

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:

<i>RTR for the California HVAC Quality Installation / Quality Maintenance Customer Decision-Making Study</i> (EMI, ED Work Order #2015, Calmac ID #SCE0374.01)

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) Plan¹ and CPUC Decision (D.) 07-09-043².

Individual RTR reports consist of a spreadsheet for each evaluation study. Recommendations were copied verbatim from each evaluation’s “Recommendations” section.³ 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.

¹ 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>.

² 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.”

³ 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.

EM&V Impact, Process, Market Assessment Study Recommendations

Study Title: California HVAC Quality Installation / Quality Maintenance Customer Decision-Making Study

Program: California HVAC QI/QM

Author: EMI

Calmac ID: SCE0374.01

ED WO: 2015

Link to Report: http://calmac.org/publications/CDM_Report_2015-04-15_FINAL.pdf

Item #	Page #	Findings	Best Practice / Recommendations	Recommendation Recipient	Disposition (Accepted, Rejected, or Other)	Disposition Notes (e.g. Description of specific program change or Reason for rejection or Under further review)
1	134	Many residential customers have a limited understanding of HVAC equipment and operating principles. Customers generally appear overwhelmed by the technical complexity of HVAC systems, with respondents reporting they use simplistic, non-technical methods to select contractors and evaluate the quality of their installation.	Provide basic information about how HVAC units work and the importance of proper installation (and maintenance) procedures in an easy-to-understand “infographic” format.	All IOUs	Accept	<p>The IOUs agree that program representation to customers in a more easily digestible format would likely increase customer comprehension and interest. The core HVAC concepts are universal and so there is potential to coordinate across all CA IOU's. PG&E currently has a graphic on the Residential Quality Maintenance website, as well as a door hanger version, that diagrams an AC unit and promotes rebates available for maintenance service. SCE's HVAC Optimization website has graphics showing a typical commercial rooftop HVAC unit and air distribution system as well as describing advanced technologies such as Digital Economizer Controls and Notched V-Belts. The SCE RQI website also has graphical depiction of the benefits of proper sizing and installation.</p> <p>The IOUs note that conveying even simplified operating principles of HVAC systems to the average customer is challenging. However, we recognize that if the customer understands the value proposition of quality maintenance, they are more likely to participate and/or seek qualified contractors. The IOUs will continue customer education and marketing. In particular, during our discussions with implementors going forward, we will emphasize the importance of well-designed marketing material that conveys program benefits and ties the programs to common HVAC faults and the associated consequences.</p>
2	134	Residential customers are highly dependent on Internet sources and contractors when it comes to obtaining information about HVAC equipment.	Utilize the Internet to provide better information regarding what QI is and how it is different from typical installations. An expanded Internet presence would be helpful in generating more interest and awareness for QI and the programs that support it. This may also be helpful in convincing customers that QI is something worth asking for – even if the contractor does not initially promote it to them.	All IOUs	Accept	<p>The IOUs agree that internet resources have become a primary source of data collection for residential customers. The QI programs can update websites and references. The programs will also look to coordinate with ENERGY STAR on its nationwide promotion of QI services to residential customers. As the RQI program expands its reach, IOUs will review the internet material to ensure QI is properly differentiated from standard practice.</p>
3	134	Residential customers are receptive to the idea of QI but could use more information on the benefits. Most residential customers appear willing to participate in a program that offers premium installation services for their HVAC equipment, but many are unclear as to what the specific benefits might be.	Branding should emphasize the benefits of QI and how it goes above-and-beyond typical installations. Making these benefits seem real and concrete may be accomplished by providing specific, quantitative information on the benefits of QI. However, it is critical that the potential benefits must not be overstated. If this information cannot be provided in this form, efforts should instead be made to provide concrete examples of success through case studies of real projects.	All IOUs	Other	<p>The IOUs agree that branding can and should be changed to better convey the goals and benefits of the HVAC optimization program. Strong messaging that differentiates premium, performance, or quality installation from standard or routine installation is important in gaining customer acceptance. Most customers are not aware that code compliance for new installations is low - so there is also an opportunity to tie QI to the codes and industry standards designed to ensure optimal performance. As we develop new marketing we will improve this messaging. EM&V budget is limited, but we agree that case studies would be valuable in helping market the programs and will consider such studies in the next program cycle.</p>

