BEFORE THE CALIFORNIA PUBLIC UTILITIES COMMISSION

PREPARED TESTIMONY OF ALICE NAPOLEON

ADDRESSING PROPOSALS OF PACIFIC GAS AND ELECTRIC COMPANY, SAN DIEGO GAS & ELECTRIC COMPANY, SOUTHERN CALIFORNIA EDISON COMPANY, AND SOUTHERN CALIFORNIA GAS COMPANY RELATED TO THE ENERGY SAVINGS ASSISTANCE (ESA) PROGRAM AND BUDGETS FOR PROGRAM YEARS 2021-2026

IN APPLICATIONS 19-11-003, 19-11-004, 19-11-005, AND 19-11-006

SUBMITTED ON BEHALF OF

THE UTILITY REFORM NETWORK

Alice Napoleon, Senior Associate
Synapse Energy Economics
485 Massachusetts Avenue
Cambridge, Mass. 02139
Direct: 617.453.7041
Email: anapoleon@synapse-energy.com

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1. INTRODUCTION AND OVERVIEW

Q. What is the purpose of this testimony?

A. The purpose of this testimony is to describe and assess the applications of Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), San Diego Gas & Electric Company (SDG&E), and Southern California Gas Company (SoCalGas) (collectively, the utilities or investor-owned utilities (IOUs)) for the 2021-2026 (plan period) Energy Savings Assistance (ESA) program. Specifically, the testimony addresses the historical performance of the ESA programs, the utilities' proposed goals and alignment with state goals and California Public Utility Commission (CPUC or Commission) directives, and feedback processes. In addition, the testimony considers the final proposal of the Energy Division for the ESA program, distributed on June 5, 2020.

This testimony is organized as follows: First, I provide a summary of recommendations. Second, I provide an overview of the utilities' ESA proposals, including energy savings, participation, budget, and cost-effectiveness. Third, I make conclusions and recommendations on the utilities' ESA proposals. Next, I provide an overview and assessment of the Energy Division proposal for the ESA program. A summary of my qualifications is provided in Appendix A.

2. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Q. Please describe your conclusions.

A. I make the following conclusions:

1. The utilities' ESA programs have historically achieved low levels of savings and had poor cost-effectiveness. Further, actual historical spending has differed from budget, in some cases substantially.

2. Each utility proposes to offer a level of basic services to all eligible customers, but the proposals differ more in their second and third tiered offerings. A single approach to tiered delivery will facilitate evaluation and review of performance across the IOUs. Further, it will help avoid customer and market

confusion across multiple service territories and can make coordination between program administrators simpler.

3. A tiered approach is consistent with the Commission's direction with respect to targeting deeper savings. Tiers could be used to balance the competing objectives of (1) reaching as many households as possible, (2) making a tangible dent in the energy burden or bills of participating households, and (3) minimizing costs.

4. The utilities are generally not offering measures targeted to customers living in mobile homes and have not considered making offerings to address the needs of this segment, even though the pool of measures that can be installed in mobile and manufactured homes is somewhat different from measures that are more applicable to site-built homes. Furthermore, rural mobile home dwellers in the West generally experience higher energy burdens than those living in other types of structures.

5. PG&E and SCE propose to implement ESA pilots, but there are no standards for proposing and assessing pilot applications.

6. Investing in long-lived natural gas efficiency measures is inconsistent with state goals and risks locking low-income customers into a fuel that will eventually see higher rates.

Q. Please describe your recommendations.

A. I make the following recommendations:

1. Upon completion of a targeted potential study, the Commission should open a formal regulatory process to establish goals for the ESA program, focusing on energy and bill savings and eventually on cost-effectiveness.

2. This process should set common tiers and metrics for the ESA program. Until this process is concluded, the utilities should implement their program proposals (including goals and tiers but excluding pilots), with immediate modifications to cap spending on non-resource measures, to target mobile homes, and to avoid investments in long-lived fossil fuel consuming

measures, as discussed in this testimony. I note that TURN may additionally advocate the adoption of additional near-term changes after considering the proposals of other intervenors.

3. The Commission should immediately establish parameters for non-resource measures.

4. The utilities should seek deeper savings than they proposed in their applications. This goal should be balanced with budget and customer reach considerations.

5. The Commission should require the utilities to immediately modify their proposals to more specifically target and collect data on the mobile home segment.

6. The Commission should develop and adopt standards for evaluating pilots, and for incorporating feedback from achievements, studies, and pilots into current and future programs. The utilities should immediately provide data to fully justify their pilot proposals.

7. The Commission should provide immediate guidance to the utilities on repair or replacement of long-lived fossil-fuel burning measures. In addition, the Commission should develop a framework to balance the risk of locking low-income customers into gas with cost increases to participants for electrification measures.

3. BACKGROUND

Q. Please describe the history of the ESA program prior to the current proceeding.

A. Since the early 1980s, the ESA program has realized energy efficiency improvements and bill savings for low-income customers.[1] In 2007, the

[1] SDG&E application p. 3-4.

Commission set forth a vision that the ESA program should serve all eligible and willing customers with all cost-effective energy efficiency measures by 2020.[2]

In the proceeding for approval of the 2015-2017 ESA and California Alternative Rates for Energy (CARE) programs, the Commission articulated a change in program emphasis. With the expectation that the utilities will have served all willing and eligible customers by 2020, the Commission called for the utilities to focus on deeper energy savings and present innovative design approaches in their 2021-2026 ESA programs applications.[3]

Q. What has transpired during the current proceeding?

On November 4, 2019, PG&E, SCE, SDG&E, and SoCalGas filed applications for the 2021-2026 ESA program, as well as the CARE and Family Energy Rate Assistance (FERA) programs. I describe the applications with respect to their ESA offerings in the following section.

On May 13, 2020, the Staff of the CPUC Energy Division distributed a Draft Proposal in the current proceeding. Staff invited comments on the Draft Proposal, and TURN submitted comments on June 8, 2020. Along with the Final Energy Division Proposal for the ESA program distributed on June 25, 2020, the Administrative Law Judge (ALJ) requested responses to a series of questions. TURN provided responses to these questions on July 24, 2020.

4. THE UTILITIES' ESA PROPOSALS

Overview

Energy Savings

Q. What savings targets have the utilities proposed for the plan period?

A. Table 1 shows the utilities' proposed first-year annual electric and gas savings.

[2] D.07-12-051 at 28.
[3] A.14-11-007 et al., Decision 19-06-022, June 27, 2019 at 5 and 9.

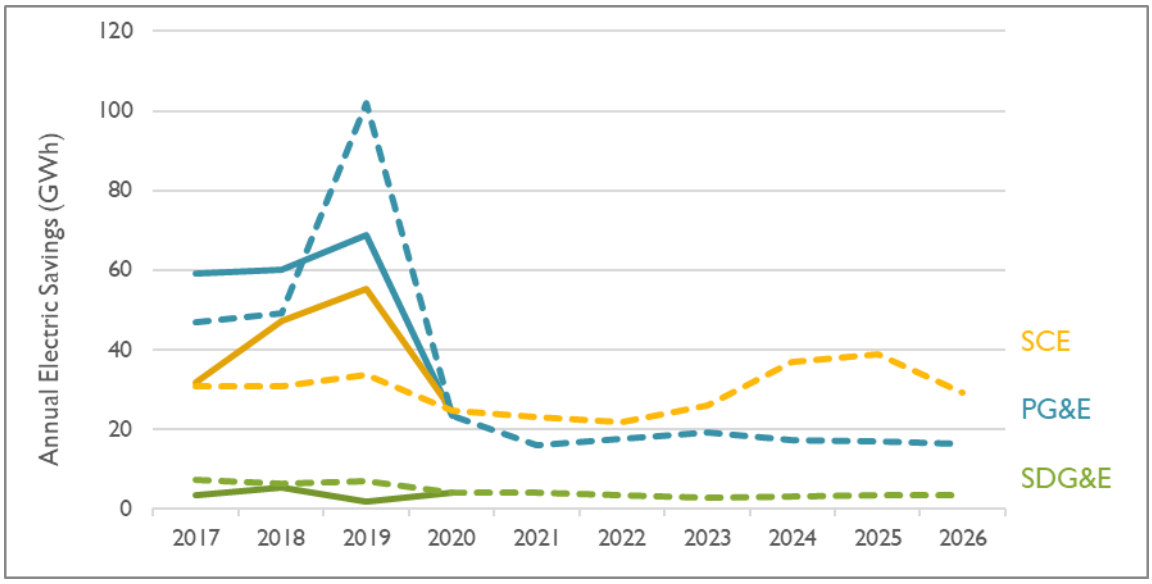
Table 1. Proposed first-year annual savings, electric and gas, 2021-2026[4]

Utility	Units	2021	2022	2023	2024	2025	2026
PG&E	kWh	16,210,460	17,550,194	19,224,473	17,457,868	16,951,340	16,249,937
SCE	kWh	23,061,894	21,847,499	26,065,467	36,932,837	38,961,950	29,129,628
SDG&E	kWh	4,316,339	3,436,234	3,015,820	3,220,929	3,379,789	3,684,972
PG&E	therm	750,415	731,518	826,272	750,276	724,108	698,721
SoCalGas	therm	1,668,798	1,668,798	1,668,798	1,668,798	1,668,798	1,668,798
SDG&E	therm	176,789	147,874	126,500	134,173	139,609	150,860

Q. How do the utilities' proposed energy savings compare to their historical achievements?

A. The utilities' proposals are inconsistent in this respect. Figure 1 shows 2017-2019 actual reported and 2020-2026 planned annual electric savings, and Figure 2 presents the same data for gas.

Figure 1. ESA program actual (solid line) and planned (dashed line) annual electric savings by utility, 2017-2026[5,6]

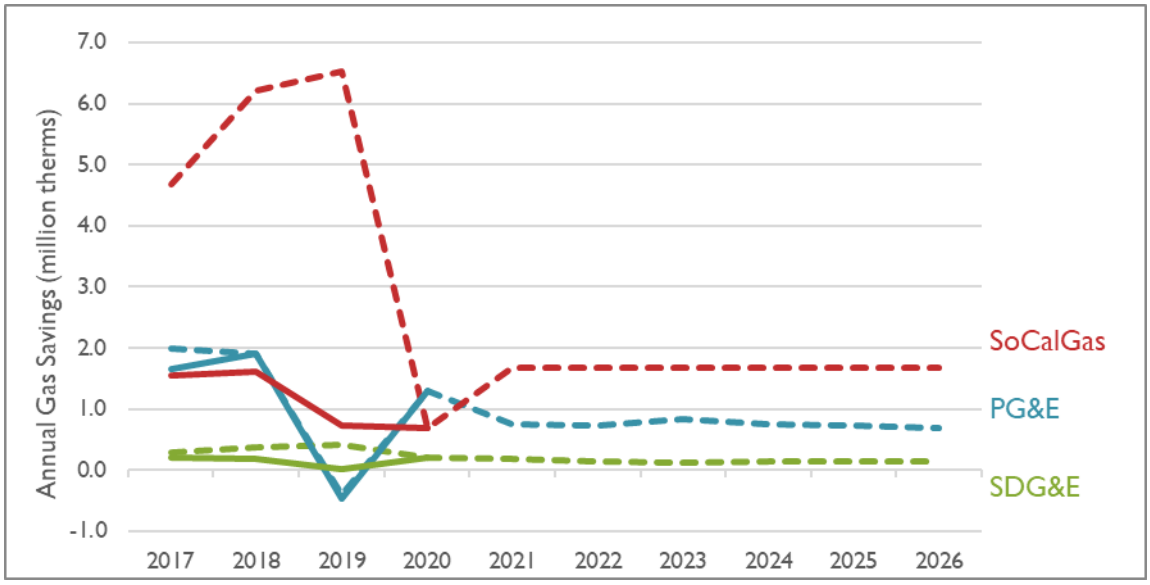


[4] DR TURN PG&E-01 Q07 Attachment 1, DR TURN SCE-03 Q12, DR TURN SDGE-04 Q12, DR TURN SoCalGas-3 Q12.

[5] DR TURN PG&E-01 Q07 Attachment 1, DR TURN SCE-03 Q11-Q12. For program years 2021-2026, see DR TURN SDGE-04 Q12. For historical years 2017-2019, see SDG&E Low-Income Annual Reports.

[6] The utilities provided planned savings for 2020 in response to discovery in the spring of 2020. Due to economic impacts of the COVID-19 pandemic, the utilities would likely have much lower projections for 2020—and for 2021—if these projections were made today.

Figure 2. ESA program actual (solid line) and planned (dashed line) annual gas savings by utility, 2017-2026[7,8]



As shown in the graphs above, first-year annual savings for the plan period (2021-2026) are projected to drop dramatically for two of the utilities, PG&E and SCE, relative to the three most recent years of actual savings (2017-2019). PG&E's proposed average electric savings levels for the plan period are 72 percent lower than the 3-year average of historical achievements, while PG&E's average total gas savings are 28 percent lower. SCE's planned average electric savings for 2021-2026 are 35 percent lower than its actual savings for the last three years.

For SDG&E and SoCalGas, average planned savings in 2021-2026 are higher than 3-year average *historical* savings, but lower than their 2017-2019 average *planned* savings.

Q. Please describe lifecycle savings under the utilities' ESA program proposals.

For SCE, planned lifecycle savings display a similar pattern to first-year annual savings. See Figure 3. SDG&E did not provide historical lifecycle electric

[7] The negative gas savings for PG&E in 2019 likely reflects the reduction in heat loss associated with switching to efficient lighting, which comprised a large share of PG&E's savings that year according to its 2019 annual report, and the increase in consumption resulting from repair of non-functional water heaters and furnaces.

[8] DR TURN PG&E-01 Q07 Attachment 1, DR TURN SoCalGas-3 Q11-Q12. For program years 2021-2026, see DR TURN SDGE-04 Q12. For historical years 2017-2019, see SDG&E Low-Income Annual Reports.

savings, only projected lifecycle savings, in response to discovery, and PG&E has provided neither historical nor projected lifecycle savings.

