

**SOUTHERN CALIFORNIA GAS COMPANY
ADVANCED METER
SEMIANNUAL REPORT**

August 31, 2017

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Southern California Gas Company Advanced Meter Semiannual Report

Introduction

This is the ninth Semiannual Report (“Report”) regarding the progress of Southern California Gas Company’s (“SoCalGas”) Advanced Meter project. In Decision (“D.”) 10-04-027, the California Public Utilities Commission (“CPUC” or “Commission”) authorized the project. Ordering Paragraph 5 required the following reporting requirements for SoCalGas:

“Southern California Gas Company shall establish a system to track and attribute program costs and projected savings from conservation. Based on this tracking system, Southern California Gas Company shall submit a report to the Director of the Commission’s Energy Division semiannually, tracking the gas conservation impacts of the advanced metering infrastructure project to date. These reports shall serve as a forum to adjust, as necessary the elements laid out in the final outreach plan described above. We expect that customer outreach, education and communications will continue to evolve and improve as SoCalGas conducts customer research, monitors customer reaction to new AMI technology and various customer usage presentation tools, and incorporates feedback from these activities into its AMI outreach and education activities. If the report shows that the company is falling short of its projections, it shall submit revisions to its conservation plan to increase awareness, participation, and durability of conservation actions among its customers. The semiannual reports and any revisions to the advanced metering infrastructure outreach and conservation plan shall be submitted to the director of the Commission’s Energy Division and served on the most recent service list for this proceeding. Additional costs incurred in order to improve conservation response will be funded out of contingency funds, or otherwise subject to the risk sharing mechanism authorized in Ordering Paragraph 2.”

Chapter 1 - Project Overview and Summary

In addition to the specific requirements identified in D.10-04-027, this Report provides overall status of SoCalGas’ Advanced Meter project through June 30, 2017 and builds upon previous Reports by highlighting project changes and activities that have taken place since January 1, 2017. Previous Report filings may be accessed on SoCalGas’ website.¹

The Advanced Meter infrastructure consists of two primary components – a meter transmission unit (“MTU” or “module”) attached to SoCalGas meters, and a communications network consisting of data collection units (“DCU”) installed across the SoCalGas service territory. Data from the modules is communicated to the DCUs and then transmitted to SoCalGas’ back-office systems. Operational highlights as of June 30, 2017 include:

¹ <http://www.socalgas.com/regulatory/A0809023.shtml>.

- Over 5.8 million meter modules installed representing 99% of the total meters to be upgraded.
- 4,201 data collector units (DCUs) installed and functioning On-Air representing 91 percent of the estimated 4,600 DCUs planned. These DCUs are fully installed in 178 of the 221 cities and counties located within SoCalGas' service territory (80 percent of total).
- Approximately 99 percent of the installed modules have been deemed 'Billing Ready' and are now used or ready for billing customers.

SoCalGas also completed its fourth targeted heating season conservation campaign leveraging Advanced Meter-enabled usage data. The conservation campaign launched in late November 2016 and extended through the heating season, with most treatments concluding in March 2017. It was the final campaign in the series of four conservation "Test and Learn" campaigns conducted over the course of the Advanced Meter project.

The goals of these consecutive conservation campaigns were to demonstrate how to best meet the one percent energy savings goal² associated with the Advanced Meter rollout and to track the resulting conservation savings. In accordance with Ordering Paragraph 5, each of SoCalGas' successive heating season conservation campaigns incorporated the lessons learned and key findings from the prior campaigns.

As with the prior year's campaign, every one of the eleven new residential conservation treatments tested during the 2016-2017 campaign produced statistically significant gas savings.³ These new treatments resulted in average savings of over 1.7 percent during the 2016-2017 fall/winter period. This is an increase in savings vs. average first year savings rates for the successful⁴ treatments tested in the three prior heating season campaigns, and shows continued progress towards the conservation goal. Also of note for the 2016-2017 treatments tested was that one treatment – a "Seasonal Energy Update" energy report based on advanced meter analytics developed by SoCalGas – achieved the highest savings rate for all four years' campaigns of 3.43 percent.

Continued savings effects were also realized for ten of the treatments initially tested during the 2014-2015 and 2015-2016 campaigns. Overall, the new and continued successful treatments produced gas savings of 1.6 percent during the 2016-2017 fall/winter period. The persistence and sustainability of these conservation results demonstrates the durability of conservation actions as outlined in Ordering Paragraph 5 above.

² This energy savings goal specifically refers to one percent of total *residential* gas usage.

³ Four out of eleven treatments tested during the 2013-2014 heating season campaign generated average savings of about 1.3 percent. Four out of seven residential treatments tested during the 2014-2015 heating season campaign generated average savings of about one percent. Fourteen out of fourteen residential treatments tested during the 2015-2016 campaign generated average savings of over 1.4 percent.

⁴ Successful treatments are comprised of the subset of treatments tested that were successful in producing statistically significant usage reductions.

The Advanced Meter project is currently meeting its schedule, budget and major project milestones; however, continued permitting and construction challenges may impede completing the network in accordance with D.10-04-027. SoCalGas has implemented a proactive public outreach strategy to educate and inform impacted residents, businesses, and municipalities of network installation to help mitigate potential concerns. As noted in previous Reports, despite extensive engagement, select municipalities continue to require SoCalGas to secure discretionary permits. Because discretionary permitting processes are contrary to SoCalGas' understanding of the CPUC's overarching authority over utility facilities, and because acquiescing to discretionary permitting processes could result in DCUs being rejected or removed by the jurisdiction at any time, SoCalGas has refrained from completing applications in these jurisdictions.

Although there has been progress in select areas, by continuing to assert their position these municipalities are considerably delaying or preventing the network installation timeline for over 90 DCUs or two percent of the 4,600 planned DCUs. The inability to deploy the necessary infrastructure in these jurisdictions will likely result in SoCalGas having to maintain separate meter reading, communications, data processing and billing systems functions for longer than was anticipated in D.10-04-027 and may negatively impact expected customer operational and conservation benefits pursuant to Sections 3.C, 3.D and 9 of this report.

As previously communicated to the Commission, SoCalGas discovered a small percentage of Advanced Meter modules producing inaccurate digital reads of gas usage. The problem was limited to approximately 0.15 percent of the installed population of MTUs. These devices were issuing multiple false alarms. SoCalGas has implemented a plan to replace all defective MTUs, address any authorized billing corrections, and communicate with regulators, customers and stakeholders. During the course of remediation a subsequent issue was identified with MTUs in curb meter vaults. SoCalGas is working with the manufacturer to resolve the issue; until then, these meters will be manually read to minimize any billing impacts to customers. Additionally, SoCalGas is working with the vendor on the feasibility of diagnostic tools to identify malfunctioning modules prior to or at installation. The total financial impact of the issue is unknown at this time, but SoCalGas is seeking full-financial recovery from the vendor for the costs associated with the curb meter MTU issue, including the costs for replacement product, for temporary manual meter reading of the affected curb meters and for the labor costs associated with replacing those that have been installed.

Chapter 2 - Module Installation and Network Construction Status

2.A Module Installation Status

SoCalGas has installed 5,893,785 modules through the end of June 2017, with its first installation dating back to October 2012. Table 1 displays the installations performed by Advanced Meter Mass Install personnel and identifies installations completed by other SoCalGas personnel.

Table 1
Module Installations by Personnel Group

	Module Only	Meter Change w/Module	Total
Advanced Meter Installations	4,231,142	1,226,172	5,457,314
Other SoCalGas Personnel		436,471	436,471
Total Installations	4,231,142	1,662,643	5,893,785

About 93 percent of the modules are being installed by Advanced Meter personnel, with approximately seven percent being installed by other SoCalGas personnel. Other SoCalGas personnel are involved when the installation requires extensive modifications to the existing meter configuration, such as installing the modules on complex industrial and commercial meters; replacing existing curb meters with new curb meters containing a pre-installed module; and when meters are changed through the normal course of business.

As Table 1 displays, over 72 percent of the modules were installed on existing meters, while nearly 28 percent of the time, the meter was replaced with a new meter with a module already installed.

Installation teams generally performed work out of warehouses leased specifically for the Advanced Meter project. As part of the planned project shut down, operations at all warehouses have completed as of June 30, 2017.

Throughout the project, the Advanced Meter team has experienced some injuries and incidents. Table 2 displays safety results from January through June 2017. SoCalGas aspires to have zero incidents and has taken a proactive approach in providing its Advanced Meter team with additional safety and training resources. SoCalGas included an additional day dedicated to safety in the installer training curriculum and as part of its “Safe and Sound” Safety Campaign, SoCalGas created and shared short safety films to promote safe behavior at the workplace and at home.

Table 2
Advanced Meter Safety Incidents
January 1, 2017 through June 30, 2017

	Number of Incidents	Rate*
Occupational Safety & Health Administration (“OSHA”)	5	4.5
Controllable Motor Vehicle Incidents (“CMVI”)	6	5.8
Lost Time Incidents (“LTI”)	1	0.9

*OSHA Rate is the number of incidents per 200,000 hours worked

*CMVI Rate is the number of incidents per million miles driven

*LTI Rate is per 100 workers

2.B Communication Network Construction Status

The communications network of the Advanced Meter system is designed to ensure that SoCalGas customers receive their hourly consumption data. It consists of DCUs deployed across the SoCalGas service territory that receive the meter reading data from the modules installed on each meter. Most modules transmit twelve hourly meter reads four times a day to at least three DCUs. Each module communicates for less than two minutes per year. The data is encrypted and transmitted across a licensed frequency from the module to the DCU.

SoCalGas continues to refine the network to improve system performance and based on the latest propagation study provided by Aclara, the technology vendor, the project plans to install 4,600 DCUs. The actual number of DCUs to be installed is determined by a two-step process:

1. The specific DCU locations, referred to as design points, are determined based on the propagation study which takes into account the location of the modules on the six million meters, the topography of the surrounding area, and the influence of the environment on the transmission of the radio signal. The DCUs can be placed within a 500 foot radius of the design point.
2. After these DCUs are installed, SoCalGas evaluates the performance of the network and identifies gaps in the network. SoCalGas then installs additional DCUs to remediate these deficiencies in performance.

SoCalGas’ plan is to install DCUs prior to the scheduled module installation so that data can be received soon after the module is installed. Overall, SoCalGas has achieved this goal. Table 3 displays the status of the SoCalGas network as of June 30, 2017.

Table 3
Status of DCUs through June 30, 2017

DCU Status	Number of DCUs	Percent of DCUs
Installed	4,201	91.3%
<i>On – Air</i>	4,201	91.3%
Ready to Construct	17	0.4%
Negotiating with Local Governments/Other Third Parties ⁵	229	5.0%
Not Started	153	3.3%
Total Planned Installations	4,600	100%

Ninety-one percent of the network has been constructed or is ready to construct. By June 30, 2017, SoCalGas has installed 4,201 DCUs with an additional 17 DCUs ready for construction. Of the 4,201 installed, all have been commissioned on-air and are receiving reads from installed MTUs. SoCalGas continues to negotiate with local governments and third parties to install the remaining DCUs in the network. Table 4 displays the locations of installed DCUs to date.

Table 4
Location of Installed DCUs

DCU Location	Installed DCUs
SoCalGas Owned Poles in	
SoCalGas Facilities	65
Public Right of Way	2,625
Caltrans Right of Way	38
Private Easement	24
Total	2,752
Attached to Third Party Assets	
Los Angeles Bureau of Street Lighting	637
SCE Street Lights	366
PG&E Street Lights	27
SDG&E Street Lights	43
Other Cities Street Lights	304
Other Public/Private Assets	72
Total	1,449
Total DCUs Installed	4,201

⁵ Includes municipalities refuting the CPUC's preemptory jurisdiction over utility facilities.

To date SoCalGas has installed DCUs on a SoCalGas owned pole in the public right of way under its franchise 62 percent of the time. The second most common method has been to install DCUs on local government-owned street lights.

When a DCU is attached to a third party owned asset, SoCalGas negotiates a contract with the asset owner which usually includes:

- Fees to lease the space on the asset; and,
- Energy rates for the electricity to power the DCU.

SoCalGas has executed contracts with the City of Los Angeles Bureau of Street Lights (“BSL”), Pacific Gas & Electric Company (“PG&E”), Southern California Edison Company (“SCE”), San Diego Gas & Electric Company (“SDG&E”), and has reached contract agreements with 143 cities and six counties.⁶

Of the 12 counties and 211 cities in the SoCalGas service territory, SoCalGas has finished installing DCUs in seven counties and in 178 cities/communities.⁷ SoCalGas is in active negotiations with several cities and counties to continue installing the remaining DCUs. A limited number of cities and counties have been reopened due to network optimization.⁸ To ensure area coverage, the project has reassessed cities and counties that have been completed with the original design and added DCUs where necessary.

With 4,201 DCUs constructed, SoCalGas has received 188 complaints and 92 inquiries, including concerns about the DCUs aesthetics, glare, or location. In each case, SoCalGas contacted the complaining party to resolve the complaint. As a result of customer concerns, SoCalGas has relocated 89 DCUs. Otherwise, the concerns have been resolved without relocating the DCU.

Where the DCU design point falls entirely within private property, SoCalGas negotiates easements with the private property owner(s). Installations of this type usually require a contract to secure the right to locate on the third party property.

When SoCalGas installs a DCU on its own pole, the DCU is solar-powered. When installed on a street light, the DCU is most often powered by electricity from the street light. Given the preponderance of new poles, most of the DCUs are solar powered. Table 5 shows the breakdown between solar and A/C powered DCUs.

⁶ Pursuant to Commission Resolution ESRB-1 dated May 10, 2013 (SCE), Resolution ESRB-2 dated June 27, 2013 (SDG&E) and Resolution ESRB-3 dated June 27, 2013 (PG&E) SoCalGas is able to permanently attach the DCUs to these electric utilities’ street lights.

⁷ Appendix A provides a list of the counties and cities with fully installed DCUs.

⁸ Appendix B provides a list of the counties and cities that have been reopened.

**Table 5
Power Source for DCUs**

Installed DCUs	Solar Powered	AC Powered
4,201	2,845	1,356

Chapter 3 - System Performance

Two key indicators of the overall Advanced Meter system performance are the performance of the network with respect to the delivery of hourly data for billing and online presentation purposes, and the resulting billing data-related performance. Additional improvements to SoCalGas’ service delivery are also being realized as a result of meter read automation and enhanced data analytics capabilities enabled by the Advanced Meter system. Extended uses of the Advanced Meter system through a network sharing capability also have the potential to provide additional operational and conservation benefits to water agencies and their customers within SoCalGas’ service territory.

3.A Network Performance

The most basic measure of system performance is to measure the data delivered as a percentage of the expected data to be delivered. This has direct impacts to both billing and the presentment of hourly gas consumption data to customers. In a perfect system, SoCalGas would receive data for every customer for every hour, each day of the year. To provide this data, the modules must communicate with the DCUs and the DCUs must transmit the data to SoCalGas back office systems 100 percent of the time.

Table 6 displays the breakdown of modules that have successfully communicated with SoCalGas’ back office systems.

**Table 6
Module Communication Status**

Module Communication Status	Modules Installed	Percent Installed With Network
Total Modules Installed	5,893,785	-
Modules installed but not yet communicating with HE systems ⁹	16,942	-
Delivering 100 Percent of Expected Reads	5,582,447	94.7%
Missing 1-12 Reads	172,751	3.1%
Missing More Than 12 Reads ¹⁰	105,775	1.9%
Missing All Reads	15,870	0.3%

⁹ Installed MTUs that have not yet established communication with a DCU and transmitted 24 hours of reads

¹⁰ Missing more than 12 reads but at least one read has been communicated.

SoCalGas generally installs modules where the network is available; however, some exceptions to installing outside of an available network include instances when new business meters are connected and routine meter changes are being performed. Additionally, when a meter fails in the field, it is replaced with an integrated meter and module, regardless of whether the network is installed or not.

As illustrated in Table 6, approximately 95 percent of the installed modules are successfully communicating all of a customer’s hourly data on a monthly basis. About three percent of the modules are missing 1-12 reads, which means that they have had only one or two unsuccessful communications per month. That is, one or two six-hour periods have not been successfully communicated to the SoCalGas back office systems. SoCalGas does not consider a module performing at this level to be problematic for billing as enough hourly data is being received for these purposes.

About two percent of the modules are missing more than 12 reads but have communicated at least one read. SoCalGas continues to examine module modifications and network enhancements to improve the performance of these modules.

3.B Billing Data Performance

The Advanced Meter modules replace the manual reads with an automated read, with the expectation that the system will produce more accurate reads (no data entry mistakes) and fewer estimated reads (meter access problems are largely eliminated).

Table 7 displays the progression of modules from installation to actual use for billing.

**Table 7
Advanced Meters Utilized for Billing**

Modules Installed as of June 30, 2017	5,893,785
Modules in ‘Billing Ready’ Status	5,849,741
Advanced Meter Reads Requested for Billing	5,815,886
Billing Data Provided by Advanced Meter	5,810,226
Billing Data Not Provided by Advanced Meter	5,660
Percent Provided by Advanced Meter – Actual Read	99.86%
Percent Provided by Advanced Meter – Estimated Read	0.04%
Percent Not Provided by Advanced Meter	0.1%

Approximately 99 percent of the installed modules have been deemed ‘Billing Ready’ and are now used or ready for billing customers. Of the remaining one percent, most are still in the process of completing one of the test elements needed to become ‘Billing Ready.’ Others are located in areas with incomplete DCU coverage, or are located in areas with insufficient module density to support conversion to Advanced Meter billing.

Modules in areas with network coverage which do not pass the 'Billing Ready' tests are monitored and, if necessary, replaced. They may also point to insufficient network coverage or DCU problems, which are then remediated.¹¹

For the Billing Ready modules, the system provides a high percentage of actual reads. The system also provided 0.04 percent of reads which were 'estimated reads' based substantially on reads received earlier in the month, rather than on a particular designated day. Only about 0.1 percent of the reads could not be provided by the Advanced Meter system.

In July 2013, SoCalGas implemented software that enabled the utilization of automated reads for the initiation of new service and generation of closing bills. With Advanced Meter automation, a field visit to collect a customer's starting read was no longer necessary for turn-on orders that did not require entry into the home. SoCalGas' Customer Service Field organization has seen a reduction of over 2,726,064 orders since the implementation of the automated reads.

3.C Service Delivery Enhancements resulting from Enhanced Data Analytics

As the Commission articulated in the AMI decision,¹² the Advanced Meter system "provides [a] system-wide technology platform with the ability to expand operating benefits as new applications emerge." In areas where the communications network is fully deployed, SoCalGas is leveraging Advanced Meter-enabled data analytics and technology by integrating data to develop algorithms that support the continued safe and reliable delivery of natural gas to its customers. These enhanced data analytics enable identification of unusual gas consumption patterns at customer facilities.

Though in the exploratory phase, this new and more granular awareness of energy data utilization is uncovering new opportunities and benefits potential. Leveraging the Advanced Meter network could result in faster identification of abnormally high gas usage, which enables SoCalGas to identify, investigate, and respond to potential safety situations quicker. By discovering abnormally high gas usage and notifying customers, SoCalGas can reduce methane emissions at customer facilities saving energy and improving air quality while also reducing the financial burden on customers from higher usage.

The Advanced Meter team assesses unusual consumption patterns on closed accounts using a Per Day Average and in some cases will look at the hourly reads to conduct further research. During the exploratory phase of SoCalGas' enhanced data analytics, the following results have been achieved. Table 8 summarizes the results of the 5,909 exploratory service orders fielded through June 30, 2017.

¹¹ As referenced in Chapter 2, additional DCUs may have to be added to improve system performance.

¹² D.10-04-027, page 40.

Table 8
Gas consumption data analytics results through June 30, 2017

Findings from completed field visits (project to date)	Number of field visits	Percent
Total field visits generated by consumption analytics awareness	5,909	
Gas services closed by SoCalGas field technician due to excessive registration, awaiting resolution. Resolution takes place at the time of the follow-up field visit to reinstate gas service.	2,561	43.34%
Gas leak found by SoCalGas field technician	1,120	18.95%
Gas or hot water leaks corrected by the customer as a result of SoCalGas field visit	878	14.86%
Hot water leaks where the hot water heater was in continuous demand	835	14.13%
Abnormal gas usage resulting from an appliance in use for an extended period of time (e.g., appliances unintentionally left on).	515	8.72%

Leveraging Advanced Meter consumption analytics is a component of a more comprehensive set of processes and inspections aimed at ensuring public safety and SoCalGas expects that, as it continues to build out enhanced analytics capabilities enabled by the Advanced Meter system, further customer service and safety benefits will accrue to its customers. More rapid detection and resolution of gas and hot water leaks provides enhanced safety for customers and their communities, as well as provides energy and financial savings, reduced greenhouse gas emissions, and conservation of our scarce water supplies.

3.D Extending the Use of the Advanced Meter Network

As articulated in our AMI Application, SoCalGas recognizes the State’s priority and urgency in encouraging and enabling water conservation and as such included the requirement for an AMI technology capable of reading water meters. This network sharing capability has the potential to provide significant operational and conservation benefits to water agencies and their customers within SoCalGas’ service territory.

In order to operationally evaluate the feasibility of the “Shared Network” concept, SoCalGas has established pilots to be conducted by Aclara and SoCalGas with a limited number of water utilities. Three municipal water utilities are participating in this pilot, and as of June 30, 2017 each of the municipal water utilities has renewed their pilot term for an additional one year period. There continue to be approximately 2,000 municipal water utility MTUs successfully transmitting data over the SoCalGas Advanced Meter network.

SoCalGas continues to work with the technology vendor (Aclara), a 3rd party analytics vendor (Valor Water Analytics), and two separate Commission-regulated water utilities (San Gabriel Valley Water Company, California American Water) for the SoCalGas Water Energy Nexus (WEN) AMI Pilots which were approved by the CPUC on June 9, 2016 with D.16-06-010. As of June 30, 2017, there are approximately 1,800 Commission-regulated water utility MTUs successfully transmitting data over the SoCalGas Advanced Meter network. The year-long analytics period for California American Water kicked off in April 2017, and the San Gabriel Valley analytics period will conclude in October of 2017.

In addition to the Advanced Meter network being shared by external water utilities, other groups within SoCalGas are leveraging the network. As part of a pilot project by the Pipeline Safety Enhancement Plan (PSEP) group, data from a sensor device to detect, measure and monitor methane in the area near a transmission pipeline is being transmitted over the Advanced Meter network. Eleven of these methane sensor devices, installed in 2016, continue to successfully communicate over the Advanced Meter network and provide SoCalGas with remote alarm registration and processing when the methane-in-air concentration, as measured by the sensors, exceeds limits established for our testing period.

Chapter 4 - Financial Status

To track expenses during the project, Ordering Paragraph 7 of the D.10-04-027, stated:

“Southern California Gas Company shall file an advice letter no later than 30 days from the effective date of this decision, establishing a balancing account and detailing the cost recovery mechanism in conformance with this decision. Southern California Gas Company is authorized to recover deployment costs up to \$1.0507 billion in this account, plus additional amounts, if any, consistent with the terms and conditions of the Risk Sharing Mechanism approved in Ordering Paragraph 2.”

On August 4, 2010, the CPUC approved AL 4110, effective April 8, 2010, which established the Advanced Meter Infrastructure Balancing Account.

The CPUC approved budget of \$1,050 million for the SoCalGas Advanced Meter project was augmented by re-directing \$13.5 million of previously approved General Rate Case funding for a Remote Automated Meter Reading (“RAMR”) project. SoCalGas halted the implementation of its RAMR project, a drive-by meter reading system, when its Advanced Metering Infrastructure (“AMI”) application was submitted, and in the AMI application requested that this funding be re-directed to the Advanced Meter project. In D.10-04-027, the CPUC approved this request.¹³ Due to the timing of the AMI application and Decision, the project deployment period overlapped with SoCalGas’ TY 2012 and TY 2016 General Rate Case (GRC) schedules. Since AMI deployment costs and benefits are recorded in the AMIBA, AMI impacts could not be

¹³ A.08-09-023, Prepared Direct Testimony of Edward Fong, page 15.

integrated into GRC forecasts until TY 2019. As a result, SoCalGas requested authorization in the TY 2016 to establish a 2018 “bridge-year” period – the year between the end of deployment in 2017 and the TY 2019 GRC. Subsequently, on May 5th, 2017, SoCalGas filed Advice Letter 5134 to request the 2018 bridge-year period, referred to in the Advice Letter as the “post-deployment phase cost sub-account.”¹⁴ The total budget for the SoCalGas Advanced Meter project is \$1,064 million, which includes a contingency fund of \$68.7 million.

The sequencing of the spending to date is typical of the pattern for many major projects. The early years of the project were spent organizing the large project team; developing new business processes; and building and implementing the information systems that support the construction of the DCUs and installation of the modules. SoCalGas’ plan contemplated that the DCUs would be constructed prior to the installation of the modules so that the modules would be effective in delivering benefits to customers. As indicated in Chapter Two, SoCalGas began installing its DCUs in June 2012 and its modules in October 2012.

Table 9
Financial Results (in \$Thousands)
Recorded 2010 through June 2017

	2010	2011	2012	2013	2014	2015	2016	2017	Project to Date
Project Management Office	2,719	6,477	6,634	4,945	4,027	3,415	3,006	1,409	32,632
Meters, Modules & Installation	120	3,718	28,410	115,516	183,117	170,078	58,829	10,623	570,411
Network	877	3,743	14,429	23,805	18,796	15,306	14,572	4,563	96,091
Information Technology	6,011	16,873	21,931	16,015	10,469	11,109	6,248	2,425	91,081
Customer Outreach	324	1,026	2,088	5,502	5,190	4,786	3,999	1,572	24,486
Employee Awareness	65	3,078	3,732	2,088	1,046	1,087	752	213	12,062
Support Organizations¹⁵	-	-	707	3,500	4,517	4,684	11,512	7,311	32,231
Overheads & AFUDC¹⁶	2,222	9,471	21,291	32,577	38,311	32,268	29,433	8,742	174,314
Total	12,338	44,386	99,223	203,947	265,472	242,732	128,350	36,859	1,033,308

Table 9 displays the Advanced Meter spending through June 30, 2017, by the major project activities. The purchase and installation of meters and modules continue to be the primary source of spending at approximately \$570 million project to date. The next large areas of spend are in information systems and the construction of the communication network with approximately \$91 and \$96 million in spend, respectively. Although the project has fully

¹⁴ AL 5134 with sub-account details is available at the following site:

<https://www.socalgas.com/regulatory/tariffs/tm2/pdf/5134.pdf>

¹⁵ Support organizations are comprised of SoCalGas departments outside of Advanced Meter that are funded by the project for project-related work or for work identified in the business case. This includes field work related to advancing our larger meters (primarily commercial and industrial).

¹⁶ Updated to exclude the Pension & Benefits refundable portion that is balanced separately from the AMI project.

allocated the authorized contingency, SoCalGas believes the project will be delivered within the approved budget.

Chapter 5 - Meter Reading Work Force Impacts

The Meter Reading work force is the most significantly impacted by the Advanced Meter project as Meter Reading positions will all but be eliminated by the project.¹⁷ Both SoCalGas and the CPUC are concerned about these impacts. The Commission specifically addressed this concern. Ordering Paragraph 1 of the D.10-04-027 states:

“Southern California Gas Company shall supplement by \$1 million, its funding for workforce retention and retraining. This fund is established to better protect the employment interests of Southern California Gas Company’s meter reading workforce and should be used to extend severance, vocational training, and other transitional opportunities to employees affected by the decision to pursue advanced metering infrastructure.”

In response to this direction, SoCalGas set aside funding in its Enhanced Educational Assistance Fund specifically to support the Meter Reading personnel in place in April 2010. As of June 30, 2017 meter readers had been reimbursed approximately \$104,000 through this fund.

While meter readers have been active in seeking employment opportunities within SoCalGas the fund has not been heavily utilized, so as part of continuing efforts to support our employees’ transition to potential job opportunities, SoCalGas expanded the retention and retraining efforts to include skills orientation workshops. These workshops are designed to familiarize employees with the mechanical and technical skills associated with piping, tools usage, natural gas appliance and distribution system construction work. The orientation workshops offered transitional skills that could be applied toward job opportunities within and outside of SoCalGas. The target employee group was expanded to include all current meter reading employees as well as AMI Field Representatives. All of these employees will be affected when Advanced Meter implementation is completed.

SoCalGas has allocated \$42,400 from the authorized funding from 4th Quarter 2014 through 2017 to provide these workshops for employees. SoCalGas will continue to offer enhanced educational assistance reimbursement to the remaining eligible meter reading employees.

Table 10 displays the current status of those Meter Reading personnel who were employed in April 2010, when the project was approved by the CPUC.

¹⁷ Some personnel may continue to manually read meters in support of the CPUC authorized Opt-Out program.

Table 10
Status of Meter Reading Personnel Employed in April 2010

Meter Reading Personnel	Work Force in April 2010	Remain in Meter Reading June 30, 2017	Left Company	Transition Within Company
Full-time	166	2	24	741
Part-time	818	26	191	
Management	46	4	14	28
Total	1,030	32	229	769
Percent of Work Force	100%	3.10%	22.23%	74.66%

As Table 10 shows, 741 employees (over 74 percent of the Meter Reading personnel from April 2010) have transitioned to another position within SoCalGas. Twenty-two percent of those employed in 2010 have left SoCalGas and 32 employees (3.10 percent) remain in the Meter Reading organization.

SoCalGas continues to encourage Meter Reading employees to explore all company opportunities outside of the Meter Reading organization.

Chapter 6 – Community Education and Outreach

SoCalGas personnel perform an array of outreach activities to inform customers about Advanced Meter project activity. SoCalGas developed a local stakeholder education and community outreach program to ensure every city and county SoCalGas serves is addressed. During the network construction process, outreach is done at the city level with initial city briefings to the city manager and staff including informational presentations to city councils as well as any other sub-committees as necessary. Outreach to the community includes, but is not limited to: one-on-one customer meetings, door knocking, and meetings with homeowner associations, community/neighborhood councils, community groups, and mailings. These efforts include briefing local elected officials, media outreach, community town hall events and local speaking engagements. During the first half of the year 2017, SoCalGas worked closely with the community and cities to support the construction of DCUs in the cities of Burbank, Santa Clarita, Diamond Bar, Orange Coast, Santa Paula, Oak View, San Marino, Norwalk, Santa Barbara, Bellflower, Glendale, Garden Grove, Pasadena, Ontario, Gardena, Riverside, Malibu, Hermosa Beach, Manhattan Beach, Burbank, Thousand Oaks, Newport Beach, Ventura, Goleta and Torrance.

6.A Outreach Organizations and Events

To date, SoCalGas has participated in over 3,093 events. In the time frame of January 1, 2017 through June 30, 2017, SoCalGas completed over 700 public outreach activities, including briefings, presentations, exhibit booths, door-to-door, public service announcements, etc.

As of June 30, 2017, nearly 165 organizations were contracted to support community outreach activities. Due to the Advanced Meter project ramping down, SoCalGas will no longer be partnering with GeM Communications to manage the solicitation and implementation for local organizations to perform community outreach on behalf of SoCalGas. GeM managed the request for proposal (RFP) process and contracts with community- and faith-based organizations (CBOs, FBOs), disability agencies, Chambers of Commerce, and business organizations that conducted outreach to sensitive communities and customers in specific Advanced Meter installation areas.

Chapter 7 - Customer Awareness and Satisfaction

From 2010 through 2016, SoCalGas monitored the impact of its outreach activities in the areas of customer awareness and customer satisfaction. SoCalGas utilized a variety of market research diagnostics to monitor the “pulse” of customers pertaining to the Advanced Meter installation process, customer communications, new programs and services, and customer attitudes and motivational drivers to behavioral change.

For purposes of monitoring overall customer awareness and perceptions, SoCalGas used the Customer Insight Study (“CIS”)¹⁸ which is administered by Davis Research. CIS is SoCalGas’ public opinion tracking study. Starting in the fourth quarter of 2010, SoCalGas added three Advanced Meter related questions to this tracking survey. The questions were then updated slightly in the fourth quarter of 2012, commensurate with the initial deployment of Advanced Meters. These questions were fielded through the fourth quarter of 2016, and then discontinued going forward given that 96 percent of the installations were completed by the end of 2016.

A consistent finding of the quarterly CIS results was that awareness levels amongst residential and business customers increased gradually over the course of the project rollout. The general upward trend seems to reflect the increased volume of customer communications about the project as well as an increase in installations.¹⁹

Chapter 8 – Elevated Customer Inquiries and Deferral/Opt-Out Program Enrollments

SoCalGas customers may inquire about the Advanced Meter project by contacting either the SoCalGas Customer Contact Center (“CCC”) or the Advanced Meter Customer Information Center (“CIC”). The CCC addresses customer inquiries about any subject while the CIC typically makes appointment arrangements with customers to have their Advanced Meter installed. Advanced Meter “opt-out” requests are processed by the CCC.

¹⁸ Formerly called iTracker Customer Perception Study.

¹⁹ Please refer to prior years’ Reports for further details regarding Customer Awareness and Satisfaction research conducted over the course of the Advanced Meter project.

Some customer inquiries were not routinely resolved and were escalated to Advanced Meter Customer Experience staff. There have been about 8,537 inquiries since the project’s inception. The number of escalated customer inquiries is very low, considering the volume of Advanced Meter communications that have been distributed to SoCalGas customers. The most common cause of the escalated inquiries is requests to defer/opt-out of the installation of the Advanced Meter communications module.

Although customers can call either the CCC or the CIC to have their deferral/opt-out requests recorded, some ask to speak to the Advanced Meter Customer Experience staff. Their questions usually revolve around safety and privacy concerns, as well as comments on the Advanced Meter Opt-Out Program fees.

Table 11 displays a breakdown of enrollment status for the Advanced Meter Opt-Out Program as of June 30, 2017.

Table 11
Advanced Meter Opt-Out Program Enrollment

Inquiry Type	Number Received	Explanation
Active customer-requested Opt-Out Program enrollments ²⁰	7,737	The number of customers actively enrolled and being billed for Opt-Out Program fees and charges. ²¹
Active customers defaulted in to the Opt-Out Program	19,291	The number of customers that have been default enrolled ²² and are being billed for Opt-Out Program fees and charges.
Total Active Opt-Out Program enrollments	27,028 (0.46%)	
Customer Opt-Out Program requests to “opt back in” to Advanced Meter installation	50,802	The number of customers that requested to be removed from the Opt-Out Program (includes customers in both an “Active” and “Pending Enrollment” Opt-Out Program status).

²⁰ “Active” includes only those customers who are enrolled in the Opt-Out Program and are currently being billed associated Opt-Out Program fees. Many customers in a “Pending” status, once presented with final communications regarding Opt-Out Program fees, elect to terminate their prior request for enrollment in the Opt-Out Program. Similarly, customers about to be default-enrolled due to repeated installation/access attempts sometimes contact SoCalGas to schedule an installation prior to being actively enrolled.

²¹ SoCalGas implemented its Advanced Meter Opt-Out Program effective March 19, 2014, pursuant to D.14-02-019. These customers either requested to defer from an Advanced Meter module installation prior to March 19, 2014, or subsequent to March 19, 2014, requested to enroll in the Advanced Meter Opt-Out Program.

²² These customers were defaulted (automatically enrolled) into the Opt-Out Program due to several unsuccessful attempts by SoCalGas to contact the customers to provide access for the installation of the Advanced Meter.

