REPORT

Nexant

Reimagine tomorrow.

Municipal Utility Joint Program Study

Submitted to Southern California Gas

June 2, 2016

Work Order: 2113

CALMAC Study ID: SCG0216.01

Principal authors:

Cherlyn Seruto, Analyst

Wyley Hodgson, Managing Consultant

Contents

List of Figures

List of Tables

Executive Summary

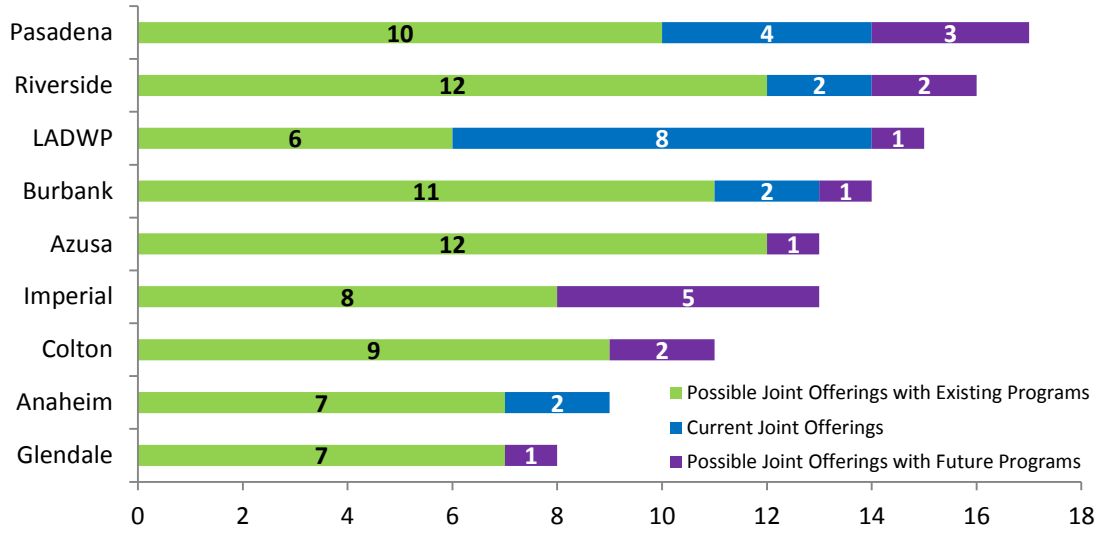
Southern California Gas (SoCal Gas) retained Nexant to develop a comprehensive summary of the energy efficiency programs implemented or administered by municipal electric utilities that overlap with SoCal Gas's service territory. The goal of this effort was to explore utilities that demonstrate partnership opportunities with SoCal Gas on dual-fuel, gas-and-electric energy efficiency programs. This study is referenced as Residential-15 in the 2013-2016 Energy Division & Program Administrator Energy Efficiency Evaluation, Measurement and Verification Plan, Version 6.

Based on initial discussions and interviews with SoCal Gas staff, Nexant identified nine municipal utilities for inclusion in this study. Nexant then prioritized the utilities based on publicly available information on the territory, the utilities' energy efficiency program efforts, and information that supported the possibility of forming partnerships with SoCal Gas. The nine utilities included:

- Los Angeles Department of Water & Power (LADWP)
- Imperial Irrigation District
- City of Anaheim Public Utilities
- City of Riverside Public Utilities
- City of Burbank Water & Power
- City of Pasadena Water & Power
- City of Glendale Water & Power
- City of Colton Electric Utility
- City of Azusa Light & Water.

Nexant collected data on these utilities primarily through in-depth interviews with utility personnel and augment this effort through secondary research and a literature review of associated utility energy efficiency programs. Figure 1 illustrates our findings showing the frequency of programs and measures that are current joint offerings between SoCal Gas and municipal utilities, possible joint offerings among existing programs or measures, and possible future joint program or measure offerings. LADWP and Pasadena currently have the highest frequency of current joint offerings, whereas Riverside, Azusa, and Pasadena have the highest frequency of possible joint offerings amongst existing programs. Imperial and Pasadena expressed interest in the largest number of future offerings.

Figure 1: Frequency of Existing Joint Offerings and Possible Existing or Possible Future Joint Offerings



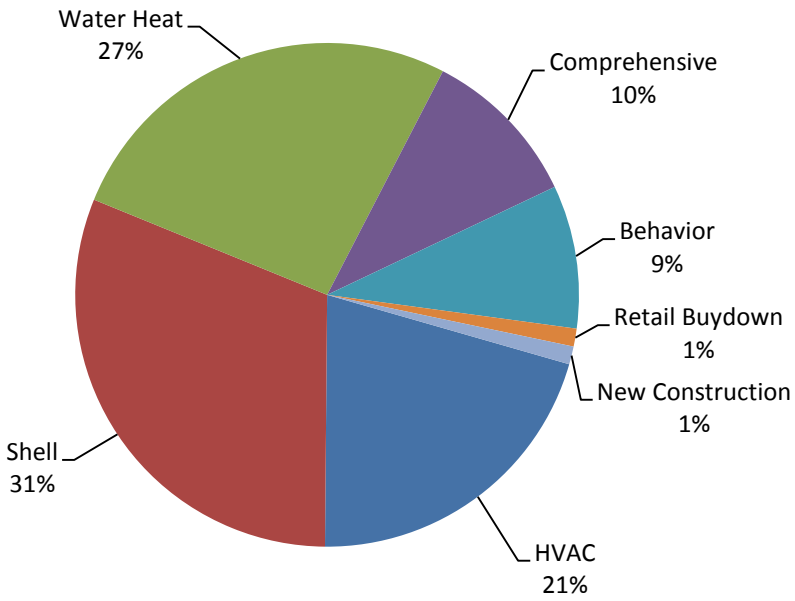
Nexant included measures or programs in the comparative analysis based on their likelihood to have joint electric and gas fuel savings. Table 1 below lists measures and programs included in this comparative analysis.

Table 1: Possible joint fuel measures included in comparative analysis

Water Heat	Shell	HVAC	Comprehensive	Behavior	Retail Buy-down
Clothes washers	Insulation	Air conditioning (A/C) replacement	Energy upgrade CA (or similar)	Online energy audit	Online web-based retail shop
Dish washers	Radiant barrier	A/C tune-up	Residential direct install	Home energy audits	
Water heaters	Cool roof		Low-income direct install	Home energy reports	
Pool covers	Air sealing		Multi-family direct install	In-home display and smart thermostat	
Showerheads/ aerators	Window/door replacement		Multi-family—other comprehensive	Smart programmable thermostat	
	Window film				
	Duct testing/repair/ replacement				

Nexant also summarized the currently available possible joint-fuel offerings by end-use among the nine municipal utilities. This includes programs with which SoCal Gas is currently operating joint agreements. Shell measures were the most commonly incented end-use, followed by water heat and HVAC measures (Figure 2).

Figure 2: Percent of possible measure or program offerings by end use



Nexant received participation data for seven of the nine surveyed municipal utilities during conversations with those utilities (Table 2). Imperial achieved the highest ratio of participation to customer base at roughly 6% of residential customers participating in energy saving programs, followed by LADWP, Pasadena, and Azusa.

Table 2: Number of Rebates in Existing Joint Fuel Saving Measures [1, 2]

Municipal Utility	HVAC System	Shell	Water Efficiency	Comprehensive	Behavior	Total Participation	% of Residential Customer Accounts
Imperial	3,663	332	-	2,533	777	**7,305**	**5.59%**
LADWP	380	372	38,706	-	-	**39,458**	**2.97%**
Pasadena	-	38	305	726	223	**1,292**	**2.28%**
Azusa	23	23	94	-	183	**323**	**2.18%**
Riverside	2	308	1,669	-	34	**2,013**	**2.09%**
Glendale	452	91	634	-	135	**1,312**	**1.77%**
Colton	47	10	25	-	-	**82**	**0.51%**

[1] Information is an estimate from municipal utility program manager interviews.

[2] Anaheim and Burbank did not provide participation data

[3] Home Energy Reports not included in behavior participation count. These total 50,000 participants for Glendale and 45,000 participants for Pasadena.

Nexant ranked the nine utilities' joint fuel programs according to the following four key criteria developed to assess possible joint fuel savings (Section 4.5):

- Total residential program savings (described in Section 3.1.1 Residential Portfolio Summary)
- Program or measure offerings (described in Section 3.2 Summary of Joint Fuel Program Opportunities)
- Program participation (described in Section 3.2 Summary of Joint Fuel Program Opportunities)
- Presence of local initiatives or policies that may stimulate enhanced action in the residential sector. (described in Section 3.4.5 Local Government and Policy Directives)

Table 3 below ranks the nine utilities according to these four criteria.

Table 3: Ranking of Municipal Utilities' Joint Fuel Offering Partnership Opportunities

Partnership Opportunities
● = Top tier
● = Middle tier
○ = Lower tier

Municipal Utility	Residential Program kWh Savings	Offerings	Participation	Local Initiatives	Average Rank
LADWP	●	●	●	●	●
Riverside	●	●	●	-	●
Pasadena	●	●	●	-	●
Burbank	○	●	○	-	●
Anaheim	●	○	○	-	●
Glendale	●	○	●	-	●
Imperial	●	○	●	-	○
Azusa	○	●	●	-	○
Colton	○	●	○	-	○

Based on this ranking, Nexant found that the highest partnership opportunity exists with LADWP and Riverside utilities. These municipal utilities scored highly in each of the three defined criteria (LADWP is the only municipal utility to have a local initiative more stringent than state regulations and therefore is the only municipal utility to score in the fourth criteria). Pasadena, Burbank, and Anaheim also presented a strong opportunity, with mixtures of high program savings, program or measure offerings that are amenable to joint fuel energy savings, and relatively moderate levels of program savings.

1 Introduction

Southern California Gas (SoCal Gas) retained Nexant to develop a comprehensive summary of the energy efficiency programs implemented or administered by municipal electric utilities that overlap with SoCal Gas's service territory. The goal of this effort was to explore utilities that demonstrate opportunities to partner with SoCal Gas on dual-fuel, gas-and-electric energy efficiency programs.

Nexant included measures or programs in the comparative analysis based on their applicability to joint electric and gas fuel savings. Table 1-1 below lists possible measures and programs included in this comparative analysis that may be amenable to joint fuel savings.

Table 1-1: Possible joint fuel measures included in comparative analysis

Water Heat	Shell	HVAC	Comprehensive	Behavior	Retail Buy-down
Clothes washers	Insulation	Air conditioning (A/C) replacement	Energy upgrade CA (or similar)	Online energy audit	Online web-based retail shop
Dish washers	Radiant barrier	A/C tune-up	Residential direct install	Home energy audits	
Water heaters	Cool roof		Low-income direct install	Home energy reports	
Pool covers	Air sealing		Multi-family direct install	In-home display and smart thermostat	
Showerheads/ aerators	Window/door replacement		Multi-family—other comprehensive	Smart programmable thermostat	
	Window film				
	Duct testing/repair/ replacement				

This report presents Nexant's research processes and findings concerning researched utilities' energy efficiency program activities in the following sections:

- Section 2 Methodology and Activity Summary: provides the methods used to collect data that informed this comparative analysis.
- Section 3 Summary of Joint Fuel Program Research: presents detailed cost, savings, and participation data from select joint-fuel measures offered by municipal utilities, discusses future partnership opportunities, and summarizes processes at the municipal utilities regarding partnership and implementation.
- Section 4 Key Findings: summarizes key findings of the comparative analysis.
- Appendices:

- Appendix A of this document presents a summary of municipal territory demographics.
- Appendix B presents the data collection instrument utilized to interview municipal utility program managers.
- Appendix C presents tables from the California Municipal Utilities Association annual 1037 report, which provides summary energy efficiency program data for each municipal utility used as a backbone of this study.
- Appendix D presents municipal utility energy efficiency requirements for select equipment upgrades

1.1.1 Study Scope

This study focused on summarizing data available from primary and secondary data collection of municipal utility energy efficiency programs that operate within SoCal Gas's territory. The intention of the study is to present SoCal Gas with an overview of possible partnering opportunities based on municipal utility program data including participation, electric energy savings, and cost-effectiveness metrics. The scope of this exercise is focused on municipal utility electric energy efficiency program offerings that overlap with SoCal Gas customer territory; therefore, this report presents its analysis and findings based on these electric programs and does not attempt to quantify potential natural gas savings that could be achieved through joint-program offerings between an electric municipal utility and SoCal Gas.

2 Methodology and Activity Summary

Nexant conducted the necessary research for developing a comprehensive summary of the energy efficiency programs implemented or administered by municipal utilities that overlap with SoCal Gas's service territory. The data collected and analyzed in this study is intended to inform SoCal Gas's interactions and program development with these municipal utilities.

2.1 Sampling Design

Nexant selected municipal utilities for inclusion in this study based on a review of summary data and discussions with SoCal Gas during the project kickoff meeting. Nexant interviewed SoCal Gas staff members about the current level of engagement with and knowledge of municipal utilities with territories that overlap with SoCal Gas's territory. The goal of these staff interviews was to understand:

- The extent to which each municipal utility was already engaged with SoCal Gas programs that focused on single-family residential, multifamily, and low-income market segments.
- SoCal Gas staff members' motivation to partner with municipal utilities and the extent to which partnership varied by program type.
- The perceived opportunities for partnering, including similarity of programs, local energy-related policies, gaps in program delivery, or size of the program.

- Variables of interest or indicators of possible partnering opportunities, such as program budgets; previous accomplishments and future plans; evidence of natural gas savings opportunities; and local initiatives or policies around climate goals, energy efficiency, or sustainability.

2.1.1 Scale

Based on these discussions and interviews with SoCal Gas staff, Nexant identified nine municipal utilities for inclusion in this study. Nexant then prioritized the utilities based on publicly available information on the territory, the utilities' energy efficiency program efforts, and information that supported the possibility of forming partnerships with SoCal Gas. The nine utilities included in the study were:

- Los Angeles Department of Water & Power (LADWP)
- Imperial Irrigation District
- City of Anaheim Public Utilities
- City of Riverside Public Utilities
- City of Burbank Water & Power
- City of Pasadena Water & Power
- City of Glendale Water & Power
- City of Colton Electric Utility
- City of Azusa Light & Water.