Figure 3. ESA program actual (no marker) and planned (circle marker) lifecycle electric savings by utility, 2017-2026[9]

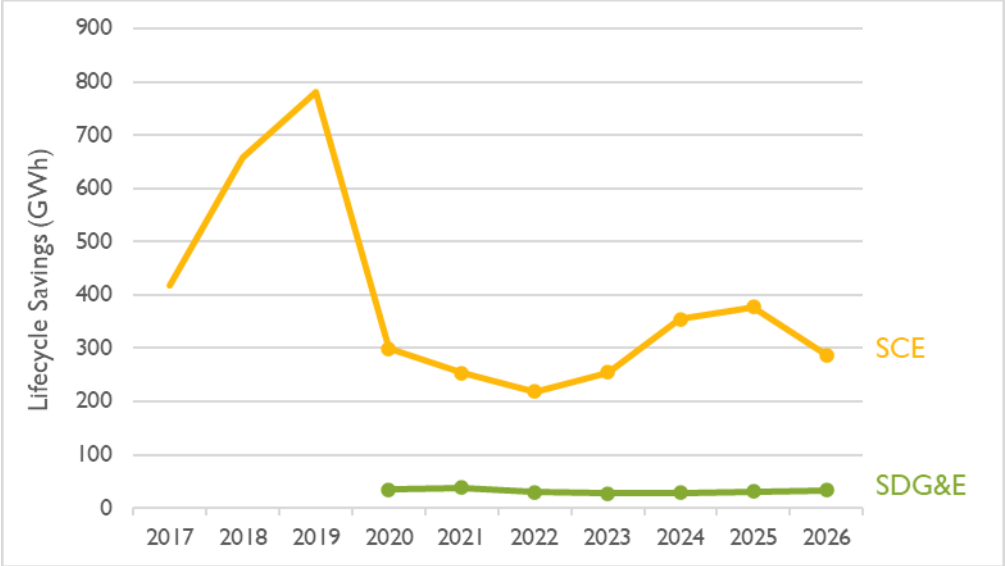
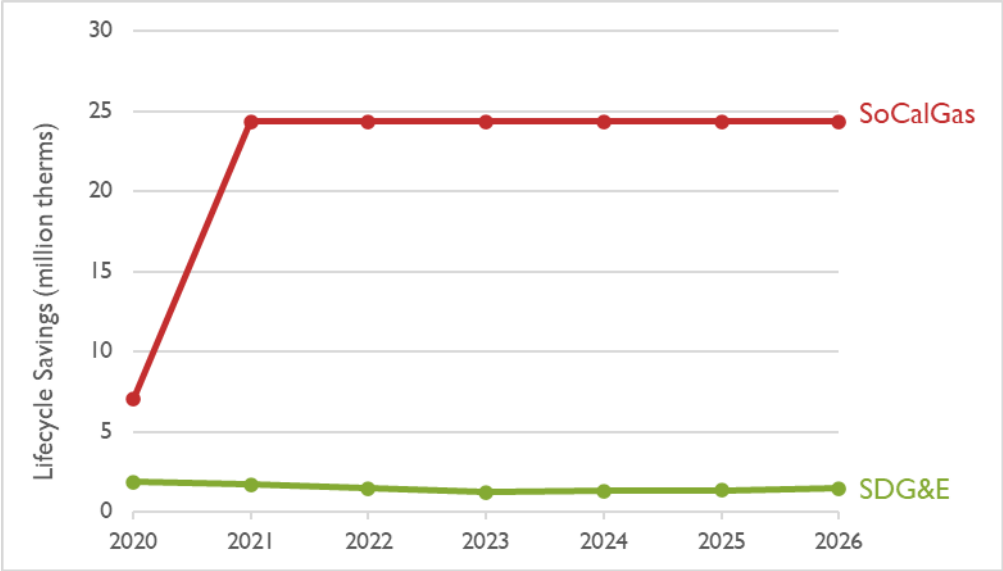


Figure 4 shows projected (2020) and proposed (2021-2026) lifecycle gas savings for SDG&E and SoCalGas. Unlike first-year annual savings, lifecycle savings for SoCalGas increases dramatically over the plan period, indicating that on average measures in the proposed plan have longer lifetimes. As with electric savings, SDG&E did not provide historical lifecycle gas savings in response to discovery, and PG&E has provided neither historical nor projected lifecycle savings.

[9] DR TURN PG&E-04 Q11-Q12, DR TURN SCE-03 Q11-Q12, DR TURN SDGE-04 Q11-12.

Figure 4. ESA program planned lifetime gas savings by utility, 2020-2026[10]



Q. Please describe proposed savings for the different types of homes.

A. Annual savings broken out by single family (SF), multi-family (MF), and mobile homes (MH) are shown in Table 2 and Table 3, below. PG&E is not included in the following tables because it did not provide savings by type of home for the plan period.

Table 2. First-year annual electric savings by utility and by home type, 2021-2026[11]

Utility		Units	2021	2022	2023	2024	2025	2026
SCE	**Total**	**kWh**	**23,061,894**	**21,847,499**	**26,065,467**	**36,932,837**	**38,961,950**	**29,129,628**
SCE	SF	kWh	13,399,053	17,232,207	19,457,740	24,590,400	28,554,198	21,321,519
SCE	MH	kWh	1,971,488	564,303	605,862	777,796	895,851	666,411
SCE	MF	kWh	7,691,353	4,050,989	6,001,865	11,564,641	9,511,901	7,141,699
SDG&E	**Total**	**kWh**	**4,316,339**	**3,436,234**	**3,015,820**	**3,220,929**	**3,379,789**	**3,684,972**
SDG&E	SF	kWh	2,791,899	2,143,156	1,948,712	2,154,069	2,273,817	2,514,347
SDG&E	MH	kWh	380,744	380,744	380,744	380,744	380,744	380,744
SDG&E	MF	kWh	1,143,696	912,334	686,364	686,116	725,228	789,881

[10] DR TURN SDGE-04 Q11-Q12, DR TURN SoCalGas-3 Q12.
[11] DR TURN SDGE-04 Q12, DR TURN SCE-3 Q12 Attachment "A-19-11-004_TURN-DR SCE_03-6-22-20, Question 12.xlsx".

Table 3. First-year annual gas savings by utility and by home type, 2021-2026[12]

Utility		Units	2021	2022	2023	2024	2025	2026
SoCalGas	**Total**	**therm**	**1,668,798**	**1,668,798**	**1,668,798**	**1,668,798**	**1,668,798**	**1,668,798**
SoCalGas	SF	therm	1,041,284	1,041,284	1,041,284	1,041,284	1,041,284	1,041,284
SoCalGas	MH	therm	54,288	54,288	54,288	54,288	54,288	54,288
SoCalGas	MF	therm	573,226	573,226	573,226	573,226	573,226	573,226
SDG&E	**Total**	**therm**	**176,789**	**147,874**	**126,500**	**134,173**	**139,609**	**150,860**
SDG&E	SF	therm	85,957	69,973	62,650	69,227	73,064	80,766
SDG&E	MH	therm	25,958	25,706	25,832	25,854	25,857	25,879
SDG&E	MF	therm	64,874	52,195	38,018	39,092	40,688	44,215

Q. How do proposed savings for customers living in single-family, multi-family, and mobile homes compare with historical savings for these customer segments?

A. Under both SCE's and SoCalGas's proposed plans, customers living in mobile homes are projected to realize a smaller share of savings relative to total savings, as compared to the share of total savings these customers experienced in the previous nine years. As shown in Figure 5, SCE's mobile home customers experienced 9 percent of total ESA first-year annual savings on average over the 2010-2019 period; under SCE's plan, however, these customers would see only 3 percent of the total program savings. Historically, SoCalGas ESA participants in mobile homes saw 6 percent of the energy savings benefits of the program, as seen in Figure 6. Going forward, they would experience just 3 percent of the total savings.

[12] DR TURN SDGE-04 Q11-Q12, DR TURN SoCalGas-3 Q12.

Figure 5. Annual electric savings in MWh for SCE by home type, 2010-2026 (2010-2019 actual, 2020-2026 planned)[13]

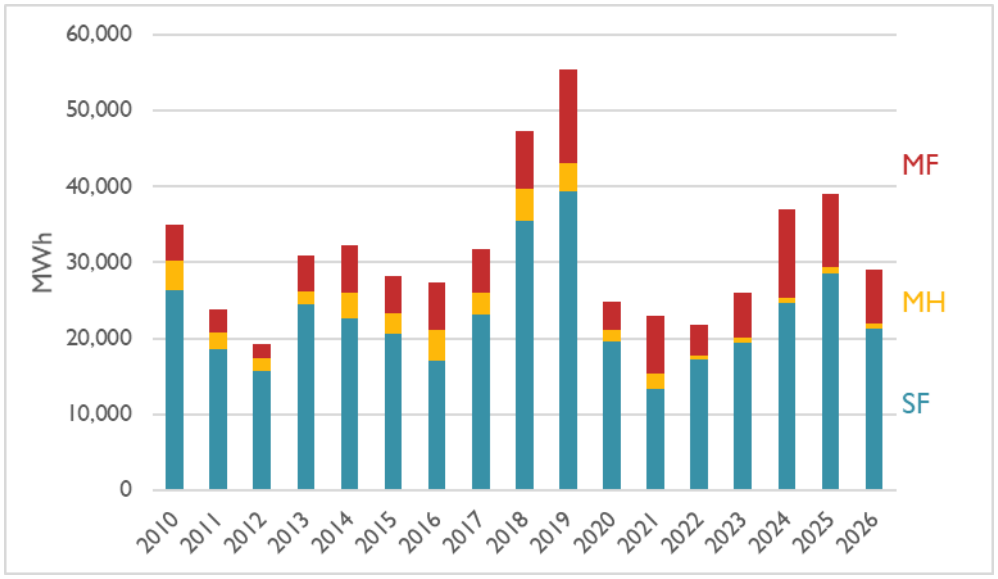
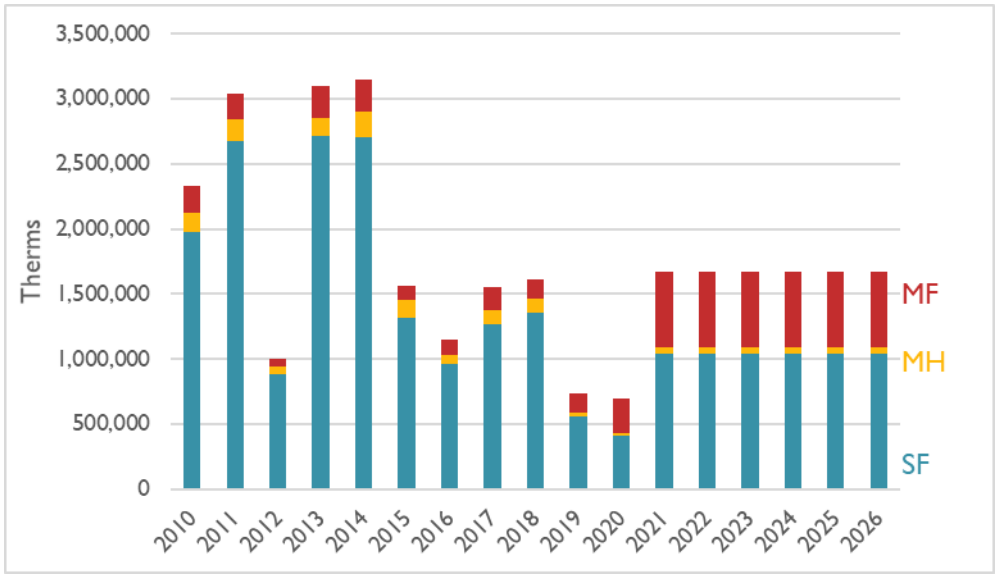


Figure 6. Annual gas savings in therms for SoCalGas by home type, 2010-2026 (2010-2019 actual, 2020-2026 planned)[14]



Participation

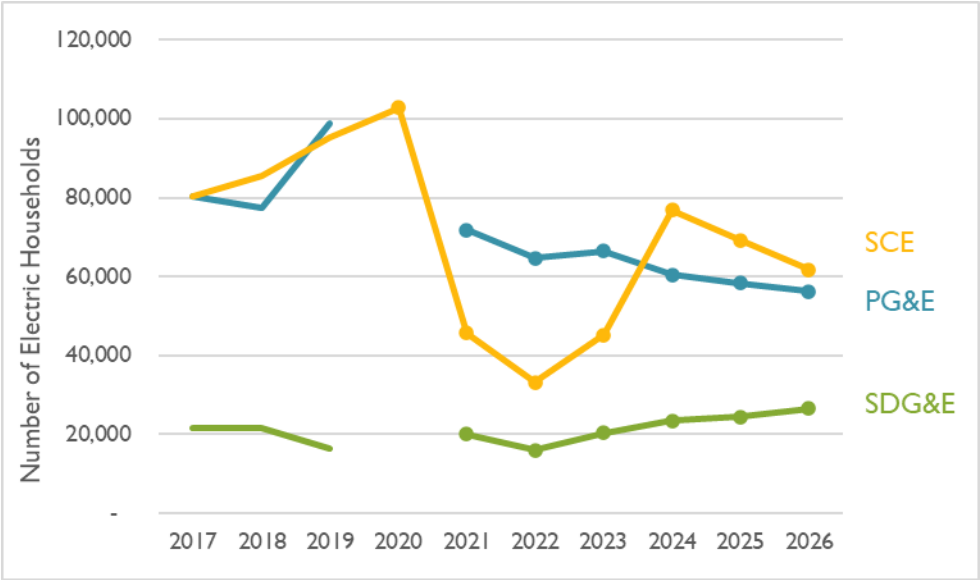
Q. Please describe historical and planned participation for the utilities.

A. As with savings, the utilities' approaches to participation vary considerably under their 2021-2026 proposals. As shown in Figure 7 and Figure 8, PG&E plans for

[13] DR TURN SCE-03 Q11 and Q12.
[14] DR TURN SoCalGas-03 Q11 and Q12.

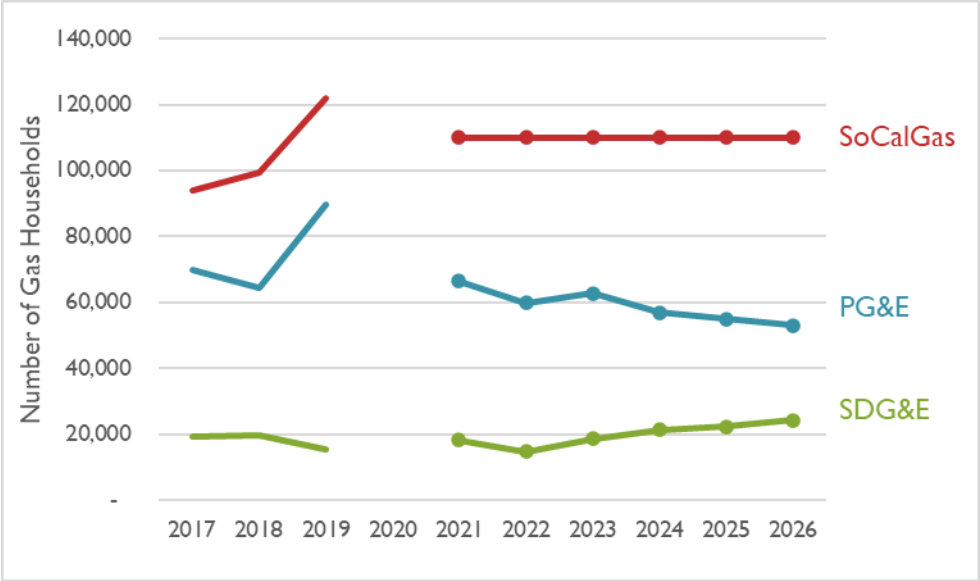
much lower participation than it saw in the last few years, in terms of both electric and gas. SCE's proposal would result in far fewer households being treated per year during the 2021-2026 period than were served in 2017, 2018, and 2019. SoCalGas plans participation levels somewhat lower than actual participation in 2019 but roughly in line with recent years. On the other hand, SDG&E proposes a slight gradual increase in the number of households relative to the historical number of households treated, for both electric and gas.

Figure 7. Number of ESA participants, electric, historical (no marker) and planned (circle marker), 2017-2026[15]



[15] For program years 2021-2026, see PG&E and SDG&E Utility Filing Table A-6. For historical years, see PG&E and SDG&E Low-Income Annual Reports ESA Table 4. For SCE, see DR TURN SCE-03 Q5. However, I note that the household value provided in DR TURN SCE-03 Q5 does not match up with the household value provided in DR TURN SCE-03 Q10.

Figure 8. Number of ESA participants, gas, historical (no marker) and planned (circle marker), 2017-2026[16]



Budget

Q. What are the utilities proposing as budgets for the ESA program?

A. Table 4 below shows the ESA program budgets proposed by the utilities for the 2021-2026 plan period. In general, the utilities propose annual budgets that increase over the plan period.

