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 2013-2015 Energy Efficiency Program Cycle. This Appendix contains the Responses to Recommendations in the report:

RTRs for the Measure, Application, Segment, Industry (MASI) market studies (Navigant, ED WO #2092) for:

1) ***Motors Baseline and Opportunities in the Industrial, Food Processing, and Agricultural Sectors, and Early Motor Retirement in Refineries (Calmac ID #SCE0377.02)***
2) ***Agriculture (Calmac ID #SCE0377.03)***
3) ***Chain Operations (Calmac ID #SCE0377.04)***
4) ***Wastewater Treatment Facilities (Calmac ID #SCE0377.05)***
5) ***New Opportunities in the Food Processing Industry (Calmac ID #SCE0377.06)***
6) ***New Opportunities for Oil and Gas Extraction and Produced Water Management and Recycling (Calmac ID #SCE0377.07)***

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[1] and CPUC Decision (D.) 07-09-043[2].

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

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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.

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.

Response to Recommendations (RTR) in Impact, Process, and Market Assessment Studies

Study Title: Measure, Application, Segment, Industry (MASI): Motors Baseline and Opportunities in the Industrial, Food Processing, and Agricultural Sectors, and Early Motor Retirement in Refineries (2/27/15)
Program: MASI - Motors Baseline and Opportunities in the Industrial, Food Processing, and Agricultural Sectors, and Early Motor Retirement in Refineries
Author: Navigant
Calmac ID: SCE0377.02
ED WO: 2092
Link to Report: http://calmac.org/publications/MASI_Motors_Opportunities_Final_Report.pdf

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1	28	In subsectors in California that frequently replace motors, there is evidence that the traditional rebate for replacement program type may be well received. Xcel Energy New Mexico is one of the remaining utilities that administers a rebate program for replacing existing motors with NEMA Premium efficient or better motors. Figure 6 shows the available rebates through this program. There are two specific cases involved in this rebate program. The first requires an existing motor that may or may not still be functioning, with a motor that is at least one efficiency band above NEMA Premium efficient (the EISA standard efficiency). This would benefit subsectors that already emphasize efficiency in their operations. The second requires a currently functioning motor be replaced by a NEMA Premium efficient motor. This would be better targeted at subsectors that lag in their efficiency practices	Create a traditional motor replacement program	Multiple IOUs (specified in recommendation)	Accepted	PGE already incetivising above code motors, which would be an efficiency band above NEMA Premium efficient. The IOU Statewide rules do not allow incentives for non-working motors or a "to-code" motor replacement.	Other	More research is required to determine where such a program belongs in the portfolio; if it is cost-effective and what savings are claimable.	Other	Not applicable	Other	Further investigation is needed on the availability of motors exceeding NEMA Premium efficiency and the impact industry standard practice may have on potential motor offerings. In order to be eligible for a rebate, implemented measures must exceed code required efficiency standards and/or practices widely adopted in industry.
2	29-30	Most subsectors in California have established protocols for rewinding certain motors rather than replacing them. Instead of attempting to change these customer protocols, there is a way to get savings out of quality rewinds. Dubbed “green rewinds,” a quality rewind can achieve a higher motor efficiency. Rebates for green motor rewinds will encourage facilities to use a certified green-rewind shop to repair and rewind their motors. Such a program is already in place at Pacific Power, whose motors rebate program is shown in Figure 7. This program provides a $2/hp incentive to the green rewind shop, which in turn subtracts $1/hp from the customer’s invoice. According to a 2000 report on motors by the Department of Energy38 “You should generally subtract two points from motor efficiency on smaller motors (<40 HP) and one point for larger motors” due to rewinding. The same report later indicates “Shops with the best quality-control practices can often rewind with no significant efficiency degradation.” This is supported SME interviews of rewind shops and industry experts. Ensuring that motor rewind shops follow best practices then has the potential to save 1-2% efficiency on rewound motors. To guarantee that shops follow best practices, there are currently two options for certification The first is the Green Motors Practices Group (GMPG) and their Green Motors Initiative. This certification covers energy efficiency only, and requires yearly oversight. Pacific Power has partnered with the GMPG for their Green Rewind program. As a second option, the Electrical Apparatus Service Association, Inc. (EASA) has recently launched their own accreditation program. There is debate in the motors industry whether the EASA accreditation is on par with the GMPG certification. It covers both repair and rewinding, but relies on audits every three years, and self-auditing the two off years. As GMPG is already established, and at least one of the motor shops Navigant interviewed is GMPG certified, there is an advantage to using the GMPG certification for this incentive program	Provide incentives for Green Rewinds	Multiple IOUs (specified in recommendation)	Other	PGE will explore the program possability.	Other	More research is required to determine where such a program belongs in the portfolio; if it is cost-effective and what savings are claimable.	Other	Not applicable	Rejected	Like for like equipment replacements are not eligible for utility incentives.
3	30	Several SMEs mentioned system efficiency as an often overlooked section in motor efficiency programs. When an existing motor might be 94 percent efficient, upgrading that motor one efficiency band will not gain you much if the pump attached to that motor is running at 60 percent efficiency. Even in the best situations, one SME suggested that pumps lose up to 2 percent efficiency per year. Incentivizing driven equipment—pumps are a prime example of this, rather than the motors themselves—presents an opportunity for further efficiency gains, especially for facilities that already have highly efficient motors. Navigant understands that there are pump efficiency programs and others incentivizing more efficient driven systems, but suggests these be linked to create a comprehensive suite of options for driven systems. The suite could have rebates for high efficiency components that are most popular – fans, compressors, and pumps – and include more customized options for other technologies. Such a program would likely have traction across California’s subsectors.	Promote system efficiency education	Multiple IOUs (specified in recommendation)	Accepted	PGE incentivises system upgrade projects through Third Party and Customized programs when equipment is above baseline.	Accepted	SCE offers classes through it's Energy Education Center.	Other	Not applicable	Other	System wide reductions in energy consumption are eligible for incentives in conjunction with equipment efficiency upgrades through the calculated program. Creating rebates for such system efficiency gains is problematic due to the custom nature of such measures.

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4	31	Several California FMs mentioned in their interviews that energy audits are very useful tools for them when they provide realistic savings opportunities in working towards increased energy efficiency. In the food processing subsector, one FM reported that he "considers it very beneficial when [utility name redacted] conducts audits in [their] facilities because it helps [them] identify potential areas for improvements." Across all subsectors, FMs often do not have the bandwidth to investigate efficiency opportunities on their own, so they are unaware of the opportunities that exist. Nevertheless, they are willing to implement efficiency measures when shown they are cost effective, presenting an opportunity for savings. This is corroborated by an agricultural FM who added that "it would be helpful if the utility could offer assistance by conducting studies at [their] facilities which would inform [them] over what period of time a new, more efficient motor would pay for itself by the energy savings it provides."	Offer energy audits	Multiple IOUs (specified in recommendation)	Accepted	PGE offers both Large Integrated Audits and process specific audits	Accepted	SCE provides audit services to customers.	Other	Not applicable	Accepted	SDG&E offers various Energy Efficiency audit programs through third party vendors. Audits evaluate the potential for customer energy savings independent of the ability to submit identified measures through utility incentive programs.
5	viii	Motor drives are key contributors to electricity consumption in the industrial sector. Depending on the industry, the machine drive end-use consumption ranges from 21 percent to 88 percent of the whole facility usage. The following table summarizes our interview findings. Having a small sample size is a limitation to this study. The characteristics found include: **Cement/Building Materials:** With the focus on energy efficiency, Navigant recommends targeting this subsector for a more traditional motor replacement program. With plants that are running high-efficiency motors, Navigant recommends focusing on the motor-driven equipment to increase system efficiency. **Wastewater:** With the extensive use of pumps, and the stock of already efficient motors, Navigant recommends focusing on the motor-driven equipment in the wastewater subsector. **Agriculture:** A standard motor incentive program is applicable to indoor agriculture. Outdoor agriculture is likely a good target for the traditional motor incentive, and possibly a frame adaptor incentive. **Refineries:** Customers in refineries indicated lack of interest in utility motor programs, making it difficult for utility programs to succeed. Due to the limited number of refineries in California, a custom approach with account executives working directly with each of the refineries for motors upgrade might be deemed appropriate. **Chemicals:** Based on the two facility manager interviews, specialized motors are common in chemical facilities. Further research on the shelved motors efficiency and the timing of replacement in the chemical industry could help determine if a on the shelf custom motors replacement program is feasible to target the chemical industry. **Food Processing:** As with the chemicals subsector, the food processing subsector is a good candidate for specialized motor efficiency programs and a spare motor efficiency program.	Navigant recommend conducting further research to validate industry characteristics. Industry specific recommendations include: **Cement/Building Materials**: With plants that are running high-efficiency motors, Navigant recommends focusing on the motor-driven equipment to increase system efficiency. **Wastewater:** With the extensive use of pumps, and the stock of already efficient motors, Navigant recommends focusing on the motor-driven equipment in the wastewater subsector.	Multiple IOUs (specified in recommendation)	Accepted	PGE is reseaching into the specific needs of customers in these segments	Other	SCE already provides customers in the industrial and agricultural sectors with comprehensives project opportunitites that include motor upgrades.		Not applicable	Other	Motor replacements must exceed code to be eligible for utility incetnives. It is not clear at this time of a significant number of motors are available that exceed NEMA Premium efficiency standards. Equipment efficiency improvements for the identified market sectors are all eligible through the Business Incentives program.
6	xi	With 20 refineries operating in California, program managers seem to already be working closely with facility managers. The success of taking the custom approach is supported by the fact that a California utility program manager is currently working with a refinery client to replace what is considered an inefficient 9,000-hp motor when compared to existing motors on the market. Navigant recommends that utilities particularly focus on working with smaller refineries on a case-by-case basis, as they seem to repair or rewind a much higher percentage of their motors than larger refineries, resulting in additional existing savings potential.	Custom Approach for Motor Improvements in Refineries: The most favorable selection of energy efficiency opportunities should be made on a plant- specific basis. Navigant recommends that utilities work with refineries on an individual basis to target custom motors that could be replaced.	Multiple IOUs (specified in recommendation)	Rejected	(PGE) Generally the 1000+ hp motors are rewound and the motors under 50 hp have back-ups waiting on shelves. Determining the savings for motors purchased as back-up would be difficult since it is unceratin when the motor would actually be swapped. PGE is developing an Industrial motor early retirement program.	Accepted	SCE offers a third party implemented industrial program targeted to the oil and gas sector	Other	Not applicable	Rejected	SDG&E does not have any refineries within it's service territory.