After selecting these municipal utilities, Nexant collected data primarily through in-depth interviews with the municipal utilities and augmented this effort through secondary research, (detailed below), as well as a literature review of information focused on southern California municipal utility energy efficiency programs. The goal of these research activities was to collect key performance indicators and data on each municipal utility's electric energy efficiency programs to compare programs across municipal utilities and to identify opportunities for collaboration with SoCal Gas.

2.2 Secondary Data Collection

Nexant consulted secondary data sources, including regulatory filings, organizational reports, planning documents, and potential studies concerning SoCal Gas and municipal utilities that operate in southern California.

A key data source was the Southern California Public Power Authority (SCPPA) annual AB 1037 report. SCPPA is a joint powers authority consisting of 11 municipal utilities and a single irrigation district; the authority finances the acquisition of generation and transmission resources for its members. SCPPA's role includes legislative advocacy and cooperative efforts to reduce member costs and improve efficiency. The AB 1037 report details the use of public benefits funds, as well as the exchange of information regarding energy efficiency, renewable energy, low-income, and research-and-development programs.

In summary, Nexant's secondary data sources included:

- California Municipal Utilities Association (CMUA) 2016. 2016 AB 1037 Report: Energy Efficiency in California's Public Power Sector, a 2016 Status Report.
- California Municipal Utilities Association (CMUA) 2015. 2015 AB 1037 Report: Energy Efficiency in California's Public Power Sector, a 2015 Status Report.
- American Council for an Energy-Efficient Economy (ACEEE). 2015. Municipal Utility Energy Efficiency: Successful Examples around the Nation. Report Number U1510.
- Municipal utility energy-efficiency program websites, annual reports, and integrated resource plans.

To ensure data comparisons were as equivalent as possible, the majority of values referenced in this report were drawn from text or tables in the 2016 CMUA AB 1037 (CMUA 2016) report[1].

2.3 Primary Data Collection

To collect primary data from the selected municipal utilities, Nexant designed a data collection instrument to capture systematic and consistent information in a template that supported analysis, comparison, and reporting. This instrument included both qualitative and quantitative information; the instrument appears in Appendix A.

Nexant conducted in-depth interviews with residential energy efficiency program managers at each municipal utility over the phone from February through April 2016. Each interview ran approximately one hour. Before interview scheduling, each municipal contact received a letter that introduced the project and asked for cooperation in the study. In an attempt to increase response rates, Nexant sent this introductory letter via SoCal Gas as a utility-to-utility request for participation. The interview results provided the basis for subsequent analysis, data comparison, and data collection activities. These interview results refined metrics desired for inclusion in this comparative research study. At the conclusion of each interview and subsequent data refinement activities, Nexant provided each utility with a summary of the information collected for confirmation and approval.

[1] The majority of municipal utilities stated during the in-depth interview that they often use a cost per first year of kWh savings to assess program success; therefore, Nexant chose to also use this metric to compare municipal utilities on a program level. Based on data presented in the CMUA 2016 report (see Appendix B), Nexant calculated the first year cost per kWh for each municipal utility's residential portfolio.

3 Summary of Joint Fuel Program Research

Nexant assessed SoCal Gas's current engagement with municipal utilities on joint-fuel savings opportunities. Of the nine municipal utilities included in the study, five were operating joint programs with SoCal Gas; one, Colton Electric Utility, was in the process of initiating a collaborative project. Three municipal utilities were not currently partnered with SoCal Gas: Imperial, Glendale, and Azusa. All nine utilities expressed interest in partnering with SoCal Gas on jointly implemented programs wherever joint energy savings opportunities were present. During the interviews, municipal utility program managers reported common goals or rationales to partner with SoCal Gas:

- Increased fuel savings for both parties
- Decreased implementation costs for both parties
- Reduced customer fatigue by decreasing the number of customer contact points and clarifying the messaging regarding all of the available fuel rebates.

This section further discusses Nexant's findings concerning the nine utilities' current and future interest in partnering with SoCal Gas: Section 3.1 provides information on the current status of the nine utilities' energy efficiency programs; Section 3.2 discusses current and ongoing partnership opportunities; Section 3.3 investigates future partnership opportunities; and Section 3.4 discusses municipal utility procedures related to the ideation and implementation of energy saving programs.

3.1 Baseline Municipal Utility Data

This section conducts a high-level comparison of municipal utility energy-efficiency program portfolio details, beginning with each utility's residential portfolio and following with an overview of the water and low-income portfolios. Comparative demographics of each municipal utility territory are presented in Appendix A: Municipal Territory Demographics.

3.1.1 Residential Portfolio Summary

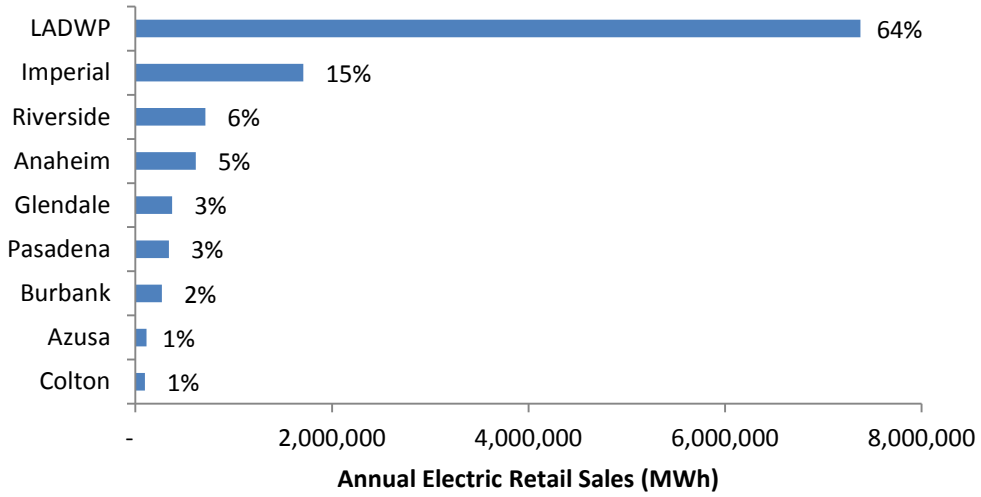
Nexant reviewed several factors to approximate possible joint fuel savings available from municipal residential energy-saving programs. Publicly available data reviewed by Nexant included FY 2014/2015[1] residential energy-efficiency expenditures, total reported energy savings, residential customer accounts, total utility costs, and residential electric retail sales.

The total residential annual electric retail sales indicated the relative size of the residential portfolio across each municipal utility included in this comparative analysis. LADWP contributes the majority of residential consumption at 64% of represented municipal utility consumption. Imperial contributes 15% to represented residential consumption. The remaining municipal

[1] Residential Energy-Efficiency Program details, as reported in CMUA's 2016 annual 1037 report, representing FY 2014/2015 data.

utilities in this study each represent between 1% and 6% of total residential electric sales, as shown in Figure 3-1.

Figure 3-1. Residential Annual Electric Retail Sales by Municipal Utility, MWh[1]



[1]Sources include CMUA 2016, program manager interviews, and the following resources, accessed May 2016:
LADWP: 2016 IRP https://www.ladwp.com/ladwp/faces/wcnav_externalId/a-p-doc?_adf.ctrl-state=eatb0scf8_21&_afrLoop=477144718339668
Imperial:2015 Budget Plan https://www.iid.com/home/showdocument?id=9315
Riverside: FY 2014/2015 Annual Report http://www.riversideca.gov/utilities/pdf/annual/2014-2015-Financial-Annual-Report.pdf
Anaheim: Facts Website http://www.anaheim.net/2104/Electric-Services-Facts
Glendale:FY 2014-2015 Operating Statistics http://www.glendaleca.gov/home/showdocument?id=26148
Pasadena: 2015 annual report http://www.ci.pasadena.ca.us/waterandpower/Annual_Reports/
Burbank: 2015 annual report https://www.burbankwaterandpower.com/annual-reports
Azusa:2008-2012 IRP http://www.ci.azusa.ca.us/DocumentCenter/Home/View/1375
Colton: Online Electric Utility Information http://www.ci.colton.ca.us/index.aspx?NID=316

The residential customer base stratification mimics the annual retail sales demonstrated above, with LADWP comprising 71% of municipal utility retail sales, and the remaining eight municipal utilities representing under 10% of sales each.

Table 3-1 Residential Accounts by Municipal Utility

Municipal Utility	Residential Electric Customer Accounts[1]	Percent of Customer Accounts[2]
LADWP	1,326,515	71%
Imperial	130,750	7%
Anaheim	98,475	5%
Riverside	96,450	5%
Burbank	74,104	4%
Pasadena	56,645	3%

Municipal Utility	Residential Electric Customer Accounts[1]	Percent of Customer Accounts[2]
Glendale	43,000	2%
Colton	16,129	1%
Azusa	14,838	1%

[1]SCPPA 2016

[2]Nexant calculated

Expenditures on energy saving programs can indicate the level of effort expended by a municipal utility. However, total costs may not necessarily reflect other key factors, such as savings achievements or participation. For example, LADWP achieved the largest quantity of savings in FY 2014/2015 at nearly 33 million kWh, which represents 44% of the total savings achieved by the nine utilities studied. However, they expended $24.4 million—67% of the total funds that the nine municipalities spent on energy efficiency programs. This indicates some losses in cost-effectiveness.

To consistently compare energy efficiency programs across municipal utilities, Nexant calculated the cost per kWh saved for each utility's residential portfolio by dividing the reported residential program total utility cost by the net annual energy savings (kWh) (see Table 3-2, sorted by $/kWh). According to this metric, Glendale, Pasadena, and Riverside utilities currently have the most cost-effective residential portfolios, while Colton, Imperial, and LADWP utilities are currently the least cost effective.

Table 3-2: Municipal Utility Residential Energy-Efficiency Program Costs and Savings, FY 2014/2015

Municipal Utility	Total Utility Cost ($)[1]	Residential DSM Savings (kWh) [1]	Cost/kWh Saved ($)[2]
Glendale	$904,881	9,101,006	$0.10
Pasadena	$1,448,513	6,848,722	$0.21
Riverside	$1,651,095	7,134,885	$0.23
Burbank	$1,455,691	5,187,165	$0.28
Azusa	$127,459	404,894	$0.31
Anaheim	$1,816,574	5,372,051	$0.34
Colton	$747,948	1,450,683	$0.52
Imperial	$3,810,659	6,750,567	$0.56
LADWP	$24,425,961	32,872,822	$0.74

[1]SCPPA 2016

[2]Nexant calculated the reported total utility cost ($) per net annual energy savings (kWh) using CMUA 2016 guidelines.

3.1.2 Water Portfolio Summary

Water-efficiency incentives may be of interest to SoCal Gas for joint fuel savings opportunities that affect the water heat end use. Several municipal utilities service water customers in addition to electric customers. All municipal utilities offer water efficiency measures that would qualify for joint fuel savings, such as showerheads, faucet aerators, clothes washers, dish washers, and other end uses. Table 3-3 presents the size of each municipal utility's water customer base. Program incentive details for measures that may affect water-heat end uses appear in Section 3.2.3.

Table 3-3: Residential Water Customers by Municipal Utility[1]

Municipal Utility	Number of residential Water Customer Accounts
LADWP	1,400,000[2]
Riverside	65,000
Anaheim	54,363
Pasadena	32,878
Burbank	25,000
Glendale	22,000
Azusa	14,232
Colton	13,000
Imperial	None; wholesale distributor

[1] Information is an estimate according to program manager interviews

[2] defined as household, including master metered multifamily buildings

3.1.3 Low-Income Portfolio Summary

Riverside and Pasadena utilities reported separately earmarked funds and programs for income-qualified customers. Municipal utilities that did not specifically earmark the low-income sector all reported prioritizing marketing to customers with the most need for reduced household energy costs.

Table 3-4: Budget Earmarked for Low-Income Energy-Efficiency Programs (FY 2014/2015)[1]

Municipal Utility	2015 low-Income Energy-Efficiency Program Budget	Low-income Earmarked Program	2015 low-income participation (accounts)
Riverside	$3,500,000	Direct install[2]	103
Pasadena	$130,000	Refrigerator exchange	171

[1] Information is an estimate according to municipal utility program manager interviews.

[2] This is a current partnership with SoCal Gas.

3.2 Summary of Joint Fuel Program Opportunities

This section provides measure and program-level details for comparing the current joint-fuel program offerings across utilities. Future offerings of interest are summarized in Section 3.3. Defined program categories created for the purposes of this comparative analysis are:

- HVAC system
- HVAC shell
- Water efficiency
- Whole home
    - Low-income
    - Multi-family
    - Net zero energy home
    - New construction
- Behavior
- Retail buy-down.

Nexant found that ongoing joint fuel partnerships between each of the nine utilities and SoCal Gas consisted of comprehensive programs that supported a suite of measures, for example, a low-income direct-install program—as opposed to collaborating on individual measure rebates, such as a clothes washer rebate. At the time of the study, opportunities remained for joint partnership within these existing relationships for cost-and-fuel savings of rebated measures that save electricity and natural gas. These measures included water heating, space conditioning, and behavioral programs, such as Energy Audits or Home Energy Reports. Many of these programs were already being implemented, but only one fuel type was being claimed for savings.

Table 3-5 presents an overview of the rebated measures and comprehensive programs currently offered by each municipal utility—measures that may be amenable to joint fuel savings, as categorized by end-use. Program managers for the nine utilities noted that residents of multi-family buildings were eligible for residential rebates, while the exterior and common spaces of multi-family buildings were considered under commercial-sector energy-efficiency programming. The remainder of this section provides a more detailed investigation into specific program offerings available from each municipal utility and includes the partnership status of each end-use category.

