 2020 is necessary. Regardless of the reasons for the flattening of the  
19 curve, the LOLE analysis is intended to allocate capacity costs, which are driven by the  
20 relative need for capacity in the top 100 hours. As addressed in rebuttal to Cal Advocates on  
21 this subject, the top 100 hours LOLE study effectively accomplishes a proper allocation  
22 regardless of the percent of loss of load that occurs outside of the top 100 hours. If this  
23 flattening of the LOLE is partially driven by factors such as flexible capacity, SDG&E will

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<sup>40</sup> Farm Bureau Direct Testimony (Charles), p. 16.

1 determine this in the proposed flexible capacity analysis it intends to do in the next GRC  
2 Phase 2.

### 3 **III. CONCLUSION**

4 To summarize, SDG&E's marginal generation cost of a CT of \$140.43 per kw-year  
5 is a reasonable proxy for MGCC in this proceeding for two reasons 1) this cost is relatively  
6 comparable to the cost of battery storage as proposed by SEIA and 2) this cost reflects the  
7 need for new capacity that has been mandated by the CPUC. SDG&E does not disagree  
8 with party proposals that either a 4-hour battery storage or hybrid renewable paired with  
9 storage should be considered as the marginal resource, but agrees with UCAN that it would  
10 be difficult to make this change now, since this technology is currently being evaluated for  
11 its resource adequacy value. SDG&E believes these proposals are more appropriately  
12 considered in the next GRC Phase 2. SDG&E's Top 100-hour LOLE analysis should not be  
13 modified and should continue to be used to allocate marginal capacity costs. SP-15 forward  
14 prices shaped by net load are the correct representation of marginal energy costs. Finally,  
15 SDG&E agrees that flexible capacity should be considered as a marginal cost metric in the  
16 next GRC Phase 2. SDG&E is open to conducting analysis to determine if there are other  
17 drivers to marginal costs in the next GRC Phase 2.

18 This concludes my prepared rebuttal testimony.