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7	47	Motors up to 500 hp are already covered by the EISA standards. However, a refinery facility manager who works at a large refinery in California suggested focusing on larger motors, such as compressor motors, in the 1,000+ hp size range, where opportunities may exist due to frequent motor overhauls. Due to the time it takes to replace these motors, if utilities want to service these motors into an early retirement program, the utility will need to develop a program where these motors can be ordered in advance and made ready for installation on the next plant turnaround.	One approach the California utilities could take would be to offer modified rebates or financing for shelved motors purchased prior to motor failure, so that these motors would be ordered early and ready to install during the next facility turnaround. However, further research is needed to determine whether a program like this would be popular across refineries and refinery motor inventory is required to calculate the potential savings.	Multiple IOUs (specified in recommendation)	Other	Determining the savings for motors purchased as back-up would be difficult since it is unceratin when the motor would actually be swapped. PGE is developing an Industrial motor early retirement program.	Rejected	SCE cannot provide rebates or incentives for non-operational and/or redundent equipment.	Other	Not applicable	Rejected	SDG&E cannot provide rebates or incentives for non-operational and/or redundent equipment.
8	47	If the utilities want to continue to support energy efficiency activities at refineries, two facility managers and a third-party energy efficiency implementer alike advised against addressing the efficiency of motors individually, as refineries have already been looking at motor efficiencies for years and remaining potential does not exist currently for motors. Federal regulations already mandate that any motors (1–500 hp) that are replaced must be replaced with NEMA Premium efficient motors. This finding was supported by secondary literature from LBNL and the DOE. The 2005 LBNL study also identified the importance of focusing on the "system approach", which looks at pump, compressor, motor and fan efficiency in order to capture the most savings. The US DOE Motor Challenge Program study agreed that the greatest savings potential lies with the system savings measures, indicating that compressed air and pump systems have the most potential. System improvements overall account for 71 percent of total potential motor system energy savings. A third-party energy efficiency implementer indicated that he believes that "you will find larger opportunities at the process level." This finding warrants further investigation to determine the potential savings through the focus on a system approach.	Investigate System-Level Approaches to Energy Efficiency	Multiple IOUs (specified in recommendation)	Accepted	PGE agrees that a system approach would yield greater savings.	Accepted	SCE offers a third party implemented industrial program that supports a system approach for segment using motor technologies	Other	Not applicable	Accepted	System level efficiency improvements are eligible for incentives through the calculated program.

Response to Recommendations (RTR) in Impact, Process, and Market Assessment Studies

Study Title: Measure, Application, Segment, Industry (MASI): Agriculture (3/31/15)
Program: MASI - Agriculture
Author: Navigant
Calmac ID: SCE0377.03
ED WO: 2092
Link to Report: http://calmac.org/publications/MASI_Agriculture_Final_Report.pdf

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1	52	Growers' primary concern is that their equipment is functioning properly during the planting, growing, and harvest seasons. Growers will therefore take any action necessary to ensure their equipment is running, including installing lower-efficiency equipment if it is available at the time they need it. If utilities do not align field tests with growers' schedules, growers will be far less likely to install equipment that requires these field tests. Furthermore, if growers must wait to install equipment until utilities can conduct a pre-inspection, then growers may forgo the incentive and install whatever equipment is available. This may lead to growers installing lower-efficiency equipment. By scheduling inspections and installations around the growing season, utilities are more likely to encourage growers to install higher-efficiency equipment.	Schedule program marketing around the growing season, and conduct field tests, verifications, installations, and rebates according to this schedule.	All IOUs	Accepted	PG&E has found that it is critical to maintain awareness of seasonal demands in engaging agricultural customers. We focus much of our marketing and project support on the winter and spring seasons as growers are getting ready for the next season's operations.	Accepted	Activities are already in practice. SCE pump testers schedule pump tests in conjunction with the timing and availability of the customer, at the direction of the customer. SCE takes two approaches regarding enhancements to the incentive and rebate application process. First, SCE obtains feedback from customers to identify "pain points" with any part of the process. From this feedback, the process is "tweaked" to "fully modified" to to address these issues and streamline the effort. Over the years SCE has worked in collaboration with the Energy Division and its consultants in looking for these opportunities. Second, SCE works with the customer. Our representatives do their best to assist the customer in managing their expectations including understanding the steps in the incentive process and the time the process might take for them to receive their authorization to begin their project (if applicable) and/or when they might receive the incentive/rebate disbursement.	Accepted	SCG works with the agriculuture sector to schedule its marketing according to the growing season/planting/harvesting. In October and November 2014, SCG launched its multi-media "AG Savings" marketing campaign to increase awareness of EE incentives and no-cost services that are provided to to its Agricultural sector customers. SCG plans to continue its marketing campaign in Winter 2015 too. The marketing campaign is planned to coincide with its customer's harvest season. SCG will aim to work with ED staff to address this recommendation and how the Ex Ante Review process can be altered to allow for projects to be completed before the start of the growing season.	Accepted	SDG&E is expanding the program to schedule program marketing around the growing season. Additionally, the pump test portion of the program will include verifications, installations, and rebate recommendations. 50 horsepower and below pumps will be offered through the rebates program.
2	52	Contractors are an important source of information for agricultural growers. However, not all contractors believe that measures such as VFDs offer energy savings. Furthermore, due to uncertainty surrounding rebate availability, some contractors avoid promoting utility programs, as any variance in the rebate amount or the time that it takes to receive a rebate can reflect poorly on the contractor. Utilities should therefore work with contractors to ensure that they understand the benefits of efficient equipment. In doing so, utilities may gain increased trust from their contractors, and contractors, in turn, may be more inclined to promote high-efficiency measures.	Focus on educating contractors on efficiency opportunities, and develop relationships with these contractors.	All IOUs	Accepted	Contractors continue to be important partners in offering agricultural energy efficiency programs. To promote measures including pump overhauls and VFDs, PG&E's local sales teams, supported by local trade alliances managers, are building relationships with pump and electrical contractors and building their awareness of the benefits of energy efficiency, as well as program needs and expectations.	Accepted	Activities are already in practice. SCE has a Customer Authorized Agent program which offers frequent workshops targeting vendors and distributors. These workshop are designed to educate the participants of ECMs offered, specifications of the ECM and how to maximize the benefit to the customer. SCE also offers free workshops for customers, vendors and other interested parties to attend. Participants learn about the best available technologies for general and specific applications and practices on using the technology in order to gain the maximum benefit. In both of these workshop offerings, energy efficiency, demand response and renewable generation programs and offerings are also	Other	Currently, SCG has a general marketing campaign targeting to its Agriculutral sector customers. SCG understand there is value is marketing to contractors and will explore the opportunity.	Accepted	SDG&E is currently developing close relationships with contractors. SDG&E will use Workforce Education & Training to develop workshops for agricultural contractors where they can learn about available technologies for general and specific applications.