In March 2014, SoCalGas' Opt-Out Program became effective and the project team initiated efforts to inform employees of the Opt-Out Program and revised any impacted company communication materials. The interim opt-out fees approved by the Commission were consistent with those previously adopted for the other California Investor-Owned Utilities ("IOUs").²³ SoCalGas' Advanced Meter Opt-Out Program interim fees for residential customers were as follows:

- Non-CARE Customers: Initial fee of \$75.00 and \$10.00/month ongoing cost
- CARE Customers: Initial fee of \$10.00 and \$5.00/month ongoing cost

In December 2014, the Commission issued D.14-12-078 regarding the Smart Meter Opt-Out Phase 2 proceeding; this decision reiterated approval of the interim opt-out fees and charges and adopted them as permanent opt-out fees and charges for residential customers for each of the California IOUs.

In April 2015, pursuant to the Commission's Phase 1 and Phase 2 Opt-Out decisions, SoCalGas implemented modifications to its billing system to begin charging opt-out fees to Opt-Out Program participants, including customers who were defaulted into the program. Additionally, information regarding key new features introduced in the Phase 2 decision was incorporated into existing customer talking points and all relevant Advanced Meter customer and external communications materials.

SoCalGas still expects the total percentage of customers who will eventually opt-out to be within the planning assumption of 0.5 percent.

Chapter 9 - Conservation Outreach Campaigns

D.10-04-027 set a goal for SoCalGas to reduce residential gas consumption by one percent and placed reporting requirements on SoCalGas which are referenced in the introduction to this report.²⁴

In late November 2016, SoCalGas initiated the fourth and final targeted heating season campaign of a multi-year outreach campaign aimed at demonstrating how to best drive behavior change to reach the Advanced Meter one percent conservation goal. This campaign followed a "Test and Learn" approach and generally ran through March 2017.²⁵ The overall strategy for the 2016-2017 conservation campaign design was to incorporate lessons learned and key findings from the prior three heating season campaigns conducted in 2013-2014, 2014-2015 and 2015-2016, with a goal towards increasing engagement levels in order to achieve behavioral change that would drive energy conservation of one percent or more. Lessons

²³ D.12-02-014 (PG&E), D.12-04-018 (SCE), and D.12-04-019 (SDG&E).

²⁴ This energy savings goal specifically refers to 1% of total *residential* gas usage.

²⁵ A few treatments tested also included year-round elements.

learned from the four Advanced Meter conservation campaigns will be carried forward into SoCalGas energy efficiency behavior programs in the future.²⁶

Through 2017, SoCalGas continued to team with Nexant on several aspects of its conservation campaign implementations and post-campaign evaluations. The primary objectives were as follows:

- 1) Development of comprehensive outreach plans incorporating a Test and Learn program development strategy in which continuous assessment and improvement in the performance of feedback programs was the objective;
- 2) Evaluation of the four years' conservation campaign results, as well as of continued conservation effects resulting from prior years' campaigns; and,
- 3) Recommendations and guidance for future years' program plans.

9.A Conservation Customer Engagement and Results

The major features of the 2016-2017 conservation campaign were:

- Continued exploration of ways to improve the Bill Tracker Alert (BTA), as it has proven to be one of the most cost effective conservation treatments for My Account customers. This included testing BTAs with and without seasonal energy-savings tips in comparable populations to determine whether these tips increased savings;
- Continued testing of innovative behavioral methods that fully leverage AM data, such as weather sensitivity-based "Seasonal Energy Update" reports (SEU), targeted to customers identified through AM-enabled analytics as those with gas usage habits most sensitive to colder weather;
- Exploration of how the SEU reports performed with CARE customers;
- Testing of a new weatherization-focused SEU with Non-CARE customers;
- Comparison of the Paper SEU treatments against the Opower Paper-only Home Energy Report (HER) and other "HERs," ensuring that the treatments were tested on comparable populations;
- Retesting of new and simplified Aclara Paper "Home Energy Update" (HEU) reports (originally tested in the 2014-2015 campaign);
- Development of an "in-house"-developed paper "SoCalGas Usage Report" that not only tested the effectiveness of a SoCalGas-developed "peer comparison" algorithm, but also helped to cultivate SoCalGas' internal behavioral change analytics and personalized messaging capabilities;

²⁶ As outlined in its Program Implementation Plan for the 2013-2014 California Statewide Program for Residential Energy Efficiency, Energy Advisor Program: "Upon completion of the Advanced Meter project, SoCalGas will incorporate successful behavioral programs and techniques into the energy efficiency portfolio." Behavioral programs are outlined as a key element of the SoCalGas Energy Efficiency Business Plan filed with the Commission on January 17, 2017.

- Testing of the impacts of providing a Bilingual English-Spanish language paper energy report and welcome materials in lieu of either a single language English or Spanish report for customers in areas with high rates of Latino population;
- Continued treatment in 2016-2017 for several Opower HER treatments that initiated in the 2015-2016 campaign, but with a decrease from four monthly paper reports and 12 email HERs (eHERs) to one paper HER supplemented with 12 eHERs. These continued treatments received the “Thermostat” version of the HER first tested in 2015-2016 campaign, or Opower’s new version of their standard HER;
- Development of new Opower paper HER treatments for the 2016-2017 campaign for CARE customers. These HER treatments included cross-promotional messaging targeted specifically to CARE customers in the treatment group who had already enrolled in the SoCalGas Energy Savings Assistance Program (ESAP), as well as to those who had not yet signed up for ESAP;
- Testing of a combination of two information feedback options -- BTA with seasonal tips supplemented with an Opower Paper HER -- to see if there are incremental savings relative to other populations that only received the BTA or HER treatments alone;
- Continued testing of treatments within the top two usage quartiles, since they both produce measurable therm savings; and
- Re-testing of the BTA that was enhanced in the 2015-2016 campaign on small and medium business (SMB) customers.

As with the prior year’s campaign, **every one of the eleven new residential conservation treatments tested during the 2016-2017 campaign produced statistically significant gas savings.**²⁷ As shown in Table 12, **these new treatments resulted in average savings of over 1.7% during the 2016-2017 fall/winter period.** This is an increase in savings vs. average first year savings rates for the successful²⁸ treatments tested in the three prior heating season campaigns, and shows continued progress towards the conservation goal. Also of note for the 2016-2017 treatments tested was that one treatment – a “Seasonal Energy Update” energy report based on advanced meter analytics developed by SoCalGas – achieved the highest savings rate for all four years’ campaigns of 3.43 percent.

²⁷ Four out of eleven treatments tested during the 2013-2014 heating season campaign generated average savings of about 1.3 percent. Four out of seven residential treatments tested during the 2014-2015 heating season campaign generated average savings of about one percent. Fourteen out of fourteen residential treatments tested during the 2015-2016 campaign generated average savings of over 1.4 percent.

²⁸ Successful treatments are comprised of the subset of treatments tested that were successful in producing statistically significant usage reductions.

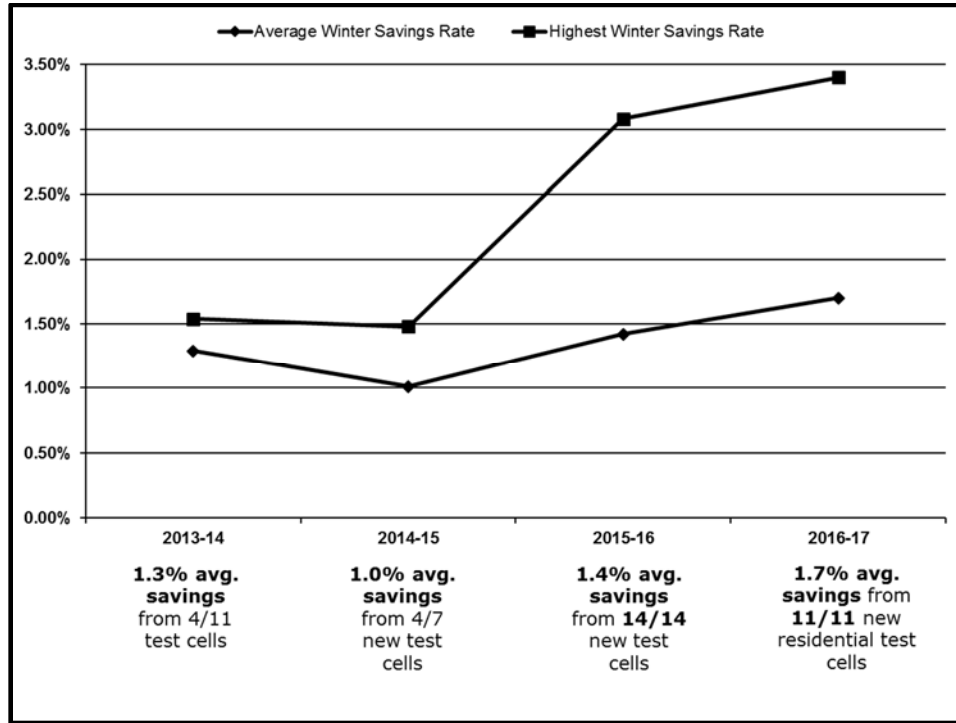
Table 12
Percent Reduction in Fall/Winter 2016-2017 Gas Usage
for Residential Conservation Treatments

Treatment	Percentage Reduction
11 New Treatments	1.74%
9 2015-2016 Treatments	1.42%
1 2014-2015 Treatment	1.31%
Overall % Reduction	1.60%

Continued savings effects were also realized for ten of the treatments initially tested during the 2014-2015 and 2015-2016 campaigns. **Overall, the new and continued successful treatments produced average gas savings of 1.6 percent during the 2016-2017 fall/winter period.** The persistence and sustainability of these conservation results demonstrates the durability of conservation actions as outlined in Ordering Paragraph 5 included on page 4 of this Report.

Please refer to Appendix C, “Evaluation of Southern California Gas Company’s 2016-2017 Conservation Campaign, August 31, 2017” provided by Nexant for a comprehensive evaluation of the results of this conservation campaign, as well as a further summary of the campaign results (as shown in Figure 1 below) for the four Test and Learn heating season campaigns conducted over the course of the Advanced Meter rollout.

Figure 1
Average and Highest Savings Rates for Conservation Test and Learn Campaigns



In addition to the conservation Test and Learn campaign treatments and outcomes described above, following is an update regarding related customer engagement metrics and indicators for the 2016-2017 customer conservation campaign pilot programs and associated Advanced Meter-enabled energy presentation and analysis tools.

9.B Conservation Campaign Update

9.B.1 Opower Home Energy Reports

As outlined above, given the success of Opower’s Home Energy Reports (HERs) in generating conservation savings in prior years, SoCalGas contracted with Opower to implement numerous treatments for the 2016-2017 campaign. This included continuation into a second heating season for five Opower treatments that were initiated during the 2015-2016 campaign. For treatments that were repeated for a second year, the number of monthly paper HERs delivered was reduced from four to one. Aside from this, any customers with email addresses within the Opower treatment groups received an electronic version of the HER (emailed HERs or “eHERs”) beginning in December.

The Opower HER contained personalized usage information that was designed to help customers save energy and money. This report engaged customers primarily through the “Neighbor Comparison” information. A customer’s current natural gas usage was compared to approximately 100 nearby occupied homes with similar characteristics - such as square footage

and heating system. These comparisons, along with personalized energy saving tips, can help customers understand how they can conserve natural gas.

A total of 652,875 paper HERs and 1,114,750 eHERs (emailed HERs) have been sent from December 2016 through June 2017. Another 955,500 remaining eHERs are scheduled to be sent from July to December 2017.

Table 13
December 2016 - June 2017 New and Continuing Opower Home Energy Reports

	2016	2017					
	Dec	Jan	Feb	Mar	Apr	May	Jun
Paper HERs							
Continuing	66,659	0	0	0	0	0	0
New Treatments	293,108	146,554	146,554	0	0	0	0
Total Paper Reports Sent	359,767	146,554	146,554	0	0	0	0
eHERs							
Continuing	66,750	66,750	66,750	66,750	66,750	66,750	66,750
New Treatments	92,500	92,500	92,500	92,500	92,500	92,500	92,500
Total eHERs Sent	159,250	159,250	159,250	159,250	159,250	159,250	159,250
Total Opower Reports Sent	519,017	305,804	305,804	159,250	159,250	159,250	159,250

As of June 30, 2017, 684 (0.2 percent) of Opower HER program enrollees opted-out of receiving further Opower HERs during the current campaign. EHERs delivered an average open rate of about 44.84 percent and a click-through rate of 0.96 percent.

Customer acceptance of the Opower treatments remains strong as indicated by both the low opt-out rate for recipients of these reports, coupled with the findings of customer satisfaction research performed with a sampling of the recipients of the reports from the 2014-2015 campaign as reported in the August 2015 Report.

9.B.2 SoCalGas (Aclara-facilitated) “Seasonal Energy Update” Reports

As outlined in section 9.A, in the 2016-2017 campaign, SoCalGas tested innovative behavioral methods that more fully leverage AM data. In collaboration with Aclara, SoCalGas developed energy reports targeted to customers based on their individual weather sensitivity, called “Seasonal Energy Update” reports. The Seasonal Energy Update report campaign included paper reports targeted to customers identified through AM-enabled analytics as those with gas usage habits most sensitive to colder weather.

Three test cells were assigned to these Aclara-facilitated treatments. Two treatment groups received a slightly enhanced version of the report tested in the prior year, with one CARE (low income) customer segment test cell and one Non-CARE customer segment test cell. The third

Non-CARE test cell received a new version of the report that focused on building envelope/weatherization-related messaging. Customers in all three test cells received the following: four paper reports; one Welcome Letter/Frequently Asked Questions; three Frequently Asked Questions inserts; and one Repositionable Thermostat Setting Reminder Decal.

The Aclara-facilitated Seasonal Energy Update reports contained personalized usage information to help customers understand their home energy usage when temperatures get cold and to offer tips on how to save energy. Each monthly report provided three pieces of information: 1) Comparison to Neighbors during cold weather; 2) Normal Day vs Cold Day Usage Comparison; and 3) Savings Tips. Customers were also encouraged to lower their thermostat settings to 58 degrees or lower when they're asleep, 68 degrees or lower when they're at home, and 50 degrees or off when away.

A total of 233,719 paper Seasonal Energy Update reports were mailed from November 2016 through February 2017.

Table 14
"Seasonal Energy Update" Reports

	Nov	Dec	Jan	Feb
Paper Seasonal Energy Updates	58,837	58,731	58,195	57,956

As of June 30, 2017, 530 (0.9 percent) of program enrollees opted-out of receiving further Seasonal Energy Update reports.

Customer acceptance of the Seasonal Energy Update report treatments was also strong as indicated by both the very low opt-out rate for recipients of these reports, coupled with the findings of customer satisfaction research performed with a sampling of the recipients of the reports from the 2016-2017 campaign as reported in Appendix C.

9.B.3 Aclara Home Energy Update Reports

As outlined in section 9.A, for the 2016-2017 conservation campaign, SoCalGas also contracted with Aclara to re-test newly enhanced and modified Aclara Home Energy Update (HEU) reports. Aclara HEUs were originally tested in the 2014-2015 campaign. The updated Aclara HEU includes streamlined messaging focused on providing customers with insights around their energy consumption, including AM usage data highlights, and personalized tips for lowering energy consumption. One test cell was assigned to this Aclara HEU treatment. Customers in this test cell received the paper HEU four times over the winter months, as well as an initial Welcome Letter and Repositionable Thermostat Setting Reminder Decal.

The Aclara HEU contains personalized usage information to help customers understand their home energy usage and to offer recommendations on how to save energy and reduce waste. Each monthly report provides three pieces of information: 1) Usage comparison to similar homes; 2) Natural gas usage breakdown; and 3) Personalized savings tips.

A total of 127,616 paper Home Energy Update reports were mailed from December 2016 through February 2017.

Table 15
Aclara Home Energy Update Reports

	Dec (2 Reports)	Jan	Feb
Paper Home Energy Updates	64,182	31,918	31,516

As of June 30, 2017, 41 (0.1 percent) of program enrollees opted-out of receiving further Home Energy Update reports.

Customer acceptance of the Home Energy Update report treatments was also strong as indicated by both the very low opt-out rate for recipients of these reports, coupled with the findings of customer satisfaction research performed with a sampling of the recipients of the reports from the 2016-2017 campaign as reported in Appendix C.

9.B.4 SoCalGas-developed “SoCalGas Usage Report”

As outlined in section 9.A, for the current campaign, SoCalGas developed a new paper “SoCalGas Usage Report” to test against Aclara and Opower paper energy reports. The SoCalGas Usage Report was developed completely in-house leveraging SoCalGas internal analytics capabilities to develop the “similar home comparison” information contained the reports. The report also incorporates customized messaging for homeowners and renters.

A key goal for testing this report was to determine if an in-house developed energy report could offer a potentially more cost-effective alternative to energy report programs outsourced to external vendors. Another key goal for the SoCalGas Usage Report was to test the impact of providing a Bilingual English-Spanish language paper energy report and welcome materials in lieu of either a single-language English or Spanish report for customers in areas with high rates of Latino population. (Bi-lingual energy reports are not currently offered by external providers.)

A total of 55,000 paper English-only and another 55,000 Bi-lingual English-Spanish SoCalGas Usage Reports were mailed from December 2016 through March 2017.

Table 16
“SoCalGas Usage Report” English and Bi-lingual Reports

	Dec	Jan	Feb	March
SoCalGas Usage Report (English Only)	13,750	13,750	13,750	13,750
SoCalGas Usage Report (Bi-lingual English-Spanish)	13,750	13,750	13,750	13,750

As of June 30, 2017, 57 customers had opted out of receiving the SoCalGas Usage Reports, or 0.2 percent.

9.B.5 Bill Tracker Alerts Enrollment

SoCalGas Bill Tracker Alerts (BTAs) offer several key features to help customers maintain a high level of energy usage awareness and engagement with SoCalGas. They help customers maintain “top of mind” awareness of their natural gas consumption which is critical to creating the ongoing behavioral change necessary to achieve energy conservation.

Bill Tracker Alerts provide “Advanced Meter Billed” customers with the following information on a weekly basis and are sent alerts via email and/or mobile phone SMS text message:

- Bill-to-Date (\$)
- Projected Next Bill (\$)
- Last year, Same Month Bill Amount (\$) [Seasonal comparison]
- Days Remaining in the Current Billing Cycle (#)
- Last Month’s Bill Amount (\$)*
- Days Elapsed in the Current Billing Cycle (#)*
- Choice of weekly email and/or SMS text messages

** provided via email only, due to 160 character text limitation*

As outlined in section 9.A, given continued proven savings results coupled with the cost-effectiveness of BTA delivery via electronic channels (email and text), the SoCalGas 2016-2017 Test and Learn campaign treatments include continued testing of different BTA options and approaches, including a treatment group with small to medium business customers. Samples of the various enhanced weekly Bill Tracker Alert emails being tested in the 2016-2017 campaign may be found in Appendix C, “Evaluation of Southern California Gas Company’s 2016-2017 Conservation Campaign, August 31, 2017.”

Through June 30, 2017, 439,599 SoCalGas customers were actively enrolled in Bill Tracker Alerts (see Table 17 below, which provides cumulative enrollments-to-date). These enrollments support the Advanced Meter project conservation savings goal as well as SoCalGas’ 2013-2016

Energy Efficiency behavior change program household participation goals.²⁹

Table 17
SoCalGas Bill Tracker Alerts Enrollment

Item	Count through June 30, 2017
Total Subscriptions	553,067
Auto Enrollment	452,647
Microsite – Online @ billtracker.socalgas.com	13,516
Microsite – Business Response Cards	7,611
Microsite – Hard-to-Reach Events	724
My Account/CSR – “Manage Alerts”	78,569
Total Unsubscriptions³⁰	113,468
By Customer (subscribed via Microsite/Auto Enrollment)	35,018
By Customer (subscribed via My Account)	5,498
By System (i.e., Account Closed)	72,952
Total Active Subscriptions	439,599

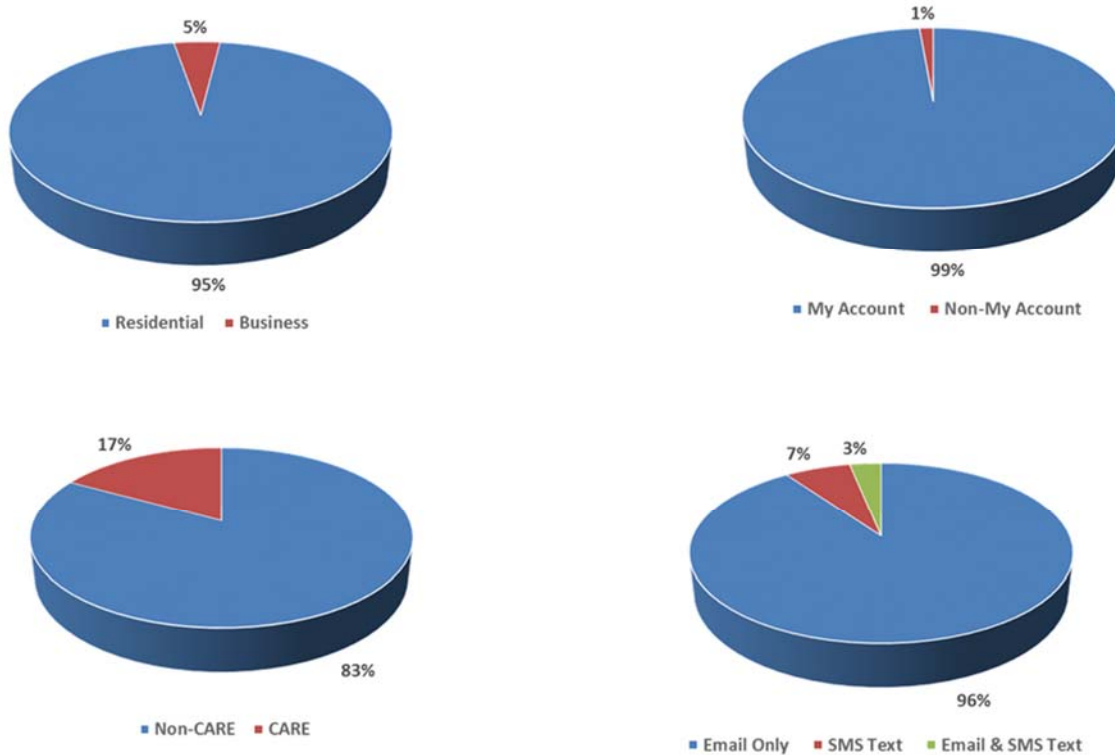
The BTAs retention rate continues to remain high at 79 percent. Sixty-four percent of the “unsubscribes” are due to system factors, such as customer account closures, which results in a customer-initiated unsubscribe rate of approximately seven percent since the program’s inception. This is a strong indicator that customers value weekly email and/or SMS text messages that keep them apprised of their bill-to-date, projected next bill, last month’s bill, last year’s same month bill, and the number of days remaining in their current billing cycle.

²⁹ Pursuant to D.12-11-015, SoCalGas is also utilizing its Advanced Meter project to support its Energy Efficiency non-resource behavior goals, which contain a 5% behavioral target for residential households. This five percent behavioral target remains in place through current Energy Efficiency program cycles as outlined in D.14-10-046.

³⁰ The majority of cancelled subscriptions are system-related (e.g., Account closures); currently 7% are due to customers unsubscribing.

Figure 2 displays some of the customer characteristics of customers enrolled in Bill Tracker Alerts as of June 30, 2017.

Figure 2
SoCalGas Bill Tracker Alert Characteristics as of June 30, 2017



* As of June 30, 2017, California Alternative Rates for Energy (“CARE”) customers accounted for approximately 27.62% of percent of SoCalGas’ residential customer base.

9.C My Account “Ways to Save” Tool Utilization

Another key indicator of enhanced customer engagement enabled or stimulated by Advanced Meter includes customer utilization of the SoCalGas.com, My Account-based “Ways to Save” online tools.

As described in prior Reports, SoCalGas has implemented energy presentation and analysis tools within its My Account customer portal, as well as within the SoCalGas Mobile App. Through June 30, 2017, a total of 512,642 residential My Account users (both new and returning users) have engaged with the Ways to Save tool “My Savings Plan” web page from which users could view their personal energy use profile and initiate a savings plan, as well as navigate to view their hourly and daily gas usage and other energy usage and bill-related information.

For further details regarding the Advanced Meter-enabled online energy information feedback options rolled out to customers, please refer to prior Reports.

Appendices

Appendix A - List of Cities and Counties with Fully Installed DCUs

Adelanto	Compton	Indio	Murrieta	Santa Ana
Agoura Hills	Corcoran	Industry	Norco	Santa Clarita
Alhambra	Corona	Irwindale	Norwalk	Santa Fe Springs
Aliso Viejo	Costa Mesa	Jurupa Valley	Ontario	Santa Maria
Anaheim	Covina	Kern County	Orange	Santa Monica
Arcadia	Cudahy	Kings County	Oxnard	Santa Paula
		La Canada		
Arroyo Grande	Culver City	Flintridge	Palm Desert	Shafter
Artesia	Cypress	La Habra	Palm Springs	Simi Valley
Atascadero	Dana Point	La Habra Heights	Palmdale	Solvang
Azusa	Delano	La Mirada	Paramount	South El Monte
Bakersfield	Desert Hot Springs	La Palma	Pasadena	South Gate
Baldwin Park	Diamond Bar	La Puente	Paso Robles	South Pasadena
Banning	Dinuba	La Quinta	Perris	Stanton
Beaumont	Downey	La Verne	Pico Rivera	Taft
Bell	Duarte	Laguna Hills	Pismo Beach	Temecula
Bell Gardens	Eastvale	Laguna Niguel	Placentia	Temple City
Blythe	El Centro	Lake Elsinore	Pomona	Torrance
Bradbury	El Monte	Lake Forest	Port Hueneme	Tulare
Brawley	El Segundo	Lakewood	Porterville	Tulare County
Brea	Fillmore	Lancaster	Rancho Cucamonga	Tustin
Buellton	Fontana	Lawndale	Rancho Mirage	Twentynine Palms
			Rancho Santa	
Buena Park	Fresno County	Lemoore	Margarita	Upland
Calexico	Fullerton	Loma Linda	Redlands	Ventura
California City	Garden Grove	Lomita	Reedley	Vernon
Calimesa	Glendora	Lompoc	Rialto	Villa Park
Calipatria	Goleta	Los Alamitos	Riverside County	Visalia
Camarillo	Grand Terrace	Lynwood	Rolling Hills Estates	Walnut
Carpinteria	Grover Beach	Manhattan Beach	Rosemead	Wasco
Carson	Hanford	Maywood	San Bernardino	West Covina
			San Bernardino	
Cathedral City	Hawaiian Gardens	Menifee	County	West Hollywood
Cerritos	Hawthorne	Mission Viejo	San Clemente	Westmorland
Chino	Hemet	Monrovia	San Dimas	Whittier
Chino Hills	Highland	Montclair	San Fernando	Wildomar
Claremont	Holtville	Montebello	San Gabriel	Yorba Linda
Coachella	Imperial	Monterey Park	San Jacinto	Yucaipa
Colton	Imperial County	Moorpark	San Luis Obispo	Yucca Valley
Commerce	Indian Wells	Moreno Valley		

Appendix B - List of Cities and Counties that are no longer Fully Installed due to increased number of sites needed for Network Optimization

Beverly Hills
Gardena
Guadalupe
Hermosa Beach
Seal Beach
Westminster

**Appendix C - Evaluation of Southern California Gas Company's
2016-2017 Conservation Campaign, August 31, 2017
Prepared by Nexant**



Evaluation of Southern California Gas Company's 2016–2017 Conservation Campaign

August 31, 2017

Prepared for
Southern California Gas Company

Prepared by
Josh Schellenberg
Vice President
Eric Bell
Managing Consultant

Amanda Stansell
Project Analyst

Nexant, Inc.

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1 Executive Summary

Southern California Gas Company (SoCalGas®) began deploying “Advanced Meters”¹ (AM) in its service territory in late 2012, pursuant to California Public Utilities Commission (CPUC) Decision (D.)10-04-027. These meters are capable of providing enhanced information services that can help customers better manage and control their energy costs. By rigorously evaluating these types of information services, SoCalGas can demonstrate how to meet its 1% energy savings goal that is associated with its AM rollout.² Each year of the AM rollout, SoCalGas implements a Conservation Campaign that is designed to test various enhanced information programs. This document summarizes the evaluation of the fourth and final Conservation Campaign, which primarily ran from December 2016 through March 2017.³⁴ This document also includes results on continuation and persistence of energy savings from the first three Campaigns that occurred during the previous three years.

Similar to the third Campaign, the 2016–2017 Conservation Campaign (fourth Campaign) tested three information feedback options—Bill Tracker Alerts (BTAs), Seasonal Energy Update reports (SEUs), and Home Energy Reports (HERs), including several types of HERs developed by Opower, Aclara and SoCalGas. These three information feedback options were chosen because they have the potential to reach large numbers of customers and demonstrate how to meet the 1% energy savings goal in a cost-effective manner. SEUs were introduced for the first time in the third Campaign. They were designed by SoCalGas specifically for residential customers with natural gas usage that is highly weather sensitive, which means that their usage increases substantially under cold weather conditions. This information feedback option leveraged AM data to target the most weather sensitive customers and also to present cold day usage patterns to customers.

Table 1-1 summarizes the estimated natural gas savings for the 2016–2017 SoCalGas Conservation Campaign. As with the three prior Campaigns, energy savings for the fourth Campaign were found to be in line with the 1% savings goal. Overall, the new and continued residential customer treatments produced gas savings of almost 2.68 million therms, or almost 1.5% from April 2016 – March 2017 for the subset of treatments tested that were successful in producing statistically significant usage reductions.⁵ During the winter period from December 2016 – March 2017, a total of 2.3 million therms were saved by the new and continued treatments. Of the 2.3 million therm savings, nearly 1.62 million therms were conserved as a result of the new treatments for the 2016–2017 Conservation Campaign, representing a savings of over 1.7%.

¹ The Advanced Meter infrastructure consists of two primary components—a meter transmission unit (communications module) attached to SoCalGas meters and a communications network consisting of data collection units installed across the SoCalGas service territory.

² This energy savings goal specifically refers to 1% of total residential gas usage.

³ In previous years, treatments began in November. This year all of the treatments started in December. The 2016-2017 winter period referred to for the remainder of the report will represent December – March.

⁴ A few programs included a year-round email element that continued after March 2017.

⁵ Gas savings are only calculated for the treatments that produced statistically significant usage reductions for that time period. As discussed in Section 5.2, treatments tested with small and medium businesses (SMB) during the 2016-2017 Campaign did not produce statistically significant usage reductions.

Roughly 718,000 therms of energy savings conserved from April 2016 to March 2017 were the result of continued effects of the treatments in the 2015–2016 Conservation Campaign (third Campaign). The continuation of the effects of these treatments over spring and summer 2016 (April through November) were found to be about 200,000 therms.

Approximately 333,000 therms of energy savings conserved from April 2016 to March 2017 were the result of continued effects of the treatments in the 2014–2015 Conservation Campaign (second Campaign). The continuation of the effects of these treatments over spring and summer 2016 (April through November) were found to be about 160,000 therms.

The first 2013-2014 Campaign treatments did not produce measurable savings during this time period. In all, the effects of the new 2016–2017 treatments and the continued effects of the 2015–2016 and 2014–2015 treatments resulted in savings of about 2.67 million therms over the 12 month period from April 2016 to March 2017.

Table 1-1: Estimated Gas Savings for the 2016–2017 SoCalGas Conservation Campaign

Initial Treatment Year	Treatment	Group	Number of Treatment Customers	% Reduction	Aggregate Therms Saved (Nov-Mar)
2016-2017	BTA w/Tips + Paper & Email Opower HER	T-31	38,700	2.21%	255,322
	BTA w/o Tips	T-36	30,906	0.77%	70,435
	BTA w/ Tips	T-37	30,649	0.88%	83,103
	Paper-only Opower HER	T-32	51,508	1.37%	209,944
	Paper Aclara Home Energy Update report (HEU)	T-40	31,772	1.47%	143,375
	Paper In-House HER	T-39	13,414	1.25%	53,596
	Paper SEU	T-34	19,612	3.18%	211,926
	Paper SEU (Weatherize)	T-35	19,625	3.43%	223,203
	Paper & Email Opower HER - CARE	T-30	49,995	1.78%	236,316
	Paper SEU - CARE	T-33	18,364	2.24%	123,932
Paper Bi-lingual HER	T-41	13,453	0.60%	12,616	
Overall for 2016-2017 treatments (fall / winter)			317,997	1.74%	1,623,768
2015-2016	Opower Email HER ⁷	T-16	12,008	1.12%	38,447
	Opower Email Thermostat HER ⁶	T-19	11,950	1.58%	56,261
	Old BTA, w/materials	T-26	17,452	1.04%	51,561
	New BTA, w/materials	T-28	17,392	1.46%	72,103
	New BTA, w/o materials	T-29	17,465	1.18%	59,103
	Opower Paper-only HER ⁶	T-17	12,609	1.02%	35,966
	Opower Paper-only Thermostat HER ⁶	T-20	12,580	1.57%	56,434
	Opower Paper & Email HER ⁷	T-15	11,987	1.01%	30,326
	Opower Thermostat Email HER (ESA & Non-ESA) ⁶	T-18	24,146	1.84%	117,747
Overall for 2015-2016 treatments (fall / winter)			137,588	1.42%	517,947
2014-2015	Opower Paper-only HER ⁷	T-13	47,910	1.31%	173,041
Overall for 2014-2015 treatments (fall / winter)			47,910	1.31%	173,041
Overall for December 2016-March 2017			503,494	1.60%	2,314,756
2015-2016	Opower Email HER	T-16	12,024	0.80%	21,887
	Opower Email Thermostat HER	T-19	11,980	0.87%	23,602
	Old BTA, w/materials	T-26	17,500	0.81%	30,076
	Old BTA, w/o materials	T-27	17,499	0.85%	31,829
	Opower Paper & Email HER	T-15	12,028	0.62%	29,866

⁶ This treatment cell received continued treatment including only one paper report in 2016-2017 compared to the standard four reports received the prior heating season.

⁷ This treatment cell did not continue to receive treatment during the 2016-2017 campaign.

Initial Treatment Year	Treatment	Group	Number of Treatment Customers	% Reduction	Aggregate Therms Saved (Nov-Mar)
	Opower Paper & Email Thermostat HER (ESA & Non-ESA)	T-18	24,209	1.09%	62,632
Overall for 2015-2016 treatments (spring / summer)			95,241	0.94%	199,893
2014-2015	Opower Paper & Email HER ⁷	T-10	11,658	1.43%	40,022
	Opower Paper-only HER ⁷	T-13	46,764	1.15%	119,788
Overall for 2014-2015 treatments (spring / summer)			35,000	1.21%	159,809
Overall for April 2016-November 2016			130,240	1.04%	359,702
Overall for April 2016-March 2017			657,698	1.49%	2,674,458

1.1 Key Research Questions and Lessons Learned

Lessons learned from the first three Campaigns were incorporated into the program designs tested during the fourth Campaign, with the goal of answering nine key research questions related to cost-effectiveness for information feedback programs. Table 1-2 summarizes the key research questions explored in the 2016–2017 Conservation Campaign as well as the findings identified.