Table 4. Proposed electric and gas budgets by utility, 2021-2026[17]

	2021	2022	2023	2024	2025	2026
Electric						
PG&E	$95,378,418	$89,073,155	$99,883,882	$99,429,788	$98,900,554	$98,617,920
SCE	$41,274,230	$53,831,214	$62,718,470	$78,034,920	$88,079,719	$65,858,642
SDG&E	$14,636,706	$15,645,648	$16,810,401	$18,746,106	$19,990,183	$20,910,811
Gas						
PG&E	$78,187,032	$78,334,825	$90,159,618	$90,058,572	$89,879,926	$89,922,130
SoCalGas	$131,525,600	$136,493,798	$136,514,861	$136,519,523	$136,549,364	$136,214,997
SDG&E	$13,106,731	$13,770,369	$14,056,635	$15,447,653	$16,449,717	$17,402,799

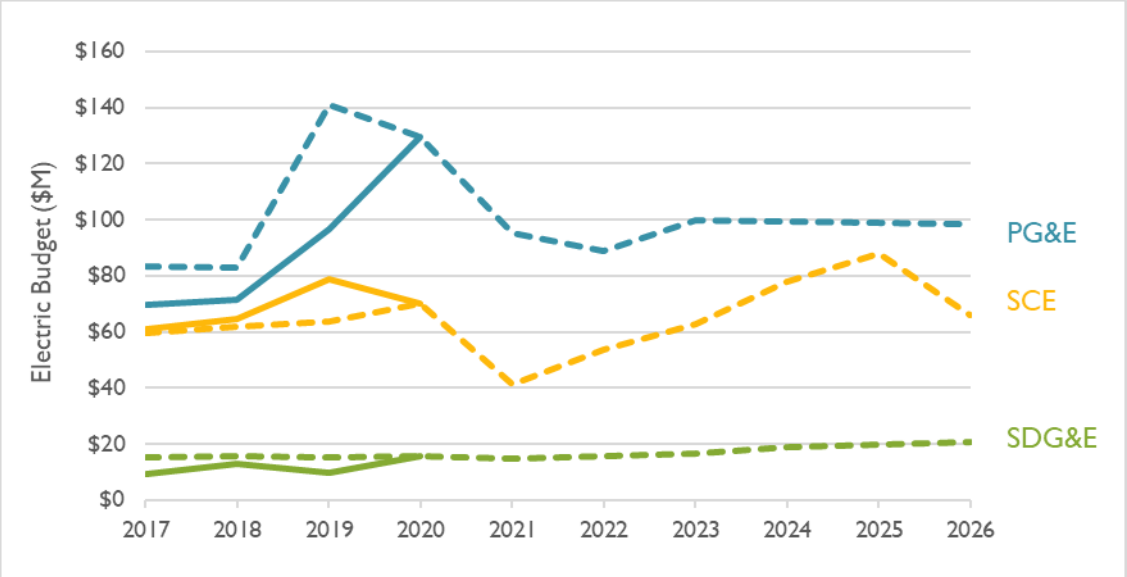
[16] For program years 2021-2026, see PG&E, SoCalGas, and SDG&E Utility Filing Table A-6. For historical years, see PG&E, SoCalGas and SDG&E Low-Income Annual Reports ESA Table 4.
[17] Utility Filings, Tables A-1, A-2, and A-3.

Q. How do these budgets compare with historical budgets?

A. Figure 9 shows historical planned and proposed electric budgets (dashed line) and historical actual electric spending (solid line). PG&E's proposed electric budget for the plan period is slightly higher than the planned budget for 2017-2018 but lower than the planned budget for 2019. SCE's budget in 2021 starts lower than its recent historical budgets but rises to a high of $88 million in 2025. Likewise, SDG&E's 2021 proposed budget starts lower than historical budget levels for 2017-2019, but rises over the plan period to a high of $21 million in 2026.

Actual historical spending has differed from budget; and for each utility, this has shown a directionally consistent bias. That is, SCE has consistently spent more than budgeted. PG&E and SDG&E have consistently spent less than budgeted. This over-budgeting imposes unnecessarily high rates on customers for which ESA recipients receive no benefits.

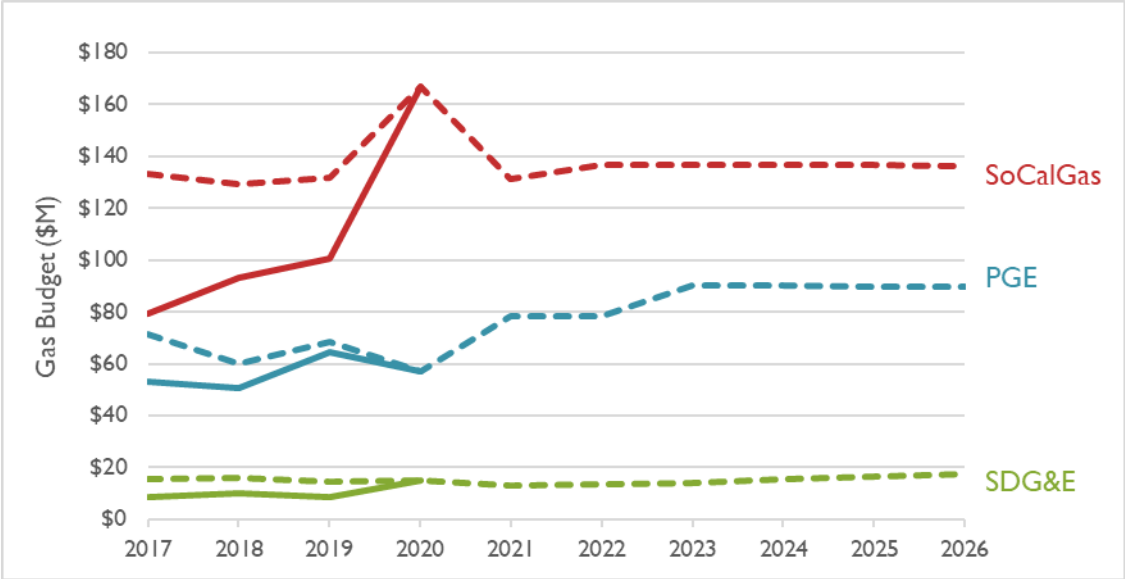
Figure 9. Historical planned and proposed electric budget (dashed line) and historical actual electric budget (solid line), 2017-2026[18]



The same is true of gas budgets and spending: all three gas utilities have historically spent less than their budgets.

[18] For historical years, see the Summary Table and ESA Table 1 of the Low-Income Annual Report filings by each utility. For years 2020-2026, see Tables A-1 and A-2 of the utility filing in this proceeding.

Figure 10. Historical planned and proposed gas budget (dashed line) and historical actual gas budget (solid line), 2017-2026 [19]



Q. How large is the underspending or overspending?

A. Table 5 shows planned and actual spending by utility. From 2017 to 2019, PG&E spent between 77 and 85 percent of planned spending. SDG&E spent between 58 and 72 percent of budget, and SoCalGas spent 60 to 76 percent. For PG&E, SoCalGas, and SDG&E, there appears to be a pattern of chronic underspending. SCE repeatedly overspent its budgets.

Table 5. Budget, actual spending, and actual spending as a percent of budget by utility, electric and gas, 2017-2019[20]

	2017			2018			2019		
Utility	**Planned**	**Actual**	**%**	**Planned**	**Actual**	**%**	**Planned**	**Actual**	**%**
PG&E	$154,671,971	$122,778,059	79%	$142,898,912	$122,110,740	85%	$209,387,402	$160,824,973	77%
SCE	$59,601,019	$61,045,978	102%	$61,919,683	$64,849,390	105%	$63,616,662	$78,613,898	124%
SoCalGas	$133,369,265	$79,364,204	60%	$129,251,729	$93,149,896	72%	$131,836,750	$100,476,415	76%
SDG&E	$30,649,505	$17,854,127	58%	$31,631,921	$22,780,528	72%	$29,973,116	$18,146,973	61%

[19] For historical years, see the Summary Table and ESA Table 1 of the Low-Income Annual Report filings by each utility. For years 2020-2026, see Tables A-1 and A-3 of the utility filing in this proceeding.
[20] See the Summary Table and ESA Table 1 of the Low-Income Annual Report filings by each utility.

Cost-Effectiveness

Q. Please describe the cost-effectiveness of the ESA programs.

A. ESA Cost Effectiveness Test (ESACET) benefit-cost ratios for 2017-2026 are shown in Table 6. The ESACET includes energy benefits (avoided costs, which include greenhouse gas benefits), non-energy benefits (NEBs),[21] and where applicable, water-embedded energy savings.[22]

Table 6. ESA program ESACET ratios, 2017-2026[23,24]

ESACET	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
PG&E	1.03	1.13	0.77	0.83	0.53	0.57	0.63	0.66	0.69	0.73
SCE	0.72	1.02	0.62	0.56	0.59	0.57	0.61	0.70	0.72	0.77
SDG&E*	0.74	0.74	0.78	0.78	0.74	0.70	0.81	0.90	0.95	1.04
SoCalGas	0.76	0.66	0.63	0.63	0.57	0.6	0.64	0.69	0.74	0.79

These ratios indicate that, by and large, the programs have not been cost-effective historically and that the utilities do not anticipate that the programs will be cost-effective going forward.

Q. What is the cost of saved energy for the utilities' proposed programs?

A. The levelized, lifecycle cost of saved electricity is shown in Figure 11, and the levelized, lifecycle cost of saved gas is displayed in Figure 12. PG&E is not included in these graphs, because it did not provide data on lifecycle savings.

[21] D.14-08-030.

[22] D.17-12-009. See SDG&E Testimony of Sara Nordin at SN-ESA-94 to -95.

[23] PG&E's 2019-2020 ratios are estimates. SCE's ESACET includes resource and non-resource measures. Only measures considered "resource measures" with kWh savings greater than "0" are included in the Resource TRC. SDG&E ratios include in-unit savings only; 2016-2020 are based on previous applications and advice letters.

[24] PG&E LowIncomeProgramPY21-26_DR_TURN_001-Q01Atch01; SCE Attachment B Tables_ESA January 2020 Filing; SDG&E Attachment B Excel 2021-2026; SoCalGas Attachment B Guidance Doc Excel 2021-2026 Budget Template.

Figure 11. Lifecycle cost of saved electricity by utility, 2021-2026[25]

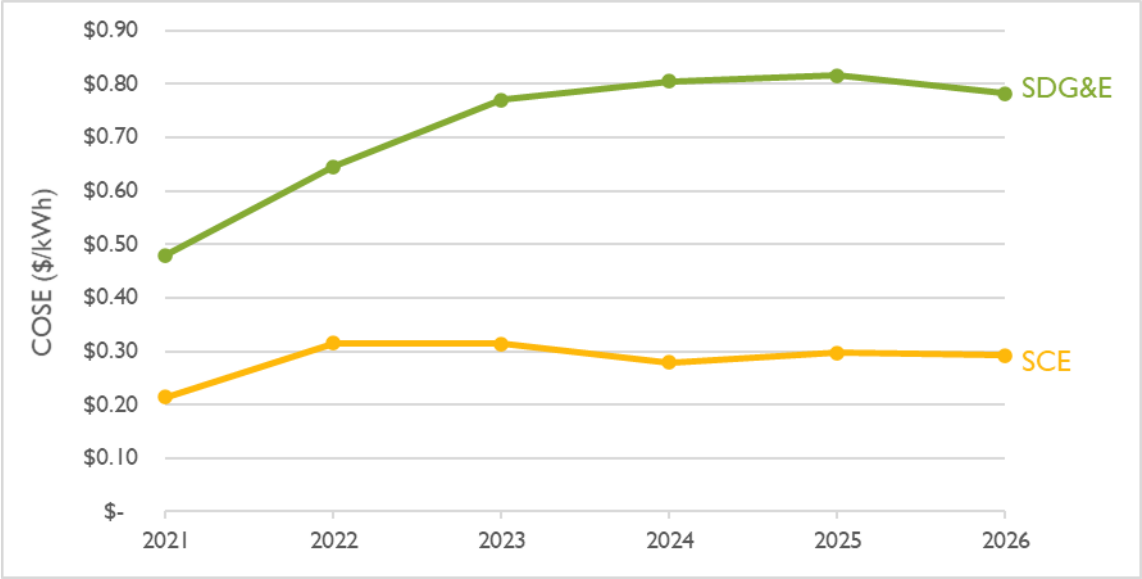
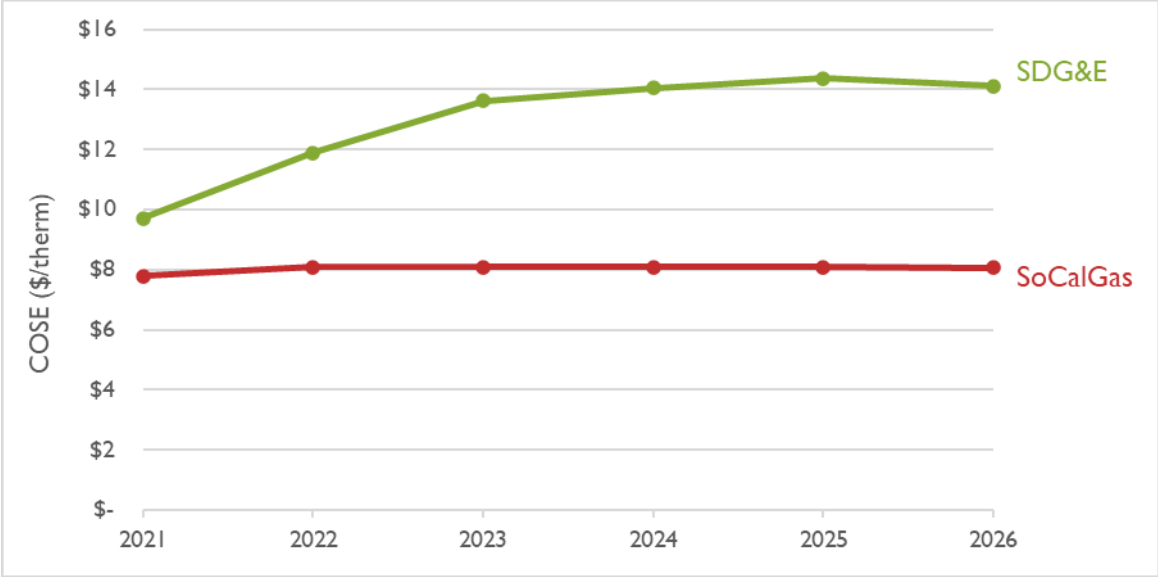


Figure 12. Lifecycle cost of saved gas by utility, 2021-2026[26]



[25] Utility Filings, Tables A-1 and A-2. DR TURN SCE-03 Q12, DR TURN SDGE-04 Q12.
[26] Utility Filings, Tables A-1 and A-3. DR TURN SoCalGas-03 Q12, DR TURN SDGE-04 Q12.

Conclusions and Recommendations

The Commission should establish goals for energy and bill savings based on the findings of a targeted potential study, and for cost-effectiveness when more NEBs have been accounted for.

Q. Why should the utilities have goals for the ESA program?

A. Generally, the utilities' ESA programs have achieved low levels of savings and had poor cost-effectiveness. The most recent ESA impact evaluation reported that average electric savings per household from 2015-2017 was less than 5 percent (and for some utilities, less than 1 percent), and average gas savings were 2 percent or less.[27] Adopting energy savings goals that are higher than past performance will drive increased savings per household, an increase in the number of homes treated, or both. Greater energy savings will, as a general matter, provide larger bill reductions for low-income customers participating in ESA, among other increased benefits for participants and ratepayers.

Q. How does the utilities' cost-effectiveness compare with experience in other jurisdictions?

A. The ESACET, California's test for assessing the cost-effectiveness of the ESA programs, incorporates different benefits than other jurisdictions, thus making it difficult to compare those other jurisdictions' benefit-cost results with California's. While the cost of saved energy does not consider the benefits of programs, it provides one basis for comparison with other jurisdictions.