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								discussed, along with changes to offerings, such as technologies that have been added or removed, increases and decreases in incentive/rebate amounts, and the "how to" apply				
3	52	Most irrigated agriculture respondents stated that they use the operating pressures from the original system design. However, both utility staff and SMEs expressed concern over the original designs. Respondents suggested that designers might overestimate the operating pressures to compensate for error, which would unnecessarily increase energy use. Furthermore, settings may naturally alter with the operation of the system over time. Utilities should take a systemic approach to ensure that all components of a growers' irrigation system are working synergistically and efficiently. This may be more relevant for larger farms than for smaller farms; however, utilities should explore potential savings in each. Utilities could provide these services to both irrigated agriculture and greenhouse customers as an extension of their pump efficiency program. By offering system optimization services, utilities could achieve increased savings from the system as a whole, as well as gain a better understanding of how growers are designing their systems	Incorporate system optimization services into program offerings, in addition to pump efficiency testing.	All IOUs	Other	PG&E is concerned that pump efficiency testers have a very specific skill set and an optimized process; adding broader system pressure evaluation, while beneficial, may be better suited to a stand-alone program. PG&E has taken the first steps to test such a program model, including an ET study and attempts to develop customized retrofit projects, but echoes SCE's questions about RCX or REA measure eligibility rules.	Other	SCE would be willing to partner with the other IOUs and ED to look into this recommendation further. Barriers to over come: cost required to analysis and redesign irrigation systems; identify the potential cost-effectiveness value to the customer to install; identify the technical and experiential knowledge a pump tester must have to perform system evaluations and designs, and most importantly, would such a measure fall outside of REA definitions.	Other	SCG will work with ED and other IOUs to incorporate system optimization into our portfolio for cold water reduction/drought reasons. SCG is researching ways to co-promote energy and water programs. Resolution to the Greenhouse moritium will help speed up the process. Also, having a resolution to the water energy nexus proceeding should expedite the program retoolment.	Other	SDG&E needs to investigate how many customers own their own water pumps. The water pump efficiency test would include a system optimization service and recommend program offerings.
4	52-53	Responses from the interviews in this MASI suggest that the market already may be moving toward incorporating computerized controls or information systems into their irrigation planning and systems operation. This is true both of irrigated agriculture and of greenhouse operators. However, because of cost constraints, some farmers who are interested in these technologies are having trouble incorporating moisture sensors and other technologies across their operations, particularly for irrigated agriculture farmers. Incentives from utilities could help farmers invest further in this equipment, which could result in both energy and water conservation. However, while these systems typically can monitor factors such as energy and water use, growers must account for other factors such as fertilization, weather, and other environmental concerns. Therefore, any monitoring system that utilities might promote to growers would need to incorporate tracking other key factors in addition to energy and water usage.	Consider incentivizing moisture sensors and other information-based technologies.	All IOUs	Accepted	PG&E has tested information-based technologies through the ET program, and has requested permission from CPUC via an ideation proposal to create an expanded pilot to evaluate the savings of these technologies.	Accepted	SCE currently has integrated information regarding irrigation controls and the beneficial use of moisture sensors for energy and water conservation reasons into the SW AG Test Strategic Approach presentation. SCE will continue to expand and update information related to controls and the use of moisture sensors in future workshops when applicable. Precision irrigation should result in higher yields, more product per unit of energy. If yield was a considered factor than other precision irrigation measures along with soil moisture sensors, such as changing from flood to micro drip could be considered energy saving.	Other	SCG will work with ED and other IOUs to incorporate system optimization into our portfolio for cold water reduction/drought reasons. SCG is researching ways to co-promote energy and water programs. Resolution to the Greenhouse moritium will help speed up the process. Also, having a resolution to the water energy nexus proceeding should expedite the program retoolment.	Accepted	SDG&E evaluate the market potential for moisture sensors and other information-based technologies. A work paper would need to be developed. These technologies are currently eligible throught the incentives program.
5	53	While there are obvious savings available in targeting efficiency measures for large pumps, both large and small growers often use smaller pumps, as well. In particular, smaller farms with smaller irrigated plots may use small to mediums sized pumps for irrigation. Large farmers also tend to operate plots that can be geographically distant from each other, and may therefore use small- to medium-sized pumps for these plots. By targeting small- to medium-sized pumps as an area for efficiency opportunities, rebates and efficiency information can apply to farmers of all sizes, rather than simply targeting larger farms. This program offering can increase participation, as it is relevant to the entire market segment.	Look at small- and medium-sized pumps as well as large pumps for efficiency opportunities in irrigated agriculture	All IOUs	Accepted	PG&E has launched new deemed measures for small pump overhauls and irrigation pump VFDs, which are already allowing more small and medium pumps to participate in our programs.	Other	SCE understand the value to reaching out to customers who have both large and small to medium pumping systems. One way we are reaching them is my "deeming" pumping measures for pumping systems between 0 and 50 HP. Creating Express measures will assist in streamlining access to financial incentive for pumping customers with small pumps.	Accepted	SCG looks at all opportunities, focusing on gas-engine driven pumps. SCG markets its pumps to all agricultural customers. SCG has service technicians who provide field support to agriculutural customers and audit service/pump testing. These technicians also will utilize the opportunity when providing services to these customers to market the EE programs and equipment, as appropriate.	Other	50 horsepower or less pumps are currently offered through the rebates program and 50 horsepower or more pumps are offered through the incentive program for commercial customers. SDG&E will condsider this same model for agricultural customers.

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6	vi	The source of an operation's irrigation water can also play a large role in growers' equipment decisions, particularly in irrigated agriculture operations. For example, farms with access to a municipal water source or close proximity to a river will have fewer expenses related to water pumping than farms that require drilling new wells or pumping water long distances. Addressing the market by crop type could help utilities to distinguish between late adopters and farmers who use water intensive systems because their crops require it. Utilities can then address these late adopters directly to identify barriers to technological adoption.	When approaching a grower with programs and information, utilities should consider the operation's crop types and water sources rather than categorizing an operation by its acreage, square footage, or energy consumption.	All IOUs	Other	PG&E agrees that crop type and water sources are very important considerations for customer outreach. Through connections with industry trade associations and presence at local events, PG&E delivers custom messages to industry subsegments. Currently, our sprinkler to drip measure is only applicable to field crop customers for the reasons cited by Navigant. However, PG&E also notes that business size is an important consideration in approaching growers. While business size is not exactly aligned with energy consumption, it is certainly correlated.	Accepted	SCE understands how much Agriculture customer still value "relationships". The better the relationship, the higher level of trust SCE will have with them. Currently, SCE leverages relationships it has developed with certain agricultural customers, but in addition, SCE leverages the relationship which vendors, consultants and assigned SCE customer account representatives, all have with these agricultural customers. This relationship requires that they have specific knowledge about their customer's business. This knowledge includes crop(s), technological areas for energy opportunities, and level of technology sophistication.	Other	SCG supports this idea of crop replacement, but further studies and collaboration with the water agency should be explored first. Some water agencies have started in that path already, MWD has a rebate for stumping avocado trees. Further research should be look into by both water and energy program staff. In addition local universities should be tapped to do these research with the energy/water program administrators.	Other	As we develop the program we are going to use the input from the vendor partners, as well as marketing, communication, and outreach to understand the agricultural customers.
7	viii	Farmers are increasingly aware of the benefits of VFDs, although VFDs are more common in large farms and on larger pumps. According to grower interviews, small- and medium-sized growers are less likely to have VFDs on their pumps, and are also less likely to see the benefits of VFDs. Educating and offering incentives to smaller farms may therefore present an opportunity for future potential savings. This opportunity will be particularly relevant if the market continues to move away from gravity-based systems and toward pressurized systems such as drip because pressurized systems may require increased pumping.	Utilities should consider conducting targeted research into VFD applications to determine which equipment on small farms is appropriate for VFDs.	All IOUs	Accepted	PG&E's deemed VFD measure is applicable to irrigation pumps of all sizees that supply water to pressurized irrigation systems and hence demand precise flow and pressure regulation. PG&E is scoping focused market research on VFD adoption.		SCE already recommends the technology in conjunction with demand response opportunities. This helps to reduce the first costs even further. SCE is recommending VFDs for irrigation systems with varying pressure requirements. This would be best suited as a deemed offering. The offering needs to be cost-effective. If the incentive is not substantial enough, the customer will not be influenced to implement. Smaller systems will have smaller energy savings potential.	Other	Not applicable to gas.	Accepted	SDG&E would have to conduct more research to undersand the validity of VFD applications in the service territory.
8	viii	The industry is trending toward low-flow, pressurized irrigation systems. However, some utility staff expressed concerns about the exclusion of microsprinklers from the utilities' rebate package. The Pacific Gas and Electric Company (PG&E) recently removed incentives for microsprinklers for tree crops and vineyards due to ISP concerns, although the incentive is still available for field crops. Utility account executives, however, stated that these estimates failed to take into account certain factors related to usage, and that the utility should continue to include them as an agricultural incentive. According to United States Department of Agriculture (USDA) data, the use of microsprinklers has actually declined since 2008, and therefore there may be energy savings available in this technology.	Utilities may want to consider reevaluating potential savings for this technology and reconsider its inclusion in program offerings.	All IOUs	Accepted	PG&E sunset the noted measures for a variety of reasons including outdated data. PG&E's products team is considering opportunities for new programs to support high-performance irrigation system design, which could support some drip and micro systems on all crop types in a more targeted way.		SCE still offers these measures in applications which benefit tree crops (Solutions Guide, page 57) We plan to consider a yield component as a factor in energy savings. Generally, with more precise irrigation methods, yields improve. When we looked at the energy intensity per unit of product instead of overall energy consumed, we may be able to consider going from flood to a more efficient irrigation system leading to a faster adoption rate of these less water intensive systems such as subsurface and micro-irrigation.		SCG supports the retooling of the program offering for irrigation systems. Currently, SCG is researching the flood to drip measure as a program offering. Although SCG supports these new program offerings, cost sharing should also take place with the respected irrigation water district. This activity will enhance both the energy and water programs' for the territories.	Other	Agricultural customers with pumping systems are currently eligible for low-flow sprinkler and drip irrigation rebates.
9	x	Despite individual reports that various groups have conducted over the years, the agricultural industry still lacks a comprehensive database of individual producers in the market, and their respective on-farm equipment components. The lack of a comprehensive database makes it difficult to establish baselines, to identify market trends, and to maintain communication with growers. Utilities and the California agriculture industry, as a whole, could benefit from an agricultural saturation study similar to California's Residential Appliance Saturation Study (RASS) or Commercial End-Use Survey (CEUS). California's IOUs should work with the CPUC, municipal and irrigation district utilities, agricultural extensions, and trade associations to establish a framework for a study such as this, taking into account the need for granularity at a region and crop-specific level. This would require a significant	Work with other utilities and agricultural entities to establish a database of system designs by crop and region.	All IOUs	Other	PG&E agrees that a comprehensive database of water sources, irrigation system types, crop types, and location could be beneficial to program design. However, we would want to carefully consider the costs, accuracy, and confidentiality implications of this proposal.	Other	Consistent with customer confidentiality rules and requirements, SCE is open to exploring evaluating the feasibility to implement this database initiative recommendation with the other IOUs, CPUC and agricultural entities.	Other	SCG understands that there is a need for the agriculture saturation study, but coordination with water agencies' program adminstrator must take place before any studies should be started. The water energy nexus is a good place to start the conversation. about co-funding an agriculture saturation study.	Other	SDG&E is open to evaluating the feasibility of implementing a database with the other IOUs, CPUC and agricultural entities. The database would have to maintain the requirements of customer privacy.