Table 3-5: Overview of existing utility energy efficiency offerings amenable to joint fuel savings, and current partnership status with SoCal Gas[1]

Municipal utility	Rebated Measures			Comprehensive Programs				
	Water Heat	HVAC Equipment	HVAC Shell	Single-family	Low Income	Multi-family	New Construction	Behavior
LADWP	2	1	2	Partnered	Partnered	Partnered	Partnered	Solicited
Imperial	2	2	3	-	-	-	-	1
Anaheim	3	2	1	-	Partnered	-	-	1
Riverside	4	2	4	1	Partnered	1	-	-
Glendale	2	2	1	-	-	-	-	2
Pasadena	4	1	3	-	Partnered	Partnered	-	2
Burbank	5	3	2	Partnered	-	-	-	1
Colton	3	2	3	-	-	-	-	-
Azusa	4	3	4	-	-	-	-	1

1Information based on municipal utilities residential energy efficiency program websites and estimates from program manager interviews

3.2.1 HVAC System

Nexant collected HVAC cooling energy-saving program performance data for each municipal utility from SCPPA's annual report (CMUA 2016).

Table 3-6 summarizes these values. Imperial and Riverside utilities report the highest participation and savings in the residential cooling sector. There may also be opportunities for joint fuel savings, should heating system maintenance and upgrades be included when these residential cooling programs are marketed and implemented.

Table 3-6: Reported Program Metrics, Residential Cooling[1,2]

Municipal Utility	Gross Annual Energy Savings (kWh)	Total Utility Cost ($)	Utility cost/kWh Saved ($)
Imperial	5,031,258	$3,150,861	$0.13
Riverside	3,839,992	$611,072	$0.01
Glendale	713,604	$103,826	$0.09
Anaheim	612,388	$474,698	$0.08
Burbank	584,332	$419,654	$0.08
LADWP	176,822	$507,289	$0.28
Pasadena	48,914	$58,535	$0.22
Colton	16,786	$66,041	$0.59

[1]Information from CMUA 2016.

[2]Although Azusa did offer residential cooling incentives, the performance did not appear in the associated CMUA 2016 table.

At the time of the study, all nine utilities offered HVAC equipment incentives. Seven municipal utilities offered air conditioner tune-up or replacement rebates Specific rebates (Table 3-7) and qualifying details varied for each utility. No municipal utilities are currently partnering with SoCal Gas on a stand-alone HVAC equipment measure.

Table 3-7: 2016 FY Incentive—HVAC System[1,2]

Municipal Utility	A/C or Heat Pump Replacement ($/ton)	A/C Tune-up ($)
Anaheim	$100	$75
Azusa	$70-$130	$20
Burbank	$140-$180	$110
Colton	$100-$200	$60
Glendale	$100-$125	$0-$50
LADWP	$100-$120	-
Riverside	-	$25

[1]Information from municipal utility energy-efficiency program websites, accessed April 2016.
[2]At the time of this report Pasadena did offer an incentive in this category

Of the municipal utilities that reported HVAC system rebate participation counts, Imperial's participation was highest, followed by Glendale.

Table 3-8: FY 2014/2015 Participation (Unique Accounts)—HVAC System[1]

Municipal Utility	A/C or Heat Pump Replacement	A/C Tune-up	Total Participants
Imperial	1,885	1,778	**3,663**
Glendale	58	394	**452**
LADWP	380	-	**380**
Colton	39	8	**47**
Azusa	14	1	**23**
Riverside	-	2	**2**

[1]Data is an estimate from municipal utility program manager interviews.
[2]Anaheim and Burbank did not report participation counts

3.2.2 Shell

Eight of the nine municipalities reported program activity in the residential shell category. According to this reported data, LADWP and Glendale achieved the most savings in this sector (Table 3-9).While Anaheim does offer residential shell incentives, their performance was not reported in the associated CMUA 2016 table.

Table 3-9: Reported Program Metrics, Residential Shell[1]

Municipal Utility	Gross Annual Energy Savings (kWh)	Total Utility Cost ($)	Utility $/kWh
LADWP	10,081,397	$3,643,325	$0.02
Glendale	2,415,103	$77,834	$0.05
Burbank	304,570	$377,454	$0.13
Imperial	215,600	$128,511	$0.05
Riverside	158,731	$61,364	$0.04
Pasadena	63,770	$29,146	$0.09
Azusa	20,249	$28,327	$0.09
Colton	9,400	$13,951	$0.24

[1]SCPPA 2016

[2]While Anaheim does offer residential shell incentives, the performance did not appear in the associated CMUA 2016 table.

All nine municipalities currently offered shell equipment incentives. Windows were the most commonly offered measure, followed by insulation.

Table 3-10: 2016 Incentive—Shell[1]

Municipal Utility	Attic/ Ceiling Insulation ($/sf)	Exterior Wall Insulation ($/sf)	Attic/Wall Radiant Barrier ($/sf)	Cool Roof ($/sf)	Door/ Window Air Sealing ($)	Windows ($/sf)	Window Film ($)	Doors ($/sf)	Duct Testing/ Repair/ Replacement ($)
Anaheim						$1.00			up to $300
Azusa (LI only)	-	-	$0.15	-	$50.00	$1.00	-	-	up to $200
Burbank	$0.10 - $0.15[2]	$0.10 - $0.15[2]	-	-	-	$1.00 - $2.00[2]	-	-	
Colton	$0.40	$0.20	$0.30	-	-	$4.00	-	-	
Glendale	-	-	-	-	-	$1.00- $2.00	-	-	-
Imperial	$0.30	-	$300 / unit	-	-	$2.00	-	-	
LADWP	-	-	-	$0.20- $0.30	-	$2.00	-	-	
Pasadena	$0.25- $0.30	$0.10- $0.15	-	$0.15- $0.20	-	-	$0.75- $0.95	-	
Riverside	$0.20	$0.15		$0.10- $0.20		$1.00		$1.00	Up to $350

[1]Information from municipal utility energy-efficiency program websites, accessed April 2016.

[2]This program was in partnership with SoCal Gas.

Of the municipalities reporting participation counts for shell measures, Imperial reported the highest participation, followed by Glendale.

Table 3-11: 2015 Participation (Accounts)—Shell[1,2]

Municipal Utility	Insulation (Attic/ Wall)	Attic /Wall Radiant Barrier	Cool Roof	Door/ Window Air Sealing	Windows/ Doors	Duct Testing/ Sealing	Blower Door Testing	Window Film /Solar / Shade Screen	Total Participants
LADWP	-	-	87	-	285	-	-	-	**372**
Imperial	38	59	-	-	235	-	-	-	**332**
Riverside	63	-	22	-	174	49	-	-	**308**
Glendale	-	-	-	-	91	-	-	-	**91**
Pasadena	7	-	2	-	-	-	-	29	**38**
Azusa	-	-	-	2	18	3	-	-	**23**
Colton	3	-	-	-	7	-	-	-	**10**

[1]Information is an estimate from municipal utility program manager interviews.

[2]Anaheim and Burbank did not report participation data.

3.2.3 Water Efficiency

The measures that could affect water-heat end uses were reported in CMUA 2016 data as clothes washers, dish washers, and water heaters. Although only five of the nine municipal utilities report program activity in the water-efficiency categories of CMUA 2016 tables, all municipal utilities offered water-savings incentives (Table 3-16). Table 3-12 presents five municipality utilities that reported clothing and dish-washer program results, and two utilities that reported electric water heater results.

Table 3-12: Municipal Utility Water-consumption Measures with CMUA Reported Program Activity[1]

Municipal Utility	Clothes Washers	Dish Washers	Water Heaters
LADWP	-	-	-
Imperial	-	-	-
Anaheim	-	-	-
Riverside	✓	✓	✓
Glendale	✓	✓	-
Pasadena	✓	✓	-
Burbank	✓	✓	-
Colton	✓	✓	✓
Azusa	-	-	-

[1]SCPPA 2016

Glendale posted the most electric savings from water heat end-use measures (Table 3-13), while Riverside reported the highest program costs but also showed the lowest cost per kWh saved ratio (Table 3-14 and Table 3-15).

Table 3-13: Reported Water-Heat End-Use Annual Energy Savings, kWh[1]

Municipal Utility	Clothes Washers	Dish Washers	Water Heaters	Total Annual Energy Savings
Glendale	404,734	66,940	-	**471,674**
Riverside	66,526	18,476	3,372	**88,374**
Burbank	18,130	10,452	-	**28,582**
Colton	2,475	900	156	**3,531**
Pasadena	284	58	-	**342**

[1]SCPPA 2016

Table 3-14: Reported Water-Heat End-Use Total Utility Cost[1]

Municipal Utility	Clothes Washers	Dish Washers	Water Heaters	Total Utility Cost
Riverside	$80,475	$29,800	$500	**$110,775**
Burbank	$38,943	$22,263	-	**$61,206**
Glendale	$34,181	$9,455	-	**$43,636**
Colton	$16,906	$7,520	$103	**$24,529**
Pasadena	$114	$80	-	**$194**

[1]SCPPA 2016

Table 3-15: Reported Water-Heat End-Use Total Utility $/kWh[1]

Municipal Utility	Clothes Washers	Dish Washers	Water Heaters	Total Utility $/kWh
Riverside	$0.16	$0.22	$0.03	$0.41
Pasadena	$0.15	$0.29	-	$0.44
Glendale	$0.35	$0.30	-	$0.65
Burbank	$0.72	$0.40	-	$1.12
Colton	$2.05	$1.30	$0.10	$3.45

[1]SCPPA 2016

Although only five of the nine reviewed municipal utilities reported program metrics for water-heat end-use measures in the 2016 CMUA 1037 report, all municipal utilities reviewed offered incentives for water heat end-use measures (Table 3-16). Clothes washers were the most commonly incentivized measure, followed by dish washers.

Water-heat end-use measure incentives were also provided by water agencies in the same territory as some municipal utilities, and thereby allowed for higher measure incentives. Nexant found that relationships between municipal utilities and water agencies included:

- ***Glendale:*** Glendale residents receive water service from The Metropolitan Water District of Southern California (Metro). Nexant found that during FY2014/2015, Glendale Water & Power (GWP) partnered with Metro on their energy star clothes washer and energy star dishwasher rebates. GWP provided a rebate, cross-

marketing the opportunity for customers to receive an additional rebate from Metro. The program was called SoCalWater$mart.

- ***LADWP and Anaheim:*** Both of these municipal utilities participated in cross-marketing for SoCalWater$mart rebates for clothes washers, as described directly above.
- ***Azusa:*** Most Azusa residents receive water service from San Gabriel Valley Municipal Water District. Like the utilities above, Azusa received SoCalWater$mart rebates in FY2014/2015. A few small sections of the city are under the Upper San Gabriel Valley Municipal Water District, and at the time of the study, Azusa was in the process of working with SoCalWater$mart to increase rebates to the Upper San Gabriel portion of the city so as to be equivalent to the rest of the population.
- ***Colton:*** Several water-saving measure rebates were offered both by Colton Electric Utility and by the City of Colton water department. Customers could claim rebate incentives from both entities for ENERGY STAR clothes washers and ENERGY STAR dishwashers.

Table 3-16: 2016 Incentive—Water Efficiency[1]

Municipal Utility	Dish Washer ($)	Clothes Washer ($)	Electric Storage Water Heater ($)	Heat Pump Water Heater ($)	Pool Covers ($)	Showerheads/Aerators ($)	Solar Water Heater ($)
Anaheim	$50	$85[2]	-	-	-	Free[3]	-
Azusa	$50	$75	$300	$300	-	-	-
Burbank	$40-$70	$50-$100	-	-	$50	Free	$1,500
Colton	$75	$75	-	-	-	$25-$75	-
Glendale	$30-$40	$60-$80[2]	-	-	-	-	-
Imperial	-	$100	-	-	-	-	-
LADWP	-	$300[2]	-	-	-	Free[4]	-
Pasadena	$25-$30	$300[2]	-	-	-	-	-
Riverside	$50	$75	$50	$200	-	-	-

[1]Information from municipal utility energy-efficiency program websites, accessed April 2016.

[2]This was in partnership with Water$mart.

[3]In partnership with SoCal Gas

[4]Single family residents must pick up products at designated locations, for multi-family this is a direct install program in partnership with SoCal Gas.

Of the municipal utilities reporting water-heat end-use measure participation, Glendale reports the highest participation, followed by Imperial.

Table 3-17: 2015 Participation (Accounts)—Water Efficiency[1]

Municipal Utility	Energy Star Dishwasher	Energy Star Clothes Washer	Electric Storage Water Heater	Heat Pump Water Heater	Pool Covers	Showerheads/ Aerators	Solar Water Heater	Total Participants
LADWP	-	7,263	-	-	-	13,412	18,031	**38,706**
Riverside	596	1,073	-	-	-	-	-	**1,669**
Glendale	207	427	-	-	-	-	-	**634**
Pasadena	1	304	-	-	-	-	-	**305**
Azusa	71	23	-	-	-	-	-	**94**
Colton	10	15	-	-	-	-	-	**25**

[1]Information is an estimate from municipal utility program manager interviews.

[2]Anaheim and Burbank did not report participation data

[3]Imperial added an ENERGY STAR clothes washer measure in 2016

3.2.3.1 Multi-family Water Efficiency

In addition to the above-noted water-heat end-use related measures, two municipal utilities also offered water-heat measures to their multi-family customers.

- LADWP partnered with SoCal Gas on a multi-family direct install program called Multi-Family Direct Therm.
- Pasadena offered two stand-alone multifamily water saving measures:
- on-demand recirculation controls for multi-family water heating loop systems, free to multi-family properties with a central-gas water heater and at least six apartment units;
- and, a small, commercial, direct-install program that applied to the existing multi-family Water & Energy Direct Install Program (WeDIP).

3.2.4 Comprehensive/Whole Home

Residential comprehensive programs or whole-home programs were presented as their own category in the CMUA 1037 report. Nexant used this information to understand the scale of the program, based on gross annual energy savings as presented in Table 3-18. LADWP and Glendale utilities reported the largest residential comprehensive programs on an energy-savings basis.

Table 3-18: Reported Program Metrics, Residential Comprehensive[1]

Municipal Utility	Gross Annual Energy Savings (kWh)	Total Utility Cost ($)	Utility cost per kWh saved ($)
LADWP	9,618,504	$11,607,561	$0.11
Glendale	8,936,281	$574,106	$0.07
Pasadena	5,728,571	$464,102	$0.08
Burbank	3,968,469	$393,692	$0.05

Municipal Utility	Gross Annual Energy Savings (kWh)	Total Utility Cost ($)	Utility cost per kWh saved ($)
Colton	1,279,607	$3,394	-
Riverside	1,270,531	$353,272	$0.03
Imperial	394,679	$237,435	$0.21
Azusa	379,399	$94,559	$0.09

[1]Information from CMUA 2016.