Item #	Page #	Findings	Best Practice / Recommendations	Recommendation Recipient	Disposition (Accepted, Rejected, or Other)	Disposition Notes (e.g. Description of specific program change or Reason for rejection or Under further review)
						The IOUs note there is a significant lack of agreement in CA on what the residential installation baseline should be. Until this agreement is reached, the program runs a risk when promoting specific, quantitative benefits.
4	134	Residential customers are sensitive to the up-front cost of HVAC installations. However, emphasizing monthly utility bill savings and system reliability improvements would likely resonate with customers. Discrete choice results suggest that customers are most sensitive to changes in their monthly utility bills and reliability	Branding efforts may benefit by focusing on cost savings for utility bill costs and reliability improvements resulting from QI (assuming that QI provides these benefits). Promoting the provision of easy-to-understand cost savings estimates of premium installation to customers could help strengthen the value proposition. Because customers are highly price sensitive to the cost of installation, the benefits of participation need to be translated into monthly cost savings. Additionally, there is evidence that this method could be effective – among program participants who received cost savings estimates, a majority indicated this estimate was either accurate or very accurate.	All IOUs	Other	<p>The residential QI program does not have enough data to develop experimentally verified savings claims. Discrete savings on a case by case basis are highly variable depending on customer behavior, seasonal weather patterns, and other factors. The programs' deemed savings numbers are still being debated through further workpaper development, stakeholder discussions, and evaluations. Therefore it is not currently feasible to provide reliable savings estimates to customers.</p> <p>In marketing QI efforts, the IOUs will utilize results of the EMI studies, in particular the observation that increased reliability and potential cost savings are benefits of the program. We will also look to the results of HVAC-6 evaluation efforts, especially differences in energy efficiency uncovered for compliant vs. non-compliant installations.</p>
5	135	Many residential customers do not recognize the benefits of having regular, preventative maintenance performed on their HVAC systems. Only 45% of nonparticipants have regular maintenance performed on their heating/cooling system, and are less likely to believe that regular maintenance has real benefits (such as longer lasting equipment).	Provide basic information about the benefits of preventative maintenance procedures in an easy-to-understand “infographic” format. This presentation should focus on making the benefits of maintenance concrete by focusing on monthly cost savings, system longevity, and system reliability. Highlighting differences between QM and non-QM services is important.	All IOUs	Other	<p>The IOUs agree that program representation to customers in a more easily digestible format would likely increase customer comprehension and interest in the program. The core HVAC concepts are universal and so there is potential to coordinate across all CA IOU's.</p> <p>PG&E currently has a graphic on our Residential Quality Maintenance website, and a door hanger version, that diagrams an AC unit and promotes rebates available for maintenance service. In our experience, conveying even simplified operating principles of HVAC systems to the average customer is challenging.</p> <p>We feel the difference between QM and non-QM services is very difficult to quantify and on a case-by case basis results are likely to vary greatly. However, enrolling a customer who has never participated in a maintenance program likely has significant real world energy savings benefits. Therefore, we will look to highlight the difference between no maintenance and QM and to incorporate such a message into our marketing collateral.</p> <p>Since program marketing material typically doesn't reach nonparticipants, the IOUs would like to see the HVAC industry as a whole help raise awareness of maintenance benefits. We will continue to engage the WHPA on this important topic.</p> <p>Finally, the IOUs note that the figure of 45% of nonparticipants receiving regular maintenance on their HVAC system seems high.</p>