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		amount of effort at the beginning of the process. However, once the utilities have created a framework and completed the first round of data collection efforts, regular updates would allow utilities and other market actors to gain a clearer understanding of equipment baselines and practices in the market.										
10	19	One greenhouse builder explained that it is difficult to convince growers to install higher efficiency materials because growers are unsure of the payback. This builder stated that most of his customers would not install higher-efficiency materials if a rebate were unavailable, and that even though his customers are often impressed with the savings, they would still revert back to single-layer polyethylene if there were no rebate available the next time. According to this builder, greenhouse growers are so cost-conscious that they will occasionally buy used materials from a neighboring greenhouse if the other greenhouse is retrofitting their buildings. One large grower confirmed this, stating that if there is no rebate available for upgrading his greenhouse material, he will “scavenge” walls from another area in his greenhouse that require less heat. Navigant’s interviews revealed that five greenhouse growers used double-layer polyethylene, which suggests that there may be some greenhouse growers who are moving toward slightly higher-efficiency shell materials without the aid of incentives. However, the cost of materials may inhibit other growers from installing higher-efficiency insulation.	Navigant recommends that utilities continue to offer incentives for higher-efficiency shell insulation retrofits.	All IOUs	Other	PG&E is working with CPUC staff to determine the future of the greenhouse programs in the context of the segment moratorium.	Other	SCE is willing to explore this option with the other IOUs, Energy Division and other appropriate entities. The first objective is to identify if this measure is already an "industry standard". With the awareness level apparently so high, acknowledging the testimony presented, it would be worthwhile to explore if there are "drivers" other than financial which will enable more greenhouse owners to increase their insulation values.	Other	CPUC has requested that an industry practice study be conducted to determine the appropriate baseline for shell insulation measures. This study would need to be completed before SCG considers incentive changes.	Other	SDG&E will consider the recommendation to continue offering incentives for high-efficiency shell insulation. SDG&E will have to work with the other IOUs and the Energy Division to determine if this measure is industry standard practice.
11	36	One SME expressed concerns regarding operating pressures, explaining that even though growers would not change operating pressures without a reason, sometimes system wear can lead to changes in operating pressures. This SME stated that a number of evaluations were conducted in 2014 for a pilot program, which reviewed operating pressures in addition to conducting pump efficiency tests. Although the results from this study were not available at the time of the interview, the SME claimed that those systems that were evaluated were 11 percent more efficient than those that were not evaluated regularly.	Navigant recommends that utilities perform tests on operating pressures at the time of pump efficiency tests to ensure that the system is running according to its original design	All IOUs	Accepted	PG&E sponsored the ET study referenced in the recommendation; PG&E will consider ways to transition the findings into programs and measure eligible energy savings.	Accepted	SCE does perform tests at the various operating pressure points at the time of test and when feasible, conduct multiple point tests to evaluate pump performance to design.	Accepted	SCG currently performs tests on operating pressures while conducting the pump testing.	Accepted	SDG&E will conduct pump tests to evaluate multiple measurements on the pump curves to compare design pressures, existing, pressures, and post retrofit pressures.
12	24	Grower and SME interviews showed that there are still a number of greenhouse growers using single layer polyethylene film for both existing greenhouses and new construction. According to explanations from both growers and SMEs, it is possible that in the absence of rebates, growers would revert to installing single-layer polyethylene film, particularly as a replacement measure. Polycarbonate is more efficient than polyethylene and has a longer measure life, which would mean that growers do not need to replace it as frequently.	Utilities should consider adjusting incentives for higher-efficiency materials so that they are more attractive as compared to double-layer polyethylene	All IOUs	Other	PG&E is working with CPUC staff to determine the future of the greenhouse programs in the context of the segment moratorium.	Other	SCE is willing to explore this option with the other IOUs, Energy Division and other appropriate entities. The first objective is to identify if this measure is already an "industry standard". With the awareness level apparently so high, it would be worthwhile to explore if there are "drivers" other than financial which will enable more greenhouse owners to increase their use of higher efficiency materials. Other concerns include what type of electric savings would be available for SCE. Currently there are no greenhouse film measures for SCE, because no HVAC nor lighting savings can be obtained through the measure.	Other	Commission Staff has requested that an industry practice study be conducted to determine the appropriate baseline for heat curtains and infrared film. This study would need to be completed before SCG considers incentive changes.		SDG&E will explore incentivizing higher-efficiency materials. Additionally, SDG&E will need to conduct research to see if this material is feasible within the service territory.

Response to Recommendations (RTR) in Impact, Process, and Market Assessment Studies

Study Title: Measure, Application, Segment, Industry (MASI): Chain Operations (2/9/15)
Program: MASI - Chain Operations
Author: Navigant
Calmac ID: SCE0377.04
ED WO: 2092
Link to Report: http://calmac.org/publications/MASI_Chain_Operations_Final_Report.pdf

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1	23	Firstly, utilities could increase the likelihood of chains implementing energy efficiency measures by developing prescriptive rebates earlier in the year. Within chain operations, energy efficiency projects are competing with other priorities at the corporate level for capital funding, and the presence of rebates can make energy efficiency projects more economically favorable and more likely to get approved during the budgeting process for capital projects. One retail chain stated that they would prefer to know the following year's available prescriptive rebates in June or July of the previous year in order to secure internal capital funding for prospective projects. Likewise, utilities can be more flexible in working with customers wishing to implement custom rebates as well. One grocery store interviewee found it difficult to obtain an estimate of a potential custom rebate from the utilities, which prevented her team from being able to calculate ROI and develop a schedule for rolling out the equipment upgrade. The resistance from the utility stemmed from the fact that they had not yet developed a rollout schedule, which led to a chicken-first-or-egg-first issue. With more willingness on the utility's part to give estimates, chains may be able to better plan out energy efficiency rollouts. Finally, utilities could better address the time-sensitive needs of chain operations by speeding up the rate of rebate processing. While it is understandable that each utility has large volumes of rebates to process, multi-month waiting periods for rebate approvals do not match the fast-paced business timelines that chain operations work with, particularly for ROB measures. Having to wait months for rebate approval could easily push a chain to purchase cheaper but inefficient equipment, especially if the chain has little leeway for downtime	Synchronize Rebate Application Process with Corporate Timelines.	All IOUs	Accepted	PG&E has also recognized the importance of designing programs to align with corporate budgeting timelines. This was also evident in the 2015 market research conducted by Greenberg on the Large Business Customer Journey. As such, PG&E redesigned the Matrix Furniture program to focus on retail chains. Similarly, PG&E redesigned the Lodging Savers program to focus on Hospitality customers, including corporately owned chain operations. These are two examples of how PG&E has shifted program focus to more effectively meet a customer where they arein their energy management journey. PG&E will continue to use this in shaping our business plans. Regarding custom rebates, PG&E is hopeful that the Custom Pipeline Cleanup conducted in 2015 and Custom Training offered in 2016 will provide more clarity on eligible projects and program rules. WIth this, PG&E hopes to streamline the delivery of accurate custom rebate amounts and quality projects to help improve the customer experience and to avoid unneccesary delays.	Other	There is no specific Chain Account program, therefore prescriptive measures will be developed as technologies are available; as work paper development is completed and as work papers are ED approved. Custom measures are accepted in the program at any time. While SCE agrees that the process for incentive approval should be fast, speed must not compromise quality. In the custom program, a focus on quality is paramount to secure and validate savings and incentives to be paid.	Accepted	SCG Account Executives work closely with their Chain Operations customers to ensure that its EE application is synchronize with the Chain's timeline. Currently, SCG provides rebates information on a program cycle basis so the information would be the same for the entire cycle. SCG updates its website and application, as needed. For Chain Operations customers, SCG offers faster rate of rebate processing by the ability to process it in batches.	Accepted	SDG&E offers rebates for standard type equipment which can be leveraged by our chain operation customers and we welcome recommendations for other standard type equipment which may allow for more rebates in our catalog.