[2]Anaheim did not report data for a residential comprehensive program .

For the purposes of this report, Nexant categorized residential comprehensive program offerings as whole-house programs; these whole-house programs fell into two categories. The first category contained programs that incentivized groups of measures, such as Energy Upgrade California. These whole-home programs are typically incentivized on a scaled system, based on specific measures selected. The second category of the whole-house program contained direct-install programs, which utilities offered for free to customers who qualify for program specifics.

The Burbank Energy Upgrade California program, offered in partnership with SoCal Gas, is unique in that the program is something of a hybrid between the two categories: it is a scaled system that is nonetheless offered free to residents as a direct-install program. A summary of all whole-house programs is listed in Table 3-19.

Table 3-19: 2015 Incentive—Residential Comprehensive[1]

Municipal Utility	Energy Upgrade California ($)	Whole House: Other ($)	Residential: Direct Install ($)	Low-Income: Direct Install ($)	Multi-Family: Direct Install ($)	Multi-Family: Other Comprehensive ($)
Anaheim				Free[2]		
Azusa						
Burbank	Free Direct Install[2]					
Colton		Free Direct Install[2]				
Glendale	-	-	-	-	-	-
Imperial						
LADWP	Up to $6.500[2]			Free[2]		
Pasadena				Free		Custom (Commercial)
Riverside		Custom		Free	Free[2]	

[1]Information from municipal utility energy-efficiency program websites, accessed April 2016.

[2]This is in partnership with SoCal Gas.

Only LADWP and Riverside report participation for residential comprehensive programs in 2015. Pasadena just started their low-income direct install program in 2016, and Colton is currently engaged in partnership discussions on a whole house program but this has not formally launched at the time of this report. In 2014, Imperial Irrigation District partnered with SoCalGas and provided qualifying low-income customers weatherization measures. Since then their energy efficiency budget has been reallocated to other programs. Effective in 2015, the district reintroduced their air conditioning maintenance program, as this is where they are seeing the majority of their savings. As noted in Section 3.3 Interest and Prioritization of Program Offerings, they have a strong interest in providing a joint low-income program again in the future, and will do so once they can quantify enough savings to justify program costs.

Table 3-20: 2015 Participation (Accounts)—Residential Comprehensive[1]

Municipal Utility	Whole House: Other	Low-income: Direct Install	Multifamily: Direct Install	Total Participants
LADWP		2,533[2]		2,533
Riverside	207	103	416	726

[1]Information is an estimate from municipal utility program manager interviews.
[2]HEIP

3.2.4.1 Residential New Construction & Net Zero Energy Homes

LADWP partnered with SoCal Gas on a new construction program called the "California Advanced Homes Program." No other municipal utilities offered a New Construction program at the time of this study.

No net zero energy homes programs were offered at the time of this study among the interviewed municipal utilities.

3.2.5 Behavior

Nexant reviewed the nine utilities' energy-efficiency behavior-based programs; these are programs that attempt to change a customer's energy use behavior to conserve energy. Nexant categorized the following programs as behavior programs for the purposes of this comparative report:

- Home Energy Reports
- Online Audit Tool
- Home Energy Audits.

Most programs categorized under behavior were offered free to customers by the municipal utility. The one exception was the pilot in-home display and smart thermostat program offered by Glendale, which was offered to participants for $90 and provided on-bill financing to offset this cost.

Table 3-21: 2016 Incentive—Residential Behavior[1]

Municipal Utility	Online Energy Audit	Home Energy Audits	Home Energy Reports	Smart Thermostat
Imperial	Free	-	-	-
Anaheim	Free	Free	-	-
Riverside	-	-	-	$50
Glendale	-	-	Free	$90[2]
Pasadena	Free	-	Free	$35–$50
Burbank	-	-	-	$25–$50 (web-based)[3]
Azusa	Free	-	-	$50

[1] Information from municipal utility energy-efficiency program websites, accessed Spring 2016, and from program manager interviews. At the time of this report LADWP and Colton did not offer a behavior program.

[2] Only offered with In-home Display pilot program

[3] This program was in partnership with SoCal Gas.

Of the municipal utilities that reported participation in behavior programs, Pasadena had the most participants in its online energy audit program, and Imperial had the most participants in its Home Energy Audits (Table 3-22).

Table 3-22: 2015 Participation (Accounts) Residential Behavior[1, 2]

Municipal Utility	Online Energy Audit	Home Energy Audits	Home Energy Reports	In-Home Display and Smart Thermostat	Total Participants[3]
Imperial	-	777	-	-	777
Riverside				34	34
Glendale	-	-	50,000	135[4]	135
Pasadena	223		45,000	New in 2016	223
Azusa	175	-	-	8[5]	183

[1] Data values are estimates from program manager interviews.

[2] Anaheim and Burbank did not report participation data. LADWP and Colton did not offer residential behavior programs in 2015.

[3] Total does not include Home Energy Reports

[4] This was a pilot program.

[5] Web-based

3.2.6 Retail Buy-down

Retail buy-down programs apply a utility rebate to the cost of approved items, which entitles a customer to reduced prices on select items. Should municipal utilities engage in retail buy-down programs, this can provide additional opportunities for collaboration on jointly beneficial energy-saving measures between electric and natural gas fuels.

Only two municipal utilities reported offering a retail buy-down program. Riverside provided an in-store rebate for LED bulbs, and Glendale previously offered discounted LEDs but discontinued the effort after the partnering retailer closed its business. No other surveyed municipalities engaged in a traditional retail buy-down program. Several municipal utilities reported concerns about the certainty of purchases made by their customers and installed within their territory and subsequently being able to claim energy savings. In place of a traditional retail buy-down program, several municipal utilities have opted to host web-based stores where customers can log in and purchase discounted energy-saving devices. This has helped utilities ensure that their customers purchase the offered products. Those municipal utilities offering web-based options are listed in Table 3-23.

Table 3-23: Measures Available at Municipal Utility-Hosted Web-Retail Outlets

Municipal Utility	Lighting Measures	Appliances: Refrigerators	Electronics: Television Monitors
LADWP	✓	✓	✓
Imperial	-	-	-
Anaheim			
Riverside	✓	-	-
Glendale	-	-	-
Pasadena	✓	-	-
Burbank	-	-	-
Colton	✓	-	-
Azusa	-	-	-

[1]Information from municipal utility energy-efficiency program websites accessed April 2016, and from program manager interviews.

3.3 Interest and Prioritization of Program Offerings

The in-depth interviews conducted with municipal utility energy efficiency program managers asked which of their current suite of offerings would be most amenable to linkage with SoCal Gas program efforts, and assessed interest in future program offerings that may be amenable to joint fuel savings. This information is intended to inform how SoCal Gas may plan for existing municipal utility offerings and include future offerings by municipal utility as they strategize future partnership inquiries.

Table 3-21 summarizes stated offerings that program managers stated as being most amenable to collaboration with SoCal Gas, that are not currently engaged in partnerships. Responses varied and most program managers included rebated measures. LADWP, Pasadena, and Colton mentioned comprehensive multifamily and low-income programs, and Burbank is interested in tandem messaging. While multifamily customers in LADWP territory are eligible for residential offerings, LADWP mentioned they would like to learn more from SoCal Gas on effective strategies when multifamily is viewed as a distinct program.

Table 3-24 Stated Offerings Most Amenable to SoCal Gas Collaboration[1]

Municipal Utility	Offering
LADWP	Showerheads, aerators, multifamily as a unique program
Imperial	Clothes washers, attic insulation, HVAC
Glendale	Rebate programs, home energy reports
Pasadena	Multifamily, new home, water heat measures
Burbank	Hot water, tandem messaging
Colton	Mobile home retrofit, low-income assistance
Azusa	Rebate programs

[1] Perspectives from program manager interviews. Responses included current and possible future offerings. Anaheim did not respond to this question. Riverside responded by stating their current joint offering with SoCal Gas is their priority.

Program managers were asked to respond with the likelihood of implementing a program or measure not currently offered. Responses are summarized in Table 3-25, with dark grey dots characterizing utilities' strong interest in considering a particular program offering in the near future, and lighter grey circles representing an offering that is likely a bit further on the horizon because of competing programmatic priorities.

Table 3-25: Future Offerings of Interest, and Likely Timing of Implementation[1]

● = Consider for implementation in 2016 or 2017

○ = Consider for implementation beyond 2017

Municipal Utility	Home Energy Reports	Whole House/Energy Upgrade California	Direct Install			Smart Thermostats	Retail Buy-Down	New Construction	Net Zero Energy Homes
			Residential	Low-income	Multi-Family				
LADWP	●								
Imperial	○	○		●		●	○		
Riverside	○							○	
Glendale			○						
Pasadena		○	●		●				
Burbank									○
Colton		○				●			
Azusa				○					

[1] Information from municipal utility program manager interviews.

Energy efficiency program managers also commented on the perceived barriers to implementing future programs. These barriers were often related to cost effectiveness of the program. For example, Imperial and Glendale utilities noted that direct-install programs had been canceled because of poor cost-effectiveness performance. These two municipal utilities expressed interest in re-launching the programs, should a joint effort with SoCal Gas yield more favorable program savings at a lower cost. Comments and barriers mentioned by municipal utility personnel include:

Home Energy Reports

- LADWP: Program cost
- Imperial: Funding and software expense
- Riverside: Program cost

Whole Home/Energy Upgrade CA

- Imperial: Funding; would require a significant portion of the budget to ensure substantial participation
- Colton: Partnering with SoCal Gas would be beneficial if SoCal Gas offers Energy Upgrade CA in Colton's territory
- Pasadena: No specific barriers mentioned; would consider partnering with SoCal Gas.

Direct Install

- Imperial: Funding and internal resources
- Glendale: Cost effectiveness; previous prior program reached only 1,200 households a year
- Pasadena: Residential program projected for launch in 2017; interested in multi-family opportunities
- Colton: Cost effectiveness
- Azusa: Cost effectiveness

Smart Thermostat

- Imperial: Ability to claim energy savings
- Colton: Cost effectiveness

Retail Buy-Down

- Imperial: Concern about the volume of products sold through a retail buy-down program that would not be installed within Imperial Irrigation District's territory.

New Construction

- Riverside: Waiting for new construction market to increase, but timing may be appropriate in the near future.

Net Zero Energy Homes

- Burbank: Prioritization of other programs.

3.4 Municipal Utility Process Summary

This section summarizes perspectives at the municipal utilities regarding partnership and implementation. These details are intended to give SoCal Gas insights toward municipal utility program manager perspectives beyond strict numeric performance data. Each sub component of this section is intended to offer the following insights regarding opinions, procedures, and directives within each municipal utility that may influence a joint fuel savings partnership:

- Section 3.4.1 Program Conception and Funding: increase understanding of procedures municipal utilities engage in when considering a new or joint program offering.
- Section 3.4.2 Marketing and Implementation: increase understanding of marketing and implementation relationships, to gain insights on the kinds of teaming arrangements that may be familiar to both SoCal Gas and the municipal utility.
- Section 3.4.3 Participation and Financing: gain insights as to the most popular programs within a municipal utility, and financing options available to customers.
- Section 3.4.4 Success Metrics: A summary of program manager responses to utilized success metrics for energy efficiency programs is provided here, relaying how municipal utilities make decisions regarding program cost effectiveness.
- Section 3.4.5 Local Government and Policy Directives: Any existing local government and/or policy directives that go beyond mandated metrics are useful to know about and may affect available joint fuel savings in the future.
- Section 3.4.6 Satisfaction and Suggestions for Joint Fuel Program Development and Implementation: Finally, each municipal utility commented on either historic interactions with SoCal Gas partnership arrangements, or presented ideas on what a preferred partnership arrangement would consider in the future.

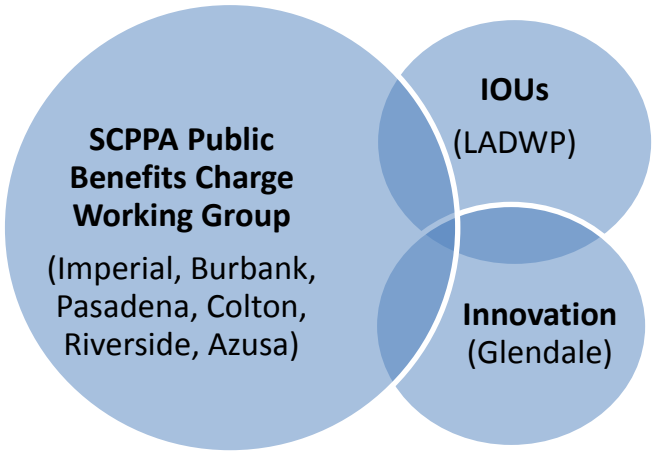
3.4.1 Program Conception and Funding

Nexant interviewed municipal utility personnel to understand the mechanisms they use to learn about new program offerings. The utilities generally reported that the central mechanism was the SCPPA public benefits charge working group, which is a forum to learn about the offerings of other SCPPA utilities are offering. Utility personnel also mentioned that they stay informed about new technologies from vendors and investor owned utilities (IOUs).

Some of the personnel that Nexant interviewed mentioned additional avenues to learn about program offerings. LADWP noted that it reviews SoCal Gas's offerings for complementary paths, attends conferences with other utilities, compares programs offered by Sacramento Municipal Utility District (SMUD), and participates in the statewide IOUs Emerging Technologies Coordinating Council. Glendale Water & Power reported a history of internally developing innovative programs.

In terms of identifying criteria for program adoption, utility personnel reported that their priority is to identify and develop programs that will expand their portfolios and increase overall energy savings—as opposed to simply transferring savings from an existing program to a newly adopted program. Imperial personnel stated that they tend to rely on energy-savings reports, such as IOU white papers, before implementing an innovative technology or process.

Figure 3-2: Reported Mechanisms for Learning about New Program Offerings[1]



[1]Information from municipal utility program manager interviews.