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6	135	Residential customers have relationships with contractors and may be unwilling to switch providers for a service like QM. Two-thirds of customers who have maintenance performed regularly reported they typically work with a specific contractor. Reaching out to customers who are currently satisfied with their non-QM maintenance contracts will be difficult to reach because they are not "in the market" for new services.	Increase outreach efforts to contractors and leverage IOU marketing channels to make customers aware of QM as an option for obtaining maintenance services. Consider providing an incentive to the customer for suggesting their contractor participate in the program. Make sure that contractors have the resources and collateral they need to effectively promote QM.	All IOUs	Reject	<p>Though a referral incentive is an interesting idea, the IOU RQM programs already operate at capacity. We are still optimizing the program and believe our resources are best devoted, for the time being, to improving the participating contractor and technician performance. The IOUs acknowledge that it is important to provide effective collateral to the contractors and customers.</p> <p>The IOUs also believe that the programs should focus on assisting QM contractors to better utilize their existing strong customer relationships to convert them into program participants. Contractors are often hesitant to introduce their important customers to a QM program which identifies inefficiencies that are the fault of that same contractor's installation/service. This dynamic is an often ignored yet important barrier.</p>
7	135	Residential customers are extremely price-sensitive to the cost of a maintenance contract. In the discrete choice study, "contract cost" carried over two times the decision weight as the next most important attribute, "monthly cost savings." Preference for premium maintenance services dropped off with increasing contract cost, making this a difficult value proposition for many customers.	If possible, emphasize that price differences between QM and non-QM services are minimal. Additionally, if supported by empirical evidence, efforts may focus on the fact that the per-visit cost may be less for QM contracts than for non-QM contracts. (For example, a QM contract may cost more than a non-QM contract but if more visits are included in the QM contract, it is possible that the cost per visit is actually less than for the non-QM contract.)	All IOUs	Reject	This point is applicable to customers that currently pay for preventative maintenance. However, most residential customers do not pay for preventative maintenance, and those that do often don't pay for it throughout the life of the equipment. Also, some contractors are hesitant to promote a "more comprehensive" QM service to their customer and risk making their standard service look inferior in comparison. Therefore, while convincing customers on maintenance contracts to switch their enrollment to quality maintenance may help program ex ante savings claims, we anticipate that the customers who could benefit most from the program are those who are not currently in a maintenance contract and who do not typically think about their HVAC systems.
8	136	Commercial customers are receptive to the idea of QI but could use more information on the benefits. Most commercial customers we surveyed would be willing to participate in a program that offers premium installation services for their HVAC equipment, but many indicated they could use more information clarifying the benefits. Of those program nonparticipants who indicated they would not pay extra for QI, the most popular reasons were "not worth the added cost," "believes contractors already do this," and "not clear what the benefits would be."	Branding should emphasize the benefits of QI and how it goes above-and-beyond typical installations. Making these benefits seem real and concrete may be accomplished by providing specific, quantitative information on the benefits of premium, standards-based installation. However, it is critical that this information must not be overstated. If this information cannot be provided in this form, efforts should instead be made to provide concrete examples of success through case studies of real projects. Additionally, this messaging should strive to clarify the differences between QI services and traditional installation services.	All IOUs	Other	<p>The commercial QI program does not have enough data to develop experimentally verified savings claims. As the program collects more participant data we will explore developing this type of messaging. In marketing QI efforts, The IOUs will emphasize both increased reliability and potential cost savings as benefits of the program. Customer-focused QI materials would be useful educational tools and should include the benefits of pulling permits.</p> <p>The IOUs perceive the greatest obstacle to QI to be the lack of code compliance in retrofit applications: most contractors do not pull permits and therefore do not qualify for QI program participation. As long as customers have a significantly cheaper option (no permits), the cost of QI will be difficult to justify.</p>
9	136	Commercial customers are particularly sensitive to improvements in the <u>reliability</u> of their HVAC systems. In the discrete choice survey, commercial respondents exhibited strong preferences for alternatives that minimized the risk of system downtime. In aggregate, commercial respondents attributed greater importance to reliability than to any other attribute tested.	When promoting the benefits of premium, standards-based installation, messaging to commercial customers could focus on the increased reliability resulting from these services (assuming that increased reliability is in fact a benefit attributable to QI). Additionally, this messaging could benefit from providing information that is more specific or concrete than just "greater reliability."	All IOUs	Accept	The IOUs agree with this assessment and appreciate the quantitative findings of this study, which identify reliability as the most important perceived benefit of QI/QM services for SMB owners. As we continue to develop new marketing materials, we will make sure to incorporate messaging centered around reliability.