Q. How does the utilities' cost of saved energy compare with those seen in other jurisdictions?

A. Based on a review of energy efficiency program data in 41 states, including California, Lawrence Berkeley National Laboratory (LBNL) found that low-income programs have a levelized program administrator cost of saved energy of $0.105 per kWh. For a subset of programs with sufficiently granular data, the levelized total cost of saved energy (including participant contributions) for low-

[27] Energy Division Draft Proposal, p. 4.

income programs is $0.145/kWh.[28] In comparison, SCE's lifecycle cost of saved electricity ranges from $0.21 per kWh to $0.32 per kWh.[29] SDG&E's lifecycle cost of saved electricity is much higher, ranging from a low of $0.48 per kWh to a high of $0.82 per kWh.

Q. Why are the utilities' proposed programs costlier than comparable programs?

A. Two factors are likely pushing up the cost of the ESA program relative to other programs: the change in emphasis from serving all eligible customers to attaining deeper energy savings per household, and the shift away from low-cost lighting to savings from other measures.[30] Also, there may be inefficiencies in program administration and delivery.

Q. Can implementing goals help reduce the cost of the ESA program?

A. I believe they can. Given costs and savings of low-income programs in other jurisdictions, there is reason to believe that there is room for improvement with the California utilities' ESA program.

Clearly stated goals from the CPUC would communicate expectations and help the utilities to know how and where to focus their efforts. Without clearly defined goals, it is more difficult to compare the utilities' performance with each other. Given the CPUC's call for significant changes in the ESA programs, it is all the more important that the utilities be given clear goals for a solid foundation on which to build and assess the programs' performance.

Q. Should cost-effectiveness be a goal?

A. Cost-effectiveness should be a goal, but not at this time. First, the state should incorporate more NEBs into the ESACET. Currently, the test does not account for

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[28] Hoffman, Ian, Charles Goldman, Sean Murphy, Natalie Mims, Greg Leventis, and Lisa Schwartz. 2018. The Cost of Saving Electricity Through Energy Efficiency Programs Funded by Utility Customers: 2009–2015. Lawrence Berkeley National Laboratory.

[29] Levelized using a 6 percent discount rate, consistent with the discount rate used in the LBNL study.

[30] For example, lighting accounted for over half of SCE's electric energy savings in 2019 but only 11 percent of the budget that year (SCE 2019 ESA Table 2 of historical Low-Income Annual Report). In contrast, under SCE's ESA, proposal lighting measures have a smaller role: 27 percent of savings and 5 percent of budget in 2023 (SCE ESA Table A-4 ESA Planning).

indoor air quality benefits.[31] Other important NEBs, such as missed days of school and work, have not been accepted for inclusion in the NEB 2.0 model.[32] It is critical that there is a comprehensive accounting for NEBs in the ESACET, as NEBs tend to significantly impact cost-effectiveness for low-income programs across the country. Without a fuller accounting for these benefits, the ESACET is somewhat skewed.

The California IOUs recently commissioned Applied Public Policy Research Institute for Study and Evaluation (APPRISE) to conduct an assessment of the NEBs methodology for the ESA program. This study will review and identify issues with the NEBs identified in the 2019 Skumatz Navigant study.[33] Also, it will identify benefits, costs, and data that are currently missing and make recommendations for filling these gaps. I anticipate that this effort will give more confidence in the NEBs that are included in the cost-effectiveness assessment, identify costs and benefits that are missing, and support a larger role for cost-effectiveness testing in program design.

While I do not call for a minimum cost-effectiveness *requirement*, a cost-effectiveness *target* would be helpful for guiding utility performance. More emphasis on cost-effectiveness would encourage the utilities to target efforts and resources where they are most beneficial and to look for internal operating efficiencies that can improve cost-effectiveness.

Q. What cost-effectiveness target should be adopted?

A. When there has been a more complete accounting for NEBs, the utilities should seek a benefit-cost ratio of 1.0 for the program, excluding non-resource measures. This ensures that the programs provide at least as many benefits as costs.

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[31] ESA Cost Effectiveness Working Group, June 2018, p. 7.
[32] Skumatz Economic Research Associates and Navigant Consulting, Inc. 2019. Non-Energy Benefits and Non-Energy Impact (NEB/NEI) Study for the California Energy Savings Assistance (ESA) Program, Vol. 1. Final.
[33] APPRISE, May 2020, "California Energy Savings Assistance Program Non-Energy Benefit Methodology Assessment: Final Work Plan."

Q. What other goals should be adopted?

A. I recommend that goals should be set for the following:

- total program lifecycle energy savings,
- lifecycle energy savings per participating household,
- lifecycle bill reductions per participating household, and
- participation as a percent of total eligible customers.[34]

These goals build on the purposes of the ESA program, as articulated by the Commission in D.19-06-022: (1) to conserve energy; (2) to reduce energy costs for participants; and (3) to improve health, comfort, and safety.[35] Participation as a percent of eligible customers will help to balance savings depth with the reach of the program.

Q. Regarding your four recommended goals, how should targets for these goals be set?

A. Targets for each should vary by utility to take into account the unique characteristics of their service areas: customers, climate, measure saturation, and building stock. However, the methodology for setting targets should be consistent across utilities.

A potential and/or baseline study can serve as the basis for mid- to long-term lifecycle energy savings targets and can also help to inform market development and product/service strategies. Because changes in technology and markets can unlock potential that were not available at the time the study was conducted, the results of the potential study should not be considered a limit on the amount of resources to be attained. The study should be conducted as soon as feasible.

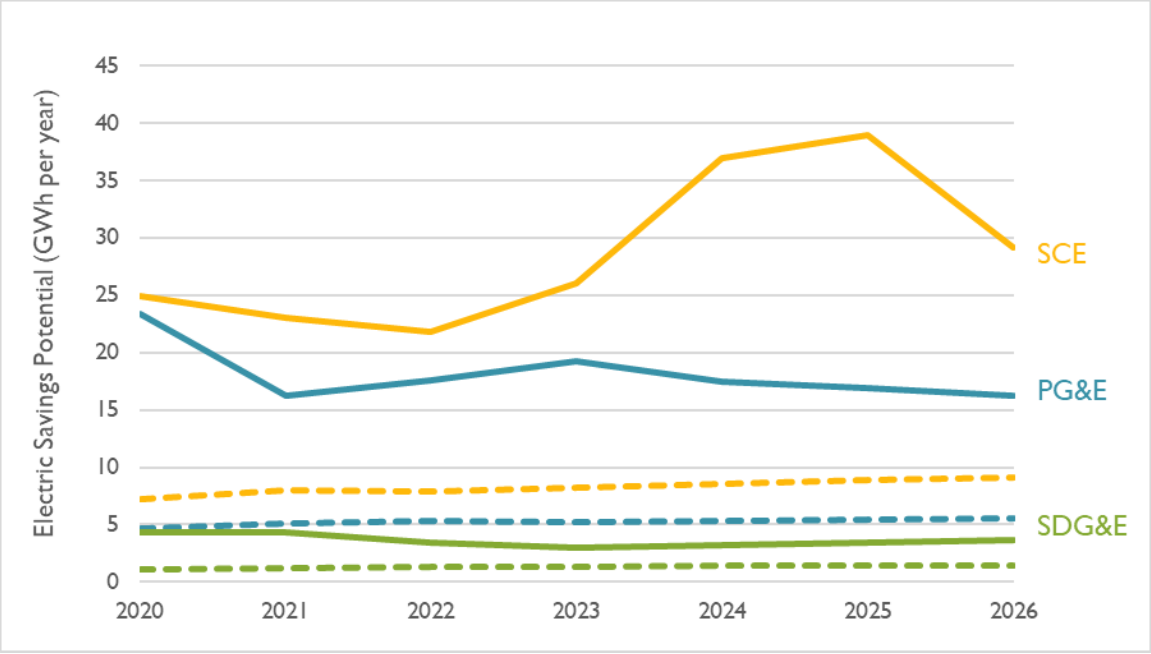
Q. When was the most recent potential study conducted?

A. Navigant Consulting Inc. completed an energy efficiency potential study in 2019.[36] The study included the low-income sector, but the methodology for this

[34] The utilities are already reporting average lifecycle bill savings per home and participants in their annual reports.
[35] D.19-06-022, pp. 2-3.
[36] Navigant Consulting Inc. 2019 Energy Efficiency Potential and Goals Study: Final Public Report.

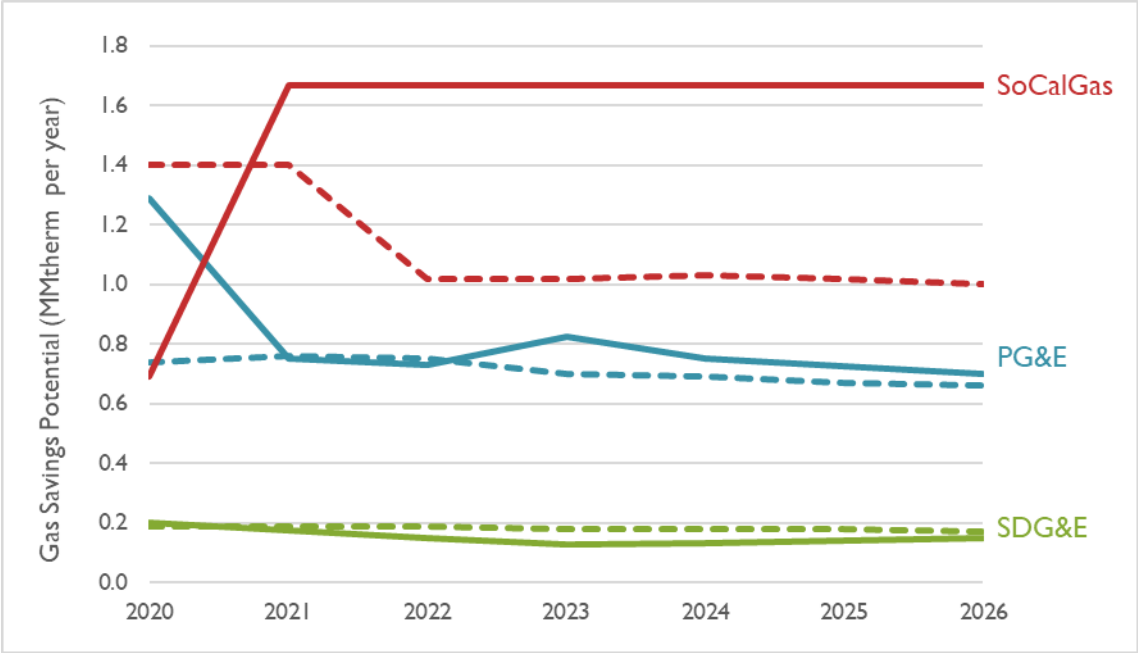
customer segment was flawed. It removed from consideration "measures not likely to be rebated or not historically rebated by ESA," such as cool roofs and clothes dryers.[37] Thus, it did not reflect the directive of the Commission to the utilities that they target deeper savings. As a result, the study found low potential for the sector. The potential study results are shown along with the utilities' proposed ESA savings levels in Figure 13 and Figure 14. In general, the utilities estimate vastly more potential savings for the sector than the Navigant study did.

Figure 13. Electric efficiency potential, study results (dashed lines) and utility proposals (solid lines), by utility, 2020-2026



[37] Id., p. 119.

Figure 14. Gas efficiency potential, study results (dashed lines) and utility proposals (solid lines), by utility, 2020-2026



Q. What should the targets be until a potential study is conducted?

A. Until the results of a potential study are available in the middle of the plan period, the targets could be based on the utilities' current ESA proposals. Once the study is available, the CPUC should launch a formal regulatory process to develop revised targets for energy savings and for other program goals. As an outcome of that process, the utilities would revise their current plans and implement the revised plans for the outer years (e.g., 2024, 2025, and 2026).

Q. What should be the consequences of failing to meet the revised targets?

A. For the first few years, there should not be penalties for failing to achieve targets. However, if utilities fail to perform after targets have been put in place, the CPUC should consider penalties in future program cycles. These penalties could have a deadband around the target, given the uncertainties associated with meeting future targets.

Q. What about other relevant program data?

A. I also recommend that the utilities should track and report other data to allow the utilities and stakeholders to better assess performance, to inform program improvements, and to support state policies. In addition to their currently reported

data,[38] the electric and gas utilities should formally track and report the following metrics:

1. annual savings per eligible low-income customer for each type of housing (single family, multi-family, and mobile home);
2. lifetime savings per eligible low-income customer for each type of housing (single family, multi-family, and mobile home);
3. lifecycle bill reductions per participating household for each type of housing (single family, multi-family, and mobile home);
4. percentage of ESA customers who enroll in other ratepayer-funded clean energy programs that reduce hardship at the household level by decreasing energy consumption, decreasing energy bills, or increasing access to reliable energy in the event of power shutoffs;
5. percentage of customers treated by ESA who request payment assistance in the 12-month period following treatment, as compared to the percentage of the same customers who requested payment assistance in the 12 months prior to treatment;
6. percentage of customers treated by ESA with an active payment plan in the 12-month period following treatment, as compared to the percentage of the same customers with an active payment plan in the 12 months prior to treatment;
7. percentage of customers treated by ESA who are in arrears in the 12-month period following treatment, as compared to the percentage of the same customers who were in arrears in the 12 months prior to treatment;
8. percentage of customers treated by ESA who are sent a disconnection notice in the 12-month period following treatment, as compared to the

[38] Total annual program savings and annual savings per participating household are already reported in the utilities' annual reports. These should continue to be reported.

percentage of the same customers who are sent a disconnection notice in the 12 months prior to treatment;

9. percentage of customers treated by ESA who are disconnected for nonpayment in the 12-month period following treatment, as compared to the percentage of the same customers who are disconnected for nonpayment in the 12 months prior to treatment; and

10. carbon reduction from the ESA program.[39,40]

Q. Should there be targets associated with these metrics?

A. Not at this time. Once the new program structure has been in place for a few years and the utilities have accumulated a good amount of data, it may be appropriate to set targets for these metrics.

<u>The Commission should establish process to set common tiers for the ESA program.</u>

Q. Please compare and contrast the tiers proposed by the IOUs.

A. In Table 7 below, I group each IOU proposal into tiers to provide a comparison. SoCalGas does not specifically group its ESA offerings into tiers, but I allocate its program offerings into tiers in order to include it in this table.

[39] I note that TURN has proposed targets in its comments filed on July 24, 2020 at 12-16. TURN will address targets, as recommended in those comments and in my testimony, in briefing.

[40] As TURN noted in its July 24 comments, "estimating GHG emissions from electric savings (as opposed to gas savings) requires consideration of how changes in California energy demand impacts GHG emissions from across the Western Electric Coordinating Council. Changes in electric generation dispatch can result in lower GHG emissions in California but higher GHG emissions elsewhere in the WECC. Related, it is overly simplistic to assume that a kWh reduced by EE translates into GHG reductions – even within California – because at some times the marginal resource displaced by EE is GHG-free." (p. 15-16) The methodology for estimating electric savings should be addressed at the state level, and all of the utilities should use the same methodology.