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2	23-24	It is important for utilities to understand what the baseline energy consumption is for custom rebate calculations, and this is typically accomplished through pre-inspection. However, the California IOUs have the opportunity to streamline the pre-inspection process by developing a simpler inspection process for chains with many similar or identical establishments. This is particularly applicable to chain restaurants, which differ very little in terms of menu choices and consequently, equipment choices and energy consumption. We suggest that chain businesses could qualify for custom rebates through reinspection of a random sample of establishments, instead of every establishment having to be preinspected. Furthermore, as chains do not plan the design of their establishments based on utility territories, locations are generally similar across California. To reduce the costs and lengthiness of the pre-inspection process, utilities could increase their willingness to share the results of their inspections with the other California IOUs. Sampling 15 stores across California instead of 15 in each of three different territories would save money and time for all parties involved, especially if the establishments targeted for custom rebates are similar in design, operation, and energy consumption across the different utilities. The pre-inspection process should also treat franchisees as similar to corporately owned establishments. Franchisees often must adhere to corporate policies that include menu choices and design that make them similar in nature to corporately owned locations. As a result, pre-inspection could also apply to franchisees who wish to qualify for the same "bulk" rebates as corporate-owned establishments.	Explore Simplifying the Pre-Inspection Process and Include Franchisees.	All IOUs	Accepted	PG&E looks forward to working with Commission Staff on this initiaitve. In addition, PG&E will seek implementer input on this feedback and will consider this in program redesign efforts going forward (e.g. program updates, business plans). Streamlining pre-inspection and pre-qualification processes could be an effective way to increase savings goal attainment and improve customer satisfaction.	Accepted	SCE has simplified the pre-inspection process for chain accounts that apply at the same time. For franchisees, if they apply at the same time and they notify SCE they are part of the chain account* project, pre-inspection sampling can be considered. * chain accounts that are corporate owned are easy to identify, many franchisees are identified by the service account owner which will not be the corporate chain name.	Other	Not applicable. SCG does not perform pre-inspection for the rebate processes that relate to the Chain Operations account. Also, SCG treats its franchisees customers as it does its corporate customers.	Accepted	SDGE does perform custom pre-inspections targeting a sample size of chain projects which are designed in a similar fashion and then applies the sample size energy savings results to the remaining similar remaining projects.
3	24	California utilities should continue to be both proactive and responsive in their communications with chain operations. As discussed in sections 4.2.2 and 4.2.4, a consistent theme across many of the energy managers interviewed was that frequent communication from dedicated account executives and thirdparty program managers was one of the largest drivers of reducing energy usage in their various stores. It is clear that chains' energy managers are increasingly responsible for coordinating with numerous utilities across multiple states, if not the entire nation. Utilities should continue to encourage account executives to be as proactive as possible in reaching out to chains, while also taking care of as much of the technical calculations and paperwork as possible. In the words of one third-party program manager, chain operations overwhelmingly prefer a one-stop shop for their rebates and energy efficiency initiatives. Sector-specific third-party implementers can also perform this role effectively.	Continue Long-Term Relationship Development from Account Executives and Third-Party Program Managers.	All IOUs	Accepted	Business Energy Solutions (BES) Account Reps and Programs teams are currently coordinating closely to ensure optimal long-term customer relationship development with chain customers. In November 2015, the BES Account Rep organization was re-organized by customer segment and PG&E is confident that this will help provide more consistent support for chain customers.	Accepted	SCE Account Executives continue to develop and strengthen their long-term relationship with its Chain Operations customers.	Accepted	SCG Account Executives continue to develop and strengthen their long-term relationship with its Chain Operations customers. SCG does not have third-party programs that targets Chain Operations customers.	Accepted	To support our chain customers we will continue to encourage our internal account executives and our third-party implementers to engage early on with chain customers to support the adoption of their projects within our custom programs.
4	24	As discussed in section 4.3.5, one grocery chain felt that the rebates provided to upstream manufacturers in California were not being reflected in the sale price to that grocery chain. For that chain, this had a notable, negative effect on the number of HVAC systems purchased as costs remained prohibitive for many stores within that retail chain. While the Upstream HVAC Equipment Distributor Incentive was designed as a market transformation program, the interviewee's response indicates that perhaps not all customers recognize the aim of the program, which could lead to frustration with upstream sellers or the utility. Steps that utilities could take if not yet already done include the following: Communicate with chain energy managers and their staff to understand the purpose of upstream rebate programs, which is to encourage a wider market transformation toward more efficient equipment Determine the extent to which manufacturers or upstream sellers are (or are not) pricing in upstream rebates, ascertain knowledge about the resulting prices and its effect on end customer adoption and if necessary, realign incentives and conditions for receiving upstream rebates	Better Understand the Effects of Upstream Rebates We recommend that utilities attempt to better understand and determine the impact of upstream rebates upon downstream participants, particularly for HVAC systems.	All IOUs	Accepted	PG&E agrees with this finding and will work to better communicate the purpose and value of the upstream programs across internal PG&E stakeholders. PG&E will continue to update the account reps through the internal newsletter. This will help ensure the account representatives are clear of the purpose of the programs and that they can clearly articulate the behavior PG&E is trying to influence with upstream programs. PG&E willl also work on external / customer facing talking points that communicate how the upstream programs work.	Accepted	SCE Account Executives educate customers about the purpose of the upstream program	Accepted	In 2015, SCG transformed its upstream program to a mid-stream approach. In its mid-stream program, SCG requires the manufacturer-distributor to pass down the rebate/savings to the customer.	Other	SDG&E offers a hybrid upstream (distributor)/downstream (customer) incentive program that offers customers an opportunity to reserve incentives in the planning stage of their HVAC system installation. Currently, downstream HVAC incentives have priority over upstream incentives as long as their reservation is submitted prior to installation.

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5	25	One third-party program manager has been approached by multiple grocery chains for help in Southern California Edison Company and SDG&E territories, and some customers have gone as far as to directly contract with the third-party implementer to conduct direct energy audits. This shows that there is a potential demand for a targeted grocery program within those utility territories. Coupled with the fact that multiple third-party program managers have anecdotally touted the success of the EnergySmart Grocer program in northern and central California, means that the southern California IOUs could explore a dedicated energy efficiency program for groceries and supermarkets that could possibly benefit the numerous chain groceries in the region. Southern California IOUs could evaluate the potential by taking the following steps: Reach out to grocery chains with both northern and southern California locations who have participated in PG&E's EnergySmart Grocer program Survey other chain grocery stores that have locations in southern California to gauge interest and/or need for dedicated grocery programs Discuss rollout strategies with potential internal or third-party implementers	Explore Potential Grocery Programs in Southern California (SCE/SDG&E). Navigant recommends that utilities in southern California explore the possibility of developing a program similar to that of PG&E's EnergySmart Grocer program.	Multiple IOUs (specified in recommendation)	Other	Not applicable	Rejected	SCE attempted a program during the 2006-2008 program cycle. It had limited success. Most measures that would be included in the third party program are currently offered through the statewide programs. A third party program is not required and may be a burden towards cost-effectiveness.	Other	Not applicable.	Other	SDG&E currently offers the Business Energy Solutions program (formerly Direct Install) which satifies the needs of grocery chains within the service territory.
6	25	Although many chain businesses use in-house financing of energy efficiency projects due to the presence of capital funds, some customers do not have enough up-front cash to implement such projects and would benefit from on-bill financing through the utilities. This is shown in the overwhelming 91% positive response in surveyed participants in an evaluation of California on-bill financing programs when participants were asked if they thought that repaying a loan through a utility bill was a valuable feature.13 Particularly as chains with more technical sophistication embark on increasingly complex projects, with longer payback periods, on-bill financing can be a strategy for such projects to continue to compete with other priorities in the company's budget. On-bill financing may also be useful to franchisees that may not have the same access to capital as a corporate-owned establishment.	Promote On-Bill Financing as an Alternative to Capital Expenditure. We recommend that utilities continue to promote on-bill financing and on-bill repayment as a way for chain businesses to finance energy efficiency projects	All IOUs	Accepted	PG&E agrees taht chain customers can benefit from On-Bill Financineg. Since 2012, the EnergySmartGrocer program has provided $9M in OBF loans to grocery chain customers. The Programs team is currently working with the program implementer and account reps to identify ways to further expand the adoption of OBF for additional chain (and other) customers.	Accepted	SCE offers OBF to all customers and continues to promote this offering.	Accepted	SCG Account Executives are aware of the benefits of OBF as an alternative to capital expenditures. They promote OBF and OBR as appropriate for the customers.	Accepted	On-Bill Financing has a maximum loan term (or payback period) of five years. Financial institutions are expected to offer longer loan terms with On-Bill Repayment.
7	25-26	Interview evidence suggests that opportunities for saving energy continue to increase in complexity; for example, more and more chain operations are implementing energy management systems where equipment at individual establishments is controlled from a centralized location. On the other hand, chain businesses sometimes have difficulty identifying and implementing energy-saving measures due to a lack of technical expertise, particularly with respect to personnel at the locations who would be responsible for maintaining such equipment. Research centers, similar to the Food Service Equipment Center and the Food Service Technology Center, can act as technical resources for chain operations.	Provide Technical Assistance and Advice on EMS, Advanced Measures. We recommend that utilities continue to be a resource for information sharing and training with respect to energy efficiency measures, from the chain's corporate leadership down to staff on-site such as operations and maintenance personnel.	All IOUs	Accepted	PG&E agrees that expanded technical assistance on identifying and implementing energy savings measures is an important tool in driving energy savings goal attainment and improving customer satisfaction. We will consider this in program redesign efforts going forward (e.g. program updates, business plans).	Accepted	SCE has a Food Technology Center that serves as technical resources to all commercial equipment users.	Accepted	SCG Account Executives continues to be a resource to its Chain Operation customers. They provide technicial assistance and advice as appropriate for the customers. SCG also participates in a statewide effort to provide another resource for its customers, the Foodservice Technology Center (FSTC) online at http://www.fishnick.com/saveenergy/rebates/.	Accepted	SDG&E's energy innovation center (EIC) provides classes covering a variety of energy efficiency measures. Additionally, the EIC contains a lending library of equipment that can be used to aid in the evaluation of energy savings projects.