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10	137	Commercial customers are highly reliant on contractors for information about HVAC installations. Nearly half (48%) of commercial respondents indicated they would consult a contractor for more information on proper HVAC installation (or maintenance). Additionally, of the commercial respondents who had participated in a QI/QM program, "contractor" was tied with "utility representative" as the source from which most customers had initially become aware of the program.	Increase outreach efforts to contractors. Consider providing an incentive to the customer for suggesting their contractor participate in the program. Make sure that contractors have the resources and collateral they need to effectively promote QI.	All IOUs	Other	<p>Though a referral incentive is an interesting idea, the IOUs CQM programs are generally meeting participation goals. We believe our resources are best devoted, for the time being, to improving the participating contractor and technician performance. The IOUs acknowledge that it is important to provide effective collateral to the contractors and customers. Many of the participating contractors are not very active and we feel boosting their performance is essential to successful programs going forward. We have prioritized this and will work with the implementors to ensure a higher portion of contractors are engaged.</p> <p>A third-party specifier incentive may support even deeper participation. There may be alternative pathways to leverage contractor relationships with customers. For instance, solar installers could recommend QI when also recommending rooftop HVAC replacements. One company is doing so in the SDG&E service area and brought a significant QI project to the program, generating a good lead for a participating contractor.</p>
11	137	Overall, cost and reliability matter to everyone. However, there is a segment of commercial customers for which reliability matters as much as cost; there is another segment for which cost matters most. Overall, commercial respondents were highly sensitive to the price of the contract; however, they also attributed great importance to reliability. In the IDIs, many respondents reported that their core business concerns relied on the ability of their HVAC systems to function correctly. In some cases this core business concern was to ensure that building occupants were comfortable. In other cases it was a way to ensure that fundamental business operations were not disrupted or expensive equipment was protected from heat damage. For these customers, priority service in case of system failure was one of the most important motivating factors in their decision to enter into a maintenance agreement. Similarly, in the discrete choice survey, commercial respondents exhibited strong preferences for alternatives that had a lower risk of downtime (i.e., more reliable equipment).	Though cost matters, most commercial customers are also sensitive to improvements in system reliability. Messaging to these customers should focus on the increased reliability resulting from QM services (assuming that increased reliability is in fact a benefit attributable to QM). This is especially true for the segment of customers for which reliability matters as much as cost.	All IOUs	Accept	The Program consistently encourages contractors to move away from the first price-driven sale, providing the contractor and sales employees with methods to do that successfully. The Program tailors sales pitches to large customers' needs, whether their primary priority is cost, reliability, or something else. Existing Program marketing materials highlight cost, reliability, air quality and a number of other benefits of QM to support contractors in their sales efforts. The program will consider changes to collateral to focus on system reliability to help reach these customers.