Once a utility is interested in implementing a new program or partnership, the approval process includes clarifying programmatic details, such as program design and contractual arrangements; receiving approval from senior management; and submitting the final plan to the decision body, such as the City Council or Utility Board, for approval.

3.4.2 Marketing and Implementation

Nexant noted that in many cases, there are existing marketing or implementation contractor relationships between SoCal Gas and the nine utilities. These existing relationships could streamline the logistics of a joint fuel partnership. To explore this possibility, Nexant surveyed municipal utilities to determine the extent to which they work with third parties for marketing or implementing their energy-savings programs. Nexant found that some utilities do work with third parties for this purpose; specific firm names have been redacted from this report at the request of the utilities.

According to the study, the majority of the nine utilities conducted their own internal marketing. However, as noted in Table 3-27, Colton reported hiring an external marketing firm in 2016.

Utilities that used implementation contractors to assist with measure installations often also use the contractors for conducting promotional activities to customers, such as door-to-door marketing. Several municipalities indicated that they worked with implementation firms for comprehensive programs. However, these arrangements were usually contracted through a joint agreement, either via a SCCPA joint-purchase agreement or a SoCal Gas partnership (Table 3-26). Participating contractor lists were rare among municipalities; Imperial was the only utility that reported using an existing participating contractor list, which applied to their HVAC measures only.

Table 3-26: Summary of Marketing and Implementation Ownership[1]

Municipal Utility	Marketing Firm Used	Name of Program	Participating Contractor List
LADWP	Internal Marketing Team	Refrigerator Recycling, and SCG Partnered Programs	None
Imperial	Internal Marketing Team	None	Yes, for HVAC measures only
Riverside	Internal Marketing Team	Refrigerator Recycling, Low-Income Direct Install, Multi-Family Direct Install	None
Glendale	Internal Marketing Team	Home Energy Reports, A/C Tune-ups, In-Home Audit (discontinued)	None
Pasadena	Internal Marketing Team	Home Energy Reports, Online Audit Tool, Refrigerator Recycling, LED Webshop	None
Burbank	Internal Marketing Team	A/C Tune-up, and Green Home House Call [SCG]	None
Colton	First year contracting with external firm	Through SCPPA agreements	None
Azusa	Internal Marketing Team	Through SCPPA agreements	None

[1] Information from municipal utility program manager interviews.

Utility program managers reported a strong preference for participating in energy-savings programs with third-party implementers through joint-purchase agreements with SCPPA, as opposed to one-off agreements. A SoCal Gas arrangement with SCPPA that municipalities can opt into was preferred over individual contracts with SoCal Gas. Utility personnel preferred this approach because it would reduce the overall time they spend on contractual negotiations; in addition, a broad arrangement with SoCal Gas would increase the scale of implementation and associated cost savings.

3.4.3 Participation and Financing

Section 3 Summary of Joint Fuel Program Research presents participation data of measures and programs that may offer the joint fuel savings between electricity and gas. In the in-depth interviews, program managers were asked about participation trends, in general, to gain insights as to the most popular programs within a municipal utility, in an attempt to assess where the joint fuel savings measures might stand in relation to all offered energy saving programs. Financing options available to customers are also presented in this section, as available opportunities could influence customer participation.

Interviewed municipal contacts reported programs that received the highest participation among their customer base and which achieved the most savings (Table 3-27). Across all surveyed municipalities, no one program type was consistently the most popular in terms of participation or achieved the most energy savings. Because of the variable nature of program options available within each municipal utility, this finding was not surprising. For the actual participation data for each listed joint-fuel measure, see Section 3.2.

Table 3-27: Summary of Program Participation Perceptions[1]

Program Type	Utilities that Noted the Program as Most Popular with Customers	Utilities that Noted the Program as Achieving the Most Savings
Refrigerator recycling/exchange	Colton, LADWP, Pasadena	LADWP, Riverside
Pool pumps	LADWP	Riverside
Solar photovoltaics	Glendale, Riverside, Burbank	-
Home energy reports	-	Glendale, Pasadena
Appliance rebates (generic)	Burbank, Riverside	-
Washing machine	Azusa: Stacked rebate with water	-
Dishwasher	Azusa: Stacked rebate with water	-
Air conditioning replacement	Imperial, Riverside	Colton, Imperial

[1]Information from municipal utility program manager interviews.

The availability of financing options may affect the purchasing power of customers within a utility's service territory. Nexant found that Property Assessed Clean Energy (PACE) financing options were available in all surveyed municipalities. Two municipalities offered on-bill financing for specific programs: Glendale offered customers on-bill financing for the in-home display pilot program; Colton offered on-bill financing only for the refrigerator replacement program.

Table 3-28: Project Financing Options Available to Utility Customers[1]

Municipal Utility	PACE Financing Availability	On-Bill Financing Availability
LADWP	Yes	None
Imperial	Yes[2]	None
Riverside	Yes	Unknown
Glendale	Yes	Yes; for in-home display pilot program only
Pasadena	Yes	None
Burbank	Yes	Unknown
Colton	Yes	Yes; for refrigerator replacement program only
Azusa	Yes	None

[1] Information from municipal utility program manager interviews.

[2] Customers have access to PACE indirectly via agencies that Imperial Irrigation District sells power to, but Imperial does not offer PACE directly.

3.4.4 Success Metrics

All utilities calculated and considered the cost-effectiveness of energy-savings programs using SCPPA's E3 model, as well as internal metrics such as first year costs per kWh saved. As expected, more favorable cost-effectiveness ratios increased the likelihood that a utility would implement a program. However, no utility program managers indicated that they responded strictly to cost-effectiveness screening values when determining new residential programs to add to the utility's portfolio or when evaluating the performance of residential programs. Rather, the utility program managers consider the issue that residential programs cost more per kWh saved than commercial programs because of the smaller scale of the energy savings measures and projects. Additionally, utilities stated that, as their residential markets mature, more administrative effort will be required to achieve savings, which will likely translate to increases in cost per kWh saved.

Therefore, although utility personnel communicated that they understood the challenges faced by residential energy efficiency programs, these interviewees also expressed the necessity to balance community needs, and frequently prioritize customer satisfaction and participation rates above cost-effectiveness in the residential sector. For example, Colton offered a window replacement incentive of $4.00 per square foot, based on the needs of their community,

specifically identifying the incentive price point required to achieve desirable participation counts in the local community.

3.4.5 Local Government and Policy Directives

Aggressive local government energy efficiency policies that municipal utilities are beholden to could function as a lever to help SoCal Gas achieve more-widespread participation and savings. The majority of municipalities set their energy saving targets based on state or federal initiatives because these have typically been more stringent than local policy directives. All nine utilities were working towards the Clean Energy and Pollution Reduction Act of 2015 (hereafter referred to as SB 350), which includes targets to increase energy efficiency in buildings by 50% from the year 2011 to 2030.

In addition to SB 350, several municipal utilities cited the following past and present local energy-efficiency and renewable-energy directives:

- Glendale responds to a city council energy-efficiency goal of reducing energy sales by 1% of retail sales annually; the goal could be met through a variety of means beyond energy-savings programs, such as through conservation voltage reduction.
- Burbank also has a requirement to reduce energy consumption by 1% a year regardless of growth. The utility already surpassed the renewable portfolio standard of 33% by 2020, with 34% renewable energy.
- As a department of the City of Los Angeles, LADWP receives policy direction from the City Council, Mayor, and the LADWP Board of Commissioners. One recent directive was the City of Los Angeles sustainability plan, which contained many initiatives for reducing the environmental impact of the utility, including ending reliance on coal-fired electricity generation and transitioning to cleaner fuels. LADWP has been working toward this goal for several years, and anticipates being coal-free before 2030.

Municipal utilities also stated water savings initiatives are a high priority. All municipal utilities are active in offering customer incentives to reduce landscape irrigation and several implement landscape irrigation restriction ordinances to certain days of the week and/or time durations. Water saving measures available to municipal utilities that have plausible associated natural gas savings are listed in section 3.2.3 Water Efficiency. None of the municipal utilities interviewed for this study indicated having local or government policy directives related to water saving measures that would result in associated natural gas savings. Therefore, no metric was available for comparative purposes in this study.

3.4.6 Satisfaction and Suggestions for Joint Fuel Program Development and Implementation

Nexant inquired with the municipal utilities on their prior experience developing partnership agreements with SoCal Gas. Feedback from the interviewed utilities offered the following recommendations to other utilities, SoCal Gas, or both:

- Have a strategy for communication, with a dedicated member responsible for the relationship. One interviewed program manager recommended a standing weekly

calendar reminder to follow up with SoCal Gas on any partnership-related action items. Designated backup personnel were also recommended, should turnover on either side begin to stall the relationship. One program manager stated that employee turnover resulted in negotiations stalling because the municipal utility no longer knew who the correct contact was at SoCal Gas.

- Ensure there is process clarity on the municipal utility and SoCal Gas operations. For example, use a flow chart or process map of the steps that need to be completed from initial conversations to program implementation, including which person or team needs to review or approve program agreements between the municipal utility and SoCal Gas.
- Program managers from both the municipal utility and SoCal Gas need to have a willingness to look for creative solutions.
- Set expectations for a long ramp-up for the project.

Municipal utility and SoCal Gas partnership outcomes that program managers expressed high satisfaction with included streamlined marketing and the ability to offer expanded program offerings. Specific joint marketing benefits included the accuracy of application completion, the presence of correct documentation, and the installation rate of qualified products. One municipal utility also stated that hardware store promotions have proven effective at increasing participation and savings.

In terms of suggested alternate partnership strategies, surveyed municipal utilities preferred that SoCal Gas engage in a partnership agreement with SCPPA directly. This would allow each utility to enroll independently, as opposed to contracting directly with SoCal Gas. Mentioned benefits of this strategy included reduced time and effort setting up the agreement, and possibly reduced implementation costs because of increased volume. One municipal utility program manager stated that the ideal scenario would be a “one-stop shop,” where there is only one contact with the customer, but both SoCal Gas and the municipal utility can install measures and document savings.

4 Key Findings

This section summarizes applicable joint-fuel program opportunities by utility. In exploring these opportunities, Nexant looked particularly at the following topics, which are detailed in the remaining sections:

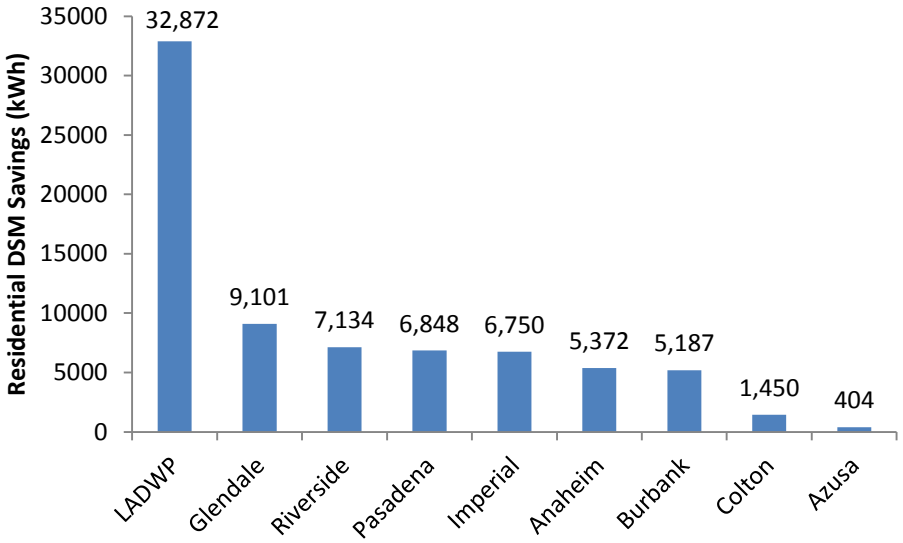
- **Funding:** Residential energy efficiency program expenditures, savings, and program cost per kWh saved
- **Offerings:** Status of existing partnerships with SoCal Gas; existing energy efficiency program or measure offerings that are amenable to joint fuel savings; and possible future offerings of interest to a municipal utility.
- **Participation:** Summary of existing participation counts by municipal utility in existing programs
- **Local initiatives:** Summary of local initiatives that function to stimulate increased activity in energy efficiency initiatives.

4.1 Cost Effectiveness: Residential Energy efficiency Program

Cost effectiveness of energy efficiency programs serves as an indicator of the level of success in achieving energy savings. Nexant found that the nine utilities all had funding set aside for energy savings programs. However, the amount of funding invested did not always lead to proportionally higher energy savings, as explored below.

Figure 4-1 shows the savings achieved by the nine utilities. In summary, LADWP spent the most on residential energy savings programs in FY 2014/2015 ($24,425,961) and achieved the largest quantity of savings in FY 2014/2015 at nearly 33 million kWh saved. This represents 27% of all savings achieved by the nine utilities included in this study. Glendale achieved the second-most savings, with Azusa achieving the least total savings.

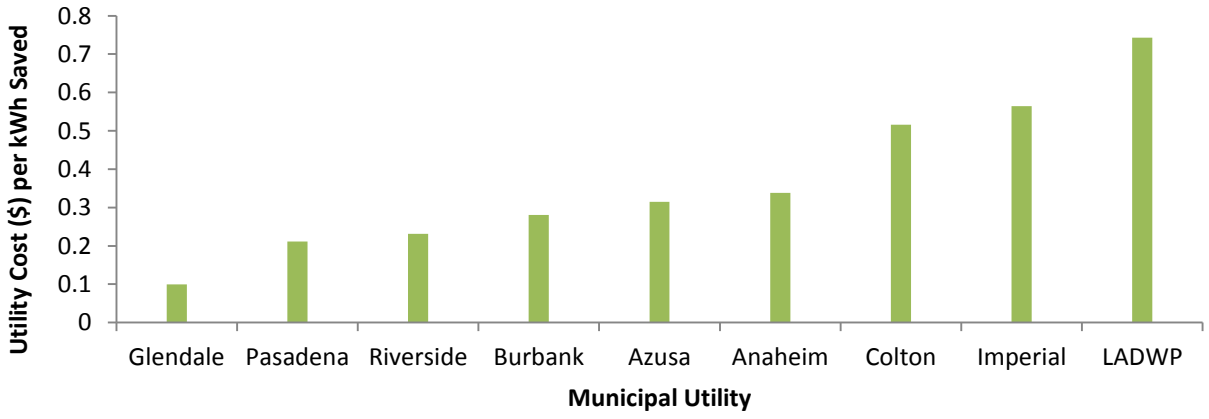
Figure 4-1: Residential Energy efficiency Savings by Utility (FY 2014/2015)[1]



[1]Information from CMUA 2016.