Table 7. IOU proposed ESA tiers[41]

	Tier 1 (Basic)	Tier 2 (Enhanced)	Tier 3 (Advanced)
PG&E			
Description	Basic: Provides simple, easy service to reduce barrier of unwillingness to participate	Comprehensive: Offers and services to low-to-moderate energy users to reduce energy	Comprehensive Plus: Provides unique offerings and services to target segments with greatest need
Eligibility	Self-certification	Income verification	Need States: High usage; Medical Baseline; Disconnections; DAC/Tribal/Rural; Wildfire
Measures	Basic measures including lighting and smart strips	Basic measures plus more comprehensive energy measures: weatherization, appliance upgrades, and health/comfort/safety measures	Comprehensive (Tier 2) measures plus measures to help with Need States: Air sealing, Air purifier, portable AC, Minor home repairs, cold storage
SCE			
Description	Standard package with basic measures for customers who already have lower bills and might not benefit from higher-cost efficiency measures	Enhanced package to high energy users	
Eligibility	Prioritizes vulnerable, hard-to-reach, and disadvantaged communities (DACs)	High usage (300%+ baseline one time in last 12 months). Uses load disaggregation data	
Measures	Basic weatherization, LEDs, smart power strips, refrigerators, smart thermostats, HVAC maintenance and filter replacement, and portable AC units for households located in the hot climate zones. Also includes energy education and in-home assessment	Standard package plus the following: pool pumps, dishwashers, HVAC systems, room AC units, evaporative coolers, washing machines, freezers, evaporative cooler maintenance, efficient fan control, attic insulation, and thermostatic shower valves, electric heat pump	
SDG&E			
Description	Basic tier includes “easy-to install” measures that may be installed during an initial visit	Enhanced tier includes measures that require additional investment of time (e.g., secondary visits) and resources	Enhanced tier will also target “Recommended Specialized Segments” (not listed as separate tier in proposal)

[41] Application of Pacific Gas and Electric Company (U 39 M) for Approval of Energy Savings Assistance and California Rates for Energy Programs and Budget for the 2021-2026 Program Years, at 3; Application of Southern California Edison Company (U 338-E) for Approval of Energy Savings Assistance and California Alternative Rates for Energy Programs and Budgets for Program Years 2021-2026, at 7-8; Testimony Supporting Policy Considerations for Southern California Edison Company’s Energy Savings Assistance (ESA) and California Alternative Rates for Energy (CARE) Programs and Budgets for Program Years 2021-2026 at 6; Prepared Direct Testimony of Sara Nordin at SN-ESA-87; Prepared Direct Testimony of Mark Aguirre and Erin Brooks (on behalf of SoCalGas).

	Tier 1 (Basic)	Tier 2 (Enhanced)	Tier 3 (Advanced)
Eligibility	All eligible customers	Homes where measure installation qualifies in order to maximize savings	High usage (CARE with exceeding 400% of baseline 3 or more times in year in high heat zone); Medical Baseline; CARB in DACs; Disconnect; Fire threat
Measures	Lighting, smart strips, smart thermostats, and domestic hot water measures (aerators).	Appliances, water heater repair/replacement, HPWH (electric), furnace repair/replacement, Room AC replacement, duct testing and sealing, EE fan control, whole house fan, pool pump, tub diverter, LED hardwired fixtures, air purifiers, portable AC, solar generators	High usage and disconnect: in-home display Medical baseline: air purifier, portable AC in hot climate zones CARB/DAC: air purifiers, electric HPWH Fire: Solar powered generators
SoCalGas			
Description	Broad outreach and continuous engagement	Comprehensive treatments	High impact measures
Eligibility	Self-certification	Targeted customer segments	Narrowly targeted
Measures	Online education and self-serve measures	New innovative measures and traditional weatherization measures	Furnaces, solar thermal water heating

Q. What conclusions do you draw from the comparison of the IOUs' tiered approach?

A. Each utility proposes to offer a level of basic services to all eligible customers. The IOUs differ more in their second and third tiered offerings. These differences include the definition of a "high-usage" customer, different needs states (e.g., customers identified as hard-to-reach or living in a Disadvantaged Community (DAC)), and allocation of services based on defined customer needs.

Q. Do you have concerns with tiers being different across the IOUs?

A. Yes. There should be consistency across the definition of each tier. While the exact measure offerings may differ between IOUs due to unique characteristics of their service areas, such as customer characteristics, climate, and measure saturation, the tiers should be consistent in terms of eligibility, delivery, and type of offering. A single approach to tiered delivery will facilitate evaluation and review of performance across the IOUs. Further, it will help avoid customer and market confusion across multiple service territories and can make coordination between program administrators simpler. If the state decides to pursue a single

point of contact model, having consistent tiers will make the transition to such a model smoother.

Q. Is a tiered approach consistent with the Commission's direction with respect to targeting deeper savings?

A. Yes, tiers may be helpful for promoting greater depth of savings while at the same time pursuing other program objectives. Tiers could be used to balance the competing objectives of (1) reaching as many households as possible, (2) making a tangible dent in the energy burden or bills of participating households, and (3) minimizing costs.

Q. What tiered approach do you recommend?

A. I recommend that there be two tiers dedicated to achieving savings. Tier 1 should be basic service, including current offerings (e.g., weather sealing, pipe and duct wrap, lighting), and Tier 2 should include more comprehensive treatments (e.g., insulation, heat pumps, cool roofs).

Flexibility to divert resources away from a tier with lower participation or savings than planned to a tier with more demand may be desirable, but the justification for shifting resources should be transparent.

Q. How should customers be put into tiers?

A. All eligible customers, regardless of their current energy usage, should be offered the choice of receiving more comprehensive measures under Tier 2 if determined appropriate during a home energy audit. Customers who do not want an audit, do not want to wait for an audit, or do not have viable opportunities for comprehensive savings should receive Tier 1 treatment.

Q. How should it be determined which specific measures will be included under each tier?

A. The formal regulatory process following release of the potential study should include consideration of the specific measures in each tier. Until that time, the utilities should implement their proposals (including goals and tiers, but excluding pilots), with immediate modifications as discussed in this testimony. Also, TURN

may additionally advocate the adoption of additional near-term changes after considering the proposals of other intervenors.

The Commission should establish parameters for non-resource measures.

Q. Earlier you stated that one of the objectives of the ESA program is to improve health, comfort, and safety. Would investments that do not have energy savings benefits be included in these tiers?

A. Measures that primarily improve health, comfort, and safety and have no or little energy savings—that is, non-resource measures—could be provided for special needs cases. Non-resource measures could be subject to a separate budget with separate goals from resource measures.

Importantly, some measures that the utilities have historically classified as non-resource measures increase energy usage. If, prior to participation in the program, the participant was restricting energy use in a way that had significant negative health, comfort, and safety impact, some increase in participant consumption may be desirable. However, by increasing consumption, these measures could result in increases in energy burden for participants, increasing the risk that participants will lose access to utility services that are essential for health, comfort, and safety. Further, non-resource measures may not produce benefits for ratepayers in general—especially if these measures exacerbate peak energy use or make it more difficult for the state to achieve other objectives such as meeting greenhouse gas emissions reduction targets. For these reasons, non-resource measures should be implemented thoughtfully and carefully, and as feasible, coupled with energy-saving measures to minimize any upward pressure on customer bills. Non-resource measures should either have a cap on the budget or a cap on spending per home, to ensure that the majority of ESA funds go towards measures that reduce energy use and burden.

Q. Do other jurisdictions set caps on health and safety spending?

A. Yes. See Table 8, below, for budget caps in other jurisdictions.

Table 8. Health and safety spending limits for a sample of energy efficiency programs[42]

Program/utility	Spending limit
National Grid (Rhode Island)	$500/home
Pacific Power (Washington)	50% of the installed-repair costs required to make energy efficiency upgrades possible (homeowner assumes remaining cost)
Massachusetts program administrators	$2,500 on an individual home, with an average of $500/home for the whole program
New Jersey Comfort Partners	33% of project cost. For spending over $500 utility permission is required.
Dayton Power and Light (Ohio)	15% of project cost
Puget Sound Energy (Washington)	30% of implementing agency's total budget
Nebraska Energy Office	15–20% of annual program budget is set aside each year.
Federal Weatherization Assistance Program	About 15% of program budget; decided at the discretion of states

Sources: Swedenberg et al. 2014; APPRISE 2014; NASCSP 2015

Q. What form should the cap take in California?

A. The cap should ensure that the majority of funds, e.g., 75 percent, go towards resource measures. The cap should be structured to allow the utility some flexibility, since some homes will need few such investments while others will need a great deal. For example, Massachusetts program administrators have a limit of $2,500 per home on health and safety measures, combined with an overall program spending limit equivalent to $500 per home on average. I recommend that the Commission set a cap immediately, adopting the limits used in Massachusetts. Since the potential study may shed additional light on the need for non-resource measures, the specific form of the cap may be modified, as appropriate, during the formal proceeding following the release of the potential study.

[42] ACEEE, Building Better Energy Efficiency Programs for Low-Income Households, March 2016, Report Number A1601.

The utilities should seek deeper savings than they proposed in their applications.

Q. Did the Commission indicate to the IOUs that there should be a focus on achieving deeper energy savings during the 2021-2026 ESA Program?

A. Yes. In Decision 19-06-022, the Commission provided guidance to the IOUs for consideration and use in preparing the 2021-2026 Low Income Program applications. This guidance included a request that the IOUs present innovative design approaches in their proposed ESA programs taking into consideration the current policy landscape.[43] The Commission also indicated its specific interest in "a focus on deeper energy savings from measures that are intended to reduce energy use."[44]

Q. Why is greater depth of savings desirable?

A. A focus on deeper savings would allow the utilities to reduce energy burden for those who participate. It would also reduce lost opportunities—that is, the utilities would address all viable measures while the utility has access to/interest from the customer.

Q. How do the IOUs intend to achieve deeper energy savings?

A. Each IOU proposes either targeted tiered approach to customer segmentation or new customer outreach and delivery strategies as a means for achieving deeper energy savings. I summarize each IOU's proposal below.

1. *SDG&E:* The company indicates that the greatest opportunity for deeper savings is in changing the delivery strategy. SDG&E will target customers with the greatest potential for savings, using home energy audits and ongoing customer education to increase persistence of energy savings, and by collecting the Property Owner Authorization (POA) up front to improve opportunities to install all feasible measures. SDG&E indicates that the program should deliver deeper energy savings to all eligible customers.[45] Compared to prior ESA plans, SDG&E has increased funding

[43] A.14-11-007 et al., Decision 19-06-022, June 27, 2019 at 5.
[44] D.19-06-022 at 9.
[45] Prepared Direct Testimony of Sara Nordin at SN-ESA-88.

for In-Home Energy Education and Enclosures to reflect its proposed new customized home energy audits and deeper treatment from increased air sealing and other weatherization measures.[46]

2. *SoCalGas*: The company proposes fundamental changes to its program delivery approach in terms of the way it engages with customers to better target deep energy savings. SoCalGas is proposing a data-driven program that will leverage various communications channels to interact with customers and provide them with more control over their energy usage. It also seeks to identify those customers presenting opportunities for deep savings and other prioritization targets.[47]

3. *SCE*: The company proposes a new, tiered service model to achieve deeper savings and promote customer engagement and energy education.[48] The tiered approach will enable SCE to obtain more savings per property by focusing on customers with high usage.[49]

4. *PG&E:* The company proposes to achieve deeper savings by providing deeper measures to targeted households that have a higher propensity to save.[50] PG&E has also prioritized measures that will provide higher energy savings in its 2021-2026 ESA portfolio and has reconsidered criteria that could help provide more high energy savings measures to qualifying customers.[51]

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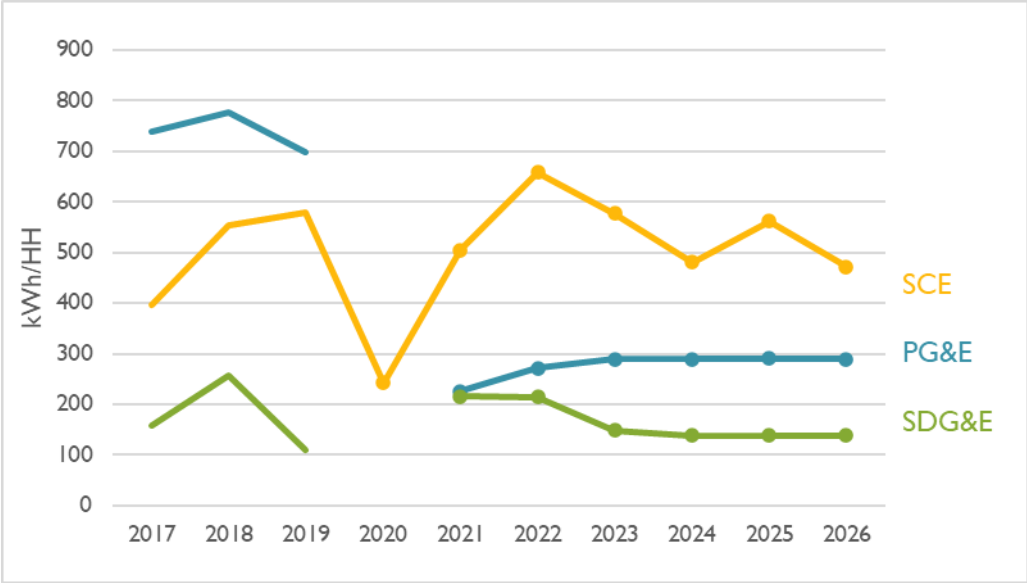
[46] Prepared Direct Testimony of Sara Nordin at SN-ESA-42.
[47] Prepared Testimony of Mark Agguire and Erin Brooks at 45 through 46.
[48] Testimony Supporting Southern California Edison Company's Energy Savings Assistance (ESA) Program and Budget for Program Years 2021-2026, Exhibit SCE-02, at 5.
[49] Testimony Supporting Southern California Edison Company's Energy Savings Assistance (ESA) Program and Budget for Program Years 2021-2026, Exhibit SCE-02, at 9.
[50] Application of Pacific Gas and Electric Company for Approval of Energy Savings Assistance and California Alternate Rates for Energy Programs and Budgets for 2021-2026 Program Years (PG&E A1911003), at 1-17.
[51] PG&E A1911003 at 1-113.

Q. Do the IOU proposals result in deeper energy savings over the current plan?

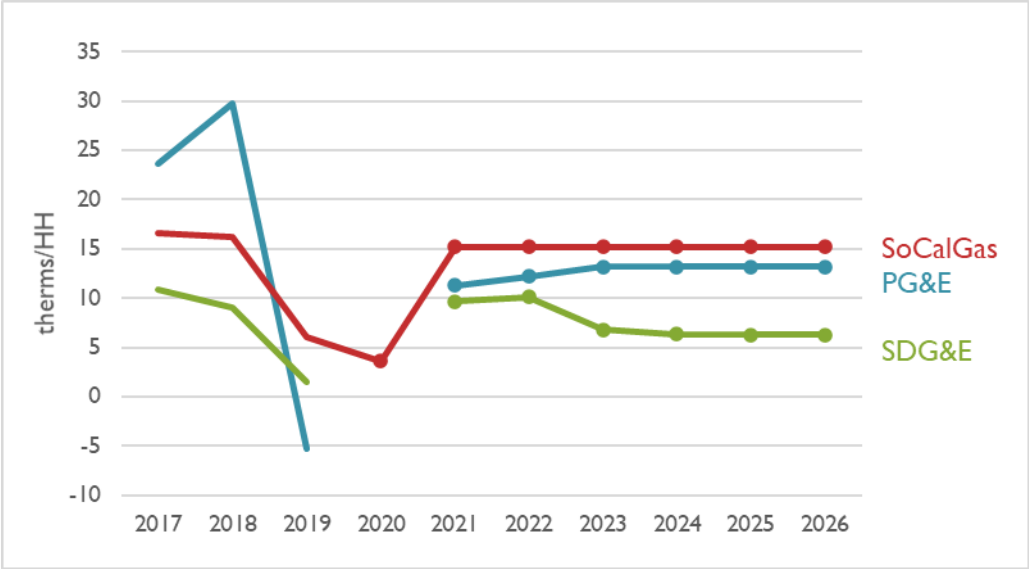
A. No. Figure 15 and Figure 16 below show a decline or stable values from actual savings per household in years 2017, 2018, and 2019 compared to proposed values for 2021-2026.