Table 1-2: Key Research Questions and Lessons Learned from the 2016–2017 Conservation Campaign

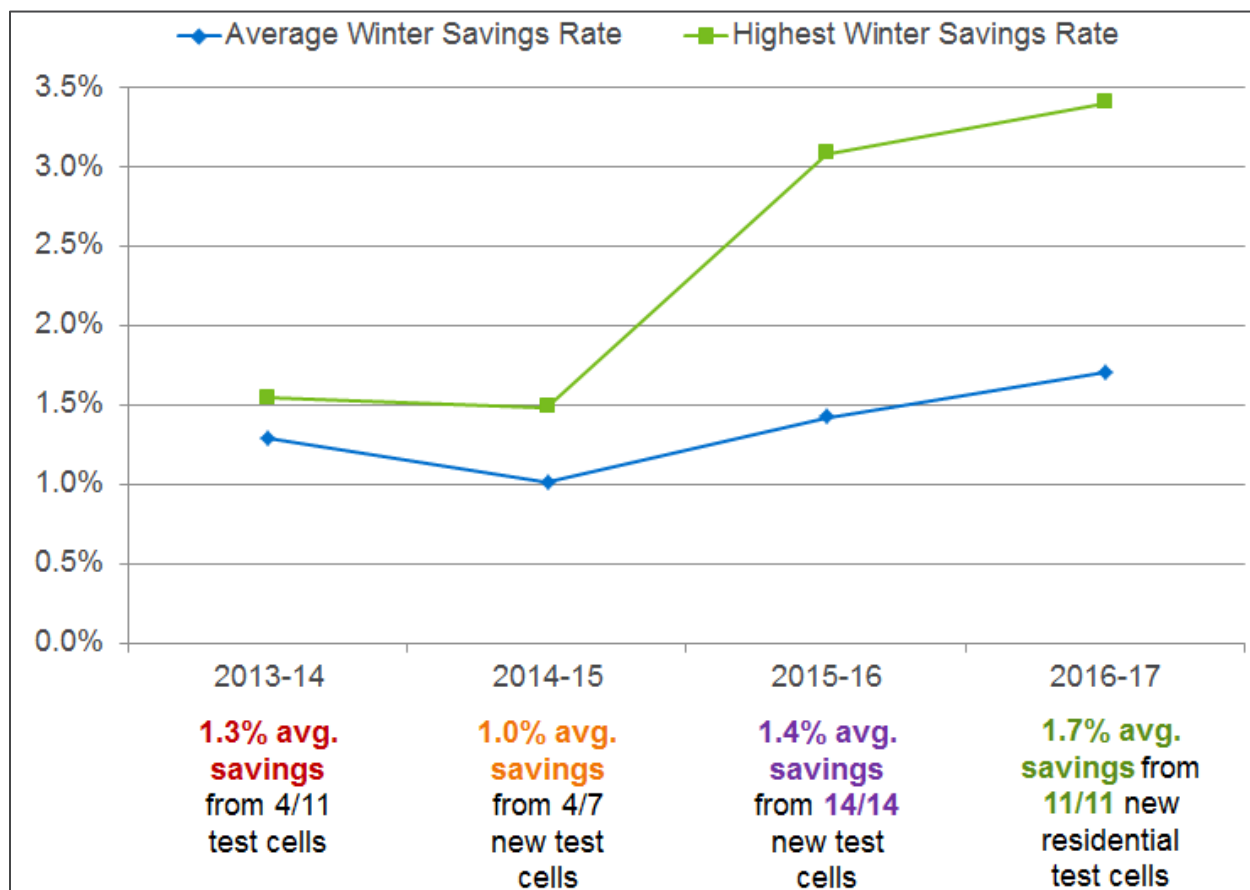
Key Research Question	Key Lessons Learned
Which variations of BTAs appear to be most effective at generating savings for residential customers on an initial and ongoing basis?	In the 2015-2016 campaign it was shown that the New [more graphical] BTA outperformed the Old BTA . Of the different new BTA treatments tested, the New BTA with promotional materials had the highest percent reduction in the first year of treatment. All of the New BTA variations achieved at least .75% savings in the first year . Both new BTA treatments that originated in the 2015-2016 campaign had savings rates that grew to over 1% in their second year.
How does the Opower HER + BTA combined information feedback treatment compare to the other BTA-only treatments?	The Opower HER + BTA w/Tips treatment achieved higher percent reductions than either of the other BTA treatments. The Opower HER + BTA w/Tips had a percent reduction of 2.21% while the other BTA treatments had savings below 1%. The combination of the two information feedback options produced higher savings.
Can SEUs with a stronger focus on home weatherization generate higher savings rates?	The SEU (Weatherize) version had a higher percent savings of 3.4%, while the standard SEU had a percent reduction of 3.2%. However, the difference between the two treatments is not statistically significant.
Do the strong savings rates from SEUs in year one persist when the treatment is not continued in the following winter?	Both SEU treatments from the third campaign had percent reductions of approximately 1.1% in the first year after stopping treatment, but the savings is not statistically significant. The results are likely insignificant due to the RED design being used to evaluate these treatments. It would be worthwhile to test the persistence of the SEUs again with the RCT design from the fourth campaign.

<p>How do the Non-My Account SEU treatments compare to other information feedback types tested with weather sensitive customers in that segment?</p>	<p>This year the treatment assignment was done so that the SEU treatments could be compared against other Non-My Account paper energy report treatments. In order to compare the results of the other treatments, it is necessary to use only the top 25% most weather sensitive customers in the comparison. Both the SEU and SEU (weatherize) had percent reductions above 3% while the weather sensitive Opower HER and Aclara HEU customers had percent reductions of 1.5% and 1.8% respectively. This confirms that the SEU treatment is more effective in getting weather sensitive customers to reduce their usage.</p>
<p>How do CARE customers identified as highly weather sensitive respond to the SEU treatment?</p>	<p>The CARE weather sensitive customers that received the SEU treatment produced a percent reduction of 2.24%. This treatment is not directly comparable to the other CARE treatment as the SEU treatment contains the top 25% most weather sensitive CARE customers. The CARE Opower HER produced a savings rate of 1.78%.</p>
<p>How do the Opower HERs, Aclara HEUs, and SoCalGas In-house HERs compare?</p>	<p>The Aclara Paper HEU had the highest percent reduction compared to the SoCalGas In-House Paper HER and the Opower Paper HER. The Aclara Paper HEU had a percent reduction of 1.47% while the Opower Paper HER had a percent reduction of 1.37% and the SoCalGas In-house Paper HER had a savings rate of 1.25%. However, the difference between the three treatments is not statistically significant.</p>
<p>How do the impacts of a Bilingual English-Spanish language paper energy report and welcome materials in lieu of either a single language English or Spanish report compare for customers in areas with high rates of Latino population?</p>	<p>The percent reductions of the Bi-lingual English-Spanish report, Spanish report, and English report for this customer segment were all less than 1%. The Bi-lingual HER and Spanish HER were both tested on customers residing in an area with high concentrations of Latino households based on census block data. A possible conclusion is that neighborhood comparison is not effective with this population.</p>
<p>Does the small and medium business (SMB) BTA treatment produce statistically significant results?</p>	<p>The SMB BTA treatment did not produce measurable savings. The percent reduction was -.39% and the p-value was .58. Therefore, the savings are essentially zero and not statistically significant. This is not surprising given the historical treatments tested by other utilities on SMB customers.</p>

1.2 Four Year Summary of Gas Savings and Key Findings

The 2016-2017 Conservation Campaign serves as the culmination of a highly successful multi-year “test and learn” process involving over 1.2 million participants. Figure 1-1 presents the average winter savings rate and highest winter savings rate for each campaign’s first year, showing how two years of testing various options and iterating toward the effective ones has led to impressive results in the last two years. Importantly, these savings rates only include treatments that produced statistically significant savings during the time period analyzed. Only 8 of 18 treatments in the first two campaigns produced measurable savings, whereas all 25 residential treatments in the final two campaigns were successful. The fourth and final campaign had an average savings rate of 1.7%, which was the highest of the four campaigns. The fourth campaign also achieved the highest percent reduction for any individual treatment, which was the SEU savings of 3.4%. This rate of savings was more than double the rate of the most effective treatments from the first two campaigns. It is clear that over the course of the four campaigns, this deliberate test and learn process produced significantly higher savings and identified innovative offerings as different treatments were tested and informed the decisions of the following campaigns.

Figure 1-1: Comparison of Percent Reductions in Gas Energy Consumption for the Four Conservation Campaigns



The four campaigns also generated four years of key findings that are applicable to SoCalGas and other utilities going forward, including:

- BTAs and HERs consistently produce savings of around .75% to 1.5%;
- SEUs and BTA+HER, which were developed in part by SoCalGas and leveraged AM data, were the only treatments to produce savings over 2%, including savings over 3% in all four non-CARE SEU treatments;
- These types of behavioral interventions consistently produce energy savings for default (auto-enrolled) participants, residential customers, and top two usage quartiles (highest in top quartile);
- Little to no savings measured for treatments involving opt-in participants, small/medium business customers, bottom two usage quartiles, and customers in highest density Hispanic neighborhoods (78%+ of population);
- Treatments targeted at CARE customers can be successful, but they cannot be solely based on email communications (BTAs or e-HERs) – paper-based communications through direct mail is required for success; and
- Energy savings generally persist if treatment continues, and in some cases, savings persist for more than one year if treatment is reduced/discontinued.

2 Introduction

SoCalGas began deploying AM in its service territory in late 2012. AM will be almost fully deployed to SoCalGas' approximately 6 million customers by the end of 2017. These meters are capable of providing enhanced information services that can help customers better manage and control their energy costs. By rigorously evaluating these types of information services, SoCalGas can develop cost effective information feedback programs designed to meet its 1% energy savings goal that is associated with its AM rollout.⁸ Each year of the AM rollout, SoCalGas has conducted a Conservation Campaign designed to test various enhanced information programs, primarily during the heating season from November through March.⁹ In approving SoCalGas' AM application in D.10-04-027, the CPUC directed SoCalGas "to establish a system to track and attribute the conservation impacts of its AM rollout" and to report the measured savings every six months. This document is the fourth of the biannual reports to include impact results of the Conservation Campaigns, which were implemented as outlined in this and prior semiannual reports.

2.1 Research Objectives and Design

This report addresses the following primary objectives:

- Meet the requirements of D.10-04-027 to track and attribute the conservation impacts of the AM rollout and to report measured savings every six months;
- Help demonstrate how SoCalGas can achieve its 1% energy savings goal in a cost-effective manner; and
- Carry forward lessons learned from the four campaigns into Energy Efficiency behavior programs.¹⁰

Meeting the first objective requires a rigorous research strategy that conclusively determines whether or not information feedback provided by SoCalGas through various programs caused changes in gas usage. Usage varies significantly across months, seasons, and years. As a result, comparing usage before and after customers receive information treatments is not a suitable approach to estimating conservation effects. Instead, impacts must be estimated by comparing usage for two groups of customers that are identical except for the fact that one group receives information feedback (the treatment group) and the other does not (the control group).

Meeting the second objective requires adherence to a "test and learn" strategy that quickly identifies the marketing strategies and service options that are most cost-effective for achieving energy savings through information services. This strategy was envisioned by D.10-04-027,

⁸ This energy savings goal specifically refers to 1% of total *residential* gas usage.

⁹ Some treatments, such as the alert component of the default BTAs and the email HER component of the Opower treatments from the last three Campaigns are continued into the spring and summer months.

¹⁰ Pursuant to D.12-11-015, SoCalGas has been utilizing its Advanced Meter project to support its Energy Efficiency non-resource behavior goals, which contain a 5% behavioral target for residential households. As SoCalGas outlined in its Program Implementation Plan for the 2013-2014 California Statewide Program for Residential Energy Efficiency, Energy Advisor Program: "Upon completion of the Advanced Meter project, SoCalGas will incorporate successful behavioral programs and techniques into the energy efficiency portfolio."

which stated, “we expect that customer outreach, education and communications will continue to evolve and improve as SoCalGas conducts customer research, monitors customer reaction to new AM technology and various customer usage presentation tools, and incorporates feedback from these activities into its AM outreach and education activities.”

Meeting the third objective requires that the information gained from the four campaigns be used to inform decisions made for SoCalGas Energy Efficiency behavior programs moving forward.

2.2 Overview of Information Services Tested

The 2016–2017 Campaign tested three information feedback options—Bill Tracker Alerts (BTAs), Home Energy Reports (HERs)¹¹, and Seasonal Energy Update reports (SEUs). The BTAs and HERs were tested in all four year’s campaigns while the SEUs were tested for the first time in the third campaign. For the first time during the four years of the campaigns, a single treatment cell received two different information feedback options. This treatment received both the Paper Opower HER and the BTA with tips. These three information feedback options were chosen because they have the potential to reach large numbers of customers and demonstrate how to cost effectively meet the 1% energy savings goal. As outlined in sections 2 and 2.1, variations to the segmentation, targeting, and messaging for each of these information feedback approaches were refined based on the findings and associated learnings from the previous three campaigns.

2.2.1 Home Energy Reports

Unlike the previous three campaigns, the 2016-2017 campaign tested HERs created by three different providers. In addition to the Opower-generated HER, Aclara introduced a new version of their “Home Energy Update” (HEU) report. The Aclara HEU is different from the Aclara HER tested in the 2014-2015 campaign. Additionally, SoCalGas tested an in-house developed HER (In-house HER) called a “SoCalGas Usage Report”. Along with the standard HERs, a bi-lingual HER developed by SoCalGas was tested in the fourth Campaign. Approximately 146,554 customers received standard Opower HERs, 33,000 received Aclara HEUs, 13,750 received SoCalGas In-house HERs, and 13,750 received Bi-lingual HERs throughout the winter months. When referring to HERs and HEUs in general, the blanket term of HER will be used in this report to simplify naming conventions. All customers receiving HERs were defaulted onto the service and received HERs either through direct mail, email, or a combination of direct mail and email (with varying frequencies of each in the different treatments tested). In addition to displaying comparisons of households’ natural gas consumption with that of neighbors, and other self-comparative information, the HERs provided tips on how to reduce gas consumption.

The features and timeline of the residential HER treatments that Opower, Aclara, and SoCalGas began implementing are shown in the sections below. Unlike previous campaigns, the first report was sent in December¹² instead of November. In total, 207,554 customers were sampled for HER treatments, split between the different types of HERs. Of the 146,554

¹¹ As outlined further below, several variations of monthly energy reports or HERs were evaluated, including HERs developed by Opower, Aclara and SoCalGas.

¹² The Aclara HEU was sent on November 30, 2016.

customers treated with Opower HERs, 52,500 CARE customers received the Paper & Email HER;¹³ 40,554 My Account customers received the Paper HER + the BTA w/Tips; and 53,500 Non-My Account customers received the Paper HERs. 33,000 Non-My Account customers were treated with the Aclara Paper HEU. Of the 27,500 customers treated with SoCalGas-developed HERs, half (13,750) received the In-house HER and half received the Bi-lingual HER.

Opower Standard HER treatment overview for new 2016-2017 treatments

Figure 2-1 and Figure 2-2 provide examples of the front and back sides of the Opower paper HER sent in January (additional HER materials are shown in Appendix A). These paper HERs were similar but not identical from month to month. They featured the following four sections that were for the most part consistently shown in each monthly report:

- Previous winter's natural gas usage (in initial HER) or previous month's gas usage compared with usage by similar neighbors, including an emoticon rating;
- Historical monthly gas usage compared with usage by similar neighbors (except January);
- Neighbor efficiency rank (except the initial December HER); and
- Personalized energy-saving tips.

¹³ Only CARE customers registered for My Account received the Email HER in addition to the Paper HER report.

Figure 2-1: Opower Paper January HER Example (Front)

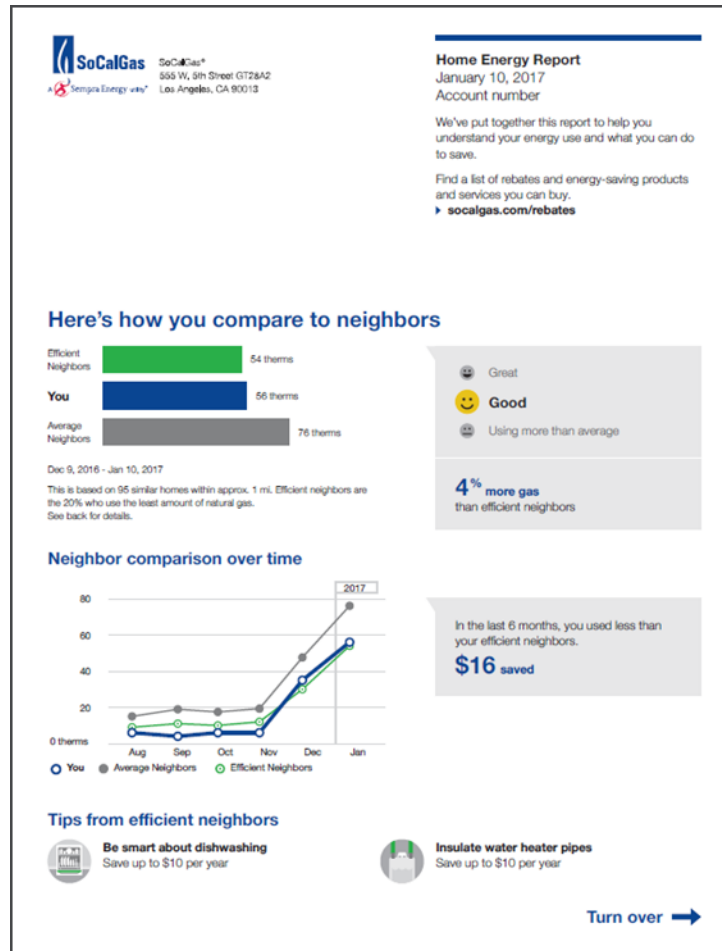


Figure 2-2: Opower January Paper HER Example (Back)

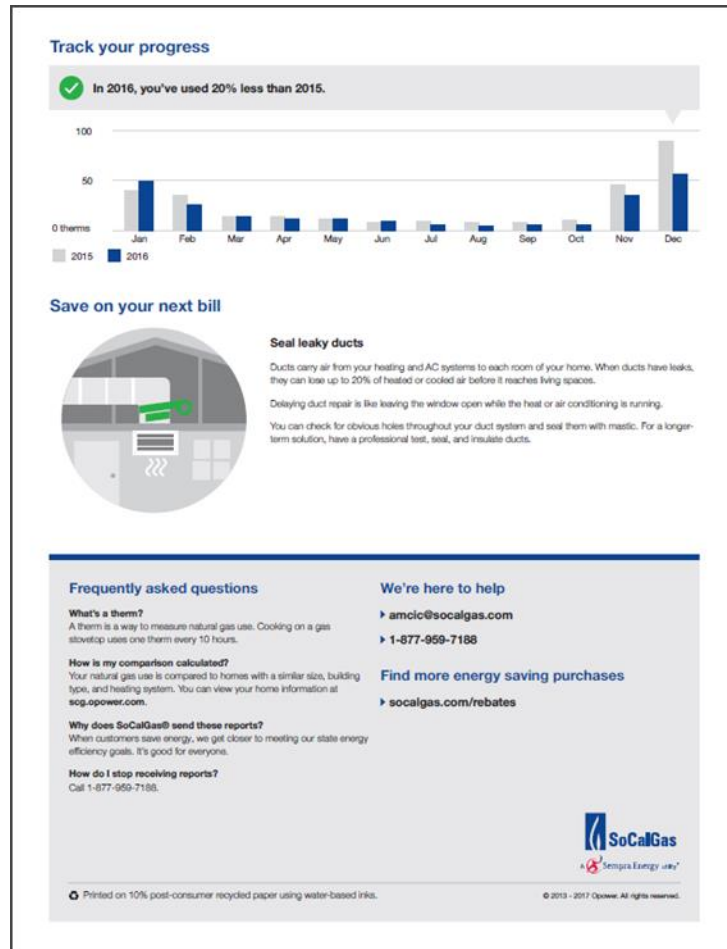
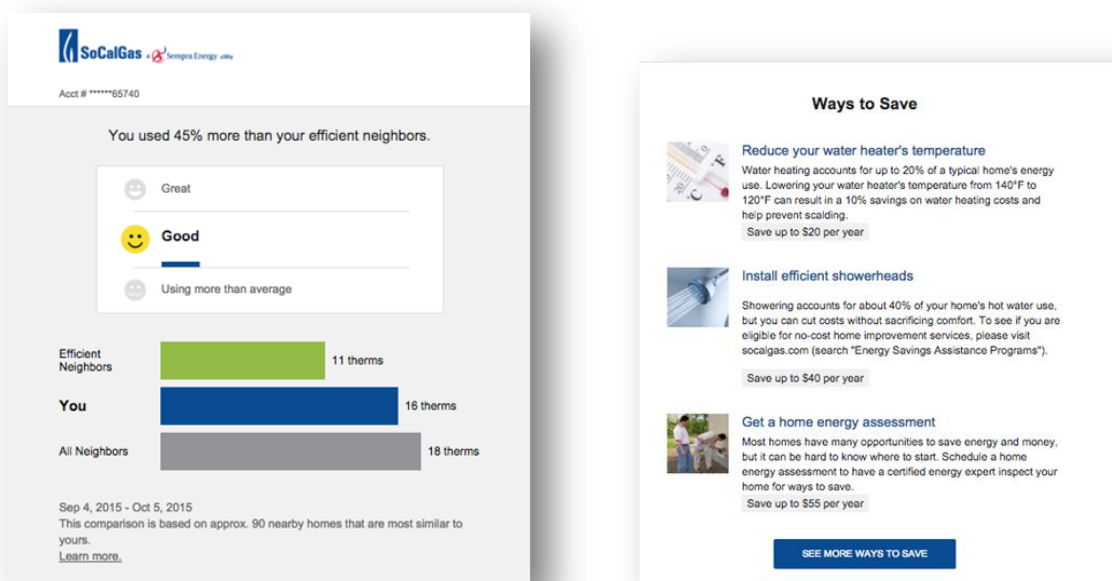


Figure 2-3 provides an example of the Opower email HER that was sent starting in December. The email HER was simpler than the paper HER and included just one main section—previous month’s/winter’s natural gas usage compared with similar neighbors—followed by several conservation tips. This comparison section is similar to the first section of the paper HER and was consistently shown in each monthly report. Examples of both HERs and the remaining materials that Opower sent are provided in Appendix A.



















Figure 2-3: Opower Email HER Example, December and Subsequent Months



Opower Treatment Schedule

The features and timeline of the 2016-2017 new residential Opower HER treatments are shown in Table 2-1. All paper reports began around the first week of December 2016 with an initial paper HER. The Paper-only and Paper & Email HER then included another three monthly paper HERs sent via direct mail between January 2016 and March 2017. In addition, the Paper & Email HER treatment included a total of 12 monthly HERs sent via email.

Table 2-1: Features and Timeline of New Residential Opower HER Treatments (November 2016¹⁴ through November 2017)

		Opower HERs					
		Nov	Dec	Jan	Feb	Mar	Apr-Nov
Paper Reports	Paper HER						
	Paper HER						
Paper & Email	Paper HER						
	Email HER						

Several of the Opower HER treatments implemented in the 2015-2016 campaign were also continued for a second year in the 2016-2017 campaign. These treatments followed the same treatment timeline as shown above, however all treatments only included one Paper report in December, whereas they may have included four monthly Paper reports in the first year of treatment.¹⁵ Similarly, the Opower HER treatments implemented in the 2014-2015 campaign were also continued for a second year in the 2015-2016 campaign. However, these treatments were not continued in the 2016-2017 campaign.

Aclara HEU treatment overview

Figure 2-4 and Figure 2-5 provides an example of the front and back sides of the December Aclara paper HEU (all additional materials can be found in Appendix B). These paper HEUs were similar but not identical from month to month. The Aclara paper HEUs featured the following three sections that were for the most part consistently shown in each monthly report:

- Historical monthly gas usage compared with usage by similar neighbors;
- Previous winter gas usage breakdown (amount of gas used for heating); and
- Personalized energy-saving tips.

¹⁴ The November email HER was sent on at the end of the month on November 25, 2016.

¹⁵ Additional information regarding the treatments implemented in the 2015-2016 campaign can be found in the SoCalGas 2015-2016 Conservation Campaign Evaluation – Final dated August 31 2016.

Figure 2-4: Aclara Paper HEU Example (Front)

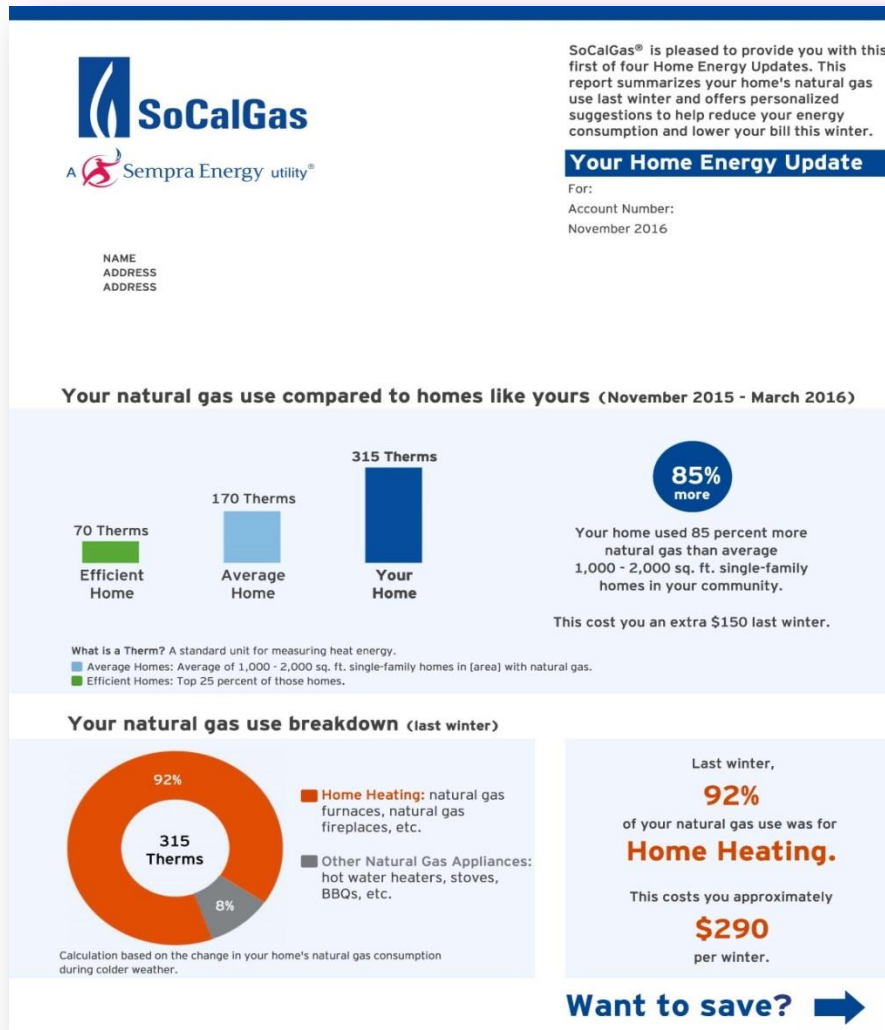





Figure 2-5: Aclara Paper HEU Example (Back)



Home Heating Tips To Help You Save This Winter







<input checked="" type="checkbox"/> Set your thermostat to 58 degrees or lower at night	Save up to \$100 per year
<p>Our bodies don't need the temperature to be as high to feel comfortable while we sleep. And during the day, most people are comfortable at 68 degrees.</p> <p>If you have one or more programmable thermostats, spend a couple of minutes setting them now – then save effortlessly all winter!</p> <p>At Home: 68° or lower Asleep: 58° or lower Away: 50° or turn off*</p>	
<input checked="" type="checkbox"/> Avoid heating unoccupied areas	Save up to \$50 per year
<p>Avoid unnecessarily heating unused rooms (e.g. guest bedrooms, basements).</p> <p>Adjust heating vents so that less heat is focused on unused rooms, but be careful not to strain your furnace blower by closing too many vents.</p> <p>Close doors to unused spaces and use door draft stoppers to keep warm air where you want it.</p> <p>Use room-specific heaters, like natural gas fireplaces, when possible.</p>	
<input checked="" type="checkbox"/> Upgrade to an energy-efficient furnace	Save up to \$150 per year
<p>New high-efficiency furnaces are about 30 to 50 percent more efficient than older furnaces. If your furnace is more than 20 years old, it might be time to replace it with a more efficient one.</p> <p>Search for available rebates to see how much you can save! Visit socalgas.com (search "SAVE ENERGY") to take advantage of this offer. Conditions apply.</p>	

Data, analysis, and recommendations in this report are based on estimates and projections, and are provided for informational purposes only. *For colder weather climates, the U.S Department of Energy recommends that the thermostat should be set to around 50 degrees while you are away in the winter to keep pipes from freezing and animals safe. For questions regarding this report, please call 888-873-4894, Monday through Friday, from 8 a.m. to 6 p.m. PT, or visit pages.socalgas.aclara.com/FAQ.
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Aclara Treatment Schedule

The features and timeline of the residential Aclara HEU treatment are shown in Table 2-2. All paper reports began around the first week of December 2016 with an initial paper HEU. Two paper reports were sent in December instead of one being sent in November. A welcome insert was sent in December as well. The thermostat decal was sent to customers in January.

Table 2-2: Features and Timeline of Residential Aclara HEU Treatment (December 2016 through November 2017)

		Aclara HEU					
		Nov	Dec	Jan	Feb	Mar	Apr-Nov
Paper Reports	Paper Report		 				
	Welcome Insert						
	Thermostat Decal						

SoCalGas Usage Report In-House HER treatment overview

The In-house “SoCalGas Usage Report” HER treatment featured two different paper reports; one for homeowners and the second for renters. The only difference between the renters’ and homeowners’ versions of these reports is the tips containing actions that a renter could take compared to a homeowner. For example, the homeowner could lower the water heater temperature while a renter might not have access to do this.

Figure 2-6 and Figure 2-7 provide an example of the homeowners and renters In-house paper HERs sent in December (all additional materials can be found in Appendix C). The In-house HERs were only sent in paper form (there were no email In-house HERs). These paper HERs were similar but not identical from month to month. In-house HERs featured the following sections that were for the most part consistently shown in each monthly report:

- Historical monthly gas usage compared with usage by similar neighbors; and
- Personalized energy-saving tips.

Figure 2-6: SoCalGas Usage Report Paper Homeowners In-house HER Example

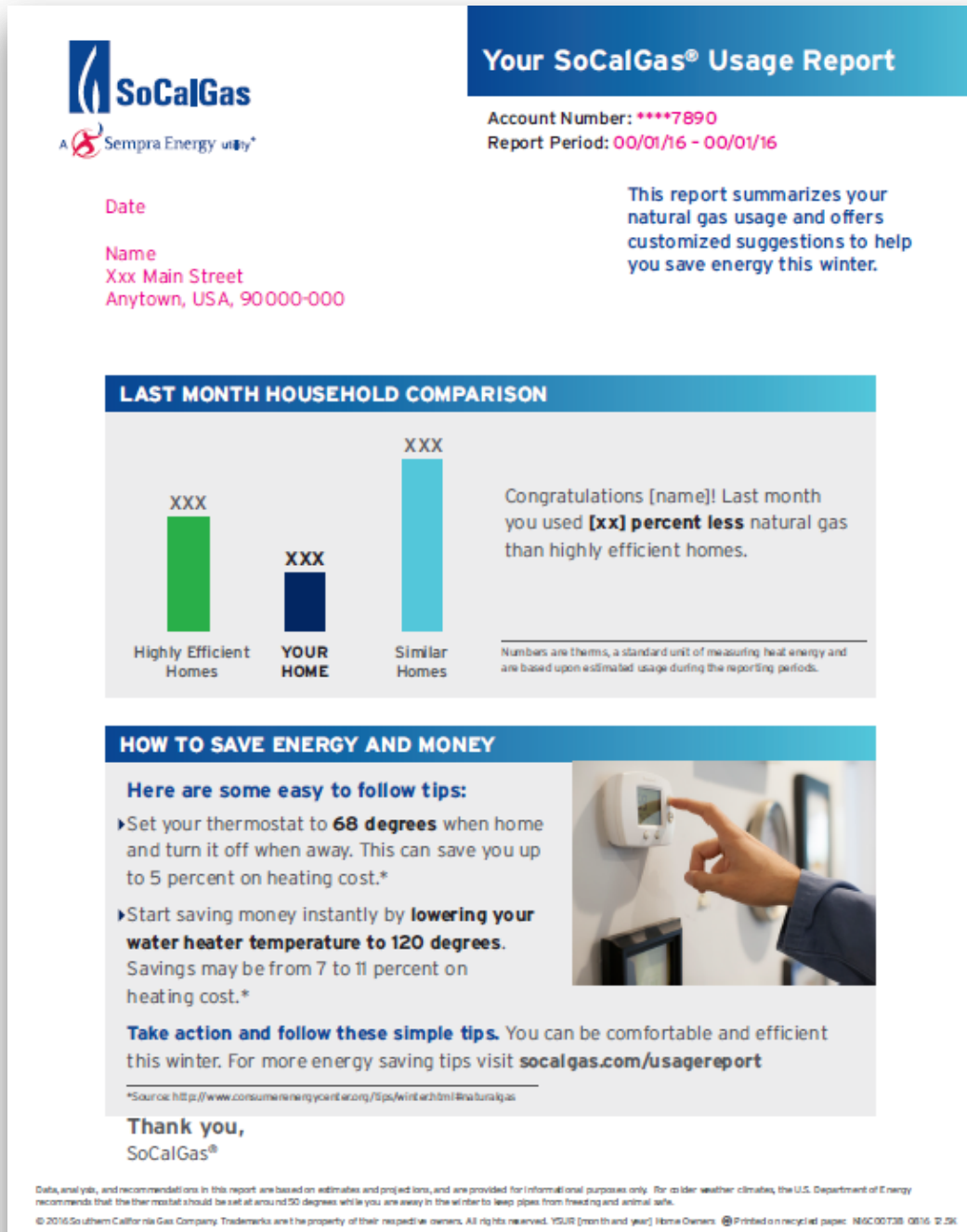


Figure 2-7: SoCalGas Usage Report Paper Renters In-house HER Example



SoCalGas Bi-lingual HER treatment overview

Figure 2-8 and Figure 2-9 provide an example of the front and back sides of the Bi-lingual paper HER sent in December (all additional materials can be found in Appendix D). The front side displays the messaging in English, while the backside displays the same messaging in Spanish. The Bi-lingual HERs were only sent in paper form (there were no email Bi-lingual HERs). These paper HERs were similar but not identical from month to month. Spanish paper HERs featured the following two sections that were for the most part consistently shown in each monthly report:

- Historical monthly gas usage compared with usage by similar neighbors; and
- Personalized energy-saving tips.