To conduct a simple assessment of cost-effectiveness, Nexant used CMUA 2016 data to calculate the cost per kWh saved, by utility residential program. Nexant divided the total utility cost ($) by the net annual energy savings (kWh) to determine an estimated first year annual cost per kWh saved for each utility's residential program portfolio (Figure 4-2). Nexant found that, according to this metric, LADWP was the least cost-effective program, while Glendale had the most cost-effective residential portfolio.

Figure 4-2: Residential Energy Efficiency Utility Cost per kWh Saved by Municipal Utility (FY 2014/2015)[1]



4.2 Participation in Existing Programs

Participation in existing programs is another way to examine the efficacy of energy efficiency programs and the likelihood that a strong partnering opportunity could exist for SoCal Gas.

Nexant received participation data for seven of the nine surveyed municipal utilities during conversations with those utilities (Table 4-1). Imperial achieved the highest ratio of participation to customer base at roughly 6% of residential customers participating in energy saving programs.

Table 4-1: Number of Rebates in Existing Joint Fuel Saving Measures [1, 2]

Municipal Utility	HVAC System	Shell	Water Efficiency	Compre-hensive	Behavior	Total Participation	% of Residential Customer Accounts
Imperial	3,663	332	-	2,533	777	7,305	5.59%
LADWP	380	372	38,706	-	-	39,458	2.97%
Pasadena	-	38	305	726	223	1,292	2.28%
Azusa	23	23	94	-	183	323	2.18%
Riverside	2	308	1,669	-	34	2,013	2.09%
Glendale	452	91	634	-	135	1,312	1.77%
Colton	47	10	25	-	-	82	0.51%

[1] Information from municipal utility program manager interviews.
[2] Burbank did not provide participation data
[3] Home Energy Reports not included in behavior participation count. These total 50,000 participants for Glendale and 45,000 participants for Pasadena.

4.3 Understanding the Joint Program Partnership Possibilities: Current, Possible Existing, and Possible Future Offerings

Nexant sought to explore utilities' current ongoing partnerships with SoCal Gas, utilities' existing offerings that SoCal Gas is not yet partnering on, and utilities' interest in new offerings that could lead to joint dual-fuel savings. This information illuminates the number of opportunities that SoCal Gas is currently taking advantage of, and it points to underutilized or possible areas of partnership for SoCal Gas.

The nine utilities' program existing offerings appear in Table 1-1. All surveyed municipal utilities offered incentives for HVAC equipment, shell, and water heat measures. Six of the nine municipal utilities offered comprehensive programs. Four offered behavior programs. Riverside was the only utility that Nexant found which offered traditional retail buy-down program; LADWP was the only utility to currently offer a new construction program (in partnership with SoCal Gas). No utilities offered a net zero energy home program.

Table 4-2: Overview of Program Types Offered by Each Municipal Utility

Municipal Utility	HVAC	Shell	Water Heat	Comprehensive	Behavior	Retail Buy-down	New Construction	Net Zero Energy Homes
LADWP	✓	✓	✓	✓	-	-	✓	-
Imperial	✓	✓	✓	-	✓	-	-	-
Anaheim	✓	✓	✓	✓	✓	-	-	-
Riverside	✓	✓	✓	✓	-	✓	-	-
Glendale	✓	✓	✓	-	✓	-	-	-
Pasadena	✓	✓	✓	✓	✓	-	-	-
Burbank	✓	✓	✓	✓	-	-	-	-
Colton	✓	✓	✓	✓	-	-	-	-
Azusa	✓	✓	✓	-	-	-	-	-

Nexant also examined the frequency of measures within a particular category of end uses. This information illuminates areas that offer opportunities for SoCal Gas to grow into through partnerships with the nine utilities. Shell measures are most commonly present across the municipal utilities followed by water-heat and HVAC measures (Figure 4-3)

Figure 4-3: Existing Measures available by End Use (Percentage)

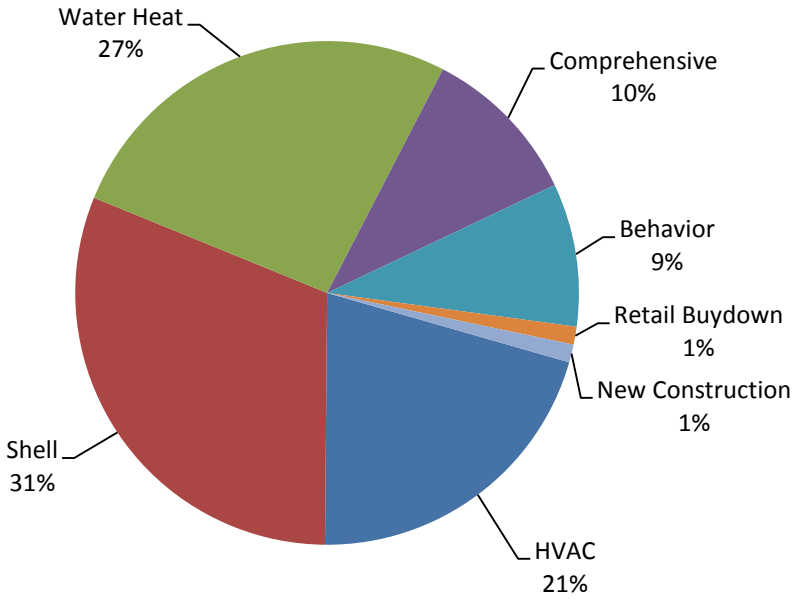
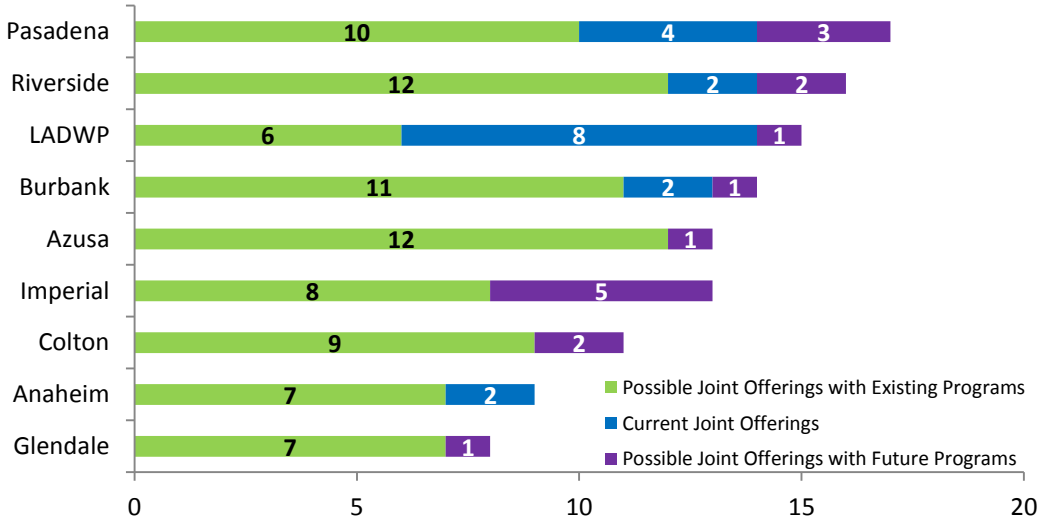


Figure 4-4 illustrates the frequency of current joint offerings with ongoing partnerships between SoCal Gas and municipal utilities, possible joint offerings among existing programs or measures, and possible future joint offerings. Burbank and LADWP had the highest frequency of current joint offerings already in partnership with SoCal Gas. Riverside, Azusa, and Pasadena had the highest frequency of possible joint offerings among existing programs. Imperial and Pasadena expressed interest in the largest number of possible future joint offerings.

Figure 4-4: Frequency of Current, Possible Existing and Possible Future Joint Offerings



4.4 Local Initiatives

Nexant found that all nine utilities in the study were working towards SB 350, which includes targets to increase energy efficiency in buildings by 50% from the year 2011 to 2030. The existence of local initiatives beyond this mandate in each utility's portfolio speaks to the local environment that the utility operates in. This, in turn, can inform the opportunities for partnering with SoCal Gas.

Only LADWP is working towards an additional directive beyond the SB 350 mandate. They are attempting to generate their power from non-coal-fired generation by 2030 by transitioning to cleaner-burning fuel-generation sources. LADWP is pursuing this goal to meet the City of Los Angeles sustainability plan current at the time of this report, which contained many initiatives for reducing the environmental impact of the utility.

4.5 Comparative Ranking of Municipalities by Joint Fuel Program Criteria

As part of the comparative analysis, Nexant ranked the nine utilities' joint fuel program opportunities (Table 4-3) according to the following four key criteria developed to assess possible joint fuel savings:

- Total residential program savings
- Program or measure offerings
- Program participation
- Presence of local initiatives or policies that might stimulate enhanced action in the residential sector.

Nexant applied the following individualized analytical approach to each criterion and assigned each with a ranking of top, middle, and low:

- **Savings:** Nexant used reported fiscal year residential program kWh savings from FY2014/2015 as a proxy for the possible relative available gas savings among municipalities. Municipal utilities with a larger quantity of savings were ranked highest, and those with a smaller quantity of savings were ranked lowest.
- **Offerings:** Partnership opportunities were likely highest with those municipal utilities that already had one or more existing programs amenable to joint fuel savings. Current program offerings with the possibility for joint fuel savings were discounted by half; the count of available future offerings of interest mentioned by each program manager interview was discounted to 10%, as Nexant considered these future program offerings to have a lower probability relative to existing programs. Nexant developed a weighted final ranking of offerings for each municipal utility according to the following equation:

- *Offerings Rank = (count of current joint offerings *1) + (count of available offerings with joint savings possibility *0.5) + (count of future offerings of interest *0.1)*

- **Participation:** We summarized actual participation among joint fuel savings measures and ranked each utility based on the total participation achieved.
- **Local initiatives:** Since LADWP was the only municipal utility to follow a local directive beyond SB 350, this was given the top tier ranking with no other municipal utilities scored in this category.

Table 4-3: Rank of Municipal Utilities for Possible Program Partnership

Partnership possibility ranking:

● = Top tier
● = Middle tier
○ = Lower tier

Municipal Utility	Residential Program kWh Savings	Offerings	Participation	Local Initiatives	Average Rank
LADWP	●	●	●	●	●
Riverside	●	●	●	-	●
Pasadena	●	●	●	-	●
Burbank	○	●	○	-	●
Anaheim	●	○	○	-	●
Glendale	●	○	●	-	●
Imperial	●	○	●	-	○
Azusa	○	●	●	-	○
Colton	○	●	○	-	○

Based on this ranking, Nexant found that the highest partnership opportunity exists with LADWP and Riverside utilities. These municipal utilities scored highly in each of the three defined criteria (LADWP is the only municipal utility to have a local initiative more stringent than state regulations, therefore is the only municipal utility to score in the final fourth criteria). Pasadena and Glendale also presented strong possibility, with high program participation, relatively moderate levels of program savings, and program or measure offerings that are amenable to joint fuel energy savings. However, Nexant emphasizes that this ranking is informational only; the study authors encourage SoCal Gas to perform their own ranking and analysis based on the utility's internal drivers and strategic goals. For example, SoCal Gas may wish to emphasize kWh savings and de-emphasize participation; in the ranking shown in Table 4-3, all of the criteria are weighted equally.

4.6 Conclusions and recommendations

1) As opposed to engaging individually with each municipal utility on a joint program offering, SoCal Gas may be able to streamline partnership negotiation and achieve greater participation and savings of joint-fuel opportunities by engaging with SCPPA directly to develop an arrangement that municipal utilities can opt into.

   Nexant recommends SoCal Gas investigate engaging with SCPPA directly to establish partnerships with municipal utilities. This approach was noted by all interviewed municipal utility program managers as the preferred method for future joint program partnerships.

2) Regardless of the type of agreement made, the municipal utilities would benefit from knowing specific details about the process SoCal Gas's partnership agreement.

   Nexant recommends SoCal Gas develop a flow chart:

   - That designates each key step in the process, along with key contacts for each step;
   - that is disseminated to program managers once negotiations begin; and,
   - provide updated versions to appropriate municipal utility contacts as roles within SoCal Gas shift.

3) Current municipal utility/SoCal Gas joint-fuel saving collaborations are on comprehensive programs. However, additional collaborations may be available in other existing or future municipal utility programs in which SoCal Gas could engage at a measure-level, rather than at a program-level, to support specific dual fuel measures that would, in turn, bolster participation within SoCal Gas's own programs.

   Nexant recommends SoCal Gas investigate methods to also partner with municipal utilities at a measure-level and seek opportunities to sponsor sole dual fuel measures within a larger program offered by municipal utilities that would in turn support SoCal Gas's energy efficiency programs.