Response to Recommendations (RTR) in Impact, Process, and Market Assessment Studies

Study Title: Measure, Application, Segment, Industry (MASI): Wastewater Treatment Facilities (3/13/15)
Program: MASI - Wastewater Treatment Facilities
Author: Navigant
Calmac ID: SCE0377.05
ED WO: 2092
Link to Report: http://calmac.org/publications/MASI_Wastewater_Treatment_Plants_Final_Report.pdf

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1	32	Small facilities and large facilities are vastly different in their energy intensities, budgeting processes, priorities, and needs; for these reasons, future studies should consider them as separate categories. Of the 250 plants in California, 80% treat less than 10 MGD on average, and these plants are far different from the larger plants that can treat up to hundreds of MGD. Large plants tend to be highly sophisticated and can operate on economies of scale that justify the implementation of expensive but advanced EE projects. Because many have already picked the lowhanging fruit of EE such as VFD pumps, advanced blowers, and methane or biogas recovery, they are looking for the next frontier of energy savings. Utilities can help by being a resource for information on the most advanced features, continuing to fund pilot studies of emerging technologies, and generally helping these plants come up with customized solutions for their needs. Small plants, on the other hand, are not as sophisticated and many, because of their size, do not have the revenues or budget to invest in advanced technologies. Some proven technologies such as VFD pumps have penetrated this market to some degree, but other more complex measures like biogas recovery are not highly utilized or not utilized at all for plants that do not have activated sludge. On the other hand, the interviewees at the two small plants that we spoke with were invested in saving energy. More study needs to be done on EE measures that would be appropriate for smaller plants, as well as the expected energy savings, keeping in mind that the savings would be aggregated across hundreds of plants.	Consider the Size of the Wastewater Treatment Plant	All IOUs	Accepted	PGE has conducted Large Integrated Audits and explores emerging technologies in the WWT sector.	Accepted	ok	Accepted	SCG's customers in wastewater treatment facilities are large industrial customers.	Accepted	We agree that further study is required to understand which EE measures would be better suited for smaller plants to promote improved energy efficency for these customers.
2	32	AQMD rules restrict emissions from biogas-using equipment such as ICEs, so in a seemingly non-intuitive outcome, many plants are flaring the gas instead of using it beneficially. Utilities may not be able to affect the regulations, but should adapt their incentives to the fact that the barrier is no longer to the production of biogas but to making that biogas usable. For example, utilities could incentivize or rebate the cleaning technologies that would allow treatment plants to use the biogas. Utilities could potentially also incentivize process-enhancing technologies that enhance biogas production, thus making the treatment more cost-effective.	Help Customers Handle Competing Regulations. Utilities should try to help their customers save energy even in the presence of competing regulations from the AQMDs in California	All IOUs	Accepted	Incentives are allowed through Third Party and Customized programs for capturing bio-gas to be used as on-site fuel which reduces natural gas usage.	Other	SCE provides customers with opportunities to save energy however it is unable to claim savings from regulation driven projects.	Accepted	SCG's Environomental Services provides permit assistance to help customers handle their permitting issues. SCG EE programs helps the customers go above and beyond what is currently mandated.	Accepted	Although SDG&E encourages its customers to fully comply with any applicable regulation, it agrees that programs that either clean biogas to make it usable, or increase biogas production, making cleaning technologies more cost-effective, could help avoid scenarios where biogas is flared instead of used beneficially.
3	32-33	Beyond the low-hanging fruit, the logical next step in EE for some plants could be redesigning the process altogether. This should also account for energy use beyond the treatment process itself. For example, advancements that reduce the amount of sludge produced also reduce the energy use of transporting the sludge. Likewise, water recycling at the source would reduce the total amount of water a treatment plant has to treat, thus lowering energy use.	Focus on Process as well as Technology. Utilities should look beyond specific technologies to consider how the treatment process itself can be made more efficient.	All IOUs	Accepted	PGE has specific Third Party programs that can assist WWT plants to optimize their process.	Accepted	SCE provides customers with opportunities to save energy from new technologies and process optimization through it's programs	Accepted	SCG assists its customers to consistently improve their processes. Additionally, SCG collaborates with the Water Agencies to provide technical assistance.	Accepted	We are currently doing this with the WISE program reviewing the plant as a whole and with regard to custom programs we will address measure as they apply.

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4	33	Regardless of the facility managers' sometimes critical opinions of the IOUs' policies, they consistently saw their relationship with their utility account managers as positive. Account managers help treatment plant operators feel that they are in a partnership with the utility, and the utilities should continue to support this environment of trust to maintain credibility with customers. Additionally, every plant is different, and a single point of contact helps with custom projects	Continue Long-Term Relationship Development through Account Managers. California utilities should continue to be both proactive and responsive in their communications with WWTPs.	All IOUs	Accepted	PGE has assigned account managers to the WWT plants.	Accepted	Ok, SCE will continue to support these and all customers.	Accepted	SCG has multiple account executives assigned to WWTPs.	Accepted	SDG&E Account Managers will continue to develop relationships with WWTPs and be proactive with understanding their business needs.
5	33	Since WWTPs generally do not compete with each other, they are willing to share their knowledge among themselves—several interviewees attended industry conferences and/or said they were members of industry organizations like SCAP. Utilities must be willing and able to both share knowledge with treatment plants and learn from them in order to continue to promote energy savings in the industry.	Continue to Share Industry Knowledge. Given the sophistication of many treatment plants and the deep level of knowledge among plant operators, utilities should stay educated and up-to-date on the latest information on advanced technologies and energy-saving measures	All IOUs	Accepted	PGE assigned account managers build relationships with WWTP facility managers which allows for easy knowledge sharing. PGE has an internal forum for the account mangers to share knowledge with each other, which intern is brought to the customers.	Accepted	SCE engages with customers directly as well as trade associations and other market actors in order to provide opportunities to share best practices and develop energy saving projects	Accepted	SCG strives to be up-to-date through education through industry conferences and seminars.	Accepted	SDG&E is willing to explore further education through Workforce Education & Training

Response to Recommendations (RTR) in Impact, Process, and Market Assessment Studies

Study Title: Measure, Application, Segment, Industry (MASI): New Opportunities in the Food Processing Industry (3/31/15)
Program: MASI - Food Processing
Author: Navigant
Calmac ID: SCE0377.06
ED WO: 2092
Link to Report: http://calmac.org/publications/MASI_Food_Processing_Final_Report.pdf