Figure 2-8: SoCalGas December Bi-lingual Paper HER Example (Front)

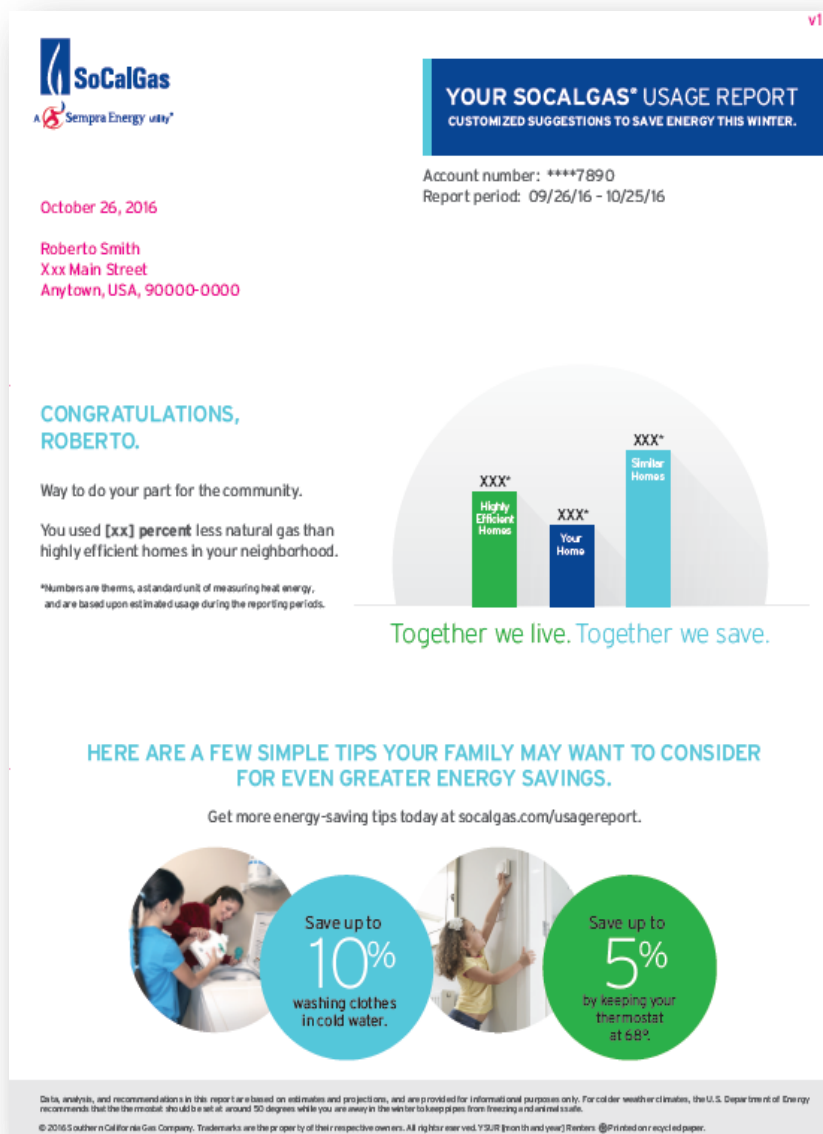






Figure 2-9: SoCalGas December Bi-lingual Paper HER Example (Back)



SoCalGas HER Treatment Schedule

The features and timeline of the residential SoCalGas HER treatments including the Bi-lingual and In-house HERs are shown in Table 2-3. All paper reports began around the first week of December 2016 with an initial paper HER. Both treatments received four paper reports.

Table 2-3: Features and Timeline of Residential SoCalGas HER Treatments (December 2016 through November 2017)

		SoCalGas HERs					
		Nov	Dec	Jan	Feb	Mar	Apr-Nov
Paper Reports	Paper HER						

2.2.2 Bill Tracker Alerts (BTA)

BTAs are weekly reports developed and provided by SoCalGas to customers by email and/or text message. The reports describe the cost of the natural gas that customers have consumed since receiving their last bill. BTAs also provide a forecast of what a customer's gas bill will be at the end of the billing period if they continue to consume gas at the same rate. Customers are not able to set specific goals for daily or weekly gas consumption. BTAs are designed to raise customers' awareness of the amount of gas they are using and its impact on their bill.

During the first 2013-2014 Campaign, the BTA service was tested on an opt-in and default enrollment basis for residential and small/medium business (SMB) customers. This service was also initially accompanied by a welcome letter and three monthly informational letters with various supporting materials sent via direct mail¹⁶ and email.¹⁷ All BTA customers from the first Campaign who did not opt out or otherwise choose to discontinue the BTA service continued to receive BTAs throughout year two and beyond but no longer received the additional informational materials.

However, in the second Campaign in 2014–2015, SoCalGas decided to forgo the supplemental direct mail and email communications that accompanied the BTAs in 2013–2014. This reduction in communications was meant to test whether comparable energy savings could be achieved without these additional communications, thereby improving cost-effectiveness. For this Campaign, enrollment in weekly BTAs was expanded to an additional 55,346 residential My Account customers on a default enrollment basis only.¹⁸ These default BTA customers received an initial Welcome email followed by the weekly email BTA notifications, which included a link to SoCalGas.com My Account-based *Ways to Save* online tools.

¹⁶ A Welcome letter was sent in October; a letter with "3 Easy Ways to Save" insert was sent in November; a letter with a "Winter Savings Checklist" in January; and a letter with links to My Account *Ways to Save* in February. These materials were sent to all BTA participants in the first Campaign, both default and opt-in.

¹⁷ A Welcome email was sent in October (to default customers only); an email titled "Save More This Winter" including links to My Account *Ways to Save* was sent in November; an email titled "How much more can you save" including links to My Account *Ways to Save* was sent in January; an email titled "Tools and Tips to help you save energy and money" including links to My Account *Ways to Save* was sent in February; and an email titled "Helping you save more" including links to My Account *Ways to Save* was sent in March.

¹⁸ Of these 55,346 accounts selected for default enrollment into BTAs, 1,229 were suppressed from receiving BTAs because the accounts were in a collections status due to payments significantly past due. It is SoCalGas' procedure to not send BTAs to accounts undergoing collections activity.

In the third Campaign (2015–2016), SoCalGas introduced a new, graphically enhanced version of the BTA email. Moving forward, only the new version of the BTA will be sent to customers after it was proven that achieve higher savings results than the old version of the BTA.

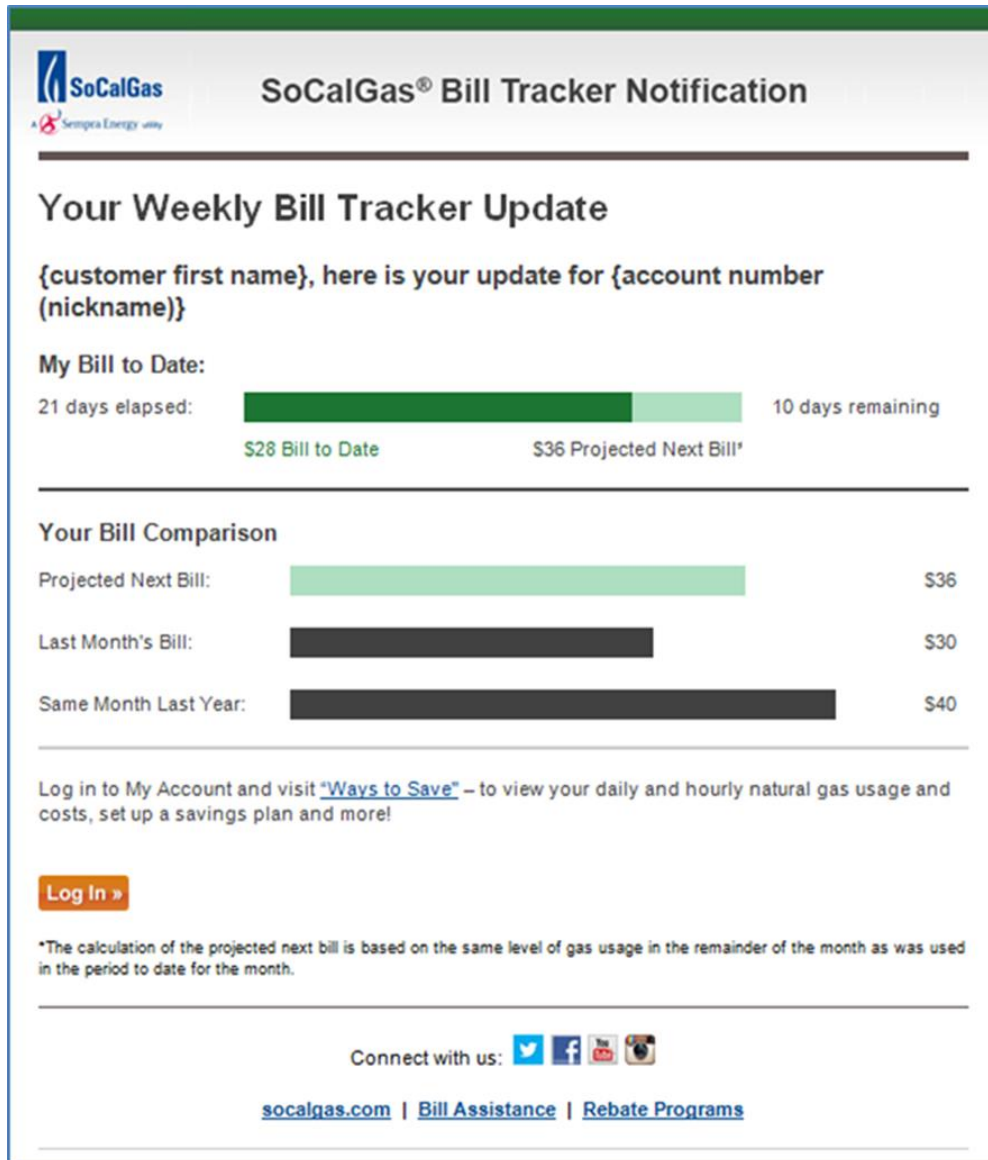
In the fourth campaign, enrollment in weekly BTAs was split into three different treatment groups, including a total of approximately 105,000 residential My Account customers enrolled on a default basis only. The 105,000 customers were split between three different treatment categories: BTA with tips and Paper Opower HER; BTA without tips; and BTA with tips. The BTA with tips included seasonal energy-savings tips in each weekly BTA email sent. This treatment design was meant to test if the addition of tips in the design of the BTA produced additional energy savings and whether combining the Opower Paper HER with the BTA with tips provided even greater energy savings than either of the treatments alone.

Additionally, in the 2016-2017 Campaign, the new version of the BTA was sent to approximately 21,000 SMB customers enrolled on a default basis only.

Figure 2-10 shows the template for the residential New BTA email notification. The New BTA emails featured the following information along with several graphic representations of these numbers:

- Bill amount (\$) to date;
- Projected amount (\$) for next bill;
- Days remaining and days elapsed in the current bill cycle;
- Last month's bill amount (\$);
- Bill amount (\$) for same month in the prior year; and
- Links to the SoCalGas *Ways to Save* tool and rebate programs.

Figure 2-10: Template for SoCalGas Residential New BTA Email Notification without Tips



The image shows a template for a SoCalGas Bill Tracker Notification email. It features the SoCalGas logo and the title "SoCalGas® Bill Tracker Notification". The main heading is "Your Weekly Bill Tracker Update". Below this, there is a personalized message: "{customer first name}, here is your update for {account number (nickname)}".

The "My Bill to Date" section includes a progress bar showing "21 days elapsed" and "10 days remaining". Below the bar, it displays "\$28 Bill to Date" and "\$36 Projected Next Bill*".

The "Your Bill Comparison" section uses horizontal bars to compare the "Projected Next Bill" (\$36), "Last Month's Bill" (\$30), and "Same Month Last Year" (\$40).

A "Log In »" button is provided, along with a link to "Ways to Save". A disclaimer states: "*The calculation of the projected next bill is based on the same level of gas usage in the remainder of the month as was used in the period to date for the month."

At the bottom, there are social media icons for Twitter, Facebook, YouTube, and Instagram, followed by the text "Connect with us:". Below this are links for "socialgas.com", "Bill Assistance", and "Rebate Programs".


Figure 2-11 shows the template for the New BTA email notification with tips. These BTAs included a rotating energy-savings tip at the end of each email notification.

Figure 2-11: Template for SoCalGas Residential New BTA Email Notification with Tips

SoCalGas | **Your Weekly Bill Tracker Update**
A Sempra Energy company


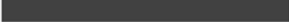

_____, here is your update for *****


My Bill to Date:

14 days elapsed:  16 days remaining

\$10.00 Bill to Date **\$20.72 Projected Next Bill***

Your Bill Comparison

Projected Next Bill:		\$20.72
Last Month's Bill:		\$61.26
Same Month Last Year:		\$67.55

 **Energy Tip**





Set your Thermostat and Save! Set it to 68 degrees or lower when you're home, health permitting.

Log in to My Account and visit "[Ways to Save](#)" – to view your daily and hourly natural gas usage and costs, set up a savings plan and more!

[Log In »](#)

Thank you for being a valued customer,

SoCalGas®

Connect with us:    

[socalgas.com](#) | [Bill Assistance](#) | [Rebate Programs](#)

Make sure you receive our emails by adding customerservice@socalgas.com to your address book. Please do not reply to this email. Email sent to this address cannot be answered. For assistance, please visit our [Help Center](#). Southern California Gas Company values your privacy. For more information, view our [Privacy Policy](#) and [Privacy Notice](#).

Email notification code: 131A

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Figure 2-12 provides an example of a text message BTA notification, which is similar to the email BTA notification. However, due to limits on the number of characters that can be included in a single text message, links to the *Ways to Save* tool and rebate programs were not provided in the text message BTAs.

Figure 2-12: Example SoCalGas Residential Text Message BTA Notification



Figure 2-13 shows the template for the New BTA email notification sent to SMB Customers. Similar to the residential New BTA emails, the SMB BTA emails featured the following information along with several graphic representations of these numbers:

- Bill amount (\$) to date;
- Projected amount (\$) for next bill;
- Days remaining and days elapsed in the current bill cycle;
- Last month's bill amount (\$);
- Bill amount (\$) for same month in the prior year; and
- Links to the SoCalGas *Ways to Save* tool and rebate programs.

Figure 2-13: Template for SoCalGas SMB New BTA Email Notification

The image shows a template for a SoCalGas email notification titled "Your Weekly Bill Tracker Update". It includes the SoCalGas logo and tagline "A Sempra Energy utility". The main content area is divided into several sections:

- Header:** "Your Weekly Bill Tracker Update" with the SoCalGas logo.
- Update Info:** "Here is your update for (*****)".
- My Bill to Date:** A progress bar showing "14 days elapsed" and "15 days remaining". Below the bar, it displays "\$196.22 Bill to Date" and "\$363.78 Projected Next Bill*".
- Your Bill Comparison:** A table comparing bills:

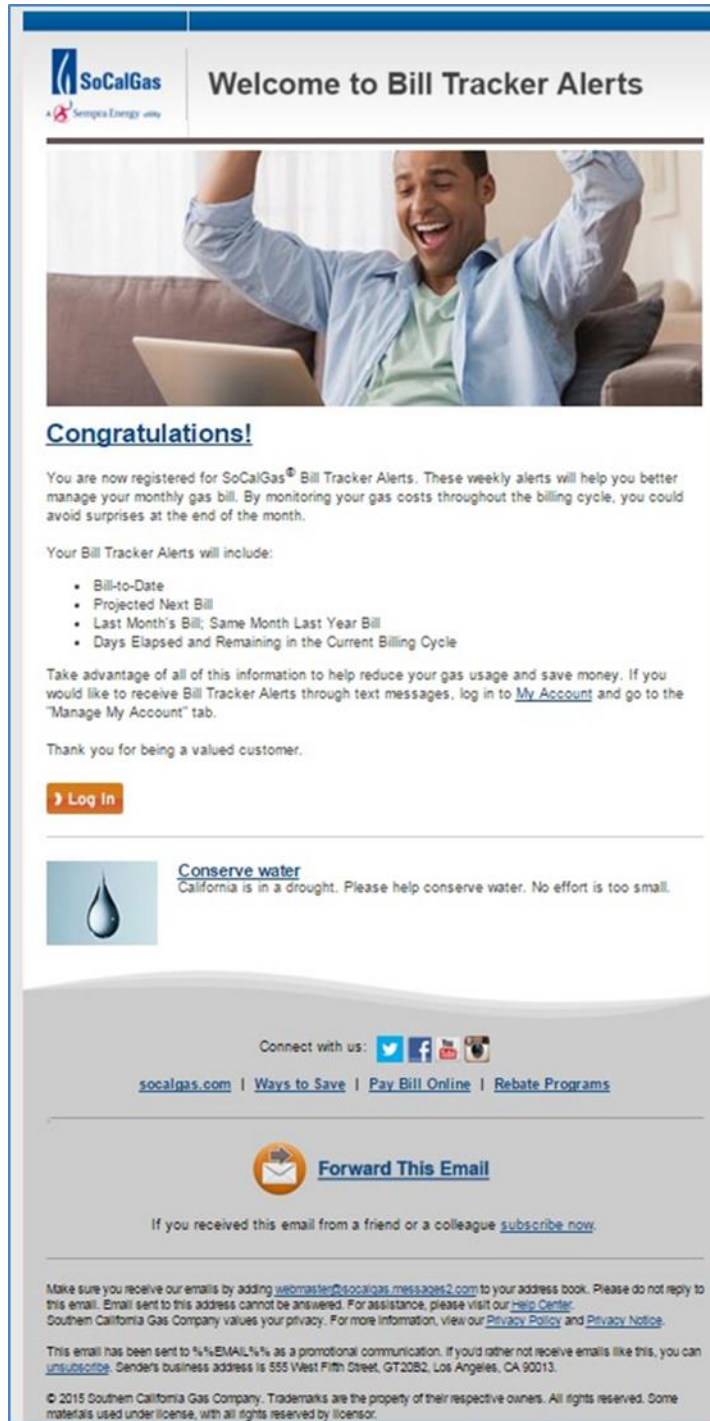
Projected Next Bill:	\$363.78
Last Month's Bill:	\$403.56
Same Month Last Year:	\$344.67
- Call to Action:** "Log in to Business My Account and visit 'Ways to Save' to view your daily and hourly natural gas usage and costs, set up a savings plan and more!". Below this is a "Log In »" button.
- Thank you message:** "Thank you for being a valued customer, SoCalGas®".
- Social Media:** "Connect with us:" followed by icons for Twitter, Facebook, YouTube, and Instagram.
- Links:** "socialgas.com | Ways to Save | Pay Bill Online | Rebate Programs".
- Footer:** "Make sure you receive our emails by adding customerservice@socalgas.com to your address book. Please do not reply to this email. Email sent to this address cannot be answered. For assistance, please visit our Help Center. Southern California Gas Company values your privacy. For more information, view our Privacy Policy and Privacy Notice." and "Email notification code: 150".
- Copyright:** "© 2016 Southern California Gas Company. Trademarks are property of their respective owners. All rights reserved. Some materials used under license, with all rights reserved by licensor."

Communications Sent to Default Residential BTA Customers

In mid-October 2016, approximately 105,000 residential customers were defaulted onto BTA and started automatically receiving BTAs through their primary My Account email address (non-My Account customers could not be defaulted onto BTA because SoCalGas does not have their email address). The default customers could also log into My Account and change their notification preferences to receive BTAs through text message, but the vast majority remained with the BTAs through email alone. In addition to the 15 or more weekly BTAs that

these customers received throughout the 2016–2017 Conservation Campaign, SoCalGas sent an initial Welcome email as shown in Figure 2-14.

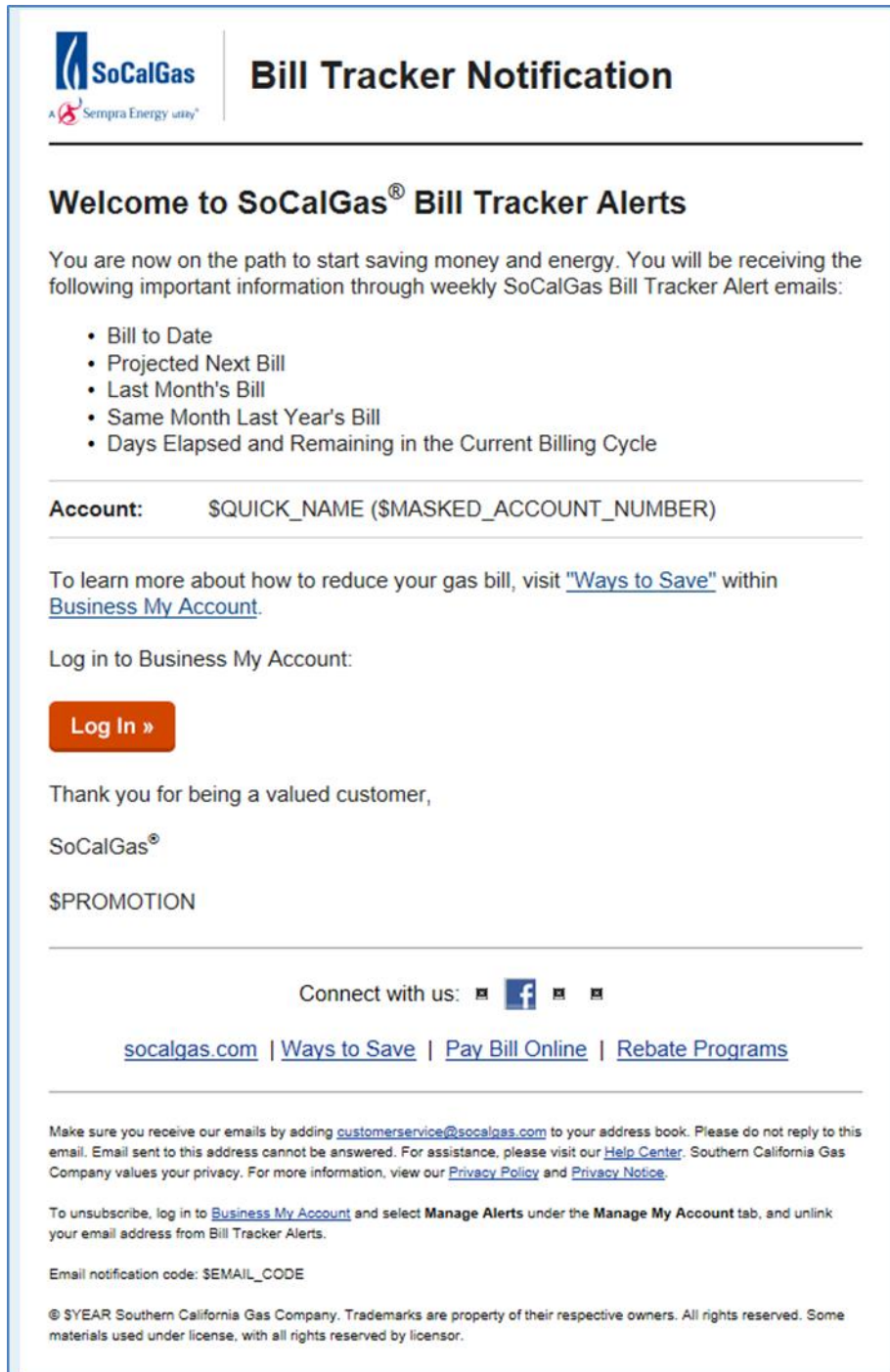
Figure 2-14: SoCalGas – November Residential Bill Tracker Alert Welcome Email



Communications sent to Default SMB BTA Customers

In mid-October 2016, approximately 21,000 SMB customers were defaulted onto BTA and started automatically receiving BTAs through their primary My Account email address. In addition to the 15 or more weekly BTAs that these customers received throughout the 2016–2017 Conservation Campaign, SoCalGas sent a Welcome email as shown in Figure 2-15.

Figure 2-15: SoCalGas – November SMB Bill Tracker Alert Welcome Email



2.2.3 Seasonal Energy Update reports (SEU)

SEUs are monthly energy reports that were developed based on data analytics provided by SoCalGas and implementation facilitated by Aclara. These reports are targeted to customers based on their individual sensitivity to colder weather as determined by their historical AM usage data. Using AM data, SoCalGas is able to measure how customers react to changes in temperature. SoCalGas refers to customers whose natural gas consumption is highly responsive to cold weather as “weather sensitive” customers. The SEU treatment included four monthly paper reports. SEUs are designed to target these weather sensitive customers and inform them on how to change their habits to reduce energy during colder weather periods.

SoCalGas developed SEUs based on learnings, insights, and hypotheses arising from the first two Campaigns and first tested SEUs in the third Campaign. In the fourth campaign, the SEU was tested on CARE and Non-My Account customers. A new version of the SEU was tested that focused on home building envelope and weatherization-related messaging. The treatment groups in the Non-My Account segment contained a large number of customers in comparison to the other treatment cells. However, only 25% of the customers in the treatment group received treatment (SEU reports). In the SEU and SEU (Weatherize) treatments there were 81,400 total customers, but only the top 25% most weather sensitive customers received reports (20,350). In the CARE SEU treatment group, which was comprised of only the top 25% most weather sensitive customers amongst treated CARE customers, all of the customers in the treatment group received reports (19,250).

All SEU treatment customers received the following: four paper reports; one welcome letter/frequently asked questions; three frequently asked questions inserts; and one repositionable thermostat setting reminder decal.

Figure 2-16 and Figure 2-17 provide examples of the front and back sides of the standard paper SEU sent in December (all additional materials can be found in Appendix E). The paper SEU featured the following information:

- Comparison to Neighbors during cold weather days;
- Normal Day vs. Cold Day Usage [self] Comparison; and
- Savings tips.

Figure 2-16: Aclara/SoCalGas Paper SEU (Front)

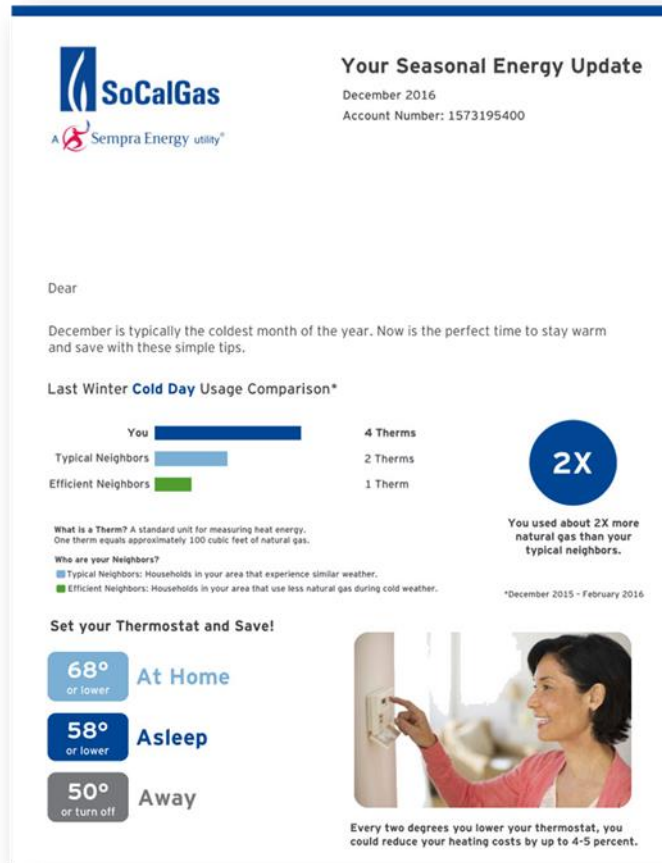


Figure 2-17: Aclara/SoCalGas Paper SEU (Back)

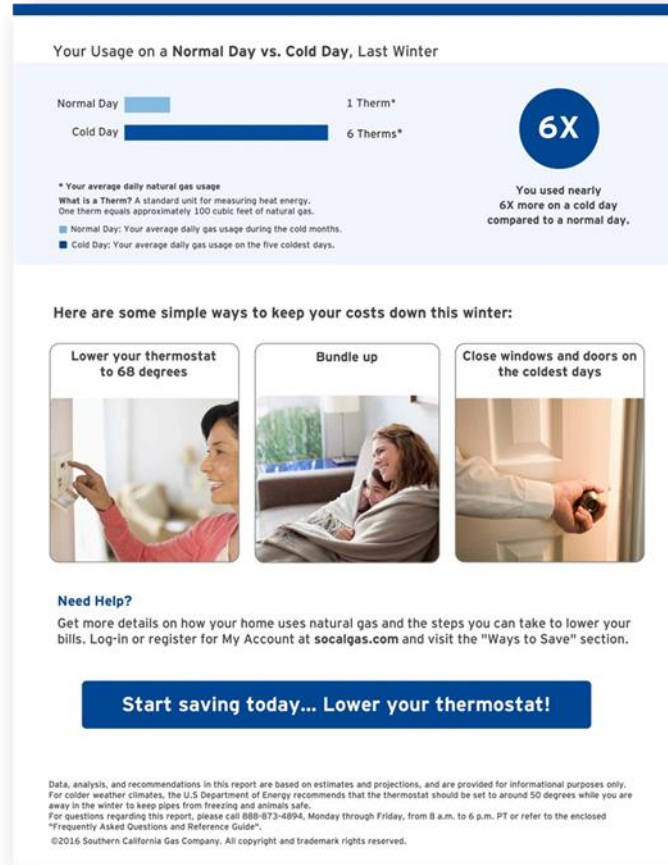


Figure 2-18 and Figure 2-19 and provide examples of the front and back sides of the paper SEU (Weatherize) sent in December (all additional materials can be found in Appendix E). The paper SEU (Weatherize) featured the following information:

- Comparison to Neighbors during cold weather days;
- Normal Day vs. Cold Day Usage [self] Comparison; and
- Savings tips.

Figure 2-18: Aclara/SoCalGas Paper SEU Weatherize (Front)

SoCalGas
A Sempra Energy utility

Your Seasonal Energy Update
November 2016
Account number:

NAME
ADDRESS
ADDRESS

Dear [NAME],

Winter is coming and your home is unusually sensitive to cold weather compared to similar households. Included in this report are some actions you can take to feel more comfortable and lower your natural gas bill.

Last Winter **Cold Day Usage Comparison***

Category	Usage (Therms)
You	6 Therms
Typical Neighbors	3 Therms
Efficient Neighbors	1 Therm

2X
You used about 2X more natural gas than your typical neighbors.

What is a Therm? A standard unit for measuring heat energy. One therm equals approximately 100 cubic feet of natural gas.

Who are your Neighbors?

- Typical Neighbors: Households in your area that experience similar weather.
- Efficient Neighbors: Households in your area that use less natural gas during cold weather.

*December 2015 - February 2016

Using more natural gas than your neighbors?
Your home may be sensitive to cold weather.

Want to save? →

Figure 2-19: Aclara/SoCalGas Paper SEU Weatherize (Back)



2.3 Customer Acceptance of Information Services

This report focuses primarily on the energy savings impact of the information services described above. A related aspect of these services is customer experience. Two gauges of customer acceptance are available: participant opt-out rates and customer experience surveys. For the fourth Campaign, SoCalGas administered customer experience surveys for SEU and Aclara HEU toward the end of the winter treatments in 2016–2017.

All treatments in the fourth Campaign were administered on a default basis but participants were able to opt-out of the service. For the 2016–2017 HER treatments, as of June 30, 2017, a total of 684 (0.2 percent) of Opower HER initial program enrollees opted-out of receiving further Opower HERs. For the Aclara HEU treatment, approximately 41 (.1 percent) enrollees opted-out of receiving further Aclara HEUs. For the same time period, a total of 530 (0.9 percent) of SEU initial program enrollees opted-out of receiving further SEUs. For the SoCalGas In-house HER (English-only and Bi-lingual), only 57 enrollees opted-out during this time (.2 percent). Additionally, since the inception of the Bill Tracker Alert offering in fall 2013, about 7

percent of enrollees have unsubscribed. This implies that customer acceptance rates were quite high for all treatments.

The customer experience survey for the Aclara HEU and SEU treatment¹⁹ reflected general customer satisfaction with SoCalGas. However, both the SEUs and Aclara HEU did not change most customers' opinions of SoCalGas.

Other key findings included:

- Approximately three-quarters of customers in the HEU treatment group and control group were satisfied with SoCalGas. There was not a statistically significant difference between the two groups.
- Almost half of the HEU treatment group customers and control group customers set their thermostat higher than the recommended setting of 68 degrees. There was not a statistically significant difference between the two groups;
- Approximately half of the SEU treatment and control customers set their thermostat above the recommended setting of 68 degrees. There was no difference between treatment and control customers; and
- CARE customers are more likely than non-CARE customers to turn off their thermostat while they are away. They are also significantly more likely to say they had sealed with caulking and weather-stripping or checked air ducts for leaks.

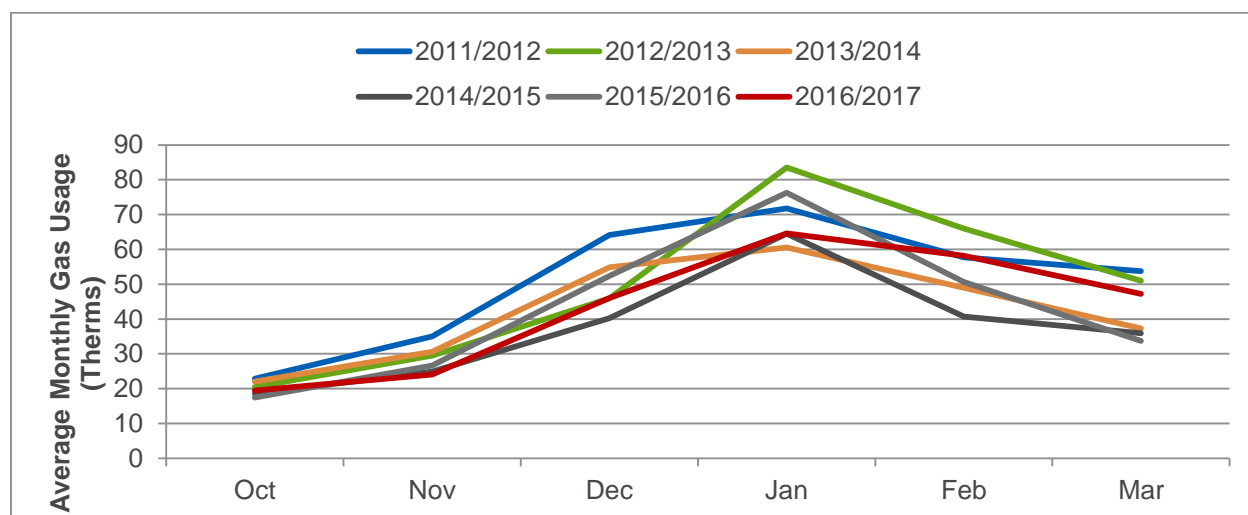
2.4 2016–2017 Winter Weather Conditions

To fully interpret the energy savings that resulted from the 2016–2017 Conservation Campaign, it is important to consider the winter weather conditions. The winters of 2013–2014 and 2014–2015 were in turn the warmest on record in California.^{20,21} The winter of 2015–2016 was not the record warmest but it was still above average. The winter of 2016–2017 was close to average, making it the coldest winter of the four campaigns. This is particularly relevant for all of the Campaign winters as the analysis uses each year prior to the start of the Campaign as pretreatment data. This unseasonably warm weather for the first and second Campaign winters was reflected in the overall gas usage for residential SoCalGas customers in both years, as shown in Figure 2-20, which provides a comparison of residential gas usage over the past five winters. From October 2013 through December 2014, residential gas usage in the 2013 heating season was similar to gas usage in the prior two years. However, in January through March 2014, residential gas usage was substantially lower in 2014 than it was in the prior two years. Further, gas usage for the 2014–2015 heating season was the lowest in four years for all months except January 2015. Surprisingly, the residential gas usage for the 2016–2017 heating season was lower than the 2015–2016 heating season even though it was slightly colder in the 2016–2017 winter. The residential gas usage for the 2015–2016 heating season was substantially higher than the prior two years due to the relatively colder temperatures. Based on the weather and results observed to date, it would be reasonable to expect that in warmer years the conservation savings may be lower compared to years with relatively colder weather.

¹⁹ Opinion Dynamics, SoCalGas Customer Survey: Summary Results, March 2017.

²⁰ <http://www.ncdc.noaa.gov/sotc/service/national/statewidetavgrank/201312-201402.gif>

²¹ <http://www.ncdc.noaa.gov/sotc/service/national/statewidetavgrank/201412-201502.gif>

Figure 2-20: Comparison of SoCalGas Residential Gas Usage over the Past Six Winters

2.5 Geographic Distribution of all the Conservation Campaigns

The customer populations for the all four Campaigns were significantly influenced by the geographic distribution of the SoCalGas advanced meter rollout. At this point the four Campaigns contain a majority of overlap in geographic regions as the advanced meter rollout is almost complete and as past control/treatment customers have been recycled into new treatment cells. While populations from the two Campaigns were geographically diverse, the first Campaign was more concentrated in denser urban areas—Glendale, areas along the 605 corridor, central areas of Bakersfield and Palm Springs—while the second campaign was more of a mix of urban, suburban, and rural areas—the San Fernando Valley, outer edges of Riverside County, towns along I-5 near the Grapevine, etc.). The third Campaign was also more of a mix of urban, suburban, and rural areas—the Inland Empire, Northern Orange County, Eastern Los Angeles, the San Fernando Valley, and California’s Central Valley.