Figure 15. First-year annual electric savings per household, 2017-2026[52]



[52] For SDG&E, see ESA Table 4 of historical Low-Income Annual Report, Table A-6 of utility filing, and DR TURN SDGE-04 Q12. For PG&E, see ESA Table 4 of historical Low-Income Annual Report, Table A-6 of utility filing, and DR TURN PG&E-01 Q07 Attachment 1. For SCE, see ESA Table 4 of historical Low-Income Annual Report, DR TURN SCE-03 Q11-Q12, and DR TURN SCE-03 Q5. I note that SCE provided a conflicting households-treated value for 2020 in DR TURN SCE-03 Q10.

Figure 16. First-year annual gas savings per household, 2017-2026 [53]



Q. How do the utilities' savings per household compare to achievements in other jurisdictions?

A. The California utilities' historical and planned savings per household are lower than these savings in other top-performing jurisdictions.

Below I recreate a table from an American Council for an Energy Efficiency Economy (ACEEE) report detailing savings per participant (household) for utilities achieving the deepest energy savings (Table 9). In this survey, ACEEE reviewed low-income program performance for 70 electric utilities. In Table 10, I show parallel data for the California utilities for a historical year (2017) and plan year (2021).

[53] For SDG&E, see ESA Table 4 of historical Low-Income Annual Report, Table A-6 of utility filing, and DR TURN SDGE-04 Q12. For PG&E, see ESA Table 4 of historical Low-Income Annual Report, Table A-6 of utility filing, and DR TURN PG&E-01 Q07 Attachment 1. For SoCalGas, see ESA Table 4 of historical Low-Income Annual Report, Table A-6 of utility filing, and DR TURN SCE-03 Q11-Q12.

Table 9. Low-income efficiency programs saving the most electricity per program participant in 2015[54]

Electric Utility	State	Program savings (MWh)	Participants	Savings per participant (kWh)	Deep savings rank
Entergy New Orleans	LA	1,335	220	6,066	1
Oncor	TX	23,044	4,669	4,935	2
CenterPoint Energy	TX	3,843	1,023	3,756	3
AEP TX	TX	6,026	1,745	3,453	4
CPS Energy (San Antonio)	TX	13,759	4,051	3,396	5

Table 10. ESA electric savings, participants, and savings per participant, 2017 and 2021

	2017			2021		
Electric Utility	Program savings (MWh)	Participants	Savings per participant (kWh)	Program savings (MWh)	Participants	Savings per participant (kWh)
PG&E	59,263	80,179	739	16,210	71,846	226
SCE	31,824	80,333	396	23,061	45,632	505
SDG&E	3,447	21,677	159	4,316	20,000	216

The top five utilities identified by ACEEE are well above the historical and planned savings per household for the California IOUs. The California utilities are also below the median savings achieved across the utilities surveyed, which was 1,040 kWh per participant.[55] In contrast, the California utilities achieved savings per participant in the range of 159 kWh (SDG&E) and 739 kWh (PG&E) in 2017 (See Table 10). Under their ESA proposals, they project to achieve savings per participant of 216 kWh (SDG&E) to 505 KWh (SCE) in 2021. Cooling measures are more prevalent in Texas than in California, and as a result one of the potential source of savings that the utilities in Table 9 tapped into is less available in California;[56] however, homes in California are relatively older than homes in

[54] American Council for an Energy-Efficient Economy (ACEEE), *Making a Difference: Strategies for Successful Low-Income Energy Efficiency Programs,* Annie Gilleo, Seth Nowak, and Ariel Drehobl, October 2017, Report Number U1713, Table 3 at pg. 9.

[55] ACEEE, Report Number U1713, Table 3 at pg. 9.

[56] U.S. Energy Information Administration 2009. Household Energy Use in California: A closer look at residential energy consumption. Available at: https://www.eia.gov/consumption/residential/reports/2009/state_briefs/pdf/CA.pdf, and U.S. Energy Information Administration 2009. Household Energy Use in Texas A closer look at

Texas[57] and may have more opportunity for upgrades often applicable to older homes such as weather sealing and efficient appliances.

The proposed savings for natural gas offerings also fall short compared to other jurisdictions. While climate differences make some of the programs in Table 11 less comparable to California, it should be noted that NW Natural in Oregon is achieving significantly higher savings per household than the California IOUs.

Table 11. Low-income energy efficiency programs saving the most natural gas per program participant in 2015[58]

Gas Utility	State	Program savings (MMtherms)	Participants	Savings per participant (therms)	Deep savings rank
Columbia Gas of Ohio (Nisource)	OH	0.66	2,085	316	1
Oklahoma Natural Gas Co.	OK	0.09	311	289	2
NW Natural	OR	0.05	231	216	3
We Energies/Focus on Energy	WI	0.78	3,748	208	4
CenterPoint Energy	MN	0.37	1,799	205	5

Table 12. ESA gas savings, participants, and savings per participant, 2017 and 2021

	2017			2021		
Gas Utility	Program savings (MMtherms)	Particip-ants	Savings per participant (therms)	Program savings (MMtherms)	Particip-ants	Savings per participant (therms)
PG&E	1.65	69,943	24	0.78	66,502	12
SoCalGas	1.55	93,790	17	1.67	110,000	15
SDG&E	0.21	19,133	11	0.18	18,269	10

Q. What are the key characteristics of low-income programs achieving deep energy savings?

A. ACEEE found several common characteristics amongst the top-performing programs. These include the following:

residential energy consumption. Available at https://www.eia.gov/consumption/residential/reports/2009/state_briefs/pdf/TX.pdf

[57] Ibid.
[58] ACEEE, Report Number U1713, Table 4 at pg. 9.

- Statewide coordination of programs;
- Single point of contact for customers and for contractors;
- Market segmentation and targeted program offerings;
- Emphasis on quality control and training;
- Leveraging of diverse funding sources to focus on comprehensive dual-fuel or fuel-neutral upgrades including health and safety measures;
- Accommodation of health and safety measures through program design and relaxed cost-effectiveness requirements;
- Prioritizing measures that achieve deep savings; and,
- Formation of partnerships to better market and deliver services to hard-to-reach customers such as partnerships with food banks, health organizations, and nonprofits like Habitat for Humanity.[59]

Q. To what extent are the California utilities utilizing these strategies?

A. The utilities all accommodate health and safety measures currently and in their plans.[60] To varying degrees, they have also pursued partnerships to better market and deliver services to hard-to-reach customers. However, there is no single point of contact for the ESA offerings for single-family and mobile home customers, and little statewide coordination of programs.

[59] ACEEE, Report Number U1713, p. 14-16.

[60] PG&E Energy Savings Assistance (ESA), California Alternate Rates for Energy (CARE), and Family Electric Rate Assistance (FERA) Programs and Budgets Application for the 2021-2026 Program Years (PYs) Prepared Testimony, Attachment 1, p. 1-34; Testimony Supporting Southern California Edison Company's Energy Savings Assistance (ESA) Program and Budget for Program Years 2021-2026, Vol. 2, p. 29; Prepared Direct Testimony of Sara Nordin on behalf of San Diego Gas and Electric Company at SN-ESA-94; Application of Southern California Gas Company (U904g) for Approval of Its Energy Savings Assistance and California Alternate Rates for Energy Programs and Budgets for Program Years 2021-2026, p. 18.

Q. What steps can be taken to improve performance related to deeper savings?

A. While the IOU proposals incorporate several of these characteristics, there are areas that could be improved. These include the following:

- Focus on deep savings rather than limit projects to direct-install measures
- Focus on whole home comprehensive retrofits
- Increase coordination with community assistance programs
- Establish a single point of contact and a statewide application system

Q. How should the IOUs balance the need for deeper savings with broad participation?

A. While deeper savings should be prioritized, it is important to ensure that all customers have access to ESA programs over time and are able to realize energy savings. The goal of deeper savings must be balanced with broad customer participation. To understand how the newly designed ESA programs are balancing these two priorities, I recommend a tracking metric that measures savings per eligible low-income customer. This should be tracked for both annual and lifetime savings. Tracking savings across all ESA qualified customers, even those that do not participate, will enable the IOUs to understand the level of savings occurring across all low-income customers. The IOUs should be able to calculate this metric for historical ESA program performance to develop a baseline to help understand how the new program proposal impacts not only depth of savings, but also number of customers served.

The Commission should require the utilities to immediately and more specifically target and collect data on the mobile home segment.

Q. How do the utilities propose to address the needs of customers living in mobile homes?

A. These customers are able to participate in the ESA program, but the utilities are generally not offering measures targeted to this population and have not considered making offerings to address the needs of this segment.[61]

Further, the utilities generally do not know the characteristics of the mobile home building stock in their territories.[62]

Q. Why is it important to understand characteristics of the mobile home building stock?

A. Certain characteristics of mobile homes—also frequently called manufactured homes—have implications for how energy efficient they are. For example, manufactured homes built prior to 1976, when the U.S. Department of Housing and Urban Development Code took effect, are much less energy efficient than ones built after that year.

Q. Is there a reason to be concerned about the mobile home segment?

A. Yes. In rural areas of the Pacific region of the United States, residents of manufactured housing experience higher energy burdens than those living in other types of housing do. According to a study by ACEEE, median energy burdens in the Pacific region for those living in manufactured homes are 5.7 percent, relative to 3.2 percent for single family residents and 4.3 percent for large multi-family residents.[63] While manufactured homes typically consume less total energy—35 percent less—than site-built homes, residents generally spend 70 percent more on energy per square foot of floor space.[64]

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[61] LowIncomeProgramPY21-26_DR_TURN_001-Q21(A) (PG&E); TURN-SCE-01-004(A); SDGE Response to TURN - SDGE-01-013(A); TURN-SOCALGAS-01-005(A).
[62] LowIncomeProgramPY21-26_DR_TURN_001-Q21(C) (PG&E); TURN-SCE-01-004(C); SDGE Response to TURN - SDGE-01-013(C); TURN-SOCALGAS-01-005(C).
[63] Ross, Lauren, Ariel Drehobl, and Brian Stickles 2018.The High Cost of Energy in Rural America: Household Energy Burdens and Opportunities for Energy Efficiency. P. 20.
[64] Id., p. 4.

Q. What measures are effective for older mobile homes?

A. The National Renewable Energy Laboratory found that the following measures reduce heating fuel usage of pre-1976 manufactured homes by 31 percent on average:

- belly insulation
- belly wrap
- insulated skirting
- roof insulation or a roof cap
- energy-efficient windows and doors
- general repairs (caulking, ducts, etc.)
- wall insulation[65]

Q. Do the utilities offer these measures through the ESA program?

A. The utilities are offering few of these measures. SCE does not offer any of them, with the exception of general repairs and air sealing.[66] None of the utilities offer belly wraps.[67] Furthermore, none of them have developed offerings specifically for residents of mobile homes.[68]

Q. How should utilities address the needs of mobile homes?

A. In many cases, manufactured homes present challenges to implementing efficiency upgrades, and improving their energy efficiency may require a different approach. ACEEE recommends innovative programs to address the challenges with serving this market segment.[69] Utilities should revise their plans to offer

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[65] U.S. Department of Energy. "Energy-Efficient Manufactured Homes." https://www.energy.gov/energysaver/types-homes/energy-efficient-manufactured-homes..

[66] TURN-SCE-01-004B.

[67] LowIncomeProgramPY21-26_DR_TURN_001-Q21(B) (PG&E); TURN-SCE-01-004(B); SDGE Response to TURN - SDGE-01-013(B); TURN-SOCALGAS-01-005(B).

[68] LowIncomeProgramPY21-26_DR_TURN_001-Q21(A) (PG&E); TURN-SCE-01-004(A); SDGE Response to TURN - SDGE-01-013(A); TURN-SOCALGAS-01-005(A).

[69] Ross et al. 2018, p. 4.

measures specific to this segment, such as belly wraps, and consider whether changes in program delivery would better serve these customers.

Q. Do you have other recommendations specific to the mobile home market segment?

A. Yes. The PUC should require utilities to collect data to better understand needs of mobile home residents. This includes understanding the size of the ESA-eligible population who lives in mobile homes, the characteristics of those homes, and what efficiency improvements have been made.

The Commission should develop and adopt standards for evaluating pilots, apply those standards to the utility pilot proposals, and specify a process for incorporating pilot results into the later part of this program cycle.

Q. What pilots are the utilities proposing associated with the ESA program?

A. In its initial application, PG&E proposed two pilots: the Virtual Energy Coach pilot and the Long-Term CARE Customer pilot. The Virtual Energy Coach pilot would use a controlled experiment design to evaluate "the impact on a customer's actions, such as changes in energy savings behavior, residential rate selection and participation in programs when personal energy usage information and recommendations are combined with frequent communications and interactions." PG&E initially proposed the Long-Term CARE Customer pilot, designed to "gain insights into barriers and motivations regarding ESA enrollment with long-tenured CARE customers."[70] PG&E no longer intends to pursue the Long-Term CARE Customer pilot proposal.[71]

SCE also proposed two pilots: the Building Electrification (BE) pilot and the BE New Construction pilot. If approved, the BE Pilot would "offer clean energy alternatives to combustion-based appliances, such as space and water heat pumps, induction cooktops and electric clothes dryers" in order to bring electrification to low-income customers and support California's ambitious Green House Gas

[70] Pilots & Studies Workshop as a part of the ESA 2021-2026 Applications, April 1, 2020.
[71] DR TURN-PG&E-02 Q7(D).

(GHG) reduction goals. At a cost of $12,000 to $15,000 per participant, roughly 3,500 homes would receive retrofits under the BE pilot.[72] The BE New Construction pilot would offer financial incentives and technical design assistance to affordable housing development teams to help affordable housing developers overcome barriers to all-electric new construction.[73]

Q. What standards apply to proposals for new pilots?

A. It is my understanding that there are no specific, formal standards for elements of a pilot proposal or guiding review of that proposal.

Q. What purpose do standards serve?

A. Well-designed standards will help facilitate Commission and stakeholder review of proposed pilots. Further, they will set expectations for the purpose of pilots and the criteria by which their performance will be assessed. I recommend that the Commission adopt minimum elements for pilot design, implementation, and reporting.

Q. What elements should the standards address?

A. Pilot proposals should provide clear documentation of their goals, as well as how progress toward these goals will be measured. A pilot study design should clearly indicate the following topics:

- Lessons already learned from previous research and pilots, and how these past and potentially ongoing learnings will relate to the currently proposed pilot.
- Gaps in understanding that would be filled by the proposed pilot, and the logic for the specific pilot study design proposed.
- Alternative approaches that could be used to fill in these knowledge gaps, and why the proposed approach is better than alternatives.

[72] Ibid.
[73] Ibid.

- Whether the utility intends to deploy the pilot at a larger scale, and if so, how the metrics and data collected will enable the utility to decide whether to recommend a wider roll-out.

- A plan for evaluating the pilot, including a description of the metrics that will be used to evaluate the impacts and measure the success of the pilot.

- Whether there are opportunities for learning on other, related issues.

Q. Have the utilities provided this information?

A. To some extent. However, in some cases, important aspects of the pilot designs are unaddressed or are vague. For example, for its proposed New Construction Beneficial Electrification pilot, SCE does not indicate alternative approaches that might be effective in addressing the purpose of the proposed pilot, such as changes in building codes.[74] Further, SCE has not indicated the specific methodology for choosing participants, e.g. whether a solicitation will be issued, and what the criteria are for selecting among applicants.[75] Given the absence of these details, I am concerned that the pilot funds will not be used effectively.

Q. What do you recommend?

A. The Commission should require the utilities to immediately supplement their pilot proposals with this information before approving them. Further, the process to set tiers should also consider whether any feedback from any pilots authorized in this proceeding and in past or related proceedings (e.g., the San Joaquin Valley Pilot Programs authorized in R.15-03-010 and Aliso Canyon ESA "intensification" activities ordered in D.16-04-040) can be incorporated into the program for the latter part of the program cycle.[76] The utilities should provide an assessment of the results of the pilots for consideration for more broad deployment in the same service area and in other service areas. This would require the utilities to report on

[74] Many cities in California—32 to date—have adopted building codes to reduce their reliance on gas. (Sierra Club, *California's Cities Lead the Way to a Gas-Free Future*, July 24, 2020. Available at: https://www.sierraclub.org/articles/2020/07/californias-cities-lead-way-gas-free-future.)

