

## RTR Appendix

Southern California Edison, Pacific Gas and Electric, Southern California Gas, and San Diego Gas and Electric (“Joint Utilities” or “Joint IOUs”) developed Responses to Recommendations (RTR) contained in the evaluation studies of the 2013-2014 Energy Efficiency Program Cycle. This Appendix contains the Responses to Recommendations in the report:

***RTR for the Focused Impact Evaluation of the 2013-2014 Home Upgrade Program***  
(DNV GL, ED WO #ED\_D\_Res\_5, Calmac ID #CPU0118.01)

The RTR reports demonstrate the Joint Utilities’ plans and activities to incorporate EM&V evaluation recommendations into programs to improve performance and operations, where applicable. The Joint IOUs’ approach is consistent with the 2013-2016 Energy Division-Investor Owned Utility Energy Efficiency Evaluation, Measurement and Verification (EM&V) Plan<sup>1</sup> and CPUC Decision (D.) 07-09-043<sup>2</sup>.

Individual RTR reports consist of a spreadsheet for each evaluation study. Recommendations were copied verbatim from each evaluation’s “Recommendations” section.<sup>3</sup> In cases where reports do not contain a section for recommendations, the Joint IOUs attempted to identify recommendations contained within the evaluation. Responses to the recommendations were made on a statewide basis when possible, and when that was not appropriate (e.g., due to utility-specific recommendations), the Joint IOUs responded individually and clearly indicated the authorship of the response.

The Joint IOUs are proud of this opportunity to publicly demonstrate how programs are taking advantage of evaluation recommendations, while providing transparency to stakeholders on the “positive feedback loop” between program design, implementation, and evaluation. This feedback loop can also provide guidance to the evaluation community on the types and structure of recommendations that are most relevant and helpful to program managers. The Joint IOUs believe this feedback will help improve both programs and future evaluation reports.

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<sup>1</sup> Page 336, “Within 60 days of public release of a final report, the program administrators will respond in writing to the final report findings and recommendations indicating what action, if any, will be taken as a result of study findings. The IOU responses will be posted on the public document website.” The Plan is available at <http://www.energydataweb.com/cpuc>.

<sup>2</sup> Attachment 7, page 4, “Within 60 days of public release, program administrators will respond in writing to the final report findings and recommendations indicating what action, if any, will be taken as a result of study findings as they relate to potential changes to the programs. Energy Division can choose to extend the 60 day limit if the administrator presents a compelling case that more time is needed and the delay will not cause any problems in the implementation schedule, and may shorten the time on a case-by-case basis if necessary to avoid delays in the schedule.”

<sup>3</sup> Recommendations may have also been made to the CPUC, the CEC, and evaluators. Responses to these recommendations will be made by Energy Division at a later time and posted separately.

**Impact Evaluation**

**Study Title:** Focused Impact Evaluation of the 2013-2014 Home Upgrade Program

**Program:** Home Upgrade

**Author:** DNV GL

**Calmac ID:** CPU0118.01

**ED WO:** ED\_D\_Res\_5

**Link to Report:** [http://calmac.org/publications/CPUC\\_HUP\\_Focused\\_Evaluation-FINAL\\_05-03-16atr.pdf](http://calmac.org/publications/CPUC_HUP_Focused_Evaluation-FINAL_05-03-16atr.pdf)