The census block data was also used to analyze the extent to which populations for the three Campaigns varied demographically.

Table 2-4 summarizes certain customer characteristics and demographics for the populations included in the original sample for the four Campaigns. Similar to the previous two years, there is a decline in the representation of customer from areas with high concentrations of renters and high population density. Similar to the second Campaign, the customers in the third Campaign show a lower representation from areas with high concentrations of renters²² and a lower representation from areas with high population density.²³ The lower representation of areas with high concentrations of Latino households is mainly due to the initial segmentation that occurred during the sampling process to separate the customers into English-only and English + Spanish

²² “High” defined as census block with rental rates above the 75th percentile among census blocks included in the first, second, or third campaign

²³ “High” defined as census block with densities above the 75th percentile among census blocks included in the first, second, or third campaign

groups.²⁴ The focus on specifically researching the customers identified by census blocks with high concentrations of Latino households ultimately resulted in a smaller overall number of Latino households being included in the Third and Fourth Campaigns.

Table 2-4: Comparison of Select Demographics for Customer Populations in the four Campaigns²⁵

Segment	First Campaign (2013–2014)	Second Campaign (2014–2015)	Third Campaign (2015–2016)	Fourth Campaign (2016–2017)
% Areas with high concentrations of renters	34%	17%	18%	14%
% Areas with high population density	35%	23%	19%	16%
% Areas with high concentrations of Latino households	27%	16%	4%	10%

These are all characteristics that may affect both the ability and the propensity of participants to respond to conservation efforts such as the SoCalGas Conservation Campaign. As such, one should not necessarily expect to find similar overall impacts from similar treatments in the four different campaigns. One may expect, however, for impacts from similar treatments within each demographic group to be more similar.

²⁴ The English + Spanish group was formed with customers who resided in a census blocks with high concentrations of Latino households

²⁵ Based on 2010 Census Block demographics

2.6 Report Organization

The remainder of this report proceeds as follows:

- Section 3 describes the research design, including the treatment and control group assignments for residential customers;
- Section 4 summarizes the methodology used to evaluate energy conservation;
- Section 5 summarizes the energy conservation estimates for all of the treatments;
- Section 6 provides recommendations and conclusions from the four Campaigns; and
- Appendix A through Appendix E include additional example communications and informational materials for the treatments.

3 Research Design

In order to determine if the new information services made available by SoCalGas change energy use for consumers who have access to them, it is necessary to estimate what energy use would have been for those customers if they did not have access to the information. Conceptually, this can be accomplished by comparing usage before and after a group of customers receives the information, but other factors such as differences in weather or economic conditions can make such comparisons highly inaccurate. Side-by-side comparisons of customers that do (the treatment group) and don't (the control group) have access to the service of interest is the most robust approach, but only if the two groups of customers are identical except for the fact that one gets the information service and the other doesn't. Obtaining well matched treatment and control groups is the fundamental challenge to getting accurate impact estimates.

In the evaluation plan²⁶ for its 2013–2014 Conservation Campaign, SoCalGas considered the full spectrum of options before determining that a randomized control trial (RCT) design was the preferred option for these default programs. The evaluation plan provides a summary of the reasons why other options were rejected.

Finally, an important input into development of the evaluation plan was the size of the participant population and control groups required to estimate the effects of the planned information/behavioral treatments. The evaluation plan provided a detailed description of the process used for sample size determination and this will not be repeated here. However, it is relevant to note that sample sizes were adjusted upward in the last three Campaigns to control for the effects of anticipated customer attrition.

3.1 Residential Treatment and Control Group Assignments

Several factors were taken into consideration in assigning customers to test cells in the 2016–2017 Conservation Campaign and how the target market should be segmented.

The first important consideration is usage. Experience has shown that customers with low annual usage may not be interested in or respond to information feedback since their bills are so low that even significant percent changes in energy use would produce only very small economic benefit in the form of bill savings. Even if these customers produced above average savings relative to other customers (which, for reasons just mentioned, may be unlikely), their contribution to the target of 1% savings in aggregate for the overall population would be small and the implementation costs for these customers per therm conserved would be relatively high. In short, it is highly unlikely that low usage customers are cost-effective and almost certain that they would be less cost-effective than customers with larger usage. In fact, the 2013–2014 Campaign found that customers in the second usage quartile (the first quartile was excluded from default treatments in that testing cycle) delivered the lowest absolute and percent gas savings, relative to high users in the third and fourth usage quartiles. Therefore, considering that the 2016–2017 Conservation Campaign was able to take advantage of an expanded

²⁶ Southern California Gas Company's Evaluation Plan for Estimating Conservation Effects from Information Feedback Services. August 9, 2013. (Included as Appendix O in the "Southern California Gas Company Advanced Meter Semi-Annual Report" dated August 30, 2013).

footprint in terms of AM installations, SoCalGas had a sufficient amount of customers to improve its targeting strategy for the fourth Campaign as follows:

- Continued focus on the top two usage quartiles;
- Continue to include customers who have passed the Opower eligibility screen;
- Delineation of top most “weather sensitive” vs. bottom most weather sensitive customers within most residential treatment groups; and
- Only include customers who have pretreatment data from October 2015 through March 2016.

Another important segmentation factor is whether customers are My Account users. My Account customers register with SoCalGas to receive a variety of online services, including receiving, viewing, and paying their bills online, accessing historical usage data, making payment arrangements, and service scheduling changes such as starting or stopping service. Given their demonstrated interest in online transactions, My Account customers may be more likely than non-My Account customers to take advantage of the new information available through BTAs or HERs. They also are a population for whom SoCalGas has email addresses and, thus, can receive email solicitations and information feedback through this inexpensive channel. For all of these reasons, the population of customers targeted for both BTAs and HERs was segmented into My Account and non-My Account customers in the all four Campaigns.

Similar to the 2015-2016 Campaign, a segmentation used was whether customers were English-only speaking customers or English and Spanish speaking customers. This segmentation was done to test how customers who preferred using Spanish performed when receiving a Bi-lingual HER.

An additional segmentation was between CARE (low income) and Non-CARE customers. The CARE population of customers may behave differently after receiving new information available through HERs or SEUs. This segmentation was used for the first time in the 2015-2016 Campaign. Additionally within this segment, the top 25% most weather sensitive customers were segmented into a treatment and control group, leaving the bottom 75% most weather sensitive customers to be split between a treatment and control group.

An important distinction to note about the residential and control group assignments for the 2016–2017 campaign is that this population included carryover/leftover customers from the previous three campaigns. These included customers from treatment groups no longer receiving treatments, treatment groups that had consistently insignificant and close to zero savings, and control group customers that were no longer needed. The C-10 control group was reduced to 27,500 customers and the C-12 control group was reduced to 63,194 customers.

Figure 3-1 provides a summary of the population segmentation and treatment and control group assignments for residential and commercial customers in the 2016–2017 Conservation Campaign. The research sample for the fourth Campaign excluded customers in the lower two usage quartiles: customers who did not have 2015–2016 pretreatment data and who did not pass the Opower screen. About 915,000 customers remained after removing customers in these three groups.

The remaining customers were then split into English Only and English + Spanish groups based on census block data. The 63,462 customers in the English + Spanish group that had data available to SoCalGas for the neighborhood algorithm were assigned to the SoCalGas Bi-lingual HER treatment (13,750) and its corresponding control group (49,712). The remaining 49,995 customers who did not have data available to SoCalGas for the neighborhood algorithm were not used in the campaign.

Among the roughly 802,000 customers in the English Only segment, about 131,000 were CARE customers and about 671,000 were Non-CARE customers. In the CARE segment, the customers were split into the top 25% most weather sensitive customers and the bottom 75% weather sensitive customers. Within the bottom 75% most weather sensitive customers, 52,500 customers were assigned to the Opower Paper and Email HER and the remaining 46,084 were assigned to the control group. In the top 25% weather sensitive segment, 19,250 customers were assigned to the Aclara/SoCalGas SEU treatment and the remaining 13,612 were assigned to the control group.

The 670,561 Non-CARE customers were divided into the My Account or Non-My Account groups. Since SoCalGas did not have email addresses for the non-My Account customers, this group was assigned to test the paper-only treatments. The Opower standard Paper HER treatment contained 53,500 customers. The Aclara Paper HEU was sampled for 33,000 customers. The SoCalGas HER was sampled for 13,750 customers. The paper SEU and paper SEU (weatherize) both contained 81,400 customers but only the top 25% most weather sensitive customers received treatment.

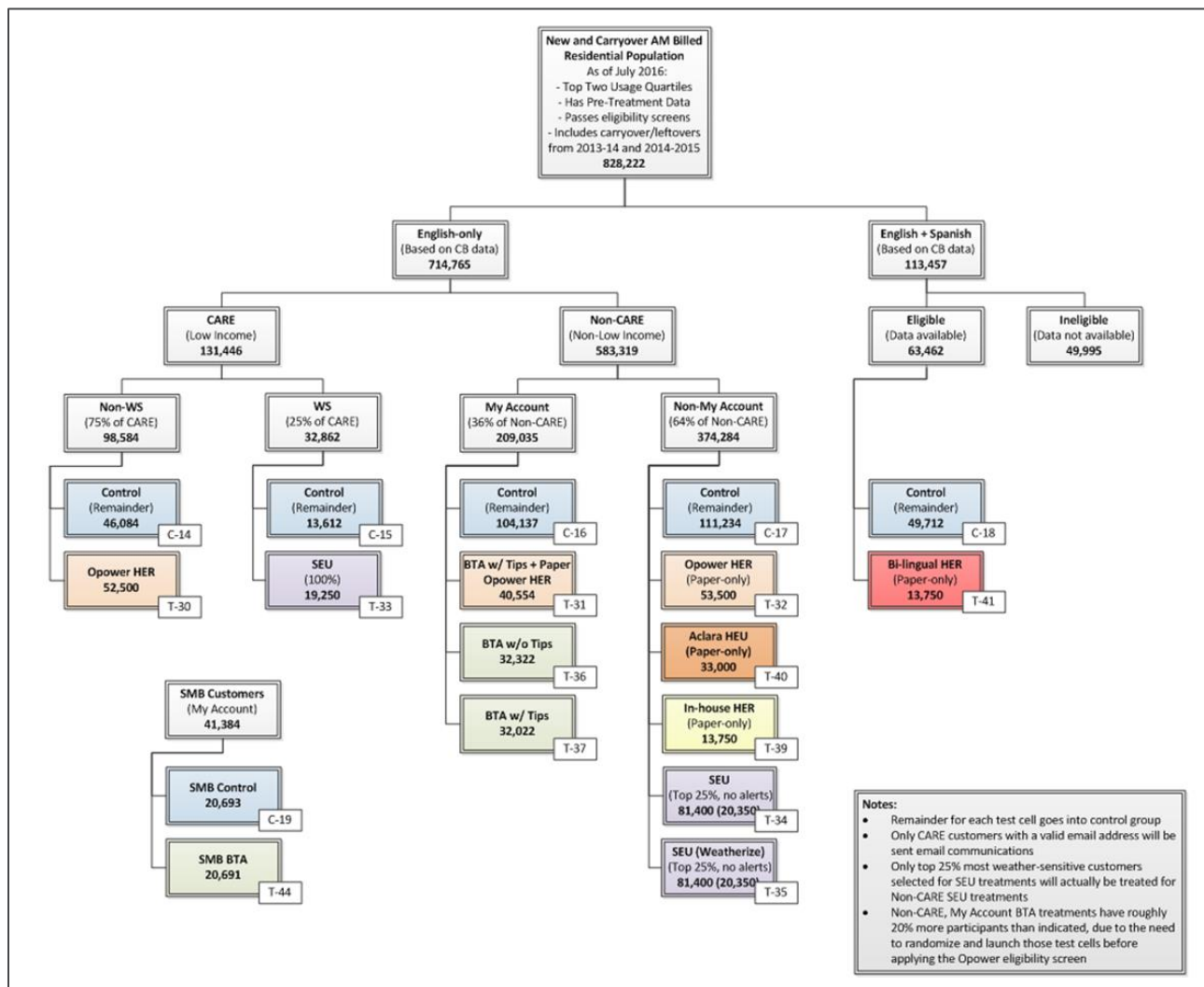
Since SoCalGas had email addresses for the roughly 259,000 My Account customers, it used this group to test default BTAs and the default BTA + Paper Opower HER treatment. The BTA w/Tips + Paper Opower HER was sampled for 40,554 customers. Both the BTA w/o Tips and BTA with Tips contained approximately 32,000 customers each.

In summary, the 828,222 residential customers in the eligible AM population were allocated to the new 2016-2017 treatments as follows:

1. **Default BTA:** 64,344 customers;
2. **Default BTA & Opower Paper-only HERs:** 40,554 customers;
3. **Paper-only HERs:** 100,250 customers (53% Opower, 33% Aclara, 14% SoCalGas);
4. **Opower Paper & Email HERs:** 52,500 customers²⁷;
5. **Bi-lingual HERs:** 13,750 customers;
6. **SEUs:** 59,950 customers (66% paper SEU, 34% paper “Weatherize” SEU); and
7. **Control Group:** 324,799 customers.

²⁷ The monthly Email HER was only sent to those CARE customers within the treatment group registered for SoCalGas My Account customer portal and with a valid Email address.

Figure 3-1: New Treatment and Control Group Assignments for the 2016–2017 Conservation Campaign



3.2 SMB Treatment and Control Group Assignments

For the first time since the 2013-2014 campaign, a treatment was tested again on SMB customers. This treatment was not tested in the prior two years as a sufficient number of AM-enabled SMB customers was first needed to conduct rigorous impact analyses with a RCT design. SMB customers were included in the assignment population if they had sufficient pretreatment data from October 2015 through March 2016 and if they were My Account customers. Only one treatment was tested in the population. In order to detect a potentially very small effect from the treatment, a randomized block design was used to select the treatment and control group.

A randomized block design is an approach to assigning treatment and control in which like units are grouped together into blocks first, then the same proportion of each block is randomly assigned to each treatment regime. This results in groups that are much more similar in terms of the variables used to create the blocks. Since the probability that any unit is assigned to any

particular treatment regime is equal for all units, the only thing different about the treatment and control groups on average is the treatment.

The randomized block design can be generalized to correct imbalance on a large number of continuous and discrete variables using clustering algorithms. Historically, blocking was conducted by dividing units into coarse categories, such as decile or quartile of a particular continuous variable and proceeding through each blocking variable, shrinking the size of the blocks with the addition of more and more variables. Further work in statistics and computer science has developed algorithms that improve on this approach. These algorithms all begin by determining how different each experimental unit is from each other unit in terms of the chosen variables. The numerical measures of difference, known as distance metrics, are then put together in a distance matrix. The most popular of these distance metrics, called Mahalanobis distance, is preferred for this task because unlike some distance metrics it is not sensitive to the means of the variables included and weights noisier variables less than quieter ones. Mahalanobis distance also accounts for the correlations between variables, making variables that are highly correlated with other included variables contribute less to the distance.

The next step in the algorithm is to group like units. These algorithms are known as nonbipartite (pair blocking) matching algorithms and attempt to minimize the sum of the distances between pairs, therefore finding the best blocks of two units.

The research sample for the fourth Campaign excluded SMB customers who did not have 2015–2016 pretreatment data and customers who belonged to the Non-My Account segment. About 41,384 SMB customers remained after removing customers in these two groups. The treatment group contained 20,691 customers while the remaining customers were placed in the control group.

3.3 Residential Data Sources

In the analysis, Nexant used daily gas usage data in therms for the post-treatment period from December 1, 2016 through March 31, 2017. Monthly billing data from the same months a year prior was used as the pretreatment data because daily AM data was largely not available for customers in the sample.²⁸ These data sources yielded 8 months of gas usage data for the study period of interest—spanning from December 1, 2015 through March 31, 2017—with the 2015 non-heating months—April through November—omitted. For estimation purposes, November was dropped from the pre- and post-treatment period both because almost all the treatment started in early December rather than November like in previous years. Thus, the impact estimates discussed in Section 5 span the four month period from December 1, 2016 through March 31, 2017.

In an RCT design that uses difference-in-differences to estimate the energy savings, customers must have a full panel of pre- and post-treatment usage data in order to be included in the analysis that assesses impacts and statistical significance across all months. Basically,

²⁸ As previously stated, only customers with pretreatment data were included, but this simply means that the sample was limited to customers who had active SoCalGas accounts in the pretreatment period, not explicitly limited to customers with pretreatment AMI data.

customers that were not active SoCalGas accounts from December 1, 2015 through March 31, 2017 were excluded from the analysis of the overall impacts of the fourth Campaign. As long as the percentage of customers dropped is consistent between each treatment group and associated control group, this exclusion of customers from the analysis does not produce bias in the conservation estimates. To verify that the percentage of customers dropped is consistent within each segment, Table 3-1 shows the number of customers that were included in the analysis by treatment/control group, compared to the original number of customers that was sampled. All treatment and control groups retained almost 95% of the customers that were originally sampled. Most importantly, the percentage of customers retained is highly consistent within each statistically equivalent group, which ensures that the integrity of the original sample design is held intact even though some customers had to be dropped from the analysis that assesses impacts and statistical significance across all months.²⁹

²⁹ For the purposes of estimating whether the treatments produced a statistically significant reduction in overall gas usage throughout the 2016-2017 Conservation Campaign, these customers were dropped. However, once Nexant identifies a statistically significant usage reduction within a given test cell, the analysis can be done at the monthly level, which allows for the re-inclusion of some customers that may not have had usage data for every month, but do have data for some pre- and post-treatment months. Basically, when the analysis is conducted at the monthly level, as long as a customer has data for an individual pre- and post-treatment month, that customer can be included in the analysis for that month.

Table 3-1: Residential Customers Included in Analysis by Treatment/Control Group

Segment	My Account	Group	Number of Customers in Original Sample	Number of Customers in Analysis	% of Original Sample in Analysis
Non-CARE	Yes	C-16	104,137	97,944	94.05%
		T-31	40,554	38,060	93.85%
		T-36	32,322	30,398	94.05%
		T-37	32,022	30,150	94.15%
	No	C-17	111,234	105,649	94.98%
		T-32	53,500	50,784	94.92%
		T-40	33,000	31,333	94.95%
		T-39	13,750	13,218	96.13%
		T-34	20,350	19,331	94.99%
		T-35	20,350	19,338	95.03%
CARE	Yes/No	C-14	46,084	43,248	93.85%
		T-30	52,500	49,177	93.67%
		C-15	13,612	12,815	94.14%
		T-33	19,250	18,077	93.91%
Bi-lingual		C-18	49,712	48,011	96.58%
		T-41	13,750	13,277	96.56%
All		Total	551,990	522,866	94.72%

3.4 SMB Data Sources

Similar to the residential analysis, Nexant used daily gas usage data in therms for the post-treatment period from December 1, 2016 through March 31, 2017. Monthly billing data from the same months a year prior was used as the pretreatment data because daily AM data was largely not available for customers in the sample.³⁰ These data sources yielded 8 months of gas usage data for the study period of interest—spanning from December 1, 2015 through March 31, 2017—with the 2016 non-heating months—April through November—omitted. Thus, the impact estimates discussed in Section 5 span the four month period from December 1, 2016 through March 31, 2017.

In an RCT design that uses difference-in-differences to estimate the energy savings, customers must have a full panel of pre- and post-treatment usage data in order to be included in the analysis that assesses impacts and statistical significance across all months. Basically, customers that were not active SoCalGas accounts from December 1, 2015 through March 31, 2017 were excluded from the analysis of the analysis. As long as the percentage of customers dropped is consistent between the treatment group and the control group, this exclusion of customers from the analysis does not produce bias in the conservation estimates. To verify that the percentage of customers dropped is consistent for the SMB treatment and control group, Table 3-2 shows the number of customers that were included in the analysis by treatment/control group, compared to the original number of customers that was sampled. The treatment group retained about 88% of what was additionally sampled. Most importantly, the percentage of customers retained is highly consistent within each statistically equivalent group, which ensures that the integrity of the original sample design is held intact even though some customers had to be dropped from the analysis that assesses impacts and statistical significance across all months.³¹

Table 3-2: SMB Customers Included in Analysis

Group	Number of Customers in Original Sample	Number of Customers in Analysis	% of Original Sample in Analysis
C-19	20,693	18,329	88.58%
T-44	20,691	18,291	88.40%
All	41,384	36,620	88.49%

³⁰ As previously stated, only customers with pretreatment data were included, but this simply means that the sample was limited to customers who had active SoCalGas accounts in the pretreatment period, not explicitly limited to customers with pretreatment AMI data.

³¹ For the purposes of estimating whether the treatments produced a statistically significant reduction in overall gas usage throughout the 2016-2017 Conservation Campaign, these customers were dropped. However, once Nexant identifies a statistically significant usage reduction within a given test cell, the analysis can be done at the monthly level, which allows for the re-inclusion of some customers that may not have had usage data for every month, but do have data for some pre- and post-treatment months. Basically, when the analysis is conducted at the monthly level, as long as a customer has data for an individual pre- and post-treatment month, that customer can be included in the analysis for that month.

4 Gas Savings Impact Estimation Methodology

Nexant estimated models using panel data to determine energy savings. Panel data is a data structure in which multiple observations over time are present for multiple individuals. In the evaluation³² for the 2013–2014 Conservation Campaign, Nexant took the opportunity to test three different model specifications for using panel data to estimate energy savings—a fixed-effects (FE) model, a random-effects (RE) model, and a lagged dependent variable (LDV) model. All models featured time-effect variables as well as error estimates clustered at the customer level. Each of these model specifications has merit under the appropriate circumstances, but they are fundamentally different approaches to estimating treatment effects. All three model specifications were carefully considered before determining that a LDV model was the preferred evaluation model. The evaluation of the first Campaign provides a summary of the reasons why the LDV model was chosen as the appropriate model for this evaluation.

The LDV model incorporates individual heterogeneity by explicitly including past values of an individual’s energy consumption as control variables on the right-hand side of the regression equation. The LDV regression model as used in this evaluation is specified in this equation:

$$therms_{i,t} = a + b \cdot T_i + c \cdot u_t + d \cdot therms_{i,t-12} + \varepsilon_{it}$$

In this equation, t indexes months December 2016 through March 2017 and i indexes individuals. The intercept is the same for everyone and the term $therms_{i,t-12}$ represents the energy consumption for individual i in a previous period (in this case, the same month from the prior year). This is akin to saying that what makes consumers unique is captured entirely by their past levels of consumption. The model variables are defined in Table 4-1. This model can be estimated using pooled OLS, provided that there is no serial correlation in the error term and that there are no omitted variables that are correlated with the treatment. The underlying identification assumption is that average consumption without the treatment would be the same for both treatment and control customers. Given that the research design features an RCT with random assignment to large treatment and control groups, this assumption is clearly valid in this case.

³² Southern California Gas Company’s Evaluation Plan for Estimating Conservation Effects from Information Feedback Services. August 9, 2013. (Included as Appendix O in the “Southern California Gas Company Advanced Meter Semi-Annual Report” dated August 30, 2013).

Table 4-1: Definition of Lagged Dependent Variable Model Variables

Variable	Definition
$therms_{i,t}$	average daily gas consumption of participant i during month t
a	estimated intercept
b	estimated treatment effect
c	estimated monthly time effect on treatment and control group
d	estimated effect of an individual's consumption in month $t - 12$
T_i	indicator of whether or not the participant is assigned to the treatment condition
$therms_{i,t-12}$	average daily gas consumption of participant i during month $t - 12$
u_t	Time effects for each month that control for unobserved factors that are common to all treatment and control customers but unique to month t
$\varepsilon_{i,t}$	error for each participant and month

Nexant conducted an evaluation of impacts for the fourth Campaign using winter 2015–2016 as the pretreatment period ($t - 12$). In addition, Nexant estimated the impacts for all the different treatments from the third Campaign. Nexant also estimated the impacts for the second Campaign including the Opower HER and Default BTA customers still receiving treatment. In addition to these ongoing treatments, Nexant estimated the persistence of energy savings for customers from the first Campaign—the Opower HER customers who no longer received HERs and the BTA customers who continued to receive BTAs in the absence of any promotional materials. For the first Campaign customers, the treatment period (t) was 2016–2017 and pretreatment period was still 2012–2013 so that energy savings in the fourth year could be compared to energy savings in the first year. For the second Campaign customers, the treatment period (t) was 2016–2017 and pretreatment period was still 2013–2014 so that energy savings in the third year could be compared to energy savings in the first year. For the third Campaign customers, the treatment period (t) was 2016–2017 and pretreatment period was still 2014–2015 so that energy savings in the second year could be compared to energy savings in the first year. Similar to last year's evaluation, the SEU treatments in the 2015-2016 Campaign are evaluated differently from the other treatments.³³

This analysis also reflects the same data management protocols developed during the 2013–2014 and used in the 2014-2015 and 2015-2016 Campaigns and agreed upon during a knowledge sharing meeting with SoCalGas and other stakeholders.

³³ For more information on this analysis see SoCalGas 2015-2016 Conservation Campaign Evaluation – Final dated August 31 2016.

5 Energy Conservation Estimates

This section begins with a summary of the results and conclusions for the 2016–2017 SoCalGas Conservation Campaign new residential treatments and the SMB treatment, followed by a detailed assessment of how gas savings vary by customer segment and a summary of the fourth year savings results for customers from the 2013–2014, 2014-2015, and 2015-2016 Conservation Campaigns. At the end of the section, an estimate of the total 2016–2017 gas savings for all four groups is provided.

5.1 Percent Reductions for 2016–2017 Conservation Campaign Residential Treatments

Table 5-1 shows the estimated percent reductions in gas consumption for the 11 new residential treatments deployed for the 2016–2017 Conservation Campaign. Percent reductions were derived using the LDV regression model. P-values for the coefficient estimates from the regression models are also displayed. The data used for model estimation covers the months of December 2016 through March 2017 as compared to the pretreatment period (the months of December 2015 through March 2016). It only includes customers who were active for the full period.

All of the 11 residential treatments yielded statistically significant impacts. This is the second year in a row that all the treatments provided statistically significant impacts. This reflects the value of the adaptive design process being utilized within the “test and learn” approach. The Non-My Account SEU treatments both produced the highest percent reductions—approximately 3%—for both the standard and weatherize versions. However, it is important to note that the SEU treatments are not directly comparable to the other treatments as they only include customers identified as being highly sensitive to cold weather. In order to compare the SEU treatments to other treatments it is necessary to look at the top 25% most weather sensitive customers in those treatments. The Bi-lingual HER produced the lowest savings rate of the treatments.

The BTA w/Tips + Paper Opower HER treatment had a percent reduction of 2.21% which was greater than both the BTA w/Tips (.88%) and the BTA w/o Tips (.77%). The Aclara HEU had the highest savings rate of the three HERs; however the difference between them is not statistically significant.

Table 5-1: Estimates of Percent Reductions in Gas Energy Consumption for the 2016–2017 Conservation Campaign New Residential Treatments, December 2016 through March 2017

CARE	My Account	Treatment	Group	Number of Treatment Customers	% Reduction	P-value	
No	Yes	BTA w/Tips + Paper Opower HER	T-31	38,060	2.21%	0.00	
		BTA w/o Tips	T-36	30,398	0.77%	0.00	
		BTA w/ Tips	T-37	30,150	0.88%	0.00	
	No	Paper Opower HER	T-32	50,784	1.37%	0.00	
		Paper Aclara HEU	T-40	31,333	1.47%	0.00	
		Paper In-House HER	T-39	13,218	1.25%	0.00	
		SEU	T-34	19,331	3.18%	0.00	
		SEU (Weatherize)	T-35	19,338	3.43%	0.00	
	Yes	Yes/No	Opower HER	T-30	49,177	1.78%	0.00
			SEU	T-33	18,077	2.24%	0.00
Yes/No	Yes/No	Bi-lingual HER	T-41	13,277	0.60%	0.01	

Figure 5-1 shows the estimated percent reductions in gas consumption for top 25% most weather sensitive customers for the Non-My Account SEU treatments, the Paper Aclara HEU, and the Paper Opower HER. Applying the weather sensitive filter increases the percent reduction as compared to the full treatment population for the Aclara and Opower HERs. However, the SEU still has the highest percent reduction. The In-house HER was not included in this comparison because an additional filter was applied for these customers so they are not directly comparable.

Figure 5-1: Comparison of Weather Sensitive Customers for Non-My Account Treatments

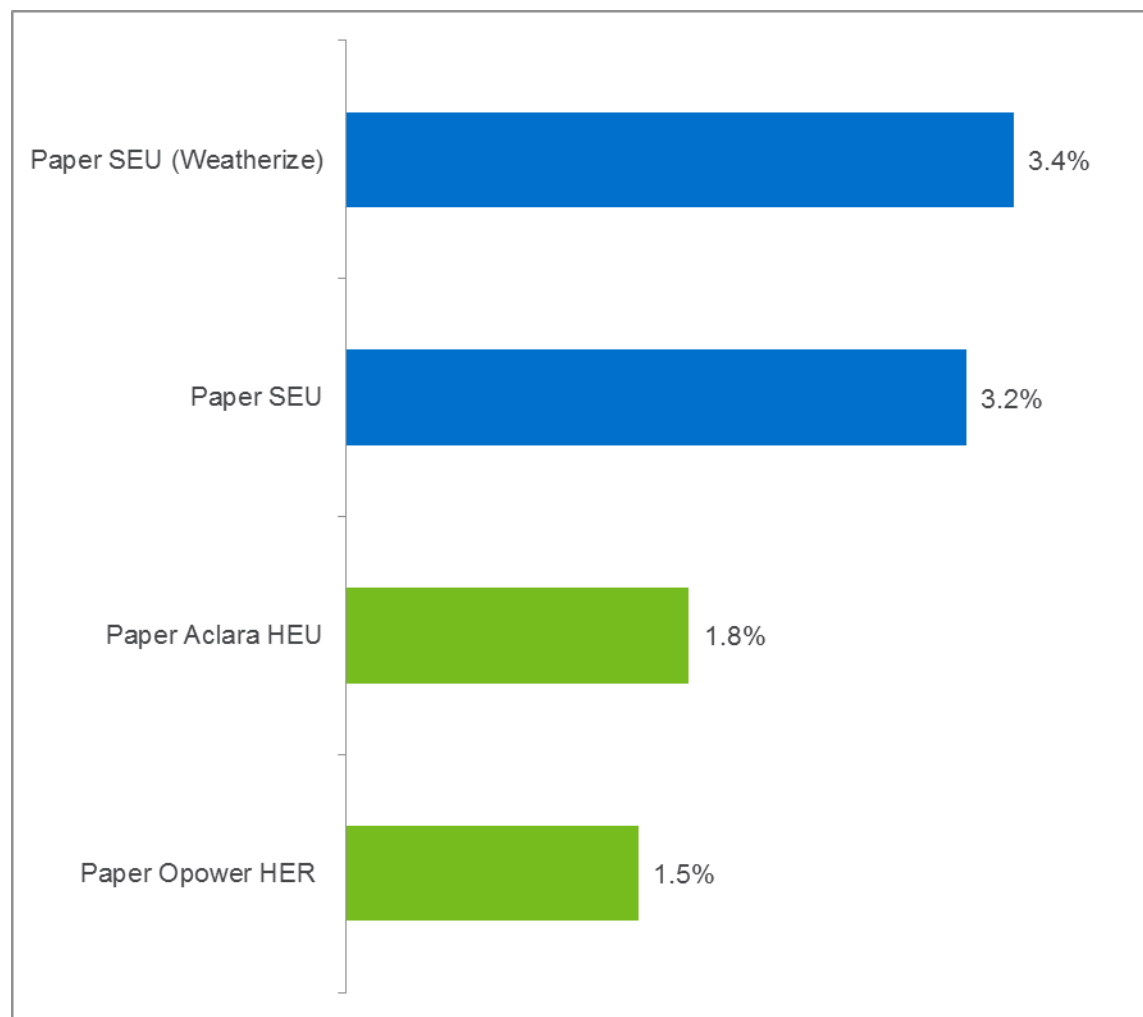
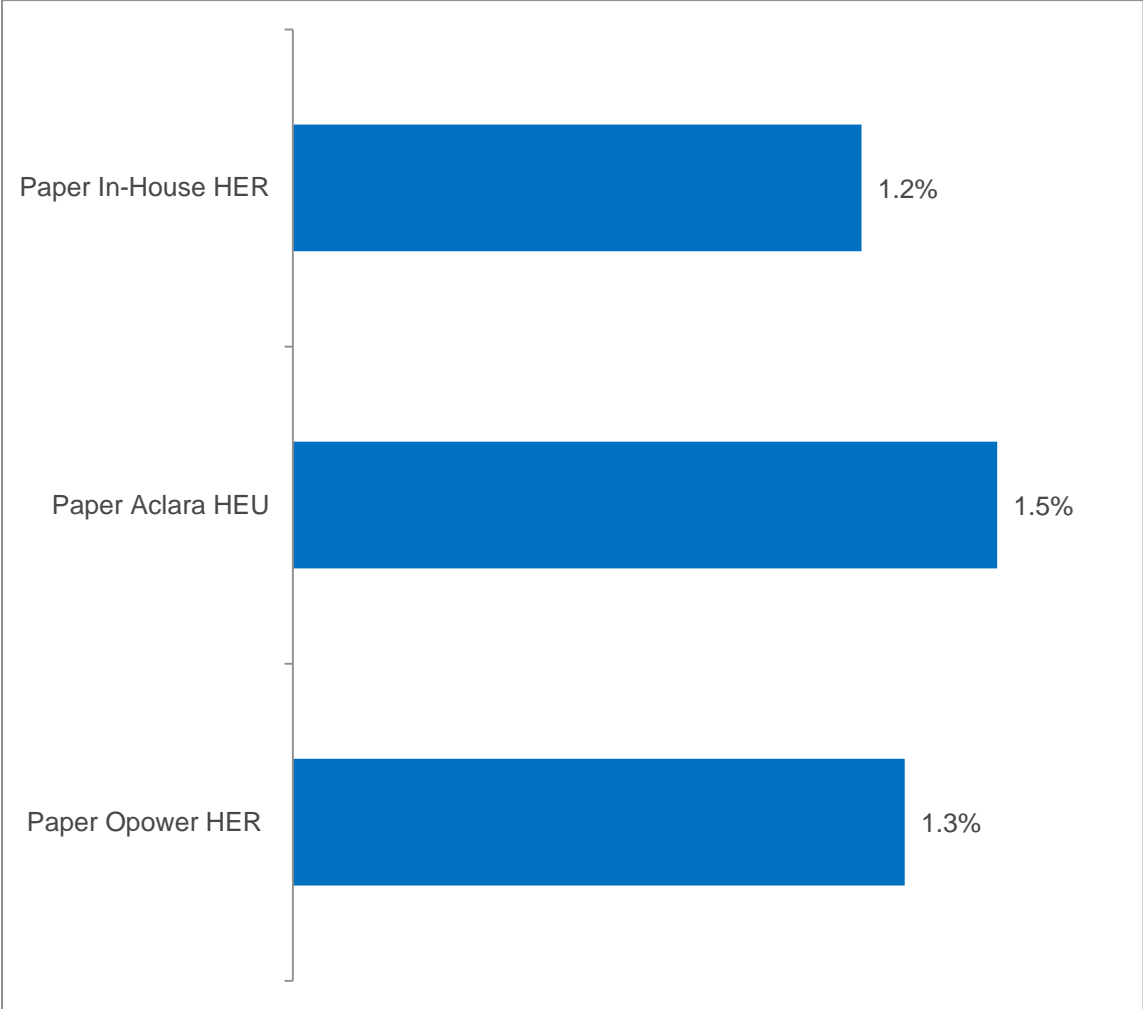


Figure 5-2 shows the estimated percent reductions in gas consumption for the customers who pass the SoCalGas “neighborhood algorithm” filter for the In-house HER, the Paper Aclara HEU, and the Paper Opower HER. This filter allows the Aclara and Opower HER treatments to be compared to the In-house HER. Applying the neighborhood algorithm filter does not significantly change the Aclara and Opower HER percent reductions. The Aclara HEU has the highest percent reduction, but the difference between the three treatments is not statistically significant.