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12	137	Contractors are the most important source of HVAC maintenance information for many commercial customers. Additionally, many customers have an existing relationship with a contractor and may be hesitant to switch. When looking for information on proper installation or maintenance of HVAC equipment, more respondents indicated they would consult a contractor (57%) than any other source. Additionally, many commercial customers have existing relationships with specific contractors.	Expand the contractor base by recruiting currently nonparticipating contractors. Ensure participating contractors have the resources, support, and information they need to effectively promote the program.	All IOUs	Accept	CQM is complex and requires significant Program resources per contractor. Investing in lukewarm contractors creates an opportunity cost and further challenges Program cost-effectiveness. However, The IOUs agree it is critical to provide the appropriate resources and support to contractors who are enrolled. The Program provides training, significant sales collateral, reports and ongoing support. The programs utilize both formal and informal feedback to improve on existing collateral and tools. For example SCE hosts contractor forums to help identify Program gaps. SCE is also an active participant in the WHPA and its program assigns an account manager to each contractor and provides training, significant sales collateral, reports and ongoing support to all contractors. Finally, QI and QM approaches require investments in tools and training that are not consistent with every contractor's business models.
13	138	There was very little indication that respondents associated the term "Quality Maintenance" with the maintenance contracts they had purchased, or with IOU programs. There appears to be a need for more consistent terminology across QM programs, as many customers do not understand what the term "Quality Maintenance" represents. This problem may be compounded by the multitude of names for programs offering QM services across the IOUs.	Be consistent when referring to QM programs and services. If a program providing QM services does not have "Quality Maintenance" in the name, make sure that the two are closely associated in marketing and branding efforts (assuming that this term will continued to be used). This particularly applies to QM references on the Internet, given that four out of five (80%) commercial respondents who indicated that they could use additional information on proper HVAC installation/maintenance indicated the Internet as a preferred medium.	All IOUs	Accept	<p>PG&E has recently restructured our CQM program offerings to move the 3-year contract and one-time maintenance programs both under our core program. We believe this will help us promote the programs with consistent messaging that gives the customer options. These programs are now called 'silver' and 'gold' tiers and are under the name 'optimization.' We're hopeful this naming convention will be less confusing to customers and contractors and better convey the value proposition of the programs.</p> <p>When the SCE CQM Program originally launched, it was branded as HVAC Optimization. Since mid-2013, the CQM Program has been branded as CQM under the HVAC Optimization umbrella. The term "quality maintenance" is used throughout the Program website and marketing materials. This feedback may reflect participants who entered the Program prior to that time. The Program sends out emails in a newsletter highlighting the term "quality maintenance" in an effort to reach the market. The Program currently provides considerable information online and via email; however, SCE will work with participants to identify any online resource gaps.</p> <p>SDG&E notes that The IOU programs do not adopt or enforce the full array of measures included in the industry Quality Maintenance and Installation specifications. For example, none of the IOU's enforce gas combustion testing nor pay incentives for many of the tasks involved in QM. Arguably, the IOU programs should not be enforcing the customer-responsibility sections of these voluntary standards. In fact, industry leadership had requested that SDG&E refrain from using "Quality Maintenance" in program website literature.</p>

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14	138	Difficulty in judging the quality of the maintenance received is a barrier to stimulating greater demand by commercial customers for QM programs. Even though the majority of small commercial customers who completed an interview reported being knowledgeable about HVAC operation—generally more so than the residential customers—several of them expressed lingering doubts that the maintenance agreement is worth the money they are paying for it. By its very nature, maintenance is difficult to judge because there is no immediate feedback on whether or not it is effective. Finding ways to combat this uncertainty could be greatly beneficial in improving customers' perceptions of the benefits of QM.	Differentiating QM from non-QM is important. Consider providing information on case studies of QM projects and/or short Internet video clips that show footage of maintenance being performed on HVAC equipment (so that commercial customers see what QM requires technicians to do onsite). There may also be value in emphasizing more tangible aspects associated with QM contracts, including the number of visits per year or perks such as priority service.	All IOUs	Reject	<p>The IOUs believe that differentiating QM from non-QM is industry's responsibility. The ACCA 180 standard is only one of many standards. The utilities have adopted one standard in a field of many, effectively excluding competing standards (e.g. labor union training and standards) from qualifying for program incentives. The IOUs prefer to let industry promote their certifications and are not prepared to endorse one standard over another.</p> <p>While customers may not associate number of visits with improved performance and the program does not guarantee priority service, there are opportunities to differentiate between QM and non-QM maintenance. Market feedback indicates that case studies are the most effective way to sell QM. The SCE Program currently provides Year End Summary Reports for every customer to help address this issue. The Program is completing a series of case studies to meet this need.</p> <p>The IOUs agree there are significant barriers, built up over many years, and that change in maintenance practice will require a significant shift in the way that customers and contractors interact.</p>