Appendix A Municipal Territory Demographics[1]

	Anaheim	Azusa	Burbank	Colton	Glendale	Imperial	Los Angeles	Pasadena	Riverside
People									
Population estimates, July 1, 2014	346,997	48,799	105,368	54,053	200,167	179,091	3,928,864	140,881	319,504
Race and Hispanic Origin									
Hispanic or Latino, percent, April 1, 2010	52.8%	67.6%	24.5%	71.0%	17.4%	80.4%	48.5%	33.7%	49.0%
White alone, not Hispanic or Latino, percent, April 1, 2010	27.5%	19.3%	58.3%	13.0%	61.5%	13.7%	28.7%	38.8%	34.0%
Asian alone, percent, April 1, 2010	14.8%	8.7%	11.6%	5.0%	16.4%	1.6%	11.3%	14.3%	7.4%
Black or African American alone, percent, April 1, 2010	2.8%	3.2%	2.5%	9.7%	1.3%	3.3%	9.6%	10.7%	7.0%
Housing									
Housing units, April 1, 2010	104,237	13,386	44,309	16,350	76,269	56,067	1,413,995	59,551	98,444
Language other than English spoken at home, percent of persons age 5 years+, 2010-2014	60.9%	58.8%	47.7%	50.0%	70.2%	74.3%	60.1%	45.4%	41.7%
Education									
High school graduate or higher, percent of persons age 25 years+, 2010-2014	75.5%	75.8%	87.8%	69.1%	84.2%	65.2%	74.9%	86.1%	78.1%
Bachelor's degree or higher, percent of persons age 25 years+, 2010-2014	24.8%	19.0%	38.3%	11.8%	37.9%	13.4%	31.5%	49.1%	22.1%
Income and Poverty									
Median household income (in 2014 dollars), 2010-2014	59,707	52,087	66,111	39,915	52,451	41,772	49,682	70,845	56,089
Persons in poverty, percent	16.9%	19.4%	10.1%	23.3%	14.7%	23.6%	22.4%	14.6%	19.7%

[1] Source is UC Census QuickFacts. QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Income and Poverty Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits. *Accessed May 2016* http://www.census.gov/quickfacts/table/PST045215/00

Appendix B Municipal Utility Data Collection Instrument Template

Note: The 2016 version of the SCPPA 1037 report was publicly released in the middle of the interview process, therefore Nexant's follow-up data-sharing with municipal utilities presented revised FY 2014/2015 numbers for the 2016 SCPPA 1037 report.

Southern California Gas: Municipal Utility Joint Program Opportunity Study

B.1 In-Depth Interview Guide: Municipal Utility Key Contacts

Date:

Hi, my name is _____ and I'm following up on an email you received from Southern California Gas requesting your participation in an important research project. SoCal Gas would like to understand the priorities of municipal utilities with shared customers so that opportunities and obstacles can be better addressed as future energy efficiency program years are planned.

We have tried to minimize the time required of you by accessing information from publicly available reports and documents; however it is important to ensure that the information we have is accurate, and to develop a more nuanced understanding of the priorities and barriers faced by municipal colleagues.

I'd like to schedule a time to interview you in-depth about your current energy efficiency portfolio and priorities for the future. I expect our conversation will take approximately one hour—when would be most convenient for you?

To help me prepare for our conversation and to minimize the time required of you, it would be helpful to review any existing information on your residential program portfolio—do you have fact sheets or other summary descriptions of programs/measures/incentives that I could review?

B.2 Instrument

Introduction

Thank you for your time, today. Our project involves researching opportunities for better collaboration, coordination, and perhaps cost savings from linking SCG residential efforts to the activities of municipal utilities with joint service territories. My broad objectives today are to:

1) Understand your current suite of residential programs: What's working really well, what could work better from a measure or program perspective? Any specific "pain points" … where leverage/cooperation/cost sharing would really make a difference? What type of programs are currently operating (upstream/direct install/rebate, measures, implementation staffing)?

2) Understand past experience coordinating with SoCal Gas (and/or other utilities), lessons learned and level of interest. Identify concerns.

3) Identify other policy objectives or priorities emerging from state or local government mandates, climate goals, or other sustainability objectives.

To prepare for this call, we reviewed the information available in the 2015 update of Energy Efficiency in California's Public Power Sector, prepared by SCPPA, MCPA, and CMUA as well as the information available on your website. I'd like to confirm a few things as we go through this interview, and we will then provide a summary table of key data points we've collected and a brief summary of the other information you provide. You will have a chance to review/edit/comment on that before we move forward with our summary report.

Do you have any questions for me before we get started?

I'd like to record our call to ensure accuracy in transcribed notes. This recording is for my purposes only and will not be used for any other purpose. Is this okay?

Summary and Public Information

To be prepared for each organization before the interview.

Municipal Utility: _____

Item	
Total population* (residential)	
Number of residential electric ratepayers*	
Estimated % also served by SCG	
Number of residential water customers	
2015 residential energy efficiency budget	
2015 low-income assistance (energy) budget	
2015 residential savings (kWh)	
Evaluation sources (date and link)	
Portion of retail sales, residential	
Service territory (square miles)	
Any SCG joint programs? (list if known)	

Programs, Roles and Responsibilities at SCG

I'd like to start by understanding your responsibilities for residential program implementation.

1. Briefly, what is your role in residential program design, management or implementation?

   [Probe to understand responsibilities, tenure, involvement in day-to-day program management]

To prepare for this interview, we reviewed the 2015 SCPPA/CMUA Status Report. Our understanding is that _____has the following programs. (Interviewer: list the programs and confirm that they are still operating; the details will be sent with the summary post interview and each contact will have a chance to review those data.)

2015 Programs					
Program	**Category (CEC)**	**Present?**	**Units Installed**	**Incentive Cost**	**Annual kWh Savings**
Appliances	Res Clothes Washers				
HVAC	Res Cooling				
Appliances	Res Dishwashers				
Consumer Electronics	Res Electronics				
HVAC	Res Heating				
Lighting	Res Lighting				
Pool Pump	Res Pool Pump				
Refrigeration	Res Refrigeration				
HVAC	Res Shell				
Water Heating	Res Water Heating				
Comprehensive	Res Comprehensive Whole house.				
Other	(Behavior, smart grid, t-stats, solar)				

Thinking about these programs you offer….

Are they all implemented directly by _____? Which (if any) are implemented by third-party contractors?

In general, who is responsible for marketing your programs?

For measures that require a contractor (HVAC, weatherization) are there lists of qualified contractors, or are program incentives available to all contractors for eligible equipment?

2. Which residential programs or measures are most popular among your customers?

    a. Are these also the programs that save the most energy? (among residential programs?)

    b. What types of services or programs are available for multi-family buildings?

    c. What types of services or programs are available for low-income customers?

    d. Is your community involved in delivering PACE loans or the HERO financing program?

3. How do you assess the cost-effectiveness of your programs—specific tests that are applied? (Are they generally cost effective?)

4. How do you identify new measures and/or technologies to promote?

5. [If not covered above, ask specifically about] I'd like to ask about a few specific residential program offers you may have. Please describe for me _____….

Program Type	Description of Major Components and/or Level of Interest.
Interest in or existence of whole-house programs (Describe the major components)	
Interest in or existence of water-conservation programs (describe major components)	
Interest in or existence of retail-based rebate programs (describe major components)	
Smart thermostats?	
In-home displays?	
Energy management and feedback programs?	
Residential behavior programs?	
Residential new construction program?	
Any efforts to promote zero-net energy homes	

6. Are there specific measures or programs _____ would like to offer, or has considered offering, but that are too difficult or expensive to deliver to customers?

    a. How could coordination or collaboration with SoCal Gas improve the outcomes in terms of goals or cost effectiveness, if at all?

7. Our understanding is _____ is collaborating with SCG on _____, is this correct?

8. Are you involved in any of these collaboratively implemented programs/initiatives?

If no: is there someone else we should follow up if we wanted more information about how those programs are working?

If yes:

9. What is working best about them?

10. What could be better?

11. Have you cancelled any programs that were not successful? Which ones?

12. What are the primary lost opportunities you see, as you implement electric-efficiency programs? (Trying to understand measures or services that may be lost because of single-fuel requirements.)

13. What is involved internally (within your own organization) to decide whether or not to move forward on a jointly implemented program, or a program that includes elements of SCG efficiency efforts?

Local Government and Policy Directives

14. Is your utility affected by any local directives related to sustainability, green building, climate goals, code to encourage net zero building or similar types of policy objectives?

    Record details, probe to understand how these affect utility programs or efforts:

15. Is _____working directly with SoCal REN at all? If so, how?

16. How are concerns about water conservation affecting your program offerings or communication efforts?

17. What are _____overarching priorities for energy efficiency and sustainability right now?

Expectations

18. How do you expect your organization will approach energy efficiency in the future? How might your programs or efforts change? What opportunities do you see for additional collaboration or coordination with other entities? With SCG specifically?

19. Thinking about your current suite of programs and/or measures, which do you think would be most amenable to linkage with SoCal Gas or IOU program efforts?

20. If the information obtained in this study is valuable, how do you think it could affect Southern California energy efficiency program design going forward?

Those are all my questions, thank you very much for your time today. ***I will prepare a summary of the information we've gathered from different sources and from this interview and send this summary to you so that you can review it. It's important that our information is accurate, so we are very open to additions/corrections/edits to this summary.***

Note: If any documents or reports were mentioned during the interview and offered by contact, prepare a quick email reminder about these sources.

Appendix C Municipality CMUA 2016 FY 2014/2015 Energy Efficiency Program Summary Tables

C.1 Anaheim

Anaheim		Resource Savings Summary									Cost Summary			
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Coincident Peak Savings (kW)	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost ($)	Utility Mktg, EM&V, and Admin Cost ($)	Total Utility Cost ($)	Utility ($/kWh)
Appliances	Res Clothes Washers													
HVAC	Res Cooling	3	496	612,388	8,640,518	496	612,388	8,640,518		5,512	$474,698		$474,698	$0.08
Appliances	Res Dishwashers													
Consumer Electronics	Res Electronics													
HVAC	Res Heating													
Lighting	Res Lighting	6	2,895	4,068,224	58,836,569	2,895	4,068,224	58,836,569		33,373	$1,002,249		$1,002,249	$0.03
Pool Pump	Res Pool Pump													
Refrigeration	Res Refrigeration	2	226	691,439	5,833,235	226	691,439	5,833,235		3,292	$339,627		$339,627	$0.07
HVAC	Res Shell													
Water Heating	Res Water Heating													
Comprehensive	Res Comprehensive													
Process	Non-Res Cooking													
HVAC	Non-Res Cooling	5	4,702	18,095,986	149,468,132	4,702	18,095,986	149,468,132		96,237	$597,626		$597,626	$0.01
HVAC	Non-Res Heating	1	294	1,233,123	13,564,353	294	1,233,123	13,564,353		8,239	$61,594		$61,594	$0.01
Lighting	Non-Res Lighting	5	1,346	5,185,442	55,271,492	1,346	5,185,442	55,271,492		32,736	$643,150		$643,150	$0.02
Process	Non-Res Motors													
Process	Non-Res Pumps													
Refrigeration	Non-Res Refrigeration	1	71	402,137	4,423,502	71	402,137	4,423,502		2,465	$121,108		$121,108	$0.04
HVAC	Non-Res Shell													
Process	Non-Res Process													
Comprehensive	Non-Res Comprehensive	1		1,017	15,255		1,017	15,255		9	$5,528		$5,528	$0.51
Other	Other	1		604,241	5,438,172		604,241	5,438,172		3,335				
SubTotal		25	10,031	30,893,997	301,491,228	10,031	30,893,997	301,491,228		185,198	$3,245,580		$3,245,580	$0.02
T&D	T&D													
Total		25	10,031	30,893,997	301,491,228	10,031	30,893,997	301,491,228		185,198	$3,245,580		$3,245,580	

EE Program Portfolio	TRC Test	**13.35**
	PAC Test	**13.74**

Excluding T&D

C.2 Azusa

Azusa		Resource Savings Summary									Cost Summary			
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Coincident Peak Savings (kW)	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost ($)	Utility Mktg, EM&V, and Admin Cost ($)	Total Utility Cost ($)	Utility ($/kWh)
Appliances	Res Clothes Washers													
HVAC	Res Cooling													
Appliances	Res Dishwashers													
Consumer Electronics	Res Electronics	3	2	5,246	47,214	2	5,246	47,214		28	$4,347	$226	$4,573	$0.12
HVAC	Res Heating													
Lighting	Res Lighting													
Pool Pump	Res Pool Pump													
Refrigeration	Res Refrigeration													
HVAC	Res Shell	1	6	20,249	607,470	6	20,249	607,470		362	$25,876	$2,451	$28,327	$0.09
Water Heating	Res Water Heating													
Comprehensive	Res Comprehensive	3	25	379,399	1,523,097	20	303,519	1,218,478		725	$89,049	$5,510	$94,559	$0.09
Process	Non-Res Cooking													
HVAC	Non-Res Cooling	8	46	314,827	4,709,367	46	314,827	4,709,367		3,012	$122,477	$28,618	$151,095	$0.04
HVAC	Non-Res Heating													
Lighting	Non-Res Lighting	13	148	883,550	8,709,879	128	738,313	7,402,742		4,384	$63,934	$35,176	$99,110	$0.02
Process	Non-Res Motors	3	41	85,520	1,282,800	41	85,520	1,282,800		715	$30,000	$5,062	$35,062	$0.04
Process	Non-Res Pumps	1	59	919,173	2,757,519	59	919,173	2,757,519		1,537		$10,992	$10,992	
Refrigeration	Non-Res Refrigeration	8	30	242,559	2,548,260	30	242,559	2,548,260		1,420	$81,809	$10,233	$92,042	$0.05
HVAC	Non-Res Shell	4	2,132	1,392,057	14,310,344	1,479	982,092	10,195,116		6,192	$50,802	$55,647	$106,449	$0.01
Process	Non-Res Process													
Comprehensive	Non-Res Comprehensive	1	46	125,335	1,253,350	46	125,335	1,253,350		761	$92,261	$6,863	$99,124	$0.10
Other	Other													
SubTotal		45	2,533	4,367,915	37,749,300	1,856	3,736,832	32,022,316		19,137	$560,556	$160,778	$721,334	$0.03
T&D	T&D													
Total		45	2,533	4,367,915	37,749,300	1,856	3,736,832	32,022,316		19,137	$560,556	$160,778	$721,334	