Figure 5-2: Comparison of “Neighborhood Algorithm Customers” for Non-My Account HER Treatments



5.2 Percent Reductions for 2016–2017 Conservation Campaign SMB Treatment

Table 5-2 shows the estimated percent reductions in gas energy consumption for the SMB treatment deployed for the 2016-2017 Conservation Campaign. Percent reductions were derived using the LDV regression model. P-values for the coefficient estimates from the regression models are also displayed. The data used for model estimation covers the months of November 2016 through March 2017 as compared to the pretreatment period (the months of November 2015 through March 2016). It only includes customers who were active for the full period.

The default BTA treatment did not deliver a statistically significant result. The impact of the BTA on gas usage for the treatment group was close to zero.

Table 5-2: Estimate of Percent Reduction in Gas Energy Consumption for the 2016–2017 Conservation Campaign SMB Treatment, December 2016 through March 2017

Treatment	Group	Number of Treatment Customers	% Reduction	P-value
SMB BTA	T-44	18,291	-0.39%	0.58

5.3 Comparison to Past Campaigns' Percent Reductions

In the 2015-2016 the third Campaign tested thirteen treatments which all produced measurable savings. The treatments included default BTAs, HERs, and SEUs. The new BTA was tested and found to produce higher savings than the old version of the BTA. The SEU treatments did not continue to receive treatment in the second year. All of the BTA treatments continued to receive the new version of the BTA. The Opower treatments continued except for the Spanish HER.

In 2014–2015 the second Campaign tested seven treatments, which included default BTAs and HERs. The two different varieties of HERs were implemented by Aclara and Opower. The three Opower HERs—Paper-only, Email, and Paper & Email—all produced statistically significant results while the Aclara Paper-only HEU was the only Aclara HEU that produced statistically significant results. The default BTA did not produce measurable savings. The Aclara treatments were stopped while the default BTA and Opower treatments continued.

The four treatments from the first Campaign that produced statistically significant gas usage reductions were the default BTAs and three variations of the Opower HER reports—Paper-only, Email, and Paper & Email. The default BTA customers continued to receive treatment but the Opower treatments have not received reports since the first Campaign.

The treatments that produced measurable savings from the first, second, and third Campaigns were also tested in the fourth Campaign.

However, to interpret the comparisons of the treatments from the four Campaigns it is important to note several key differences between the Campaigns. First, as discussed in Section 2.5, the research sample in each year was pulled from the population that received advanced meters in the year leading up to the summer before each Campaign. These meters were rolled out to different geographic areas each year and the underlying characteristics of the different populations could bias the results from one year to next. Due to the process of sampling customers in the fourth Campaign, there are very few areas with high rates of a Latino population compared to the first and second Campaigns. Second, as explained in Section 3.1, the HERs eligibility screens applied in the second Campaign resulted in a much higher exclusion rate, with 35% of advanced meter customers being screened out in the second year versus only 4% in the first year. This large difference may have created systematic differences between the populations of the first Campaign and the following Campaigns. Third, as described in Section 2.2, the implementation of the default BTAs differed in that the BTAs from the third Campaign were tested with and without promotional materials, while the BTAs from the fourth Campaign were tested with and without tips included in the report.

With these caveats considered, Figure 5-3 shows the comparison of results for the similar Opower HER treatments across the four Campaigns. The results shown in Figure 5-1 are the savings rates from the first year of treatment for each of the different Campaigns. The Opower Paper-only HER provides consistent measurable percent reductions for each of the Campaigns. The Opower Paper & Email HER was sent to CARE customers in third and fourth Campaigns, but produced different results both years.

Figure 5-3: Comparison of Opower Treatments Percent Reduction Estimates for all Campaign Years

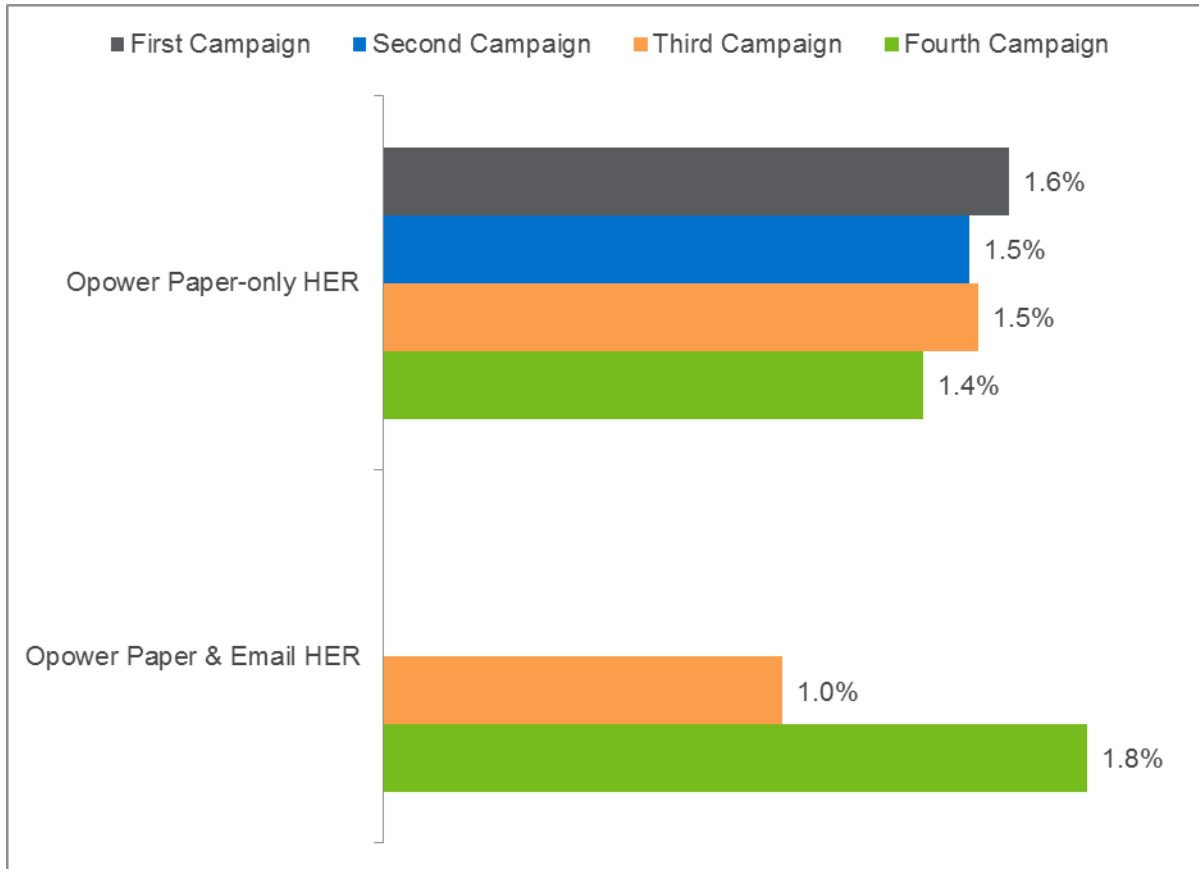


Figure 5-4 shows the comparison of results for new BTA treatments from the third and fourth Campaigns. The results shown in Figure 5-4 are the savings rates from the first year of treatment for each of the Campaigns. The New BTA with supplemental promotional materials produced the highest savings rate of the default BTA treatments. Both of the BTA treatments with additional tips or materials had higher percent reductions than the versions without, but this difference is not statistically significant. The new BTA provided consistent results for the two years it was tested.

Figure 5-4: Comparison of BTA Treatments Percent Reduction Estimates for Third and Fourth Campaigns

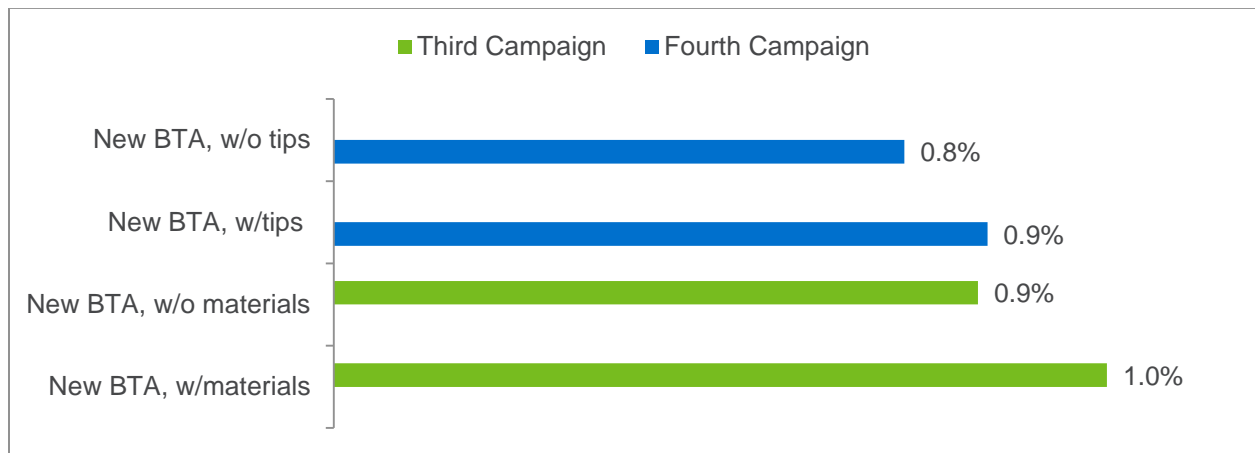
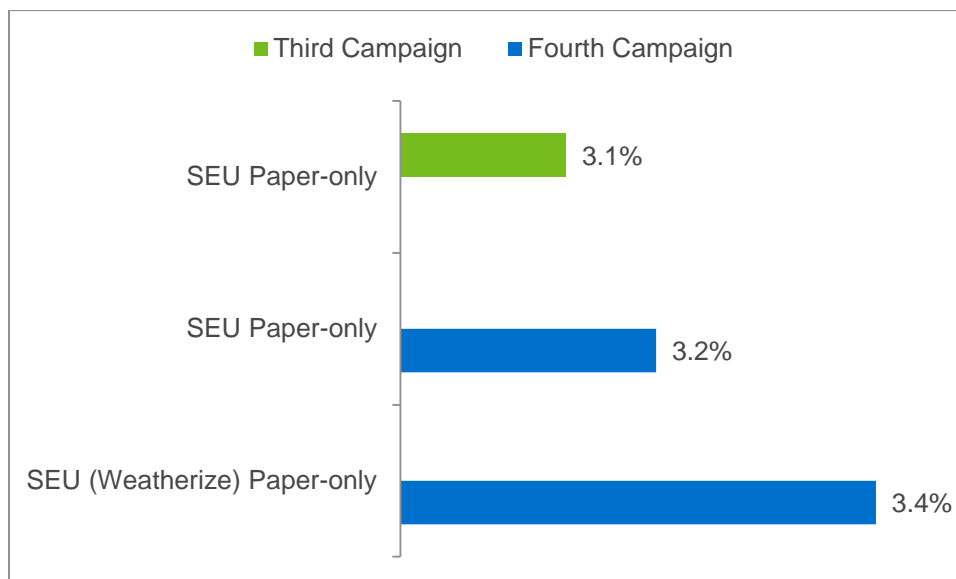


Figure 5-5 shows the comparison of results for SEU treatments from the third and fourth Campaigns. This comparison only includes the SEU treatments that were sent to the Non-My Account customer segment so that the results could be comparable. These results are the savings rates from the first year of treatment for both of the Campaigns. The SEU treatments sent to Non-My Account customers had percent reductions over 3% in both Campaigns.

Figure 5-5: Comparison of SEU Non-My Account Treatments Percent Reduction Estimates for Third and Fourth Campaigns



5.4 Gas Savings by Usage Quartile

Over the course of the four campaigns it has been useful to examine how natural gas savings vary across customer segments. If some segments do not respond well to the information treatments and others do, it will be more cost-effective to focus future campaigns on segments that are more responsive to the information offerings.

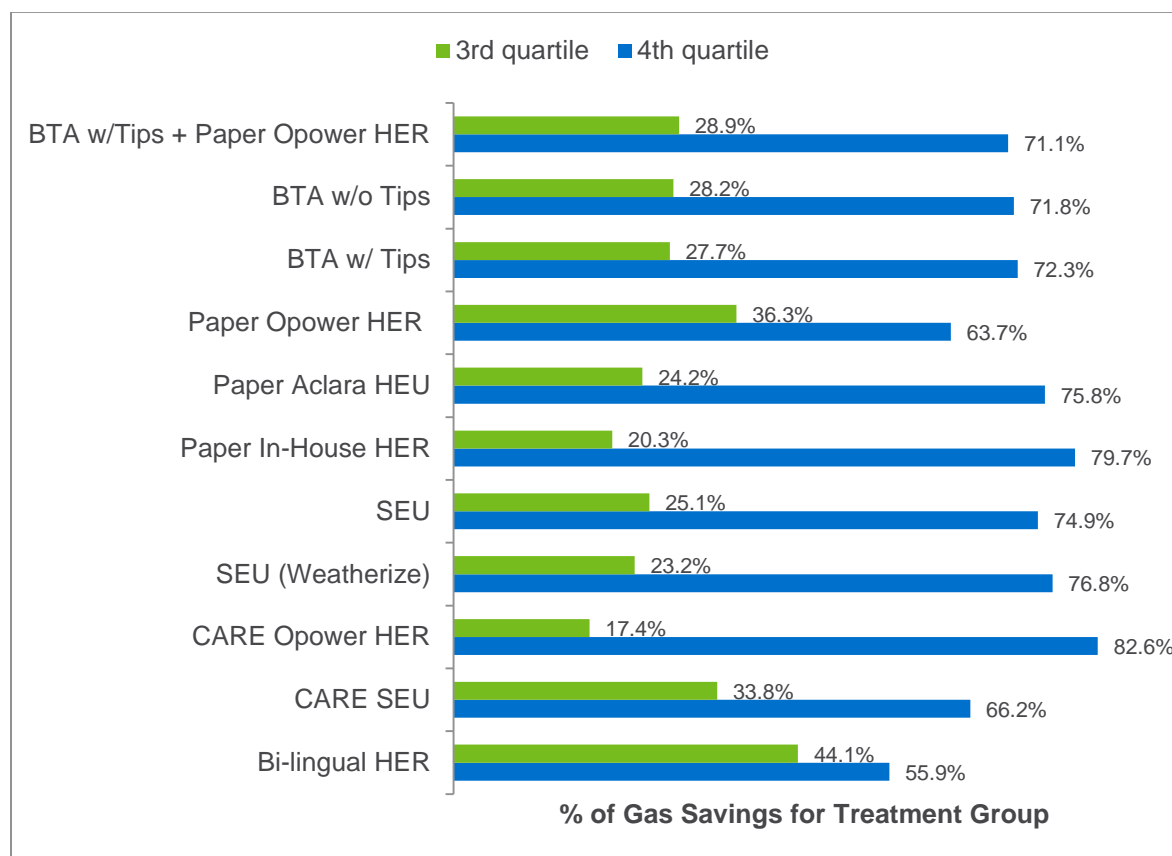
A segmentation with consistent results across years is customers grouped into usage quartiles. To put these usage quartiles in context, it is helpful to note their likely influence on the contents of a participant’s HER. A key component of HER messaging is the neighbor comparison component, which informs the participant whether their household gas usage is above, below, or in-line with usage for similar homes. Due to the nature of this comparison, top usage quartile customers are more likely to receive messages indicating that their usage is higher than usage for similar homes, thereby providing a signal to conserve. This segmentation was explored in the report for the first Campaign, leading to the conclusion that “both the magnitude of savings and percent savings consistently increase as usage increases.”³⁴ This conclusion led to the decision to focus the following three campaigns on the top two usage quartiles only.

Figure 5-6 shows the share of aggregate gas savings in therms attributable to the third versus the fourth usage quartile for each treatment. The gas savings for the third quartile customers range from 17% to 44% of the overall savings across treatments. All treatments have less than

³⁴ For further details, refer to Exhibit E: “Evaluation of Southern California Gas Company’s 2013-14 Conservation Campaign,” included in the “Southern California Gas Company Advanced Meter Semi-Annual Report” dated August 29, 2014.

50% of their aggregate savings come from the customers in the third quartile. As in the previous Campaigns, both the magnitude of savings and percent savings consistently increase as usage increases. For fourth usage quartile customers, high usage combined with larger impacts leads to a large percentage of the overall therm savings. Considering that customers in the top usage quartile consistently produce the largest share of therm savings, it may make sense for SoCalGas to further hone conservation efforts by focusing on customers in this group going forward.

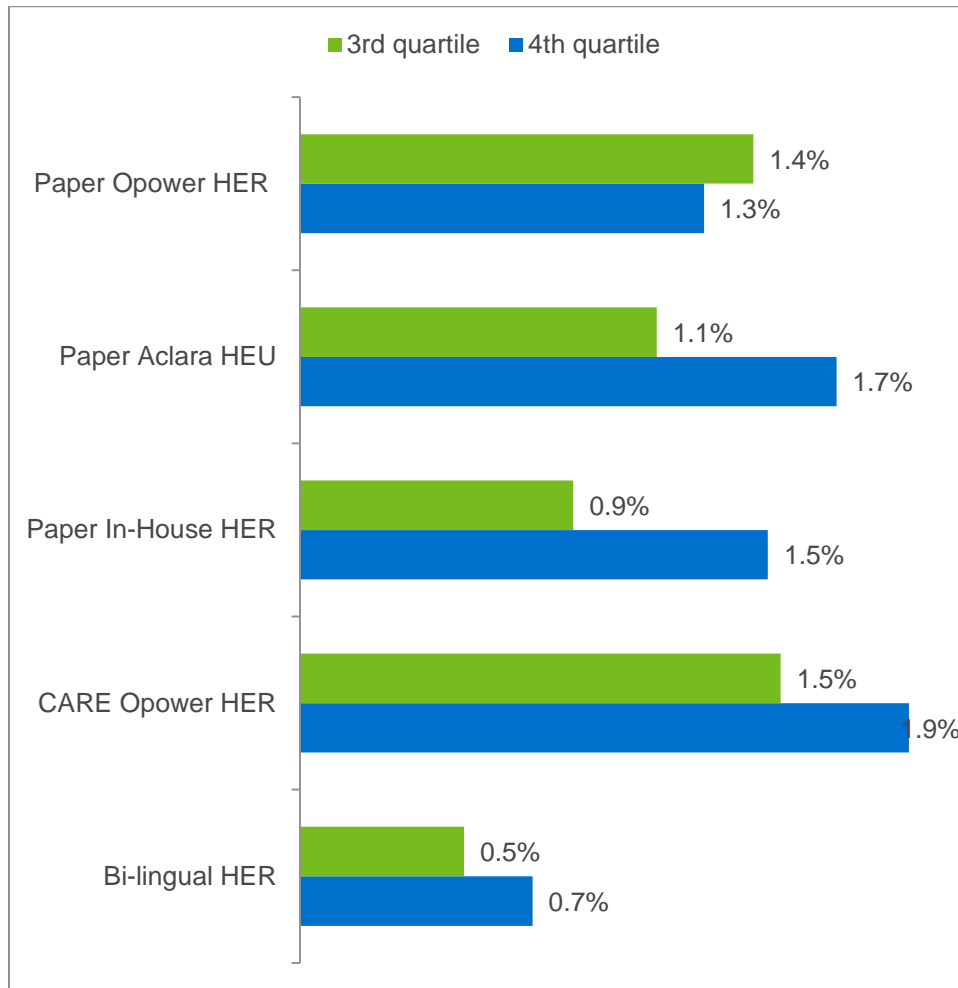
Figure 5-6: Percent of Gas Savings Attributable to Each Usage Quartile (Statistically Insignificant Results are in Gray)



HER Gas Savings by Usage Quartile

Figure 5-7 compares percent reductions for the top two quartiles for each of the HER treatments in the fourth Campaign. As in the prior three campaigns, the HER treatments consistently show similar or higher reductions for the fourth usage quartile as compared to the third quartile. The Paper Opower HER is the only HER treatment where the fourth quartile percent reduction is not higher than the third quartile percent reduction. In the previous Campaigns the third quartile usage was much lower than the fourth quartile usage for the paper-only HER. This suggests that for this population the participants were more responsive to paper-only HERs than in the past.

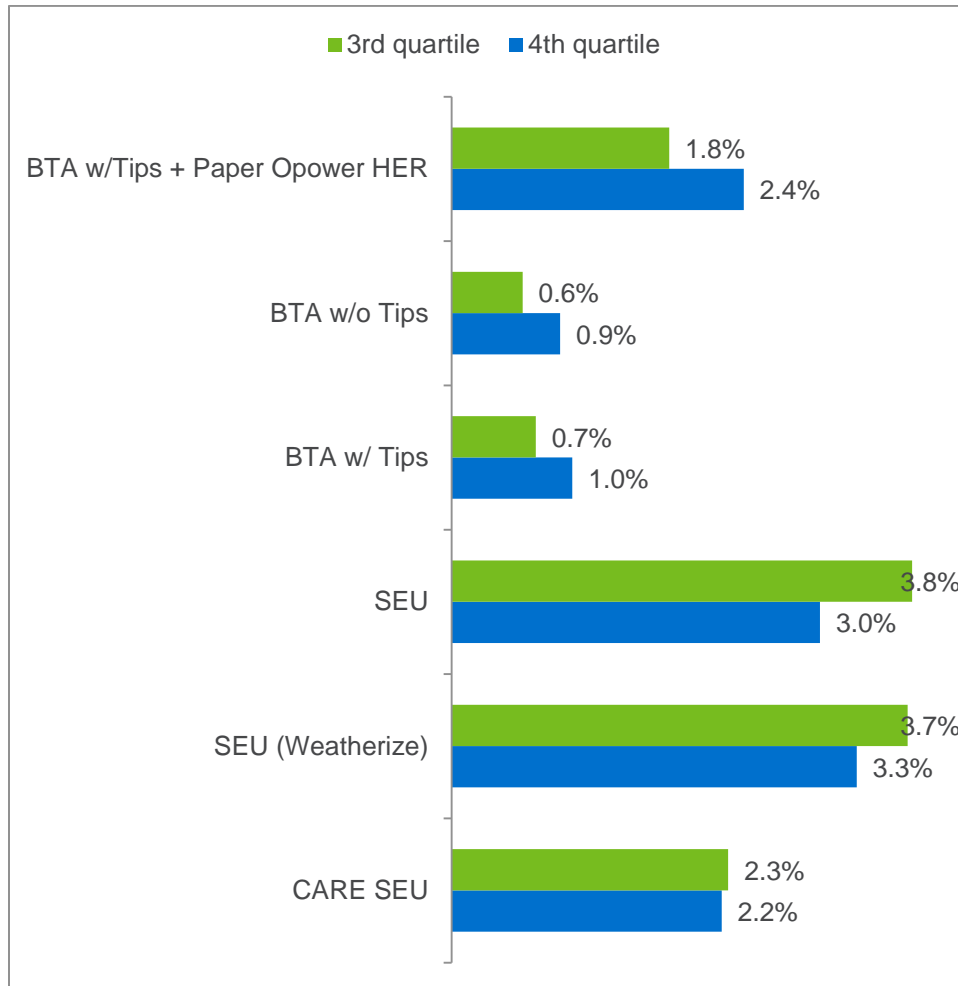
**Figure 5-7: Comparison of HER Fourth Campaign Treatments by Quartile
(Statistically Insignificant Results are in Gray)**



SoCalGas BTA and SoCalGas/Aclara SEU Gas Savings by Usage Quartile

Figure 5-8 compares percent reductions for the top two quartiles for each of the BTA and SEU treatments in the fourth Campaign. All of the BTA treatments have larger percent reductions for the fourth quartile. Unlike the HER and BTA treatments, all three of the SEU treatments have larger percent reductions for the third quartile customers. This suggests that weather sensitive customers in the third and fourth quartiles are responsive to the SEU treatment.

Figure 5-8: Comparison of BTA and SEU Fourth Campaign Treatments by Quartile (Statistically Insignificant Results are in Gray)



Other Segmentations Analyzed

As with each treatment in the first two Conservation Campaigns, Nexant segmented the 2016-2017 gas savings results by several demographic variables using granular block-level data from the 2010 U.S. Census. However, there weren't any consistent trends in 2016-2017 gas savings to report here. Given that the test cell design of the fourth Campaign leveraged many segmentation-based insights from the first three Campaigns, consistent drivers of differences in gas savings across demographic characteristics have been accounted for in the segmentation of the treatment population. For example, gas savings for CARE customers were consistently lower in the first two Campaigns for email-based treatments, so the design for the 2015-2016 and 2016-2017 Campaigns segmented those customers into a sub-population that received paper-based treatments. Similarly, gas savings for customers in census blocks with a high percentage of Latinos were also consistently lower, so those customers were segmented into a population that received a Spanish-language treatment instead. These data-driven improvements from one year to the next highlight the benefits of the adaptive "test and learn" strategy. The rigorous research design, data analysis and segmentations of the results yielded several quick insights that led to SoCalGas identifying the types of treatments that are most cost-effective for each segment of the population.

5.5 Percent Reductions in Second Year for 2015-2016 Conservation Campaign

Table 5-3 provides the estimated second year percent reductions for treatments from the third Campaign, shown alongside the impacts from the previous year (year 1) for these same treatments. The estimates were derived by using the LDV model to compare customer usage from December 2016 through March 2017 as compared to usage in the pretreatment period (December 2014 through March 2015). It is important to note that the first year results are for the period of November- March while the second year results are for the period containing December-March. Four of the thirteen treatments did not produce statistically significant results in the second year. The Old BTA w/o tips and the Spanish HER had the lowest savings rate in the first year of treatment and did not produce statistically significant savings in the second year. Both of the SEU treatments produced around 1% savings this year, but this was not statistically significant. Of the nine treatments that continued to produce statistically significant savings, seven treatments had percent reductions that were higher in the second year. This could be due in part to the slightly colder weather conditions as well as measuring the effect from December-March instead of November-March. Several treatments initiated in the 2015-2016 campaign did not continue to receive treatment in winter 2016-2017. The paper HER treatments received four paper reports in the initial year, and the treatments that continued received only one paper report in the second, 2016-2017 treatment year. Both of the 2015-2016 SEU treatments did not receive reports in the 2016-2017 treatment winter. The Email HER treatments that were continued were the same as the initial year treatment (one paper report and 12 email reports).

Table 5-3: Estimates of Percent Reductions in Gas Energy Consumption for Residential Treatments Initiated in 2015–2016, December 2016 through March 2017 (Statistically Insignificant Results are in Gray)

Segment	My Account	Treatment	Group	Number of Treatment Customers	Year 2 results (LDV)		Year 1 results (LDV)	
					% Reduction	P-value	% Reduction	P-value
Non-CARE	Yes	Opower Email HER ³⁵	T-16	13,086	1.12%	0.00	0.86%	0.00
		Opower Email Thermostat	T-19	13,094	1.58%	0.00	1.28%	0.00
		Paper & Email SEU ³⁵	T-24	17,877	1.20%	0.28	3.04%	0.00
		Old BTA, w/materials	T-26	19,069	1.04%	0.00	0.70%	0.00
		Old BTA, w/o materials	T-27	19,032	0.43%	0.12	0.49%	0.04
		New BTA, w/materials	T-28	19,035	1.46%	0.00	1.04%	0.00
		New BTA, w/o materials	T-29	19,062	1.18%	0.00	0.86%	0.00
	No	Opower Paper-only HER	T-17	13,364	1.02%	0.01	1.50%	0.00
		Opower Paper-only Thermostat	T-20	13,342	1.57%	0.00	1.32%	0.00
		Paper-only SEU ³⁵	T-25	23,494	1.08%	0.14	3.08%	0.00
CARE	Yes/No	Opower Paper & Email HER ³⁵	T-15	13,082	1.01%	0.00	1.01%	0.00
		Opower Thermostat	T-18	23,796	1.84%	0.00	1.53%	0.00
Spanish		Opower Spanish Paper-only ³⁵	T-21	13,319	0.42%	0.22	0.82%	0.00

Table 5-4 provides the estimated percent reductions during spring and summer of 2016 for the treatments from the third Campaign. The estimates were derived by using the LDV model to compare customer usage from April 2016 through November 2016 as compared to usage in the pretreatment period—April 2015 through October 2015. The November pretreatment month used is November 2014 since treatment started during November 2015 for this Campaign.

³⁵ This treatment cell did not receive treatment during winter 2016-2017.

Email HERs continued to receive treatment during the summer which is apparent in the results as the majority email based treatments continued to produce statistically significant savings. Both of the SEU treatments did not produce measurable savings during this time period.

Table 5-4: Estimates of Percent Reductions in Gas Energy Consumption for Residential Treatments Initiated in 2015–2016, April 2016 through November 2016 (Statistically Insignificant Results are in Gray)

Segment	My Account	Treatment	Group	Number of Treatment Customers	Year 1 results (LDV)	
					% Reduction	P-value
Non-CARE	Yes	Opower Email HER	T-16	11,978	0.80%	0.04
		Opower Email Thermostat	T-19	11,928	0.87%	0.02
		Paper & Email SEU	T-24	16,357	0.76%	0.61
		Old BTA, w/materials	T-26	17,443	0.81%	0.01
		Old BTA, w/o materials	T-27	17,439	0.85%	0.01
		New BTA, w/materials	T-28	17,351	0.62%	0.05
		New BTA, w/o materials	T-29	17,433	0.21%	0.51
	No	Opower Paper-only HER	T-17	12,617	0.02%	0.96
		Opower Paper-only Thermostat	T-20	12,580	0.51%	0.15
		Paper-only SEU	T-25	22,075	1.55%	0.15
CARE	Yes/No	Opower Paper & Email HER	T-15	13,082	1.09%	0.00
		Opower Paper & Email Thermostat	T-18	24,099	1.14%	0.00
Spanish		Opower Spanish Paper-only	T-21	12,659	0.58%	0.10

5.6 Percent Reductions in Third Year for 2014-2015 Conservation Campaign

Table 5-5 provides the estimated third year percent reductions for treatments from the second Campaign, shown alongside the impacts from the previous two years for these same treatments. The estimates were derived by using the LDV model to compare customer usage from December 2016 through March 2017 as compared to usage in the pretreatment period (December 2013 through March 2014). This table only includes results for treatments that produced statistically significant savings in the prior years. The default BTA and Aclara HEU treatments that also started in the second Campaign, did not produce statistically significant savings during the first and second years of observing these customers. The Opower Paper-only HER was the only treatment that continued to produce statistically significant savings this year. The percent reduction for this treatment went down from the previous years. The Opower Email HER and Opower Paper & Email HER did not produce statistically significant savings this winter season. In the second year of treatment in 2015-2016, the Opower Paper & Email HER and the Opower Paper-only HER treatments received four paper reports. The Opower Email HER treatment only received one paper report and 12 Email HERs in this time period. None of the treatments received any reports in 2016-2017.

Table 5-5: Estimates of Percent Reductions in Gas Energy Consumption for Residential Treatments Initiated in 2014–2015, December 2016 through March 2017 (Statistically Insignificant Results are in Gray)

My Account	Treatment	Group	Number of Treatment Customers	Year 3 results (LDV)		Year 2 results (LDV)		Year 1 results (LDV)	
				% Reduction	P-value	% Reduction	P-value	% Reduction	P-value
Yes	Opower Email HER	T-8	10,974	0.80%	0.07	0.96%	0.02	0.74%	0.05
	Opower Paper & Email HER	T-10	10,988	0.73%	0.09	1.38%	0.00	1.45%	0
No	Opower Paper-only HER	T-13	44,590	1.31%	0.00	1.86%	0.00	1.48%	0

Table 5-6 provides the estimated percent reductions during spring and summer of 2016 for the treatments from the second Campaign. The estimates were derived by using the LDV model to compare customer usage from April 2016 through November 2016 as compared to usage in the pretreatment period—April 2014 through October 2014. The November pretreatment month used is November 2013 since treatment started during November 2014 for this Campaign. The Opower Paper & Email HER and Opower Paper-only HER continued to show measurable savings during the summer period. The Opower Email HER did not produce measurable savings during the spring / summer period for a second year in a row. The Aclara treatments were not monitored this year as these customers were recycled in the 2016-2017 Campaign sampling. The Opower Paper & Email HER treatment received email reports during this time period while the Opower Paper-only HER treatment did not receive any reports.

Table 5-6: Estimates of Percent Reductions in Gas Energy Consumption for Residential Treatments Initiated in 2014–2015, April 2016 through November 2016 (Statistically Insignificant Results are in Gray)

My Account	Treatment	Group	Number of Treatment Customers	Year 2 spring / summer results (LDV)		Year 1 spring / summer results (LDV)	
				% Reduction	P-value	% Reduction	P-value
Yes	Opower Paper & Email HER	T-10	11,369	1.43%	0.00	1.35%	0.00
No	Opower Paper-only HER	T-13	45,874	1.15%	0.00	0.77%	0.00

5.7 Percent Reductions in Fourth Year for 2013–2014 Conservation Campaign

Table 5-7 provides the estimated fourth year percent reductions for treatments from the first Campaign, shown alongside the impacts from the previous three years for these same treatments. The estimates were derived by using the LDV model to compare customer usage from December 2016 through March 2017 as compared to usage in the pretreatment period (December 2012 through March 2013). This table only includes the results for the BTA treatment as Opower email HER did not have enough customers to find statistically significant and valid savings in the fourth year. The Opower Paper & Email HER (T-2) and the Opower Paper-only HER (T-1) did stopped producing statistically significant savings in the third year. The default BTA is the only treatment from the first Campaign that is still receiving treatment. The percent reduction for the BTA treatment decreased to .83% and is not statistically significant at the 95% confidence level.

Table 5-7: Estimates of Percent Reductions in Gas Energy Consumption for Residential Treatments Initiated in 2013–2014, December 2016 through March 2017 (Statistically Insignificant Results are in Gray)

My Account	Treatment	Group	Number of Treatment Customers	Result Year	% Reduction	P-value
Yes	Default BTA	T-4	17,031	1	0.70%	0.02
				2	1.20%	0.00
				3	1.28%	0.00
				4	0.83%	0.06

None of the treatments from the first Campaign provided statistically significant results during the spring/summer period in 2016 or 2015.

5.8 Comparison of Aggregate Savings for Different Winter Periods

The fourth campaign was the only campaign to start treatments in December rather than November. This raises the question of whether it is more effective to start treatments in November or December. In order to test this hypothesis, it would be necessary to run a randomized control trial splitting the treatment into two groups; one group starting treatment in November and the other in December. However, it is possible to look at past results to see how the percent reductions and aggregate monthly reductions compare when including November.