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1	24	Statewide we found annual electric energy savings, averaging 3.1%. Two climate zones showed annual household savings of 5% or more. In descending order from greatest to least savings, these climate zones were 16 and 11.	These evaluation results suggest the 2013-14 Home Upgrade Program is more effective at saving gas and reducing demand than saving electric energy. It may be worth reviewing the current program to redefine the savings goals. Any changes to the savings targets will affect future, and redefining program design and delivery to achieve greater savings.	All PAs	Accepted	<p>The IOUs acknowledge that the program is more effective at saving gas than reducing demand, due to the Energy Efficiency Loading Order encouraged by the program design and measures offered.</p> <p>The IOUs are encouraged by the findings, given the high GHG reduction potential of both therm savings and peak demand savings, and the high value to the grid of demand reduction at peak hours.</p> <p>No current policy guides the IOUs to save more electric than gas. If electricity is of higher priority, the IOUs agree to revisit goals for 2017. Currently, The IOUs are meeting set program goals.</p> <p>The IOUs are currently working together to determine what other measures or means can be deployed to further reduce electricity use.</p>
2	24	Statewide we found annual gas savings, averaging 29.3%. Three climate zones showed annual household savings of 30% or more. In descending order from greatest to least savings, these climate zones were 3, 4, and 9. These are climate zones with more than 2,500 Heating Degree Days.	When higher electric energy savings and demand reductions, concentrate on our program goals, the Program Administrators should concentrate on the inland climate zones. The program seems to be more effective at producing electric energy savings in climate zones and areas with wider temperature ranges. One approach might be to concentrate on climate zones with higher and a nearly equal number of Heating and Cooling Degree Days. For example, climate zones in the central portion of the state (4, 11, 12, and 13) have more defined seasons with hotter temperatures in the summer and cooler temperatures in the winter.	CPUC, All PAs	Accepted	<p>The IOUs are encouraged by the findings that kWh reductions in inland climate zones were greater than originally modeled.</p> <p>The IOUs agree that climate zones with more defined seasons should be targeted; as well as the range of customer demographics that drive participation. Demographics differences between participants is Southern and Northern California include age, income, education, and housing stock. Additionally the difference of climate zones across IOUs should be considered. PG&amp;E and SoCalGas share territories in climate zones 4, 11, 12, and 13. SCE has a limited number of customers in climate zones 4, 11, 12 and 13, while SDG&amp;E has no customers in these climate zones. In SCE and SoCalGas shared territory, the bulk of projects were completed in climate zones 9 and 10.</p> <p>The IOUs hope to continue to find ways to reduce electricity use and demand in inland climate zones. In 2013-2014, PG&amp;E targeted marketing to inland climate zones 11, 12 and 13, resulting in increased participation. In 2017, SDG&amp;E will target climate zones with wider temperature ranges (10, 14, 15) and customers with high energy intensity values.</p> <p>The IOUs are further researching to determine what other measures or means we can deploy to further reduce electricity use and demand. Since SCE and SoCalGas are single fuel IOUs with single fuel goals, any changes would have to consider both IOUs and commodities.</p>

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3, 4, 5	24	Statewide we estimated a reduction in demand of 7.4% between 3pm and 5pm during the hottest days of the year (August and September), except for two PAs	Conduct additional research on customer decision making and behavior relative to the Home Upgrade Program. In addition, consider both program paths using a larger sample to refine savings estimates. Include analyzing the differences in the measures that are implemented by each PAs territory. Depending on the primary savings goal for the program (demand reduction or therm savings). For example, including measures focusing on kW or therms could earn customers higher rebates than the current design of increasing the number of shell measures offered through the program. In addition, we suggest surveys and interviews with participating homeowners to find out drivers for big reductions, increases, and little change to energy usage. This will include a comparison of savings and costs for Home Upgrade and Advanced Home Upgrade.	All PAs	Accepted	<p>The IOUs will continue to evaluate measure combinations installed, savings and cost effectiveness of both program pathways and further refine and optimize program approaches.</p> <p>The IOUs agree that past process evaluations indicated customers were primarily interested in comfort. Building shell and HVAC measures included in nearly all jobs performed, and high customer satisfaction scores post-retrofit, indicate that the program as designed is meeting participating customer stated needs for comfort.</p> <p>The IOUs seek to further maximize kWh and therm savings through high performance HVAC installation standards. SCE and SoCalGas began implementation of these standards in Q4 2015. PG&amp;E is testing these standards in 2016.</p> <p>The IOUs agree that additional information could be gathered on customer decision making and behavior, however much of this information is currently gathered by the IOUs. The IOUs continue to conduct post-retrofit surveys on all projects to collect contractor installation performance and customer satisfaction results. Additionally, SCE and PG&amp;E complete behavioral comparative analysis using AMI data on customers and mails out findings through Home Energy Reports. These reports compare behavior between the customer and 100 closest neighbors. These customers are currently randomly selected; SCE will investigate having a group of all prior Energy Upgrade California past participants as a study group to reinforce persistence. Additionally, PG&amp;E utilizes customer targeting to encourage program participation among high energy users, customers with a propensity to participate, and climate zone. This effort has expanded into a targeted demand side management effort, to help reduce load a targeted substations in PG&amp;E territory.</p> <p>Past process evaluations indicate that behavior changes influence program results. Negative or neutral savers experienced take back due to behavior changes primarily consisting of: additional persons residing in the home, new or increased HVAC use when HVAC use was low or not present previously, and addition of plug load or appliances. These take-back findings led PG&amp;E to propose the Pay for Performance approach as an alternative to the Home Upgrade Program, which pays only for savings achieved.</p> <p>The 7.4% reduction between the hours of 3:00 p.m. and 5:00 p.m. suggest that customers may be utilizing Demand Response initiatives. The IOUs request a process evaluation to analyze what is the cause of the 7.4% reduction. This data need should be incorporated into the 2017 M&amp;E roadmap update.</p>