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1	28-29	Two of the four wineries interviewed specifically mentioned that they would strongly benefit from rebates for energy management and measurement tools. Both wineries indicated that the energy consumption information that they received from utilities was too high-level. The wineries want more information on how much energy is consumed within different operational sections (i.e. within bottling or crushing), including information for specific pieces of equipment. Wineries were not the only facilities interested in more in-depth energy measurement; two of the cheese manufacturers were particularly interested in understanding the energy consumption of key equipment. Additionally, the state regulatory analyst subject matter expert directly stated that facilities "can't improve on what they can't measure."	Research and provide Energy Management equipment and software. This could be accomplished by implementing the following recommendations: 1. Utilities could focus on programs that offer rebates for energy management systems or energy measurement equipment. 2. California Utilities like PG&E, SCE and SDG&E all have tool lending libraries where home owners and businesses can borrow tools for short periods of time to measure energy at equipment level. These libraries can be advertised to the facility managers who are currently unaware of these available tools.	Multiple IOUs (specified in recommendation)	Other	PG&E would like to find innovative ways to support energy management equipment and software through programs, but is challenged by the need to demonstrate energy savings and cost-effectiveness.	Accepted	Please refer to current offerings in the Customized program that include EMS for all customers. The lending library may be further promoted.	Accepted	SCG offers incentives through its Calculated Program for qualifying energy management systems. SCG does not have a tool lending library. SCG provides the service of measuring energy at equipment level through its Audit and assessment Program.	Other	SDG&E's Energy Innovation Center (EIC) contains a lending library of equipment that can be used to monitor energy consumption for various types of processes. We will work with the food service team to increase awareness of this offering. Incentives are currently available through the calculated program for energy management sysytems in conjunction with specific energy savings strategies and hardware.
2	29	Many facility managers mentioned that they would highly appreciate opportunities to learn more about energy-efficiency opportunities and management. As the majority of food processing companies that we interviewed had no dedicated energy personnel, operations staff and facility managers are responsible for energy management. These personnel could be trained through the development of a dedicated energy training center for food processors. This center could be responsible for providing regular training sessions (either in person or in webinars) on focused topics such as the following: Upcoming regulations: demand charges, renewable portfolio standards, greenhouse gas credits, Utility energy-efficiency programs: demand response, ISPs, new or discontinued incentive programs, New technologies and best practices: energy management systems, new energy-efficiency measures. California Utilities have established training centers which can be leveraged for the purpose of educating the facility managers. Advertising these available resources to the facilities can be beneficial for their education of energy use. These training sessions could also serve as conduits for information exchange and networking among different food processors. By using the following, utilities can increase the efficiency of this process: Collaborating with trade associations and industry organizations to tailor trainings to the needs of their constituents. Developing case studies for successful installations of energy saving measures, promoting measures that are currently being implemented in the industry.	Invest in Better Training for Non-Energy Personnel.	All IOUs	Accepted	PG&E agrees with the recommendation. Training programs are critical, and two key channels are (1) via the CEI program, which supports facility operations staff developing energy expertise, and (2) marketing efforts to disseminate information, including a planned collaborative workshop with the California League of Food Processors.	Other	SCE has an energy education center that provides numerous classes for non-energy personnel and energy savvy personnel	Accepted	SCG offers a wide variety of training, ranging from basic combustion training to Department of Energy courses on steam and process heat analysis, and food service equipment training, to the public including non-energy personnel through its courses at the Energy Resource Center (ERC).	Accepted	SDG&E's Energy Innovation Center (EIC) offers a variety of courses for non-energy personnel on a regular basis covering the outlined topics. We will work with the food service team to increase awareness for these offerings.

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3	30	In addition, the BEST Dairy Benchmarking Tool is an educational tool for better understanding facility energy consumption in the dairy industry. The tool was developed for industrial users to compile data on energy and water usage in their own dairy processing plants, and compare their efficiency levels with state of the art efficient facilities to determine where opportunity exists. Utilities can also promote this tool for wineries, with the LBNL "BEST Winery: Benchmarking and Energy and Water Efficiency Savings Tool." Apart from the tool lending libraries, California utilities also have energy training centers for their respective service territories. These centers, that offer a variety of courses and seminars on a variety of energy topics, can be a great resource for facility managers to learn and understand energy management. Information about these courses can be found on the utility websites. The California League of Food Processors is a great forum to learn, grow and connect with industry experts as well as other facility managers. They have several workshops offered year around as well as an annual Food Processing expo that brings together more than 230 exhibitors from 11 countries with over 2000 attendees, is the largest tradeshow in California devoted exclusively to food processing. These resources can be very beneficial for facility managers to understand, evaluate and learn about their energy use. The CPUC collaborated with the California League of Food Processors conducted an open workshop and outreach to update its knowledge on the energy efficiency and identify opportunities and barriers in the industrial and hence the food processing sector. There may be more opportunities for the sector to engage in energy efficiency dialogue at the state level as a part of the CPUC Industrial Action Plan.	Promote Use of Existing Industry Resources. Navigant recommends that utilities promote existing industry specific resources.	All IOUs	Accepted	PG&E is partnering with CLFP to offer an IDSM workshop to member food processing customers in Fall 2015.	Other	SCE supports customer use of industry resources through the energy education center, BCD interaction, etc.	Other	SCG will explore existing industry resources that are pertinent to market sectors within the SCG service territory.	Other	SDG&E will explore existing industry resources that are pertinent to market sectors within the SDG&E service territory.
4	30	The cheese manufacturers interviewed were relatively small facilities. Both the small and medium cheese manufacturer spoken to indicated that having specific measure information and the potential energy savings opportunity would be the most helpful way for utilities to provide support. Two of the cheese manufacturers expressed that they will be expanding their operations facilities over the course of the next couple of years and advice regarding energy-efficient equipment and practices would be much appreciated.	Cheese Manufacturing: Provide Support in Energy-Efficiency Investments.	All IOUs	Accepted	PG&E will conduct outreach to cheese manufacturers.	Other	SCE provides customer support for all segment customers with audit opportunities and project development assistance.	Other	SCG needs to determine the number of customers in cheese manufacturing by running a query by NAICS code.	Other	eSource response: Regarding cheese processing, the US Census Bureau's Industry Statistics Portal's County Business Patterns series did not report any data for the NAICS code 311513 (cheese processing) for the San Diego-Carlsbad metropolitan area. We assume that means there are no establishments reporting with that code, but we are not sure. Rolling up to NAICS code 31151 (dairy product except frozen manufacturing), there were 3 establishments in 2013.
5	31	The small cheese manufacturing facility is currently looking into the feasibility of recycling water as they produce 3,500 gallons of wastewater each day or one million gallons annually. According to the California Food Processing Industry Technology Roadmap57, cheese manufactures in California use 600 million gallons of water annually. This recommendation will be useful for other food processing sub-sectors that have water-intensive processes such as wineries and the fruits and vegetable canning industries.	Within water-intensive process of cheese manufacturing, utilities can explore program options to help facilities recycle industrial wastewater, which could have a dramatic impact on both water and energy consumption.	All IOUs	Accepted	PG&E has helped support water savings projects at facility types including canning and wineries, where pumping and heating energy was saved as a result of water conservation. The customized retrofit program also offers opportunities for cheese manufacturers.	Other	SCE provides customer support for all segment customers with audit opportunities and project development assistance.	Other	SCG provides customer support for all segment customers with audit opportunities and project development assistance.	Other	eSource response: Regarding cheese processing, the US Census Bureau's Industry Statistics Portal's County Business Patterns series did not report any data for the NAICS code 311513 (cheese processing) for the San Diego-Carlsbad metropolitan area. We assume that means there are no establishments reporting with that code, but we are not sure. Rolling up to NAICS code 31151 (dairy product except frozen manufacturing), there were 3 establishments in 2013.

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6	31	All four of the larger wineries interviewed have been investing in energy efficiency for many years. At this point, they have installed majority of the low hanging fruit measures. These facilities felt that although they have received some assistance from third-party consultants hired by the utilities for energy audits, the majority of those audits were insufficient to identify measures that are more complex. Utilities may explore helping wineries evaluate opportunities in these highly complex facilities by providing technical expert advice. These experts should have an understanding of the current regulatory framework and utility energy-efficiency programs.	Wineries: Provide Expert Advice in Energy Audits.	All IOUs	Accepted	PG&E offers a dedicated 3P program to deliver technical and industry-specific expert advice, including audits, to wineries. PG&E will consider what additional strategies may be cost-effective for large advanced facilities.	Other	SCE provides customer support for all segment customers with audit opportunities and project development assistance.	Other	SCG is developing a niche for wineries in its exisiting program in collaboration with other utilities.	Accepted	Further research is required to understand the winery industry within the SDG&E territory.
7	31	The fruit and vegetable canning sub-sector had the highest gas consumption of over 25% in the food processing sector.	Fruit and Vegetable Canning: Navigant recommends focusing on this sub-sector for programs with gas measures and conducting further in-field research for the canning sector.	All IOUs	Accepted	PG&E maintains a close relationship with this industry, and they have been regular participants in gas- and electric-saving programs.	Other	N/A	Other	SCG will consider the canning sector in its future measure offerings.	Other	eSource Response: For the NAICS code 311421 (fruit and vegetable canning), there were 3 establishments in 2013.
8	31	One of the biggest barriers while conducting this study was getting participation from the facilities.	Navigant strongly suggests that the utilities identify opportunities to increase lines of communication with their customers. This could be done in several ways, such as. Newsletters for the food processing sector, conducting in person/on-line surveys to help customers identify energy savings opportunities, strengthening their ties with the California League of Food Processors, etc.	All IOUs	Accepted	PG&E aspires to maintain strong lines of communication to market programs and get industry feedback.	Other	SCE provides customer support for all segment customers with audit opportunities and project development assistance.	Accepted	SCG maintains its relationship and lines of communication with its customers.	Other	SDG&E utilizes several methods to communicate with customers, such as newsletters. Additionally, Account Executives interact with customers on a one-on-one basis. Further research is required to understand the Food Processor industry within the SDG&E territory.
9	31-32	CHP measures have one of the highest gas consumption within this sector.	Navigant recommends focusing on the canning sector for programs with gas measures and conducting further in-field research for the canning sector.	All IOUs	Accepted	PG&E maintains a close relationship with this industry, and they have been regular participants in gas- and electric-saving programs.	Other	N/A	Other	SCG will consider the canning sector in its future measure offerings.	Other	SDG&E will leverage our audit programs to reach the (relatively small) SDG&E food processing sector and focus on energy-intensive equipment in these facilities.
10			Navigant further recommends conducting a CHP study targeting the large gas users.	All IOUs	Rejected	CHP technologies are ineligible for utility EE programs.	Other	N/A	Other	D.14-10-046 authorized SCG to conduct a pilot for bottoming-cycle CHP. SCG will be filing an Advice Letter for this pilot Q4 2015.		Further research is required to understand the CHP market within the SDG&E territory.
11	32	Refrigeration Operation and Controls showed high savings with the main barrier being lack of knowledge. Contractors that have the knowledge to recognize these opportunities could realize these savings through refrigeration retro-commissioning.	Navigant suggests that utilities conduct retro-commissioning pilot studies with large wineries to identify remaining energy efficiency potential in this sector.	All IOUs	Other	PG&E is launching a new refrigeration operator coaching project via the CEI subprogram to identify and implement new projects at refrigerated facilities.	Other	As long as retrocommissioning savings are allowed to be claimed, SCE supports pursuing retrocommissioning projects instead of pilot studies	Other	SCG is developing a niche for wineries in its exisiting program in collaboration with other utilities and SCG will consider reto-commissioning pilot studies. Shawn will follow up with Glenda.	Other	SDG&E needs to research the market for large wineries within the service territory before considering retrocommissioning pilot studies to identify remaining energy efficiency potential in this sector. Additionally, IOUs must work with the Energy Division to determine whether retrocommissioning is Industry Standard Practice.
12	vii	Two facility managers and the trade association subject matter expert expressed that a thorough energy audit would help them identify potential opportunities in their facilities. Additionally, receiving expert advice during the early stages of construction would allow the facility to implement energy efficient measures at a much lower cost.	Provide Expert Advice in Energy Audits or Planning Stages of Construction	All IOUs	Accepted	PG&E is often engaged in the early planning of a new facility. PG&E will consider the feasibility of a design audit approach to identifying potential EE strategies.	Other	SCE provides customer support for all segment customers with audit opportunities and project development assistance.	Accepted	SCG provides audits through Energy Advisor. In Energy Advisor, recommendations will be provided that will identify potential opportunities.	Other	SDGE promotes the value of energy audits through it EAS audit program, where we provide a no cost ASHRAE Level II energy audit to thoroughly inform our customers of energy efficiency potential savings at their facility.