[75] TURN-SCE-01-01C.

[76] TURN asked SCE and SoCalGas for outcomes and lessons learned from the Aliso Canyon ESA targeted "intensification" activities ordered in D.16-04-040 in DR TURN-SoCalGas-03, Q16 and TURN-SCE-03, Q15. Their experiences may be useful in planning for deeper energy savings from ESA in the future.

the interim results of their pilots simultaneously with the release of the results of the potential study described above.

In future program cycles, the utilities should be required to provide a thorough study plan, including the data elements noted, for any pilot proposal.

The Commission should provide immediate guidance to the utilities on repair or replacement of long-lived fossil-fuel burning measures and should seek a framework to balance the risk of locking low-income customers into gas with cost increases to participants for electrification measures.

Q. Please summarize California's decarbonization goals.

A. California has made strong commitments to decarbonization. The state has economy-wide greenhouse gas reduction targets of 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050.[77] California also has a goal of achieving carbon neutrality by 2045.[78]

In the building sector, Assembly Bill 3232 requires the State Energy Resources Conservation and Development Commission, in consultation with the PUC, the State Air Resources Board, and the Independent System Operator to assess, by January 1, 2021, the potential for the state to reduce the emissions of greenhouse gases in the state's residential and commercial building stock by at least 40 percent below 1990 levels by January 1, 2030.[79] In addition, Senate Bill 1477 directs the Commission in consultation with the California Energy Commission, to develop two programs (BUILD and TECH) aimed at reducing greenhouse gas emissions associated with buildings.[80] In response to these pieces of legislation, the Commission instituted a new rulemaking on building decarbonization (R.19-

[77] State of California. Senate Bill No. 32, California Global Warming Solutions of 2006, 2016, and State of California - California Gov. Arnold Schwarzenegger, Executive Order S-3-05, 2005.
[78] State of California - Executive Department, Executive Order B-55-18 To Achieve Carbon Neutrality, 2018.
[79] Assembly Bill 3232 (Friedman, Stats. 2018, Ch. 373).
[80] Senate Bill 1477 (Stern, Stats. 2018, Chapter 378).

01-011). Further, 32 cities have adopted building codes to reduce their reliance on gas.[81]

Specific to the electricity sector, California has a renewable portfolio standard (RPS) that requires 50 percent of the state's electricity to come from renewable energy by 2025, 60 percent by 2030, and 100 percent from carbon-free resources by 2045.[82]

Q. How will these goals impact the natural gas sector?

A. For California to achieve its decarbonization goals, natural gas usage will need to decrease substantially. The Commission recognizes this fact, indicating that "Over the next 25 years, state and municipal laws concerning greenhouse gas emissions will result in the replacement of gas-fueled technologies and, in turn, reduce the demand for natural gas."[83]

A decline in natural gas usage is expected in the building sector to meet the state's decarbonization goals. Energy efficiency and electrification will play a key role in achieving those goals. Recent studies have indicated that electrification of buildings is likely to be the least-cost means of decarbonizing the building sector.[84]

Further, the RPS will lead to a reduction in natural gas-fired generation. As the Commission notes, "as retail sellers procure less electricity from gas-fired generators, which comprise approximately 30 percent of the demand for natural gas in California, the gas throughput assigned to these customers will also decline, thereby allocating more costs to remaining customers, such as residential, small commercial, and industrial ratepayers."[85]

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[81] Sierra Club, *California's Cities Lead the Way to a Gas-Free Future*, July 24, 2020. Available at: https://www.sierraclub.org/articles/2020/07/californias-cities-lead-way-gas-free-future.
[82] State of California. Senate Bill No. 100 - California Renewables Portfolio Standard Program, 2018.
[83] R.20-01-007 ALJ/CTP/jt2, Order Instituting Rulemaking to Establish Policies, Processes, and Rules to Ensure Safe and Reliable Gas Systems in Californian and Perform Long-Term Gas Planning, at 2.
[84] Energy and Environmental Economics, Inc, *The Challenge of Retail Gas in California's Low-Carbon Future* (CEC-500-2019-055-F), prepared for the California Energy Commission, April 2020.
[85] R.20-01-007 ALJ/CTP/jt2, Order Instituting Rulemaking to Establish Policies, Processes, and Rules to Ensure Safe and Reliable Gas Systems in Californian and Perform Long-Term Gas Planning, at 10.

Q. What natural gas measures do the utilities propose in their ESA filings?

A. SoCalGas, PG&E, and SDG&E all propose offering incentives for natural gas measures. These include measures such as furnace replacement, furnace repair, water heater replacement, and water heater repair.

Q. How long do these measures typically last?

A. According to the California electronic Technical Reference Manual (eTRM), a clothes washer has an 11-year measure life, a water heater is 10 to 20 years depending on type, and a furnace is 20 years.[86]

Q. How much of the proposed savings are associated with these long-lived natural gas measures?

A. As shown in Table 13, PG&E and SDG&E both plan on substantial negative savings, that is, increased consumption, associated with furnace repair and replacement.[87] A substantial portion of SoCalGas' planned gas savings are associated with long-lived equipment. Just one measure—furnaces—accounts for about 17 percent of SoCalGas's ESA savings.

Table 13. Planned gas savings (therms) from furnace measures by utility, 2021-2026[88]

		2021	2022	2023	2024	2025	2026
PG&E	Furnace Repair/Replacement	(12,476)	(17,945)	(18,555)	(16,896)	(16,261)	(15,677)
SDG&E	Furnace Repair/Replacement	(5,160)	(3,960)	(3,420)	(3,780)	(3,990)	(4,410)
SDG&E	High Efficiency Furnace, Residential, AFUE 92%-VSM, MFm	0	678	2,313	2,692	2,911	3,130
SDG&E	High Efficiency Furnace, Residential, AFUE 97%-VSM, MFm	0	595	2,012	2,352	2,550	2,720
SoCalGas	HE Wall Furnace Early Replace	130,003	130,003	130,003	130,003	130,003	130,003
SoCalGas	HE Wall Furnace On Burnout	153,171	153,171	153,171	153,171	153,171	153,171

[86] California Technical Forum. California Electronic Technical Reference Manual. http://www.caltf.org/statewide-measure-list.

[87] Negative savings may reflect the increase in usage that occurs when a furnace that was previously not operational is fixed or replaced.

[88] Utility filings, Table A-4

Q. What are the consequences of continuing to invest in natural gas measures for low-income customers?

A. The consequences are that low-income customers could eventually see increased natural gas rates leading to higher energy burdens—contrary to the aims of the ESA program. Further, California would almost certainly see higher costs to achieve its decarbonization goals.

Q. Please explain how low-income customers could experience gas rate increases.

A. When a utility incentivizes the installation of a new natural gas appliance or heating, venting, and air conditioning (HVAC) equipment at a property, the customer residing in that building is essentially locked into using natural gas for the next 10 to 20 years.

Having low-income customers locked into natural gas creates significant risk when one considers the anticipated decline in natural gas usage over the next 25 years as described above. If natural gas use declines as projected, the fixed costs needed to maintain and operate the gas system will end up being spread out over fewer units of gas sales, which in turn will increase costs for customers that remain on the gas system.

Low-income customers face significant financial barriers and would not have the upfront capital needed to convert from natural gas to electric home heating and cooling systems. Although low-income populations are generally not a static group, it is not realistic to expect that customers who are low-income today will have the time, knowledge, and financial resources to transition to electric appliances in a few years. Without financial assistance from the ESA program or other offerings, low-income customers will likely remain on the natural gas system the longest and could be faced with increased gas distribution rates that will be needed to cover the utility's revenue requirements. This concern was raised in the study prepared for the California Energy Commission, which noted that "as residential customers exit the gas system, those costs are spread over a smaller quantity of throughput and number of customers, leading to increased

rates for remaining customers. Absent a policy intervention, low-income customers who are less able to electrify may face a disproportionate share of gas system costs."[89]

Q. Please explain how continued investment in natural gas measures will increase the overall cost of achieving the state's decarbonization goals.

A. Converting a customer from natural gas to electric heating and cooling near the end of the gas equipment's useful life is far more cost-effective compared to converting that customer when their gas equipment is relatively new. If the ESA programs continue to invest in long-lasting natural gas measures, this may lead to a scenario where early retirement conversion is needed in order for California to achieve its decarbonization goals. This will cost more than if a customer's equipment was converted at the end of its useful life. In essence, California ratepayers could be paying for the same end-use twice: once with the initial in-kind replacement, and again to switch to electric equipment before the end of the in-kind unit's useful life.

Q. What do the utilities propose for electrification?

A. I summarize each utility's proposed electrification offerings below.

1. *PG&E*: The company did not provide any indication of new offerings related to electrification. However, PG&E does indicate it is implementing the San Joaquin Valley Pilot Program (D.18-12-015) that is replacing propane and wood burning appliances with all-electric appliances in 12 Disadvantaged Communities in the San Joaquin Valley. PG&E plans to provide electric appliances to approximately 1,800 participants across eight communities through this pilot. Homes treated through this pilot program will also be eligible for weatherization and all qualifying measures through the ESA Program.[90]

[89] Energy and Environmental Economics, Inc, The Challenge of Retail Gas in California's Low-Carbon Future (CEC-500-2019-055-F), prepared for the California Energy Commission, April 2020, at 5.
[90] A1911003, Prepared Testimony of Pacific Gas and Electric Company at I-94.

2. *SDG&E*: The company indicates its decarbonization efforts will be focused on replacement of water heating for the TECH program. However, it plans to wait until program years five and six in order to give the TECH program time to launch and implement its program strategies to identify appropriate areas for leveraging.[91] SDG&E indicates it is taking a measured approach by first focusing on replacement of natural gas water heaters for a limited number of customers in neighborhoods that have been identified by the California Air Resources Board (CARB) Community Air Protection Program.[92]

3. *SCE*: The company is proposing two pilots that will incorporate high-efficiency electrification measures into customer homes. One pilot will target high-energy users, particularly those customers residing in DACs, and focus on retrofitting existing buildings with a variety of electrification technologies. A second pilot proposes to encourage building decarbonization by providing incentives to low-income housing developers to encourage the incorporation of electrification into the design and construction of affordable housing.[93]

4. *SoCalGas*: No offerings are proposed.

Q. What are your recommendations?

A. The Commission should direct the utilities to prioritize efficient electrification measures over natural gas efficiency measures, particularly for long-lived measures. The recent analysis prepared for the California Energy Commission found that "electrification of buildings, and particularly the use of electric heat pumps for space and water heating, leads to lower energy bills for customers over

[91] Prepared Direct Testimony of Sara Nordin on behalf of San Diego Gas and Electric Company at SN-ESA-75-76.
[92] Id. at SN-ESA-51.
[93] Application of Southern California Edison Company for Approval of its Energy Savings Assistance and California Alternate Rates for Energy Programs and Budgets for Program Years 2021-2026, at pgs. 5-6.

the long term than the use of renewable natural gas. Likewise, building electrification lowers the total societal cost of meeting California's long-term climate goals."[94] Achieving the benefits of building decarbonization—such as improved public health, improved affordability, and meeting decarbonization goals—will require decades to bring about. The Commission and the utilities should set this transition into motion now in order to transform the market and avoid unnecessary gas system investments.[95]

Specifically, the Commission should provide clear criteria for using ESA funds to support the repair and replacement of natural gas furnaces. Some of the utilities consider these to be non-resource measures because they tend to increase gas use. I recommend that, instead of repairing or replacing a broken furnace that may last for another 20 years, an air-source heat pump be installed. Consistent with the state's carbon goal, the Commission should set a specific year, e.g., 2030, as a benchmark for when ESA should be significantly transitioned away from measures that prolong natural gas end-uses. For example, a gas furnace can be repaired in 2021 if that leads to nine more years of operation, while in 2024, a gas furnace should only be repaired if that is expected to lead to no more than six more years of operation.

The programmatic ramifications of such a policy for a gas-only utility would be different than for a dual-fuel utility. A gas-only utility would need to coordinate more closely with an electric utility to provide furnace services through ESA, whereas a dual-fuel utility could provide gas or electric measures, as feasible and appropriate under the circumstances. These impacts should be considered in the future when the Commission sets ESA energy savings goals for gas and electric utilities, similar to the Commission's consideration in D.19-08-009 of the impact of gas-to-electric fuel substitution energy efficiency measures on the potential

[94] Energy and Environmental Economics, Inc, The Challenge of Retail Gas in California's Low-Carbon Future (CEC-500-2019-055-F), prepared for the California Energy Commission, April 2020, at 4.
[95] Hopkins, Asa, Kenji Takahashi, Devi Glick, and Melissa White 2018. Decarbonization of Heating Energy Use in California Buildings: Technology, Markets, Impacts, and Policy Solutions.

energy savings a gas utility can be expected to capture through its energy efficiency portfolio.

Q. Will electrification increase energy bills to low-income customers?

A. While heating with electricity is currently more expensive than with gas, there are ways to protect customers against any potential negative bill impacts.

I recommend that participants who receive electrification measures can additionally be encouraged to enroll in all other programs providing bill reductions for which they might be eligible, including the Medical Baseline program and the additional programs that TURN recommended for prioritized coordination with ESA in its July 24, 2020 Comments.[96] Also, to the extent that they are not currently doing so, the utilities should auto-enroll ESA participants in the CARE program if they are not already enrolled.[97]

5. THE ENERGY DIVISION PROPOSAL

Overview

Q. Please describe the Energy Division (ED) proposal.

A. The ED proposal sets forth three new goals for the ESA program, as well as a number of CPUC priorities impacted by the proposal. The Proposal also recommends significant modifications to current ESA program design, including a three-tier approach to serving eligible customers.

Q. What goals does the ED propose?

A. The ED proposal sets forth the following three new goals for ESA:

- Goal #1: Based on resource measures, average treated-household energy savings (e.g. kWh/household and therms/household) across the ESA program increases at least 5 percent year over year for each IOU

[96] TURN Comments on the Energy Division Staff Proposal and Utility Applications, filed 7/24/20, at 23-27.

[97] See SDG&E Testimony of Sara Nordin at SN-ESA-75. SDG&E enrolled more than 4,800 customers in CARE through a check-box on the ESA application from 2017 through August 2019.

service territory. This is defined as, first, setting a baseline value of energy savings per household, and second, requiring an increase each year compared to the previous year's average household energy savings value on a prospective basis.

- Goal #2: Maximize ESA household participation and coordination in other clean energy programs that will reduce hardship at the household level, either by decreasing energy consumption or increasing health, comfort, and safety based on preset metrics. The goal will include identifying other clean energy programs besides ESA for which a household is eligible and providing support to the household to facilitate its application.

- Goal #3: In conjunction with increasing coordination among programs and meeting Goal #2, the utilities will build a universal low-income customer application system that allows for multiple registration pathways (online, in-person, or by phone, text, or email by owner, building manager/owner on behalf of tenants, or by tenants) and capabilities for sharing application information and related energy usage information with program partners, such as other clean energy program administrators and implementers. This system allows for a customer to complete one application for multiple programs and allow co-funding and cross-coordination among various programs.[98]

Q. How does the ED proposal contemplate that the first goal would be achieved?

A. The ED proposal includes a tiered system for delivery of energy efficiency services.

- Tier 1 is associated with the lowest level of savings. Tier 1 represents a continuation of basic treatments—similar to the mix of ESA measures that the

[98] Energy Division Staff Proposal (Final) June 2020. Energy Savings Assistance Program Goals for Years 2021-2026, p. 4.

utilities proposed in their applications—and would be available to all participants.