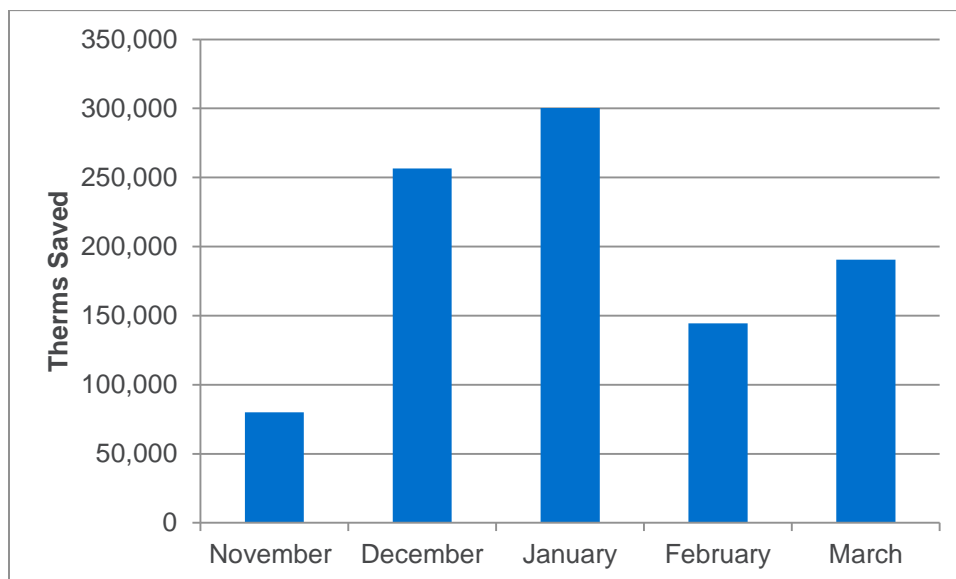
Table 5-8 compares the percent reductions for the third Campaign treatments from November 2015 – March 2016 to the percent reductions from December 2015 – March 2016. The percent reductions estimated for the December 2015 – March 2016 time period are higher for all of the treatments compared to the percent reductions estimated for the November 2015 – March 2016 period. However, this is not a true comparison since this is not able to measure the effect of starting the campaign in December. It is clear that November provides lower savings to due lower gas usage in general compared to December.

Table 5-8: Comparison of the Estimated Gas Savings for the 2015–2016 SoCalGas Conservation Campaign Treatments

Segment	My Account	Treatment	Group	Number of Treatment Customers	Nov 2015 - Mar 2016		Dec 2015 - Mar 2016	
					% Reduction	P-value	% Reduction	P-value
Non-CARE	Yes	Opower Email HER	T-16	13,086	0.86%	0.00	0.95%	0.00
		Opower Email Thermostat	T-19	13,094	1.28%	0.00	1.48%	0.00
		Paper & Email SEU	T-24	17,877	3.04%	0.00	3.09%	0.00
		Old BTA, w/materials	T-26	19,069	0.70%	0.00	0.77%	0.00
		Old BTA, w/o materials	T-27	19,032	0.49%	0.04	0.56%	0.02
		New BTA, w/materials	T-28	19,035	1.04%	0.00	1.13%	0.00
		New BTA, w/o materials	T-29	19,062	0.86%	0.00	0.91%	0.00
	No	Opower Paper-only HER	T-17	13,364	1.50%	0.00	1.65%	0.00
		Opower Paper-only Thermostat	T-20	13,342	1.32%	0.00	1.56%	0.00
		Paper-only SEU	T-25	23,494	3.08%	0.00	3.23%	0.00
CARE	Yes/No	Opower Paper & Email HER	T-15	13,082	1.01%	0.00	1.24%	0.00
Opower Thermostat		T-18	23,796	1.53%	0.00	1.75%	0.00	
Spanish		Opower Spanish Paper-only	T-21	13,319	0.82%	0.00	0.83%	0.00

Figure 5-9 compares the average monthly aggregate therms savings for all of the 2015-2016 campaign first year treatments. Compared to the other winter months, November had the smallest aggregate therms reduction. Approximately 80,000 therms were saved in November compared to 256,000 therms saved in December. Although the savings are lower in November, there are still therms being saved during this month.

Figure 5-9: Monthly Aggregate Gas Savings for the 2015–2016 SoCalGas Conservation Campaign Treatments



The key takeaway from this analysis is that the savings are much smaller in November compared to December. However, it isn't possible to know if starting the campaign in November rather than December has any sort of effect on the savings from December through March. It may be possible that starting the campaign in November sets the stage for the large savings in December. The results from the 2016-2017 winter when the campaigns started in December aren't directly comparable with the prior winter due to the different customer populations and weather. Ultimately, as noted above, the only way to truly ascertain the impact of starting the campaign in November versus December is to run a randomized control trial splitting the treatment into two groups; one group starting treatment in November and the other in December.

5.9 Estimated Gas Savings

Once a statistically significant usage reduction within a given test cell is identified, the analysis can be done at the monthly level, which allows for the re-inclusion of some customers that may not have had usage data for every month, but do have data for some pre- and post-treatment months.

Table 5-9 summarizes the estimated gas savings for the 2016–2017 SoCalGas Conservation Campaign, based on the monthly-level analysis. Gas savings are only calculated for the treatments that produced statistically significant usage reductions using the LDV model, which includes the Opower Paper-only treatment and the Opower Paper & Email HER from the 2014–2015 Conservation Campaign, nine of the treatments from the 2015-2016 Campaign, and all of the residential treatments from the 2016–2017 Campaign. Overall, the new and continued treatments produced gas savings of almost 2.7 million therms between April 2016 and March 2017, or about 1.5%.

In total, approximately 1.6 million therms were conserved as a result of the new treatments for the 2016–2017 Conservation Campaign, representing a savings of almost 1.7%.

The treatments initiated in the 2015–2016 Conservation Campaign conserved a total of almost 517,000 therms during the 2016–2017 winter. An additional almost 200,000 therms were saved over the summer / spring of 2016 as a result of treatments in the 2015–2016 Conservation Campaign with statistically significant reductions. The CARE Opower Thermostat treatment saved the most therms during this time period as well as having the highest percent reduction for the treatments initiated in 2015-2016.

Roughly 173,000 therms were conserved during the winter as a result of the treatments in the 2014–2015 Conservation Campaign. Only the Opower Paper-only HER continued to produce measurable savings in third winter. During the summer / spring of 2016 approximately 160,000 therms were saved due to the Opower Paper-only HER and the Opower Paper & Email HER.

None of the first Campaign treatments produced measurable savings during the 2016-2017 year.

Table 5-9: Estimated Gas Savings for the 2016–2017 SoCalGas Conservation Campaign

Initial Treatment Year	Treatment	Group	Number of Active Customers per Month	Average Customer Total Usage for December-March			Aggregate Usage for December-March		
				Reference Therms	Observed Therms	Therms Saved	Reference Therms	Observed Therms	Therms Saved
2016-2017	BTA w/Tips + Paper & Email Opower HER	T-31	38,700	293.2	286.6	6.6	11,345,338	11,090,016	255,322
	BTA w/o Tips	T-36	30,906	294.0	291.7	2.3	9,086,707	9,016,272	70,435
	BTA w/ Tips	T-37	30,649	293.2	290.5	2.7	8,987,059	8,903,956	83,103
	Paper-only Opower HER	T-32	51,508	302.5	298.4	4.1	15,580,888	15,370,945	209,944
	Paper Aclara Home Energy Update report (HEU)	T-40	31,772	301.4	296.9	4.5	9,577,422	9,434,047	143,375
	Paper In-House HER	T-39	13,414	309.3	305.3	4.0	4,149,178	4,095,583	53,596
	Paper SEU	T-34	19,612	341.4	330.6	10.8	6,695,902	6,483,976	211,926
	Paper SEU (Weatherize)	T-35	19,625	341.3	329.9	11.4	6,697,060	6,473,857	223,203
	Paper & Email Opower HER - CARE	T-30	49,995	262.9	258.2	4.7	13,143,012	12,906,696	236,316
	Paper SEU - CARE	T-33	18,364	304.0	297.3	6.7	5,582,822	5,458,890	123,932
	Paper Bi-lingual HER	T-41	13,453	185.1	184.1	0.9	2,489,546	2,476,930	12,616
Overall for 2016-2017 treatments (winter)			317,997	293.5	288.4	5.1	93,334,934	91,711,168	1,623,768

Energy Conservation Estimates

Initial Treatment Year	Treatment	Group	Number of Active Customers per Month	Average Customer Total Usage for December-March			Aggregate Usage for December-March		
				Reference Therms	Observed Therms	Therms Saved	Reference Therms	Observed Therms	Therms Saved
2015-2016	Opower Email HER ⁷	T-16	12,008	282.8	279.6	3.2	3,395,683	3,357,236	38,447
	Opower Email Thermostat HER ⁶	T-19	11,950	281.8	277.1	4.7	3,367,997	3,311,737	56,261
	Old BTA, w/materials	T-26	17,452	282.0	279.0	3.0	4,921,216	4,869,656	51,561
	New BTA, w/materials	T-28	17,392	282.1	277.9	4.1	4,905,432	4,833,330	72,103
	New BTA, w/o materials	T-29	17,465	282.1	278.7	3.4	4,925,873	4,866,770	59,103
	Opower Paper-only HER ⁶	T-17	12,609	295.0	292.2	2.9	3,720,273	3,684,308	35,966
	Opower Paper-only Thermostat HER ⁶	T-20	12,580	293.7	289.3	4.5	3,695,294	3,638,860	56,434
	Opower Paper & Email HER ⁷	T-15	11,987	255.5	252.9	2.5	3,062,292	3,031,967	30,326
	Opower Thermostat Email HER (ESA & Non-ESA) ⁶	T-18	24,146	254.9	250.1	4.9	6,155,619	6,037,872	117,747
Overall for 2015-2016 treatments (winter)			137,588	277.3	273.5	3.8	38,149,679	37,631,736	517,947
2015-2016	Opower Email HER	T-16	12,024	223.2	221.3	1.8	2,683,287	2,661,400	21,887
	Opower Email Thermostat	T-19	11,980	220.5	218.5	2.0	2,641,595	2,617,993	23,602
	Old BTA, w/materials	T-26	17,500	222.1	220.4	1.7	3,886,298	3,856,222	30,076
	Old BTA, w/o materials	T-27	17,499	221.7	219.9	1.8	3,879,196	3,847,366	31,829
	Opower Paper & Email HER	T-15	12,028	226.7	224.2	2.5	2,726,227	2,696,360	29,866
	Opower Thermostat HER (ESA & Non-ESA)	T-18	24,209	227.0	224.5	2.6	5,496,242	5,433,610	62,632
Overall for 2015-2016 treatments (summer/spring)			95,241	223.8	221.7	2.1	21,312,845	21,112,951	199,893

Energy Conservation Estimates

Initial Treatment Year	Treatment	Group	Number of Active Customers per Month	Average Customer Total Usage for December-March			Aggregate Usage for December-March		
				Reference Therms	Observed Therms	Therms Saved	Reference Therms	Observed Therms	Therms Saved
2014-2015	Opower Paper-only HER ⁷	T-13	45,184	296.5	292.7	3.8	13,397,634	13,224,593	173,041
Overall for 2014-2015 treatments (winter)			45,184	296.5	292.7	3.8	13,397,634	13,224,593	173,041
2014-2015	Opower Paper & Email HER ⁷	T-10	11,658	226.3	222.9	3.4	2,638,390	2,598,369	40,022
	Opower Paper-only HER ⁷	T-13	46,764	226.9	224.4	2.6	10,612,781	10,492,993	119,788
Overall for 2014-2015 treatments (summer/spring)			58,423	226.8	224.1	2.7	13,251,171	13,091,362	159,809
Overall			654,431	274.2	270.1	4.1	179,446,268	176,771,810	2,674,458

6 Recommendations and Conclusions

Throughout the AM rollout until the end of 2017, SoCalGas is implementing a cycle of innovation in which continuous assessment and improvement in the performance of feedback programs is the primary objective. This is referred to as the “test and learn” process, which is consistent with what the CPUC envisioned in D.10-04-027. This decision approved SoCalGas’ AM application, as discussed in Section 2. As the implementation proceeded, high performing program design options were retained and offered to an increasingly larger share of customers who received advanced meters. At the same time, new program design alternatives were tested based on the experiences gained from the prior rounds of implementation. Programs and program design features that were less effective were abandoned or modified. In this way, over the course of the AM rollout, the most effective means for encouraging energy savings from information feedback were identified and offered to customers.

As discussed in Section 2.4, the 2015-2016 and 2016-2017 winters were colder than the previous two winters. As a result, the residential gas usage was substantially higher than the prior two years. The higher observed gas usage was also associated with higher percentage savings relative to the prior campaigns. This is reasonable given there are more opportunities to conserve when the usage is higher. Based on the weather and results observed to date, it would be reasonable to expect that in warmer years the conservation savings may be lower compared to years with relatively colder weather.

Furthermore, a fundamental tenant of the “test and learn” process is to continuously improve toward more cost-effective solutions. The last two of the four Campaigns were the only Campaigns to have all residential treatments produce statistically significant results. The SEU treatment continued to have the highest percent reductions in the first year of treatment. However, it is still possible to produce comparable (or higher) energy savings at a lower cost. Staying consistent with the literature on SMB behavioral programs, there were no statistically significant savings from the SMB BTA treatment this year or in the very first year. A follow-on analysis to be conducted by Nexant for SoCalGas will look into the cost-effectiveness and overall takeaways moving forward from the four Conservation Campaigns in further detail. Some of the key conclusions moving forward as these programs are transitioned into the energy efficiency program portfolio are¹⁰:

- BTAs and HERs consistently produce savings of around .75% to 1.5%;
- The Opower Paper HER + BTA w/Tips achieves higher savings than the BTA treatments alone;
- SEUs and BTA+HER, which were developed in part by SoCalGas and leveraged AM data, were the only treatments to produce savings over 2%, including savings over 3% in all four non-CARE SEU treatments;
- The SMB BTA treatment does not produce measurable savings;
- The SEU treatment materials in combination with targeting weather sensitive customers achieves the highest percent reductions during the winter period;
- The Aclara, Opower, and SoCalGas HERs all produced savings above 1% and the difference between them was not statistically significant;

Recommendations and Conclusions

- The percent reductions of the Bi-lingual English-Spanish report, Spanish report, and English report for the customer segment containing customer in areas with high rates of Latino populations consistently fall below 1%;
- Treatments targeted at CARE customers can be successful, but they cannot be solely based on email communications (BTAs or e-HERs) – paper-based communications through direct mail is required for success;
- Energy savings generally persist if treatment continues, and in some cases, savings persist for more than one year if treatment is reduced/discontinued;
- These types of behavioral interventions consistently produce energy savings for default (auto-enrolled) participants, residential customers, and top two usage quartiles (highest in top quartile); and
- Little to no savings measured for treatments involving opt-in participants, small/medium business customers, bottom two usage quartiles, and customers in highest density Hispanic neighborhoods (78%+ of population).

Appendix A Opower Home Energy Report Materials

Appendix A presents the standard Opower HER materials utilized in the 2016-2017 new and continuing treatments.

In addition to the paper and email HER examples in Section 2.2, Opower also sent a HER welcome insert and a door hanger, which are included in this appendix.

Figure A - 1 shows the front and back of the Opower HER welcome insert. Figure A - 2 shows the inside page of the HER welcome insert. Figure A - 3 displays the door hanger that was delivered to all of the Opower HER customers.

Figure A - 4 through Figure A - 9 show the front and back of the standard paper HER, the CARE paper HER, and the thermostat paper HER. Figure A - 10 shows the email HER sent December and in subsequent months (January 2017 and after).

A.1 Opower HER Welcome materials

Figure A - 1: December Opower HER Welcome Insert (Front and Back)

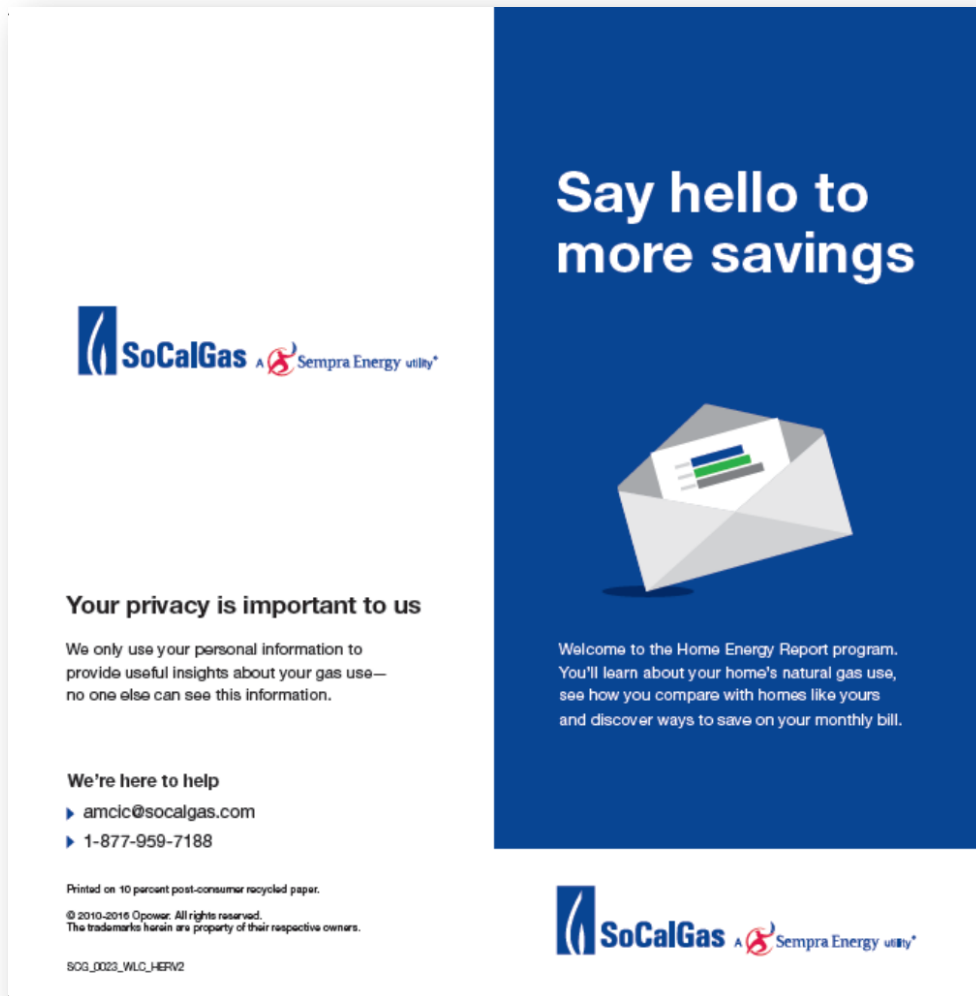


Figure A - 2: December Opower HER Welcome Insert (Inside Page)




Millions of households are already using their Home Energy Reports and online tools to reduce their use and save money. And now you can, too.

What's in your report

Neighbor comparison

We compare your natural gas use with approximately 100 nearby homes that share similar size, fuel type, and more. These homes represent your neighbors, but don't necessarily include the homes on your block.



Efficiency tips and programs

You'll see personalized energy-efficiency tips based on what we know about your home. From quick and easy tricks to upgrades with big saving potential, these tips can help you save more natural gas and lower your bill.

Your report may also include current rebates and programs you can join to boost the comfort and saving power of your home.


Discover more online

Insights and tools are waiting for you

Visit our website to learn even more about how you use gas, see seasonal ways to save and enroll in programs that make managing your natural gas use and bills easier and more convenient.

Make your report more accurate

The more we know about your home, the more personalized your insights and tips will be. Go online to update your home profile for a more accurate report.



▶ **Get started at [SCG.opower.com](https://scg.opower.com).**

Figure A - 3: Opower HER Door Hanger
Front **Back**



A.2 Opower Paper HERs

Figure A - 4: Opower Paper December HER Example (Front)

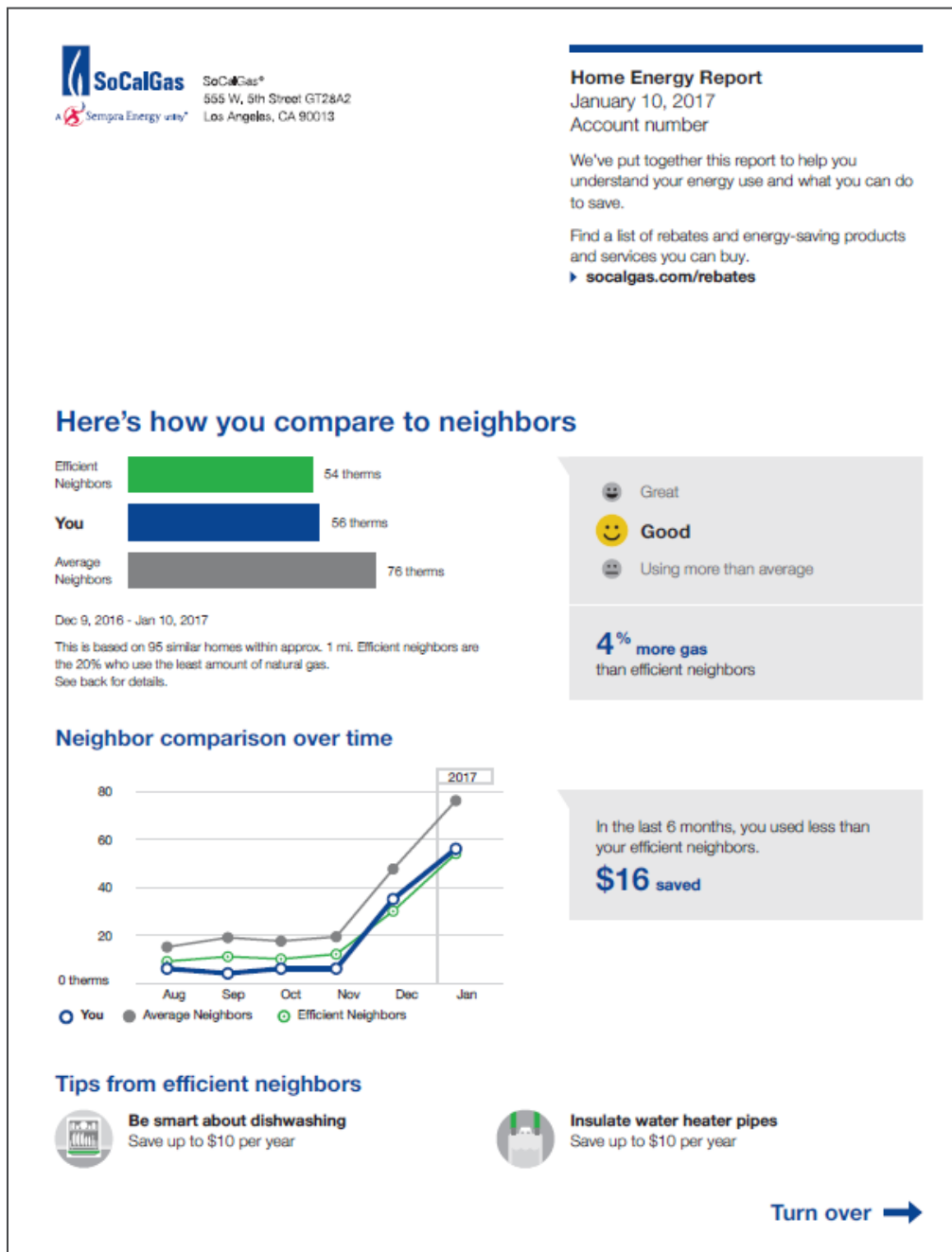


Figure A - 5: Opower Paper December HER Example (Back)

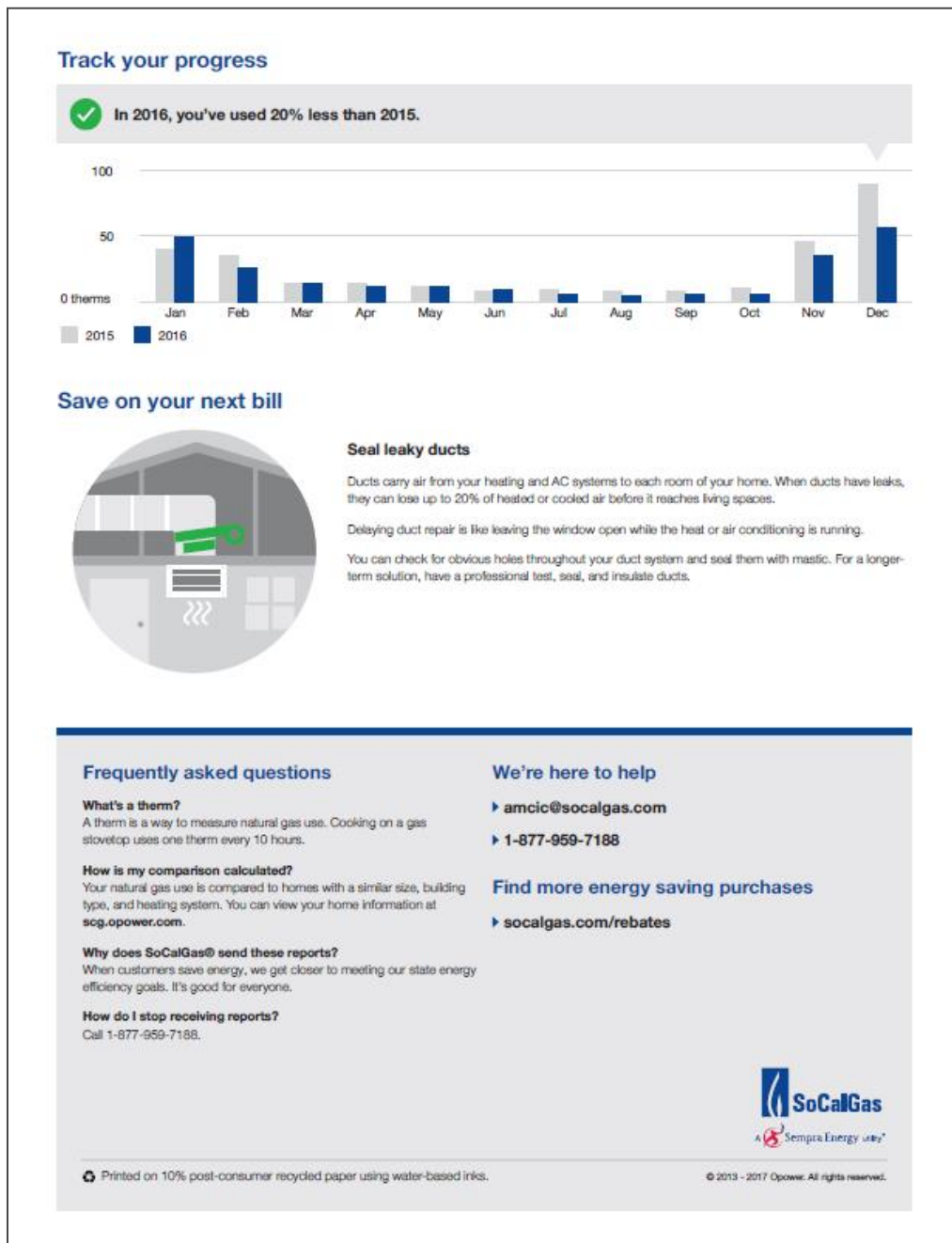


Figure A - 6: Opower CARE Paper December HER Example (Front)

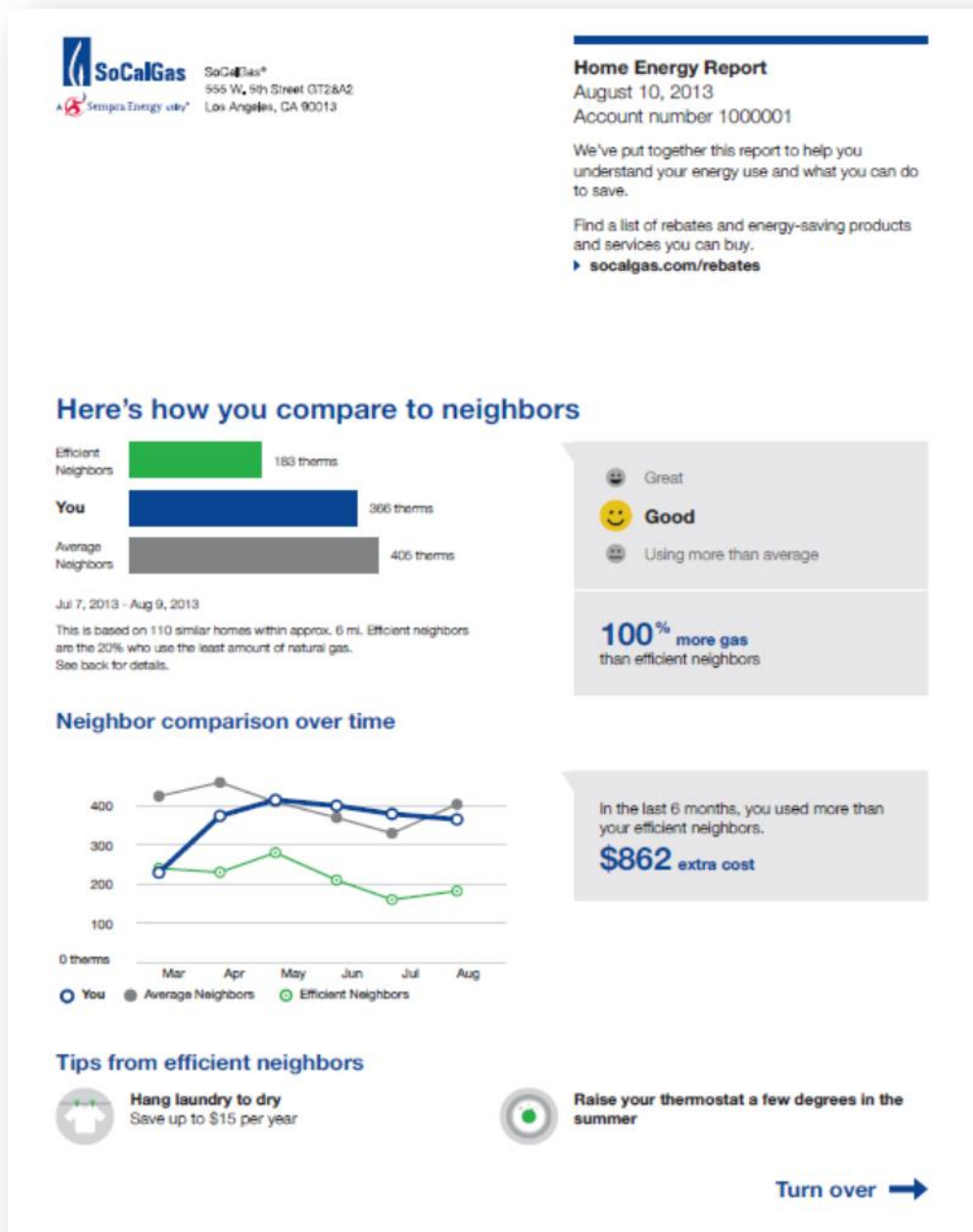


Figure A - 7: Opower CARE December Paper HER Example (Back)

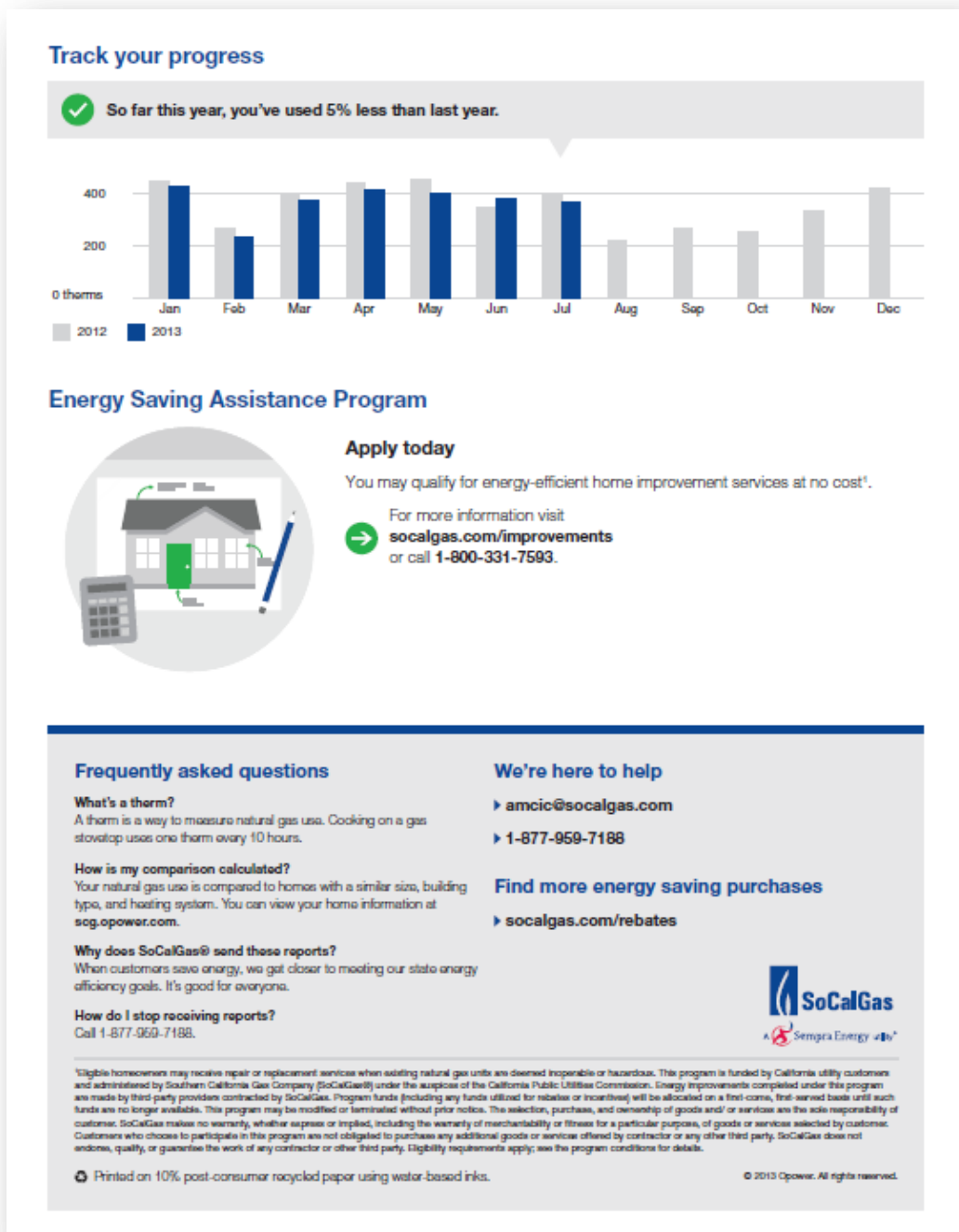
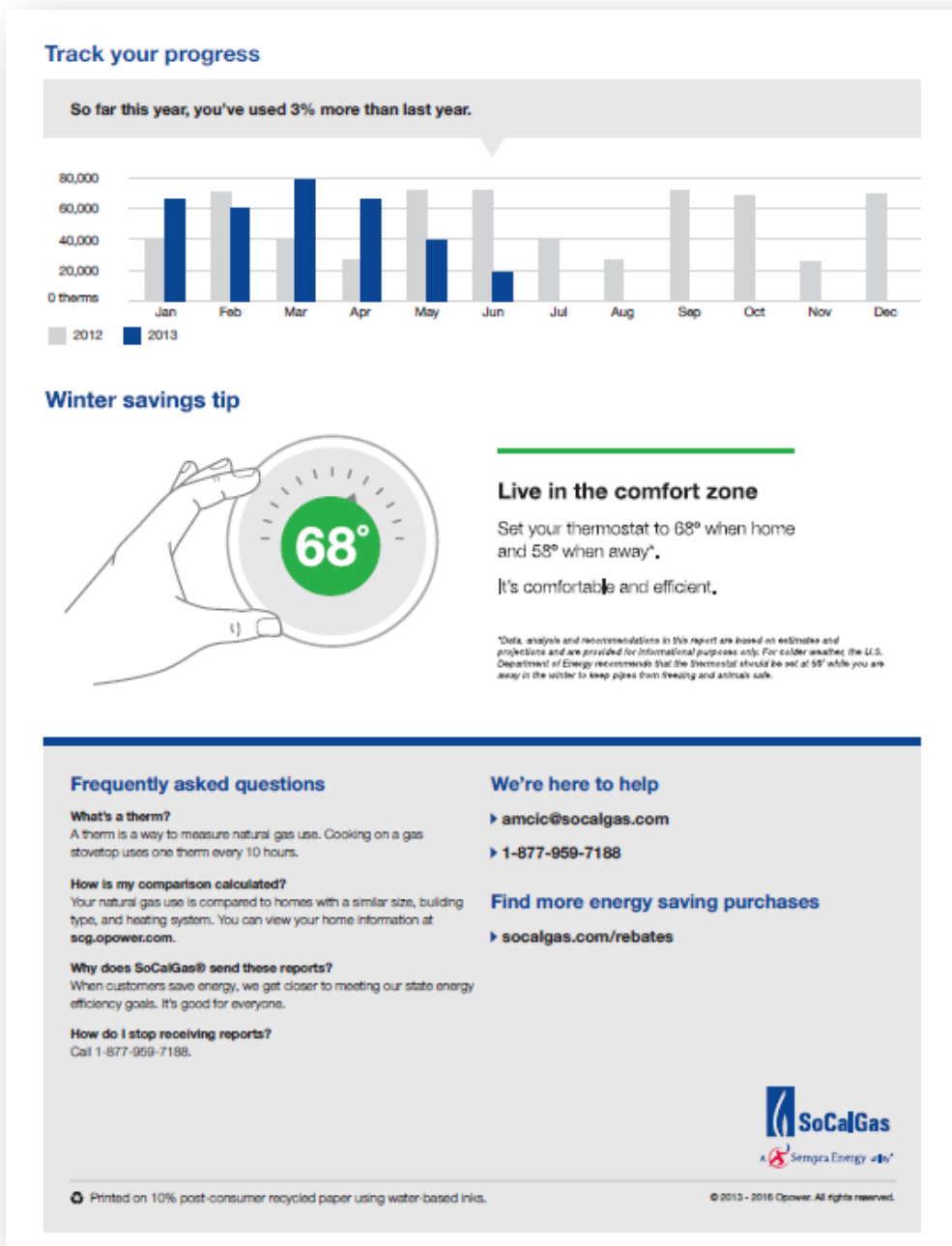


Figure A - 8: Opower Thermostat December Paper HER Example (Front)

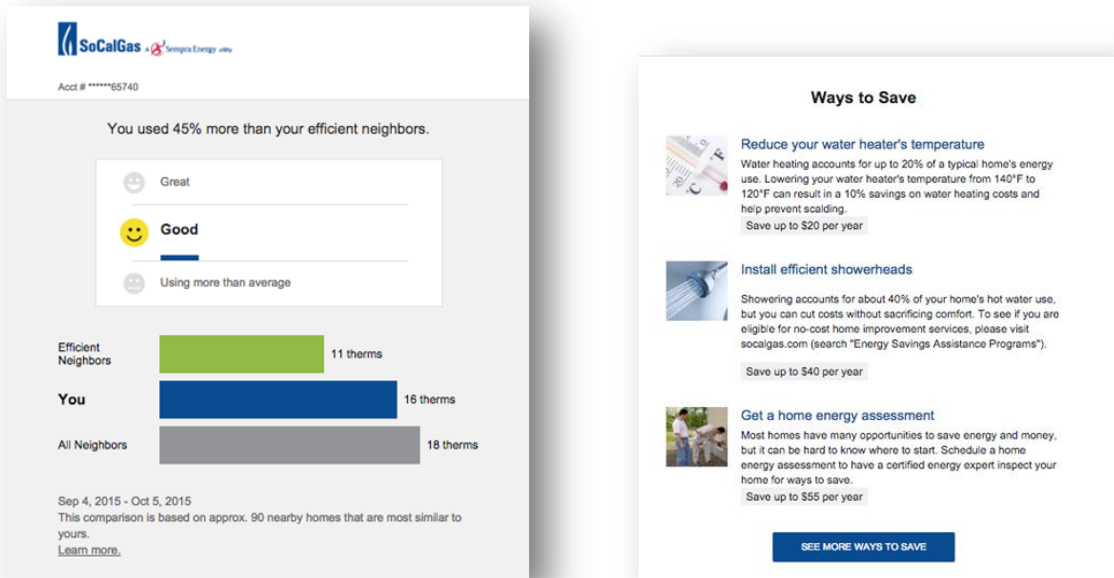


Figure A - 9: Opower Thermostat December Paper HER Example (Back)



A.3 Opower Email HERs

Figure A - 10: Opower Email HER Example, December and subsequent months



Appendix B Aclara Home Energy Update Materials

This appendix contains all the Aclara HEU materials. In addition to the paper HEU examples in Section 2.2, Aclara also sent a HEU welcome insert and repositionable sticker.