Response to Recommendations (RTR) in Impact, Process, and Market Assessment Studies

Study Title: Measure, Application, Segment, Industry (MASI): New Opportunities for Oil and Gas Extraction and Produced Water Management and Recycling (4/10/15)
Program: MASI - Oil and Gas Opportunities
Author: Navigant
Calmac ID: SCE0377.07
ED WO: 2092
Link to Report: http://calmac.org/publications/MASI_Oil_and_Gas_Final_Report.pdf

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1	29	Of the seven oil producers that were interviewed, three are considered major oil producers in California .All three major oil producers uniformly stated that they were actively pursuing all available energy efficiency opportunities that have feasible paybacks; typically the major producers consider feasible payback periods to be within two years. Opportunities with longer payback periods, greater than two years, and in some cases even projects with payback periods shorter than two years may require incentivizing to get major producers to implement them. Major producers consider energy efficiency an integral component of their operations, primarily due to the size of their operations and the significance of energy costs for oil extraction. They play an indispensable role in developing and proving new energy efficient technologies. Collaborating with the IOUs, major oil producers willingly provide personnel, resources and well sites to develop, evaluate and verify new technologies. Minor producers, who have limited personnel, time and production capacity, are unable to divert valuable resources to test new technologies. They typically look to the major producers to prove new energy efficient technologies and then where economically possible follow the majors lead by adopting new energy efficient technologies or practices. Consequently, as stated earlier, the major producers lead the minor producers by several years in adopting these new energy efficient technologies and practices.	Major Oil Producers Should Continue to Utilize Existing Energy Efficiency Programs. It is recommended that major oil producers continue to utilize existing energy efficiency programs since their participation is indispensable, in both developing new technologies for the industry and improving the economies of scale of energy efficiency opportunities for both major and minor producers.	Other	Accepted	(PGE) Agree with findings and Reccomendations	Accepted	As long the new technologies that major oil producers are developing are not considered industry standard practice shortly there after, it makes sense to leverage major producers to drive economies of scale.	Other	Not applicable. Large oil producers are typically on rates which do not pay into G-ppps. For the smaller oil producers with the eligible rates, there are limited opportunities for boilers, heaters, insulation and pollution control (PC).	Other	Not applicable to SDG&E
2	29-30	All minor oil producers interviewed stated that they have extremely limited resources to pursue energy efficiency opportunities. Due to their small size, they do not have the personnel to research which energy efficiency technologies should be considered or the technical resources to install and operate such technologies. They also have limited financial resources for the upfront investment in new energy efficient equipment and often rely on insight from major producers regarding energy efficient measures and practices worthy of implementation.	It is recommended that the IOUs develop energy efficiency programs for minor oil producers since they account for approximately 20 percent of the oil produced in California. For the minor oil producers to upgrade their facilities, for oil and gas extraction, water management and recycling, they need: Education: To learn what energy efficient practices and technologies they should install, particularly in regards to energy efficiency best practices for well expansion Technical Assistance: To implement and operate energy efficient technologies Incentives: To offset the upfront costs of purchasing and installing energy efficient equipment; it is recommended that incentives be awarded on a case-by-case basis to ensure cost effectiveness	All IOUs	Accepted	(PGE)Utilizes Third Party Programs and in-house oil experts to educate and advise the minor/major oil producers	Other	Currently SCE has a third party implemented program that offers opportunities to all oil producers.	Accepted	SCG continues to work with its refinery customers on identifying EE improvements to their faciliities. SCG provides technical assistance to Refinery customers in the form of surveys, and audits to augment the refinery's pursuit of EE projects. SCG works with Vendors to promote new technologies for EE savings such as improved Tube Seals. SCG's incentives help refinery projects meet or exceed critical funding hurdle rates and improves project economics relative to other non-EE projects competing for the same limited capital pool.	Other	Not applicable to SDG&E

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3	30	It is recommended that the IOUs evaluate MotorWise, the advanced pump motor controller. This technology claims to provide 25 percent or more savings for rod-beam pumps. This product is a recent development and has only been operating in Texas according to its manufacturer. Although pricing has not been quoted by the manufacturer, the company claimed that a payback period of 15 months is possible with their product. If the savings potential is valid and the IOUs can develop an incentive program to promote this technology, energy savings could be significant since 92 percent71 of oil field pumps in California are currently rod-beam pumps. This is a great opportunity for IOUs to incentivize majors for a short period of time to adopt this new technology, hopefully providing a demonstration of a new technology's success and ultimately serving as a showcase for minor producers. This technology could provide a near term example of majors leading minors down the path of adopting a new energy efficient technology. However, prior to developing a program it is recommended that evaluations for this technology include a preliminary evaluation on potential savings, an in-depth market assessment, and field pilot testing/pilot EM&V. Assuming positive results, this technology can benefit both major and minor producers.	Evaluate Advanced Pump Motor Controllers (MotorWise)	All IOUs	Accepted	(PGE) Currently conducting a study on MotorWise	Accepted	SCE has a new product/measure process in which this technology may evaluated.	Other	Not applicable.	Other	Not applicable to SDG&E
4	30-31	Interviews with major and minor oil producers indicated that opportunities to promote energy efficiency within the water treatment and management aspect of oil and gas extraction are limited and fragmented according to the size of the producer's business. As noted in previous sections of this report, major producers that were interviewed agreed that they were independently incentivized to pursue energy efficient practices based upon measured payback and technical collaboration with IOUs, both in the extraction processes and water treatment. These producers currently fund R&D for energy efficiency within all operations because their business requires it for either compliance with current codes and standards or for profit maximization. In contrast, minor producers that were interviewed indicated that they did not have the same resources to pursue energy efficient practices to maintain operations.	Based on report findings, Navigant Consulting and ASWB Engineering both recommend additional research and evaluation on potential education and incentives for minor oil producers to adopt energy efficient strategies for water management and recycling. Further investigation includes: Smart Wells as a high potential energy efficiency improvement. According to minor producers interviewed, smart wells are at a relatively low penetration rate within this segment of the industry and could be beneficial from both energy efficiency and profitability perspectives. It is recommended that incentives be awarded on a case-by-case basis in order to avoid investing in projects where economic conditions can result in shut-off activity. Unicel IGF with VFDs is a more efficient oil flotation and water cleanup apparatus that uses fewer motors than the baseline WEMCO therefore using less power. Energy efficiency technologies and best practices for water treatment facility capacity expansion and payback periods on implementing these technologies with restricted operating budgets.	All IOUs	Accepted	(PGE) Is pursuing more water savings technologies for the oil field and has looked at Smart Well technology and more efficeint oil floatation & water cleanup apparatuses and works with customers on a case-by-case basis.	Other	The ex-ante team determined Smart Wells were ISP for all oil customers	Other	Not applicable. Large oil producers are typically on rates which do not pay into G-ppps. For the smaller oil producers with the eligible rates, there are limited opportunities for boilers, heaters, insulation and pollution control (PC).	Other	Not applicable to SDG&E