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4	24	Savings vary considerably by PA, for kW and therms. For example, statewide average demand (kW) reduction was 7.4%. The changes however ranged from an average reduction of 17.8% (PG&E) to an average kW increase of 8.1% (BayREN).  This difference may reflect the fact that PG&E projects were in predominantly hotter climate zones while BayREN projects were predominantly in cooler climate zones.	See recommendation 3	CPUC, All PAs	Accepted	See response 3,4,5
5	24	For therms, the statewide average savings was 29.3%. This range spanned from 30.7% (BayREN) to 7.8% (SoCalREN).	See recommendation 3	CPUC, All PAs	Accepted	See response 3,4,5
6	24	Sample sizes are very small in the Southern part of the state (particularly for gas). These results are as accurate as they can be given the quality and quantity of data.	For Southern California, the results should not be considered statistically representative of the program population. Given the design and demographics of the program however, there is no evidence to suggest they are not an accurate estimate of all program participants.	CPUC, All PAs	Accepted	SDG&E, SCE & SCG agree to work with this set of findings until more specific Southern California results can be available. Due to the number of projects chosen, this analysis does not represent the number of climate zones in Southern California territories.  Since this recommendation does not address PG&E territory, PG&E can neither accept nor reject this recommendation.
7	25	Tracking data sets were not complete and changed during the analysis period. For example, <ul style="list-style-type: none"> <li>the Home Upgrade and Advanced home Upgrade projects were not clearly labeled or flagged among all project administrators</li> <li>For some projects, multiple records separated each measure. Unfortunately, the total savings for the entire project was associated with each record. Simply adding all measure savings together resulted in savings that were greater than the total usage for the home.</li> <li>the reported duration of most Home Upgrade projects (66%) was cataloged as only 1 day. These projects were set to a 30-day blackout period.</li> </ul>	The quality of tracking data needs to be improved prior to an evaluation to ensure that all PAs are recording data that is understandable and useable. <ul style="list-style-type: none"> <li>Energy Division ex-ante tracking data should be coded consistently across all PAs</li> <li>The CPUC and IOUs should identify a mechanism to check data prior to the start of an evaluation, to ensure it has been properly coded</li> <li>Tracking data should be checked thoroughly by PAs prior to submission. Specifically, <ul style="list-style-type: none"> <li>Home Upgrade and Advanced Home Upgrade projects should be clearly differentiated</li> <li>Projects that receive financing should be clearly differentiated</li> </ul> </li> </ul>	CPUC, All PAs	Accepted	The IOUs accept the recommendation and would like to engage DNV GL to learn about the details of this study.  PG&E accepts the recommendation and acknowledges the need to improve the quality of tracking data sets. Since the 2013-2014 program cycle, PG&E has worked to improve the quality of the tracking data across all EE Programs. Improvements for Home Upgrade include but are not limited to: separate subprogram codes for each of the program pathways, increased data validations to ensure data accuracy, and data standardization across all EE programs.  PG&E looks to DNV GL to provide further, specific guidance on how to differentiate the data fields highlighted, check and properly code data, track financing data, verify project start and end dates in a manner consistent across all PAs in order to fully address the spirit of the recommendation. In future

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		<ul style="list-style-type: none"> <li>account numbers were reported for only one fuel type only and matching accounts via premise ID was not consistent across program administrators</li> <li>In addition the deemed savings reported in the tracking data had some anomalies. Specifically, the average reported kW savings was 0.64. Considering a typical residential household draws an approximate maximum 2.0kW at peak, this implies savings of 32%.</li> </ul>	<ul style="list-style-type: none"> <li>Projects from other programs should be coded differently, so that if they are included in the data, they can immediately be identified and removed, such as multi-family and energy savings assistance program projects</li> <li>Projects should include well-defined and verified project start and end dates</li> <li>Tracking data should identify and verify valid electric and gas account numbers when possible</li> <li>Where account numbers are not available, due to service territory overlap for example, service provider should be identified for each fuel type</li> <li>Data should be checked for accuracy with project files and reasonableness in terms of magnitude</li> </ul>			<p>evaluations, PG&amp;E hopes to have the opportunity to correct data issues during the course of the evaluation to improve the quality of the final evaluation and findings.</p> <p>SCE and SoCalGas would like to engage DNV GL to look into the details of this study. We will approach DNV GL to have a discussion in late 2016 or early 2017.</p> <p>SDG&amp;E accepts the recommendation and is working on improving the quality of the data tracked for Home Upgrade. Further guidance on tracking quality data is encouraged as these evaluations provide an important insight into program's success.</p> <p>SDG&amp;E would like to initiate a discussion in 2016 with DNV GL to better understand recorded data. What areas we did well in and what areas are deficient and have room for improvement.</p>
7		Applies to finding 6	We suggest replicating this billing analysis again when all of the 2015 tracking data and a full year of 2016 billing data become available. A billing analysis of Home Upgrade could be included in the next impact evaluation of the Advanced Home Upgrade program.	CPUC, All PAs	Accepted	<p>The IOUs support the replication of this billing analysis using improved data to support robust findings.</p> <p>All four IOUs support this recommendation.</p>