Figure B-1 shows the Aclara HEU welcome insert, which was delivered to nearly 33,000 Aclara paper-only HEU customers in early December 2016. Figure B presents the repositionable sticker that was sent in January 2017.

Figure B - 1: December Aclara HEU Welcome Insert



SoCalGas

A  Sempra Energy utility®

Welcome to

Your Home Energy Update

from SoCalGas®!

SoCalGas® is pleased to provide you with a series of four Home Energy Update reports throughout this winter. These personalized updates can help you better understand how your household uses natural gas when temperatures get cold, and how to use energy more wisely to lower your bills.

Each report contains these three features:

1 Comparison to Similar Homes

Learn how your natural gas use compares to homes of similar type and size in your area when it gets cold.



Home Type	Therms
Efficient Home	70
Average Home	170
Your Home	315

2 Breakdown of Your Natural Gas Use

Uncover insights into how much of your natural gas use goes towards home heating. The calculation is based on the change in your home's natural gas consumption during colder weather.



Category	Percentage
Home Heating	92%
Other Natural Gas Appliances	8%

- **Home Heating:** natural gas furnaces, natural gas fireplaces, etc.
- **Other Natural Gas Appliances:** hot water heaters, stoves, BBQs, etc.

3 Savings Tips

Act now to save, based on personalized savings tips just for you.



We hope these reports will help you better understand and manage your natural gas usage during the colder months.

Data, analysis, and recommendations in the reports are based on estimates and projections, and are provided for informational purposes only. For questions regarding the reports, please call 888-873-4894, Monday through Friday, from 8 a.m. to 6 p.m. PT, or visit pages.socalgas.aclara.com/FAQ. Images and charts shown above are for illustrative purposes only.

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Figure B - 2: Aclara HEU Repositionable Sticker



Appendix C SoCalGas In-House HER Materials

In addition to the paper “SoCalGas Usage Report” HER examples in Section 2.2, SoCalGas also sent a welcome insert and a door hanger, which are included in this appendix.

Figure C – 1 shows the front of the welcome insert, which was delivered to nearly 13,750 SoCalGas In-House paper-only HER customers in December 2016. Figure C – 2 shows the back of the HER welcome insert. Figure C – 3 displays the door hanger that was delivered to all of the In-house HER participants.

Figure C - 1: December SoCalGas In-House HER Welcome Insert (Front)

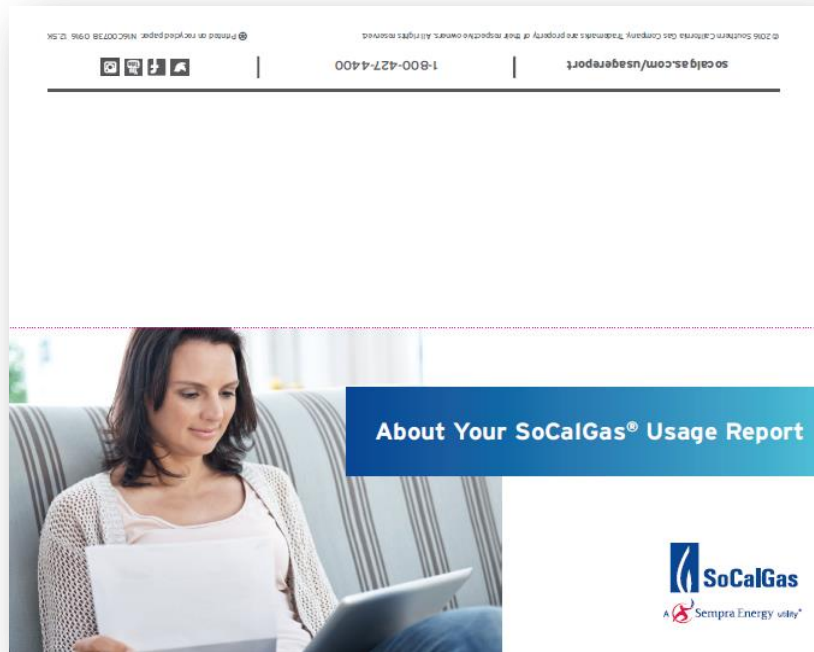


Figure C - 2: December SoCalGas In-House HER Welcome Insert (Back)

WHAT IS THIS REPORT AND WHY ARE YOU RECEIVING IT?

This year, we selected you randomly from our SoCalGas customer database to participate in a pilot program that's geared toward motivating customers to take action and conserve energy. We believe that the information contained on this report will provide you insights and also help guide you to use gas more efficiently.

WHAT TO EXPECT?

In the next few months, you will be receiving personalized letters that will include your previous months' usage compared to nearby homes. These nearby homes have been identified based on size, age, type of home (e.g. home owner or renter). Aside from these, we also considered your weather zone in the calculation. Information from a third-party data provider was also used. More specific details on the algorithm can be found on [socialgas.com/usage report](http://socialgas.com/usage-report). Please note that some figures used are estimates only and may not represent actual information.

YOUR INFORMATION AND PRIVACY

SoCalGas is committed to protecting your Energy Usage Information and ensuring appropriate protection exists when collecting, storing, using and reporting that information. For more information visit socialgas.com/privacy-notice.

TO OPT OUT

If you do not wish to participate in this pilot program, you can opt out at any time by calling 1-800-427-4400.



Better understanding your natural gas usage is the first step in saving energy and money.

Figure C - 3: SoCalGas In-House HER Door Hanger

Front

Back



REMEMBER!



68° at HOME

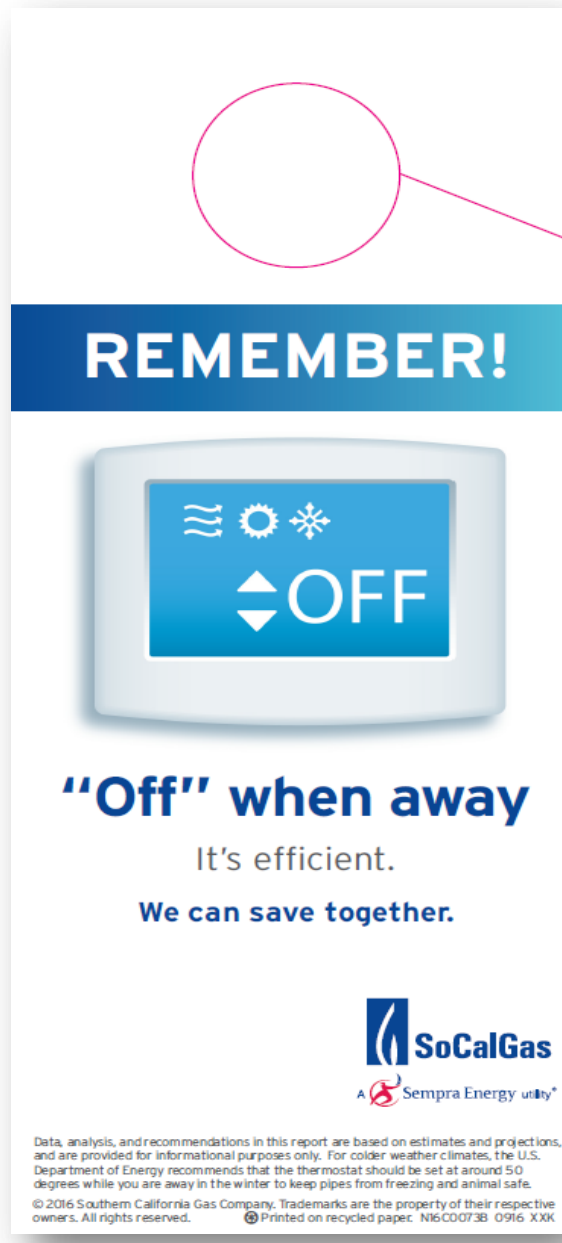
Ideal winter thermostat settings.
It's comfortable and efficient.

We can save together.



Data, analysis, and recommendations in this report are based on estimates and projections, and are provided for informational purposes only. For colder weather climates, the U.S. Department of Energy recommends that the thermostat should be set at around 50 degrees while you are away in the winter to keep pipes from freezing and animal safe.

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REMEMBER!



"Off" when away

It's efficient.

We can save together.



Data, analysis, and recommendations in this report are based on estimates and projections, and are provided for informational purposes only. For colder weather climates, the U.S. Department of Energy recommends that the thermostat should be set at around 50 degrees while you are away in the winter to keep pipes from freezing and animal safe.

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Appendix D SoCalGas Bi-lingual HER Materials

In addition to the paper HER examples in Section 2.2, SoCalGas also sent a welcome insert and a door hanger, which are included in this appendix.

Figure D – 1 shows the front of the welcome insert, which was delivered to nearly 13,750 SoCalGas Bi-lingual paper-only HER customers in December 2016. Figure D – 2 shows the back of the HER welcome insert. Figure D – 3 displays the door hanger that was delivered to all of the In-house HER participants.

Figure D - 1: SoCalGas Bi-lingual HER Welcome Insert (Front)

Together we live.
Together we save.

SoCalGas
A Sempra Energy utility

Learn More About Your SoCalGas® Usage Report.

WHAT IS THIS REPORT AND WHY ARE YOU RECEIVING IT?
The information in this report has a number of great insights on using gas more efficiently. So, get ready to save. You were selected from our customer database to take part in a pilot program designed to help the entire community conserve energy together.

WHAT TO EXPECT?
You will receive personalized letters in the next few months that include your previous months' usage compared to other homes in your area. These other residences were selected based on things like size, age and the type of home (homeowner or renter). Also, we considered the weather zone in our calculation and received some information from a third-party data provider. More specific details on the algorithm can be found on socialgas.com/usagereport. Please note that some figures used are estimates only and may not represent actual information.

YOUR INFORMATION AND PRIVACY
SoCalGas is committed to guarding your energy usage information and ensuring that proper protection exists when collecting, storing, using and reporting the data.

To learn more, please visit socialgas.com/privacy-notice.

HOW TO OPT OUT
If you do not wish to participate in our community pilot program, you can opt out at any time by calling 1-800-427-4400.

socialgas.com/usagereport | 1-800-427-4400 |    

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Figure D - 2: SoCalGas Bi-lingual HER Welcome Insert (Back)

Vivimos juntos.
Ahorramos juntos.



A Sempra Energy utility®



Obtenga más información sobre el Informe de Uso SoCalGas®.

¿QUÉ HAY EN ESTE INFORME Y POR QUÉ LO RECIBE?

La información en este informe tiene varias ideas geniales sobre cómo usar el gas de manera más eficiente. Así que, prepárese para ahorrar. Usted ha sido seleccionado de nuestra base de datos de clientes para participar en un programa piloto diseñado para ayudar a toda la comunidad en conjunto a preservar la energía.



¿QUÉ DEBE ESPERAR?

Recibirá cartas personalizadas en los próximos meses, que incluirán su consumo de meses anteriores en comparación con otros hogares en su área. Estas otras residencias se seleccionaron en función de características, como tamaño, edad y tipo de hogar (propietarios o inquilinos). Además, consideramos la zona climática en nuestros cálculos y recibimos información de nuestro proveedor de datos tercerizado. Podrá encontrar detalles más específicos sobre el algoritmo en socialgas.com/usagereport/es. Tenga en cuenta que algunas cifras utilizadas son únicamente estimadas y es posible que no representen información real.

SU INFORMACIÓN Y PRIVACIDAD

SoCalGas se compromete a mantener la información sobre su consumo de energía y a asegurar que exista una protección adecuada al recopilar, almacenar, usar e informar datos.

Para obtener más información, visite socialgas.com/privacy-notice.

BAJA VOLUNTARIA

Si no desea participar en nuestro programa comunitario piloto, puede optar por la baja voluntaria en cualquier momento, llamando al 1-800-427-4400.

socialgas.com/usagereport/es

1-800-427-4400



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Figure D - 3: SoCalGas Bi-lingual HER Door Hanger


Front

Back

Together we live. Together we save.



Remember to keep your thermostat at **68°** when you're home and **OFF WHEN YOU'RE AWAY.**



Data, analysis, and recommendations in this report are based on estimates and projections, and are provided for informational purposes only. For colder weather climates, the U.S. Department of Energy recommends that the thermostat should be set at around 50 degrees while you are away in the winter to keep pipes from freezing and animals safe.
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♻️ Printed on recycled paper.

Vivimos juntos. Ahorramos juntos.



Recuerde mantener su termostato en **68°** cuando esté en su hogar y **APAGADO AL SALIR.**



Los datos, análisis y las recomendaciones en este informe se basan en estimados y proyecciones, y se brindan únicamente con fines informativos. Para climas más fríos, el Departamento de Energía de EE. UU. recomienda establecer el termostato en 50 grados mientras se encuentra fuera de su hogar en invierno, a fin de impedir que las tuberías se congelen y por la seguridad de los animales.
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♻️ Impreso en papel reciclado.

Appendix E Aclara/SoCalGas Seasonal Energy Update Materials

In addition to the paper SEU example in Section 2.2, Aclara/SoCalGas also sent a welcome letter, frequently asked questions insert, and a repositionable sticker, which are included in this appendix. There was also a slightly different version of the paper SEU reports sent in January and February which are included in the appendix.

Figure E – 1 shows the front of the Aclara facilitated SEU welcome letter, which was delivered to nearly 59,950 SEU customers in December 2016. Figure E – 2 shows the back of the SEU welcome letter. Figure E – 3 displays the SEU frequently asked question insert. Figure E – 4 displays the repositionable sticker that was sent to all of the SEU customers. Figure E – 5 and Figure E – 6 show the front and back of the November paper SEU report. Figure E – 7 and Figure E – 8 show the front and back of the November paper SEU (weatherize) report.

Figure E - 1: Aclara-Facilitated November SEU Welcome Letter (Front)

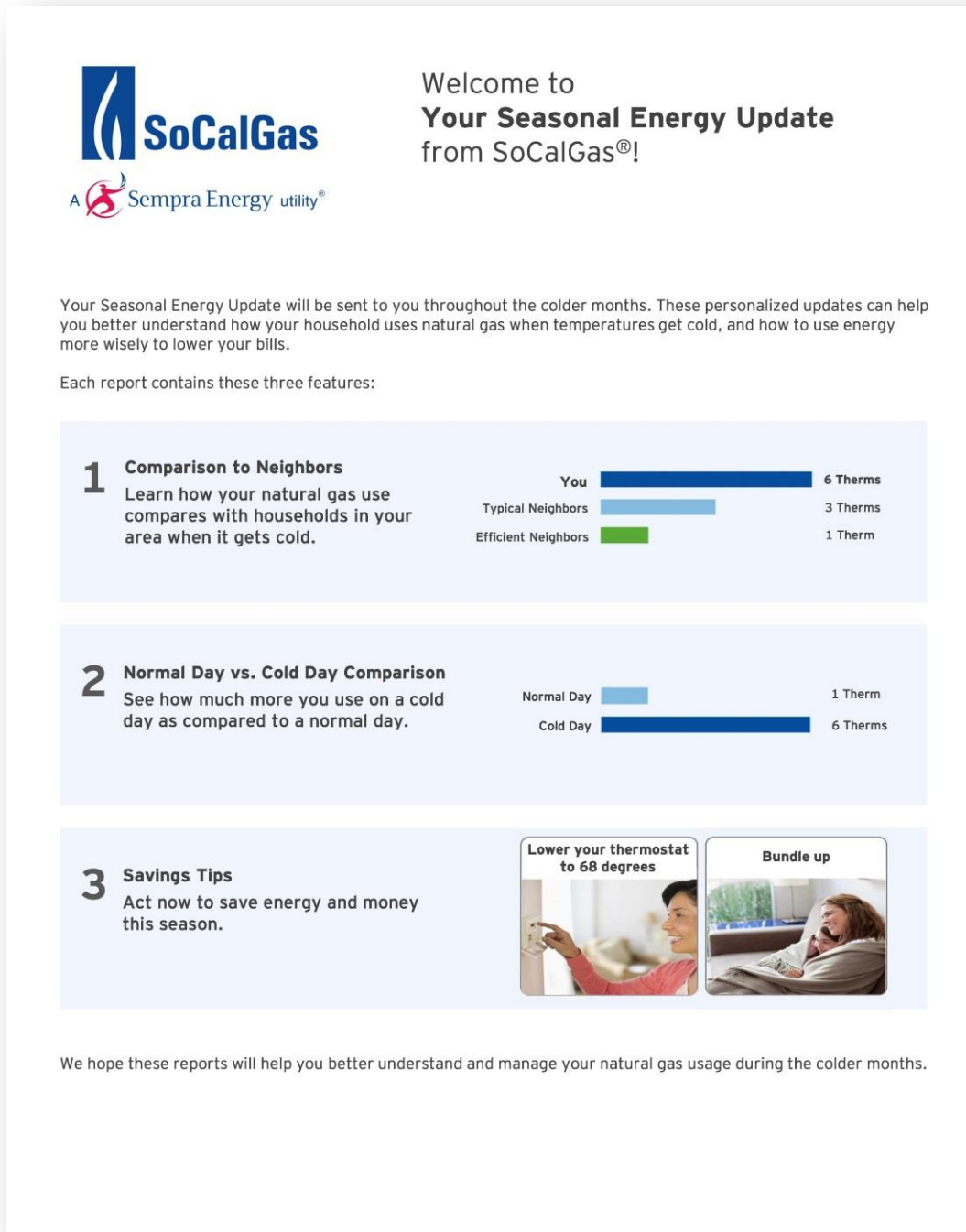



Figure E - 2: Aclara-Facilitated November SEU Welcome Letter (Back)



Seasonal Energy Update

Frequently Asked Questions & Reference Guide

Q. Why am I receiving this Seasonal Energy Update report?

A. The report you received is part of a pilot program from SoCalGas® to help customers like yourself understand your seasonal energy usage patterns through the fall and winter months, and to discover opportunities where you might be able to save energy and reduce your gas bills. These reports are being distributed for a limited time to a select group of SoCalGas customers in the pilot program. The reports will then be evaluated before potentially offering them in subsequent years or expanding the number of customers who will receive them.

Q. How was I selected to be part of this program?

A. You were selected for this program because you may have potential to save energy and money this winter. Based on historical data, your household gas usage has been shown to be sensitive to cold weather and amongst those with highest average gas usage on cold days.

Q. How many reports will I receive and how often will they be sent? What if I'd rather not receive them?

A. Program participants will receive four monthly paper reports provided from November 2016 through February 2017. You may call 888-873-4894, Monday through Friday, from 8 a.m. to 6 p.m. PT, if you would prefer to stop receiving these reports.

Q. Which neighbors/households is my gas usage being compared to in the "Cold Day Usage Comparison" chart on the front side of the Seasonal Energy Update report?

A. Your household's average daily gas usage for the five coldest days last winter is compared to that of other households in your area that have similar usage levels and experience similar weather. For the first two monthly reports, the comparison period is last winter (December 2015 through February 2016). For the January 2017 and February 2017 monthly reports, the comparison period is the most recent two prior months.

- **"Households in your area that experience similar weather":** "Your area" refers to one of six SoCalGas-defined climate zones. These geographically defined climate zone areas are comprised of High Mountain, High Desert, Low Desert, Coastal, Valley and Inland Valley. They were developed by SoCalGas for purposes of factoring in regional weather conditions to forecast gas supply needs for SoCalGas' service territory.
- **Households with similar usage levels** are those households in your area that used average or greater than average gas usage during the comparison period.
- **Typical Neighbors:** The bar shown is approximately the average daily gas usage on the five coldest days during the comparison period for households in your area experiencing similar weather.
- **Efficient Neighbors:** The bar shown is the average daily gas usage for the 20 percent of households in your area that have the lowest average daily gas usage for the five coldest days during the comparison period.

Q. Please provide further details for the "Your Usage on a Normal Day vs. Cold Day" chart on the back side of the Seasonal Energy Update report:

A. The comparison highlighted in this chart – for the November 2016 and December 2016 reports – is a comparison of your average daily gas usage for the five coldest days last December 2015 through February 2016, to your average daily gas usage during this same period. For reports dated January 2017, the comparison period is for the most recent two months, November 2016 through December 2016. For reports dated February 2017, the comparison period is for the most recent two months, December 2016 through January 2017.


Q. Is my information kept confidential?

A. Yes, in accordance with SoCalGas' Privacy Policy and Privacy Notice, which may be viewed at www.socalgas.com.

For further information or questions regarding the report, please call 888-873-4894, Monday through Friday, from 8 a.m. to 6 p.m. PT, or visit: pages.socalgas.aclara.com/WSFAQ

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Figure E - 3: Aclara-Facilitated SEU Frequently Asked Questions Insert



Seasonal Energy Update Frequently Asked Questions & Reference Guide

Q. Why am I receiving this Seasonal Energy Update report?

A. The report you received is part of a pilot program from SoCalGas® to help customers like yourself understand your seasonal energy usage patterns through the fall and winter months, and to discover opportunities where you might be able to save energy and reduce your gas bills. These reports are being distributed for a limited time to a select group of SoCalGas customers in the pilot program. The reports will then be evaluated before potentially offering them in subsequent years or expanding the number of customers who will receive them.

Q. How was I selected to be part of this program?

A. You were selected for this program because you may have potential to save energy and money this winter. Based on historical data, your household gas usage has been shown to be sensitive to cold weather and amongst those with highest average gas usage on cold days.

Q. How many reports will I receive and how often will they be sent? What if I'd rather not receive them?

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Q. Which neighbors/households is my gas usage being compared to in the "Cold Day Usage Comparison" chart on the front side of the Seasonal Energy Update report?

A. Your household's average daily gas usage for the five coldest days last winter is compared to that of other households in your area that have similar usage levels and experience similar weather. For the first two monthly reports, the comparison period is last winter (December 2015 through February 2016). For the January 2017 and February 2017 monthly reports, the comparison period is the most recent two prior months.

- **"Households in your area that experience similar weather":** "Your area" refers to one of six SoCalGas-defined climate zones. These geographically defined climate zone areas are comprised of High Mountain, High Desert, Low Desert, Coastal, Valley and Inland Valley. They were developed by SoCalGas for purposes of factoring in regional weather conditions to forecast gas supply needs for SoCalGas' service territory.
- **Households with similar usage levels** are those households in your area that used average or greater than average gas usage during the comparison period.
- **Typical Neighbors:** The bar shown is approximately the average daily gas usage on the five coldest days during the comparison period for households in your area experiencing similar weather.
- **Efficient Neighbors:** The bar shown is the average daily gas usage for the 20 percent of households in your area that have the lowest average daily gas usage for the five coldest days during the comparison period.

Q. Please provide further details for the "Your Usage on a Normal Day vs. Cold Day" chart on the back side of the Seasonal Energy Update report:

A. The comparison highlighted in this chart – for the November 2016 and December 2016 reports – is a comparison of your average daily gas usage for the five coldest days last December 2015 through February 2016, to your average daily gas usage during this same period. For reports dated January 2017, the comparison period is for the most recent two months, November 2016 through December 2016. For reports dated February 2017, the comparison period is for the most recent two months, December 2016 through January 2017.

Q. Is my information kept confidential?

A. Yes, in accordance with SoCalGas' Privacy Policy and Privacy Notice, which may be viewed at www.socalgas.com.


For further information or questions regarding the report, please call 888-873-4894, Monday through Friday, from 8 a.m. to 6 p.m. PT, or visit: pages.socalgas.aclara.com/WSFAQ

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Figure E - 4: Aclara-Facilitated SEU Repositionable Sticker



Figure E - 5: Aclara-Facilitated November SEU Paper Report (Front)



Your Seasonal Energy Update
November 2016
Account number:




A  Semptra Energy utility®

NAME
ADDRESS
ADDRESS

Dear [NAME],

Colder days are coming soon! Get ready with these simple tips to stay warm and lower your natural gas bill.

Last Winter **Cold Day** Usage Comparison*

You		6 Therms
Typical Neighbors		3 Therms
Efficient Neighbors		1 Therm

2X


You used about 2X more natural gas than your typical neighbors.

What is a Therm? A standard unit for measuring heat energy. One therm equals approximately 100 cubic feet of natural gas.
Who are your Neighbors?
■ Typical Neighbors: Households in your area that experience similar weather.
■ Efficient Neighbors: Households in your area that use less natural gas during cold weather.

*December 2015 - February 2016

Set your Thermostat and Save!

68° or lower	At Home
58° or lower	Asleep
50° or turn off	Away



Every two degrees you lower your thermostat, you could reduce your heating costs by up to 4-5 percent.

Figure E - 6: Aclara-Facilitated November SEU Paper Report (Back)

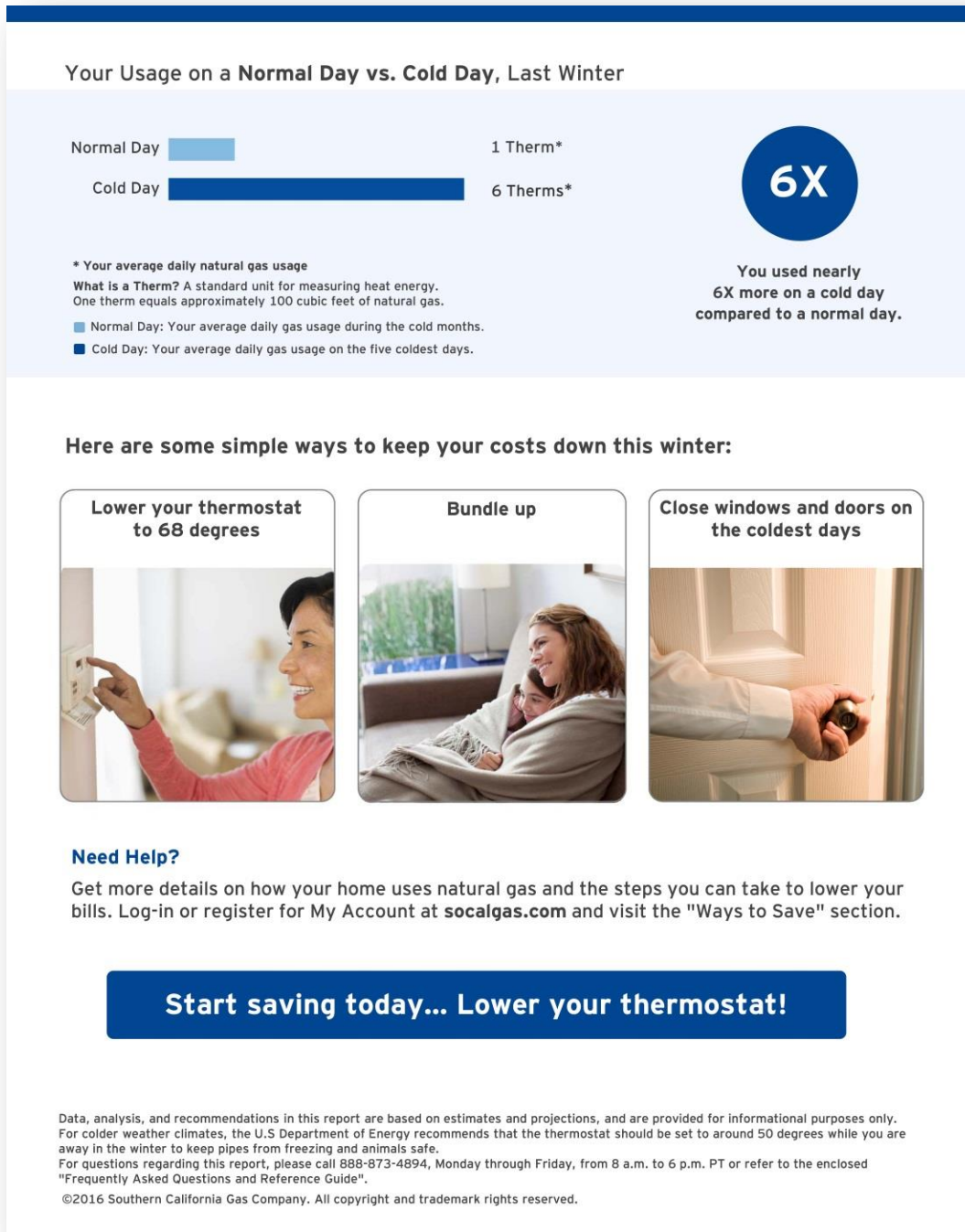


Figure E - 7: Aclara-Facilitated November SEU (Weatherize) Paper Report (Front)

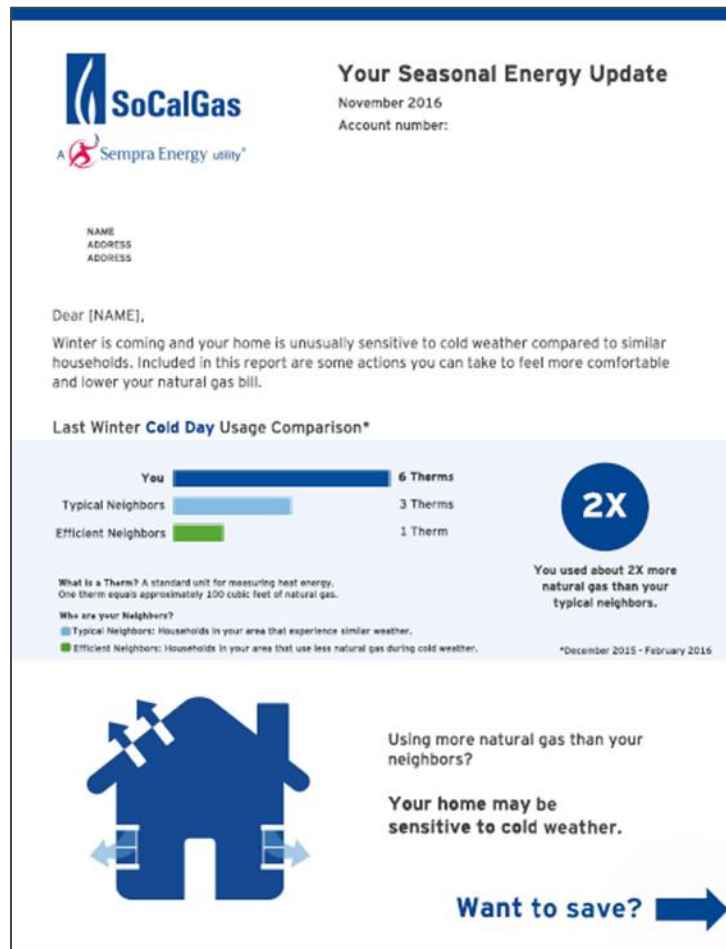


Figure E - 8: Aclara-Facilitated November SEU (Weatherize) Paper Report (Back)