- Tier 2 has higher savings levels (annual energy usage reduction of 5 to 15 percent). Tier 2 measures include Tier 1 measures not already installed and measures with deeper savings. This includes, but is not limited to, energy management technology, common area measures like central boilers, and HVAC and hot water systems with control technologies and heat pump technology.

- Tier 3 has the highest savings (15 to 50 percent reduction in annual energy usage). Tier 3 measures include Tier 1 and 2 measures not already installed and advanced treatments such as windows and doors; advanced insulation, including walls, floor/slab, roof, and attic; cool roofs; and improvement or replacement of duct work, water pipes, and waste heat recovery.[99]

Q. How would you characterize the ED proposal?

A. The ED proposal offers a vision of a statewide, results-driven ESA program.

Q. Have you compared the ED proposal to the utilities' proposals?

A. Yes, but only at a high level. As the utilities noted in their responses to the ALJ questions, the ED proposal lacks key information that would allow a thorough analysis. For example, the specific measures to be included have yet to be defined. Also, the ED proposal does not propose overall budget levels or savings targets. Questions surrounding the methodology for measuring program performance and what consequences the utilities will face if they fail to meet expectations have not been settled. Thus, the feasibility, cost, and savings of this proposal are not clear.

Nonetheless, some key differences are apparent: the utilities' ESA proposals lack the statewide goal consistency that the ED proposal emphasizes. Also, the ED

[99] Energy Division Staff Proposal (Final) June 2020. Energy Savings Assistance Program Goals for Years 2021-2026, p. 10-11.

proposal focuses on deeper savings and coordination with other programs, which the utilities' proposals do not uniformly seek.

Conclusions and Recommendations

Q. What do you find with respect to the ED proposal?

A. The ED proposal recommends many elements that would help improve the performance of the ESA program. This proposal deserves further analysis.

Q. What do you recommend in this regard?

A. The scope of work for the potential study referenced in the body of this testimony should explicitly include the measures and approach called for in the ED proposal. As suggested above, once the study is available and during the current program cycle, the CPUC should launch a formal regulatory process to develop revised targets for energy savings and for other goals. That process would require the utilities to revise their current plans and implement the revised plans for the outer years. These revised plans should incorporate the elements of the ED proposal that are found to be achievable and cost-effective (when additional NEBs are taken into account) by the potential study.

In addition, the utilities should be directed to jointly develop and submit recommendations for a universal application system. The recommendations should be based on an assessment of the feasibility, benefits, and costs of implementing a universal application system, considering the current and planned functionality of their data management systems and the costs to upgrade these systems, if needed. The joint filing could be submitted independently of the current program cycle, but the CPUC should immediately set a timeline for the utilities' submission, e.g. in 2022. Once the utilities make this joint submission, a working group should be convened to discuss and vet the utilities' recommendations and to submit a report with its own recommendations to the CPUC for its consideration and approval. In any event, the utilities' applications for the next ESA program cycle should detail how they are working toward any CPUC-adopted recommendations of the working group.

APPENDIX A: QUALIFICATIONS

Q. Please state your name, title, and employer.

A. My name is Alice Napoleon. I am a Senior Associate at Synapse Energy Economics ("Synapse"), located at 485 Massachusetts Avenue, Cambridge, MA 02139.

Q. Please describe Synapse Energy Economics.

A. Synapse is a research and consulting firm specializing in electricity and gas industry regulation, planning, and analysis. Our work covers a range of issues including integrated resource planning; economic and technical assessments of energy resources; electricity market modeling and assessment; energy efficiency policies and programs; renewable resource technologies and policies; and climate change strategies. Synapse works for a wide range of clients including attorneys general, offices of consumer advocates, public utility commissions, environmental groups, and federal clients such as the U.S. Environmental Protection Agency and the Department of Justice. Synapse has a professional staff of 30 with extensive experience in the electricity industry.

Q. Please summarize your professional and educational experience.

A. Since joining Synapse in 2005, I have provided economic and policy analysis of electric systems and emissions regulations, with a focus on energy efficiency program design, administration, cost recovery, and benefit-cost analysis. In my 15 years at Synapse Energy Economics, I co-authored dozens of reports and led major projects for the U.S. Environmental Protection Agency on quantifying the benefits of clean energy resources and for the U.S. Department of Energy (DOE) on strategic energy management. I presented testimony before public utility commissions in New York, Nova Scotia, and South Carolina, and assisted with testimony development in California, Delaware, Illinois, Kentucky, Missouri, and New Jersey. In New Jersey and Nova Scotia, I have also provided ongoing expert advice on a range of issues including low-income energy efficiency programs, benefit-cost analysis, incentive setting methodologies, load forecasting, locational

targeting, and grid modernization. In Colorado, Maryland, and South Carolina, I facilitated and provided expert analysis on program costs and benefits for demand-side resource policy working groups.

Before joining Synapse, I worked at Resource Insight, Inc., where I supported investigations of electric, gas, steam, and water resource issues, primarily in the context of reviews by state utility regulatory commissions.

I hold a Master's in Public Administration from the University of Massachusetts at Amherst and a Bachelor's in Economics from Rutgers University. My resume is attached.

Q. Have you previously testified before the California Public Utilities Commission?

A. No.

Q. On whose behalf are you providing evidence in this case?

A. I am providing evidence on behalf of The Utility Reform Network.

Alice Napoleon, Senior Associate

Synapse Energy Economics I 485 Massachusetts Avenue, Suite 3 I Cambridge, MA 02139 I 617-453-7041
anapoleon@synapse-energy.com

PROFESSIONAL EXPERIENCE

Synapse Energy Economics, Inc., Cambridge, MA. *Senior Associate*, June 2013 – present; *Associate*, July 2008 – June 2013; *Research Associate*, April 2005 – July 2008.

- Provide expert analysis, ongoing stakeholder support, and consulting services in regulatory proceedings regarding energy efficiency program design and performance, funding and incentive mechanisms, evaluation, cost-effectiveness screening, avoided costs, potential studies, and plans. Develop and sponsor testimony and formal comments on electric and natural gas energy efficiency plans, advanced metering infrastructure (AMI) proposals, and innovative programs and regulatory structures.
- Develop a cost effectiveness tool, program designs, and case studies to facilitate incorporating strategic energy management programs into energy efficiency program administrators' portfolios for commercial and industrial customers.
- Design research approach, manage team, and conduct a sweeping analysis of energy efficiency potential studies from utilities, states, and regions across the U.S.
- Conduct extensive research on low-income energy efficiency efforts in U.S. states. Analyze energy burden differences between low-income and non-low-income households, and across factors that can impact participation in and efficacy of energy efficiency programs, to inform efficiency program design and targeting efforts. Provide consulting services and testimony on low-income energy efficiency programs and proposals.
- Facilitate residential, commercial, and industrial policy working groups and manage technical analysis of working group recommendations to reduce greenhouse gas (GHG) emissions in Colorado, South Carolina, and Maryland.
- Research and analyze historical emissions of criteria and hazardous air pollutants, greenhouse gases, and coal combustion wastes. Research and develop potential state and local emissions mitigation strategies, such as strategies for reducing ambient fine particulates in New York City.
- Conduct surveys of regional, state, and utility policies and practices regarding ratemaking for energy efficiency, power procurement, risk management, and fuel diversity. Research federal, regional, and state policies and case histories on integrated resource planning, power procurement, power plant operations, renewable portfolio standards, and market power.
- Conduct research for modelling macroeconomic impacts of policies that reduce oil production.

Resource Insight, Inc., Arlington, MA. *Research Assistant*, 2003-2005.

Responsible for conducting research and analysis of electric, gas, steam, and water resource issues. Conducted discounted cash flow analysis for asset valuation. Developed market-price benchmarks for analysis of power-supply bids including energy, capacity, ancillary services, transmission, ISO services, losses, and adjustment for load shape. Prepared discovery responses, formal objections, comments, and testimony; collaboratively wrote and edited reports; created and formatted exhibits. Participated in drafting an Energy Plan for New York City. Edited solicitation for competitive power supply to serve aggregated municipal load.

University of Massachusetts, Amherst, MA. *Teaching Assistant*, 2001-2002.

Developed and taught lessons on applied math to a diverse group of incoming graduates; tutored students in microeconomic theory and cost benefit analysis; graded problem sets and memoranda.

International Council for Local Environmental Initiatives, Berkeley, CA. *Cities for Climate Protection Intern for the City of Northampton, MA*, 2001.

Compiled primary and secondary source data on energy consumption and solid waste generation by the municipal government, city residents, and businesses; applied emissions coefficients to calculate total GHG emissions; identified current and planned municipal policies that impact GHG emissions; researched the predicted local effects of global warming ; gathered public feedback to provide acceptable and proactive policy alternatives. Composed a GHG emissions inventory describing research findings; wrote and distributed a policy report and press releases; gave newspaper and radio interviews; addressed public officials and the public during a televised meeting.

University of Massachusetts, Amherst, MA. *Research Assistant*, 2000-2001.

Located federal data sources, identified changes, and updated a research database to evaluate the Habitat Conservation Program; proofread articles and white papers; composed a literature review on land use modelling. Collaboratively administered, tested, and proposed interface enhancements for a web-based data warehouse of regional habitat change research; formally presented the system to an independent research group.

Court Square Data Group, Inc., Springfield, MA. *Administration Manager*, 1998-2000; *Project Administrator*, 1996-1998.

As Administration Manager, analysed profitability and diversity of income sources; managed cash flow, expense, and income data; created budgets; devised and implemented procedures to increase administrative efficiency; implemented new accounting system with minimal disruption to workflow.

As Project Administrator, coordinated implementation of software features; identified opportunities for future development; monitored problem resolution; wrote and coordinated production of a user's manual and questionnaires; edited technical proposals and a business plan.

EDUCATION

University of Massachusetts, Amherst, MA
Master of Public Administration, 2002

Rutgers University, New Brunswick, NJ
Bachelor of Arts in Economics, 1995

Syracuse University, Syracuse, NY, 1994

PUBLICATIONS

Napoleon, A., B. Havumaki, D. Bhandari, T. Woolf. 2019. *Review of New Brunswick Power's Application for Approval of an Advanced Metering Infrastructure Capital Project: In the Matter of the New Brunswick Power Corporation and Section 107 of the Electricity Act; Matter No. 452.* Synapse Energy Economics for the New Brunswick Energy and Utilities Board Staff.

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Napoleon, A., D. Goldberg, K. Takahashi, T. Woolf. 2019. *An Assessment of Prince Edward Island Energy Corporations' 2018 - 2021 Energy Efficiency and Conservation Plan.* Synapse Energy Economics for Carr, Stevenson and MacKay as Counsel to the Island Regulatory and Appeals Commission.

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Hall, J., J. Kallay, A. Napoleon, K. Takahashi, M. Whited. 2018. *Locational and Temporal Values of Energy Efficiency and other DERs to Transmission and Distribution Systems.* Synapse Energy Economics.

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Fagan, B., A. Napoleon, S. Fields, P. Luckow. 2017. *Clean Energy for New York: Replacement Energy and Capacity Resources for the Indian Point Energy Center Under New York Clean Energy Standard (CES).* Synapse Energy Economics for Riverkeeper and Natural Resources Defense Council.

Kallay, J., A. Napoleon, M. Chang. 2016. *Opportunities to Ramp Up Low-Income Energy Efficiency to Meet States and National Climate Policy Goals*. Synapse Energy Economics.

Woolf, T., A. Napoleon, P. Luckow, W. Ong, K. Takahashi. 2016. *Aiming Higher: Realizing the Full Potential of Cost-Effective Energy Efficiency in New York.* Synapse Energy Economics for Natural Resources Defense Council, E4TheFuture, CLEAResult, Lime Energy, Association for Energy Affordability, and Alliance for Clean Energy New York.

Napoleon, A., K. Takahashi, J. Kallay, T. Woolf. 2016. "Evaluation, Measurement, and Verification in Virginia." Memorandum prepared by Synapse Energy Economics for Clean Energy Solutions Inc., Virginia Energy Efficiency Council, and Virginia Department of Mines, Minerals and Energy.

Woolf, T., A. Napoleon, M. Whited. 2015-2016. *Comments and Reply Comments in the New York Public Service Commission Case 14-M-0101: Reforming the Energy Vision*. Comments related to Staff's (a) a benefit-costs analysis framework white paper, (b) ratemaking and utility business models white paper, and (c) Distributed System Implementation Plan guide. Prepared by Synapse Energy Economics on behalf of Natural Resources Defense Council and Pace Energy and Climate Center.

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Public Service Commission of South Carolina (Docket No. 2016-223-E): Direct Testimony of Alice Napoleon regarding South Carolina Electric and Gas Energy Efficiency Efforts. On behalf of South Carolina Coastal Conservation League. September 1, 2016.

Nova Scotia Utility and Review Board (Case No. M06247): Direct evidence in the matter of an application by Efficiency Nova Scotia Corporation for approval of its electricity demand-side management plan for 2015. On behalf of Counsel to the Nova Scotia Utility and Review Board. July 14, 2014.

TESTIMONY ASSISTANCE

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South Carolina Electric & Gas Company. On behalf of South Carolina Coastal Conservation League and Southern Alliance for Clean Energy. March 22, 2017.

State of New Jersey Board of Public Utilities (Docket No. ER16060524): Direct testimony of Tim Woolf regarding the Petition of Rockland Electric Company for Approval of an Advanced Metering Program, and for Other Relief. On behalf of New Jersey Division of the Ratepayer Advocate. September 9, 2016.

Nova Scotia Utility and Review Board (Matter No. M06733): Direct testimony of Tim Woolf regarding EfficiencyOne's 2016-2018 demand-side management plan. On behalf of the Nova Scotia Utility and Review Board. June 2, 2015.

Missouri Public Service Commission (File No. EO-2015-0055): Rebuttal and surrebuttal of Tim Woof on the topic of Ameren Missouri's 2016-2018 Energy Efficiency Plan. On behalf of Sierra Club. March 20, 2015 and April 27, 2015.

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State of New Jersey Board of Public Utilities (Docket No. GO12050363): Direct testimony of Maximilian Chang regarding South Jersey Gas Company's proposal to extend and modify its energy-efficiency programs. On behalf of New Jersey Division of the Ratepayer Advocate. November 9, 2012.

State of New Jersey Board of Public Utilities (Docket No. GO12070640): Direct testimony of Robert Fagan regarding New Jersey Natural Gas Company's petition for approval of the extension of the SAVEGREEN energy efficiency programs. On behalf of the New Jersey Division of the Ratepayer Advocate. October 26, 2012.

State of New Jersey Board of Public Utilities (Docket No. GO11070399): Direct testimony of Robert Fagan regarding Elizabethtown Gas Company's Proposed Energy Efficiency Program. On behalf of New Jersey Division of the Ratepayer Advocate. December 16, 2011.

State of New Jersey Board of Public Utilities (Docket No. GR11070425): Direct testimony of Robert Fagan regarding New Jersey Natural Gas Company's petition for approval of the extension of the SAVEGREEN energy efficiency programs. On behalf of the New Jersey Division of the Ratepayer Advocate. November 16, 2011.

State of New Jersey Board of Public Utilities (Docket No. GR10030225): Direct testimony of David Nichols regarding New Jersey Natural Gas Company's Proposed Energy Efficiency Program. On behalf of New Jersey Division of the Ratepayer Advocate. July 9, 2010.

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Delaware Public Service Commission (Docket No. 07-20): Jointly authored an expert report, with Robert Fagan, William Steinhurst, David White, and Kenji Takahashi, In the Matter of Integrated Resource Planning for the Provision of Standard Offer Service by Delmarva Power & Light Company Under 26 DEL. C. §1007 (c) & (d). On behalf of the Staff of Delaware Public Service Commission. April 2, 2009.

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Resume updated December 2019