EE Program Portfolio	TRC Test	**3.50**
	PAC Test	**5.65**

Excluding T&D

C.3 Burbank

Burbank		Resource Savings Summary									Cost Summary			
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Coincident Peak Savings (kW)	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost ($)	Utility Mktg, EM&V, and Admin Cost ($)	Total Utility Cost ($)	Utility ($/kWh)
Appliances	Res Clothes Washers	490		18,130	199,430		5,620	61,823		37	$38,600	$343	$38,943	$0.72
HVAC	Res Cooling	5,139	718	584,332	6,258,111	713	577,024	6,169,149		3,980	$264,375	$155,279	$419,654	$0.08
Appliances	Res Dishwashers	402		10,452	104,520		6,271	62,712		37	$21,935	$328	$22,263	$0.40
Consumer Electronics	Res Electronics													
HVAC	Res Heating													
Lighting	Res Lighting	2,885	10	86,778	999,450	10	82,832	979,718		556	$52,643	$4,783	$57,426	$0.07
Pool Pump	Res Pool Pump	62	2	41,788	417,880	1	25,073	250,728		150	$16,100	$1,490	$17,590	$0.08
Refrigeration	Res Refrigeration	611	25	172,646	1,646,428	17	120,852	1,152,500		651	$112,363	$16,306	$128,669	$0.13
HVAC	Res Shell	250,551	253	304,570	5,260,850	177	192,245	3,605,606		2,147	$356,770	$20,684	$377,454	$0.13
Water Heating	Res Water Heating													
Comprehensive	Res Comprehensive	909		3,968,469	9,184,819		3,916,908	8,720,772		5,192	$328,287	$65,405	$393,692	$0.05
Process	Non-Res Cooking													
HVAC	Non-Res Cooling	517	834	3,324,005	48,318,275	834	3,324,005	48,318,275		30,907	$367,489	$387,055	$754,544	$0.02
HVAC	Non-Res Heating													
Lighting	Non-Res Lighting	7	1,143	5,172,771	54,774,649	1,143	5,172,771	54,774,649		32,442	$1,185,894	$369,256	$1,555,150	$0.03
Process	Non-Res Motors	1	8	23,073	346,095	8	23,073	346,095		193	$16,836	$3,016	$19,852	$0.07
Process	Non-Res Pumps													
Refrigeration	Non-Res Refrigeration	1	20	86,576	432,880	20	86,576	432,880		241	$5,533	$3,517	$9,050	$0.02
HVAC	Non-Res Shell	3	31	171,339	1,555,444	31	171,339	1,555,444		945	$449,548	$12,532	$462,080	$0.34
Process	Non-Res Process													
Comprehensive	Non-Res Comprehensive	1		35,610	284,880		35,610	284,880		173	$10,420	$3,248	$13,668	$0.05
Other	Other													
SubTotal		261,579	3,044	14,000,539	129,783,711	2,954	13,740,198	126,715,231		77,649	$3,226,792	$1,043,243	$4,270,035	$0.04
T&D	T&D													
Total		261,579	3,044	14,000,539	129,783,711	2,954	13,740,198	126,715,231		77,649	$3,226,792	$1,043,243	$4,270,035	

EE Program Portfolio	TRC Test	**2.64**
	PAC Test	**4.87**

Excluding T&D

C.4 Colton

Colton		Resource Savings Summary									Cost Summary			
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Coincident Peak Savings (kW)	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost ($)	Utility Mktg, EM&V, and Admin Cost ($)	Total Utility Cost ($)	Utility ($/kWh)
Appliances	Res Clothes Washers	15	2	2,475	37,125	1	767	11,509		7	$16,875	$31	$16,906	$2.05
HVAC	Res Cooling	39	1	16,786	179,280	1	13,462	143,457		93	$65,249	$792	$66,041	$0.59
Appliances	Res Dishwashers	10	1	900	13,500		540	8,100		5	$7,500	$20	$7,520	$1.30
Consumer Electronics	Res Electronics													
HVAC	Res Heating													
Lighting	Res Lighting	1	57	101,797	1,017,970	57	101,797	1,017,970		577	$33,438	$2,388	$35,826	$0.04
Pool Pump	Res Pool Pump	11		18,821	188,210		11,293	112,926		67	$24,200	$331	$24,531	$0.27
Refrigeration	Res Refrigeration	180	9	20,741	259,240	6	14,519	181,468		102	$579,229	$447	$579,676	$4.28
HVAC	Res Shell	92	6	9,400	185,801	2	2,673	84,856		53	$13,614	$336	$13,951	$0.24
Water Heating	Res Water Heating	1		156	2,340		94	1,404		1	$100	$3	$103	$0.10
Comprehensive	Res Comprehensive	1	205	1,279,607	1,279,607	205	1,279,607	1,279,607		762		$3,394	$3,394	
Process	Non-Res Cooking													
HVAC	Non-Res Cooling	32	20	284,943	3,473,705	20	284,943	3,473,705		2,200	$34,527	$11,867	$46,393	$0.02
HVAC	Non-Res Heating													
Lighting	Non-Res Lighting	508	136	284,745	11,565,410	136	284,745	11,565,410		6,850	$74,114	$29,865	$103,979	$0.01
Process	Non-Res Motors	2	683	6,004,137	60,981,615	683	6,004,137	60,981,615		33,986	$150,000	$144,783	$294,783	$0.01
Process	Non-Res Pumps	1	10	89,719	897,190	10	89,719	897,190		500	$6,729	$2,132	$8,861	$0.01
Refrigeration	Non-Res Refrigeration	40	1	6,360	63,600	1	6,360	63,600		35	$1,000	$151	$1,151	$0.02
HVAC	Non-Res Shell													
Process	Non-Res Process													
Comprehensive	Non-Res Comprehensive	1	5	39,659	396,594	5	39,659	396,594		241	$25,000	$1,288	$26,288	$0.08
Other	Other													
SubTotal		934	1,134	8,160,247	80,541,187	1,126	8,134,315	80,219,411		45,479	$1,031,574	$197,829	$1,229,403	$0.02
T&D	T&D													
Total		934	1,134	8,160,247	80,541,187	1,126	8,134,315	80,219,411		45,479	$1,031,574	$197,829	$1,229,403	

EE Program Portfolio	TRC Test	**2.28**
	PAC Test	**6.93**

Excluding T&D

C.5 Glendale

Glendale		Resource Savings Summary									Cost Summary			
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Coincident Peak Savings (kW)	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost ($)	Utility Mktg, EM&V, and Admin Cost ($)	Total Utility Cost ($)	Utility ($/kWh)
Appliances	Res Clothes Washers	427		36,794	404,734		11,406	125,468		75	$33,964	$217	$34,181	$0.35
HVAC	Res Cooling	449	2,486	713,604	2,014,994	2,474	620,486	1,661,598		1,072	$98,662	$5,164	$103,826	$0.09
Appliances	Res Dishwashers	207		6,694	66,940		4,016	40,164		24	$9,390	$66	$9,455	$0.30
Consumer Electronics	Res Electronics													
HVAC	Res Heating													
Lighting	Res Lighting	1,481		239,641	2,396,406		239,641	2,396,406		1,359	$61,136	$3,602	$64,737	$0.03
Pool Pump	Res Pool Pump	60	2	40,440	404,400	1	24,264	242,640		145	$7,312	$454	$7,766	$0.04
Refrigeration	Res Refrigeration	400		52,000	728,000		39,000	546,000		308	$32,120	$856	$32,976	$0.08
HVAC	Res Shell	908	308	204,074	2,415,103	291	181,312	2,015,366		1,200	$74,369	$3,464	$77,834	$0.05
Water Heating	Res Water Heating													
Comprehensive	Res Comprehensive	1,482	121	7,807,759	8,936,281	121	7,807,759	8,936,281		5,320	$559,000	$15,106	$574,106	$0.07
Process	Non-Res Cooking													
HVAC	Non-Res Cooling	6	194	782,562	8,755,620	194	782,562	8,755,620		5,601	$25,828	$20,418	$46,245	$0.01
HVAC	Non-Res Heating													
Lighting	Non-Res Lighting	218	564	3,191,617	34,524,483	564	3,191,617	34,524,483		20,448	$448,706	$61,941	$510,647	$0.02
Process	Non-Res Motors	2	101	201,265	3,018,975	101	201,265	3,018,975		1,683	$12,836	$4,497	$17,333	$0.01
Process	Non-Res Pumps													
Refrigeration	Non-Res Refrigeration													
HVAC	Non-Res Shell	193	722	4,117,126	4,683,910	722	4,117,126	4,683,910		2,845	$9,876	$9,417	$19,294	
Process	Non-Res Process													
Comprehensive	Non-Res Comprehensive	157	99	159,669	479,007	99	159,669	479,007		291	$31,599	$985	$32,585	$0.07
Other	Other													
SubTotal		5,990	4,596	17,553,245	68,828,853	4,567	17,380,124	67,425,917		40,370	$1,404,797	$126,188	$1,530,985	$0.03
T&D	T&D													
Total		5,990	4,596	17,553,245	68,828,853	4,567	17,380,124	67,425,917		40,370	$1,404,797	$126,188	$1,530,985	

EE Program Portfolio	TRC Test	**2.90**
	PAC Test	**5.53**

Excluding T&D

C.6 Imperial

Imperial ID		Resource Savings Summary									Cost Summary			
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Coincident Peak Savings (kW)	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost ($)	Utility Mktg, EM&V, and Admin Cost ($)	Total Utility Cost ($)	Utility ($/kWh)
Appliances	Res Clothes Washers													
HVAC	Res Cooling	59,077	7,882	5,031,258	40,074,257	6,452	3,943,639	30,736,884		19,449	$2,670,675	$480,187	$3,150,861	$0.13
Appliances	Res Dishwashers													
Consumer Electronics	Res Electronics													
HVAC	Res Heating													
Lighting	Res Lighting	5,845	224	216,037	1,136,585	215	208,461	1,098,706		623	$72,660	$18,863	$91,523	$0.10
Pool Pump	Res Pool Pump	467	150	710,892	7,108,920	131	618,476	6,184,760		3,694	$53,586	$83,969	$137,555	$0.03
Refrigeration	Res Refrigeration	624	26	182,101	1,396,060	18	136,873	1,108,875		626	$41,825	$22,949	$64,774	$0.07
HVAC	Res Shell	16,889	1,136	215,600	4,493,990	988	187,572	3,909,771		2,328	$83,088	$45,423	$128,511	$0.05
Water Heating	Res Water Heating													
Comprehensive	Res Comprehensive	1,247	75	394,679	1,486,378	60	326,213	1,280,980		763	$190,987	$46,448	$237,435	$0.21
Process	Non-Res Cooking													
HVAC	Non-Res Cooling	2,355	496	1,400,225	20,373,708	388	1,156,677	16,698,297		10,387	$547,617	$78,927	$626,544	$0.06
HVAC	Non-Res Heating													
Lighting	Non-Res Lighting	1	1,354	4,747,112	80,700,907	1,124	3,940,098	66,981,672		39,672	$386,954	$217,023	$603,977	$0.01
Process	Non-Res Motors													
Process	Non-Res Pumps													
Refrigeration	Non-Res Refrigeration	1	12	331,303	5,963,458	10	279,123	5,024,214		2,800	$79,448	$13,694	$93,142	$0.03
HVAC	Non-Res Shell	3	131	1,119,569	27,989,225	110	940,438	23,510,949		14,280	$89,566	$41,708	$131,273	$0.01
Process	Non-Res Process	1	28	247,515	4,455,270	24	209,150	3,764,703		2,098	$44,553	$10,261	$54,814	$0.02
Comprehensive	Non-Res Comprehensive	36	27	58,980	176,940	21	47,184	141,552		86	$22,338	$13,745	$36,083	$0.28
Other	Other													
SubTotal		86,545	11,542	14,655,272	195,355,699	9,541	11,993,905	160,441,364		96,804	$4,283,296	$1,073,197	$5,356,493	$0.05
T&D	T&D													
Total		86,545	11,542	14,655,272	195,355,699	9,541	11,993,905	160,441,364		96,804	$4,283,296	$1,073,197	$5,356,493	

EE Program Portfolio	TRC Test	**1.50**
	PAC Test	**4.02**

Excluding T&D

C.7 LADWP

LADWP		Resource Savings Summary									Cost Summary			
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Coincident Peak Savings (kW)	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost ($)	Utility Mktg, EM&V, and Admin Cost ($)	Total Utility Cost ($)	Utility ($/kWh)
Appliances	Res Clothes Washers													
HVAC	Res Cooling	1,924	200	176,822	2,473,190	200	176,822	2,473,190		1,596	$194,090	$313,199	$507,289	$0.28
Appliances	Res Dishwashers													
Consumer Electronics	Res Electronics													
HVAC	Res Heating													
Lighting	Res Lighting													
Pool Pump	Res Pool Pump	2,006	282	1,389,592	13,895,920	282	1,389,592	13,895,920		8,299	$1,003,000	$971,426	$1,974,426	$0.18
Refrigeration	Res Refrigeration	3,259	1,758	11,606,507	121,280,619	1,758	11,606,507	121,280,619		68,454	$6,064,472	$628,889	$6,693,360	$0.07
HVAC	Res Shell	411,735	329	10,081,397	302,080,189	329	10,081,397	302,080,189		179,837	$2,509,387	$1,133,938	$3,643,325	$0.02
Water Heating	Res Water Heating													
Comprehensive	Res Comprehensive	3	6,472	9,618,504	145,078,491	6,472	9,618,504	145,078,491		86,369	$11,153,034	$454,527	$11,607,561	$0.11
Process	Non-Res Cooking													
HVAC	Non-Res Cooling	7,888,459	856	7,888,459	144,002,935	856	7,888,459	144,002,935		92,112	$2,357,409	$1,353,677	$3,711,085	$0.04
HVAC	Non-Res Heating													
Lighting	Non-Res Lighting	11,927,548	10,330	83,835,754	1,095,945,920	10,330	83,835,754	1,095,945,920		649,101	$6,686,804	$27,029,316	$33,716,120	$0.04
Process	Non-Res Motors	36,049,246	4,829	36,049,246	360,434,842	4,829	36,049,246	360,434,842		200,878	$2,644,833	$2,310,646	$4,955,479	$0.02
Process	Non-Res Pumps	1		4,364,369	65,465,535		4,364,369	65,465,535		36,485		$181,407	$181,407	
Refrigeration	Non-Res Refrigeration	391	39	272,509	3,320,228	39	272,509	3,320,228		1,850	$36,842	$74,002	$110,844	$0.04
HVAC	Non-Res Shell	2,533,466	48	2,533,466	28,566,930	48	2,533,466	28,566,930		17,351	$195,628	$245,686	$441,313	$0.02
Process	Non-Res Process	1	13,630	121,781,298	2,435,625,960	13,630	121,781,298	2,435,625,960		1,357,429	$1,150,860	$6,573,713	$7,724,573	
Comprehensive	Non-Res Comprehensive	3,438,408	259	6,781,527	89,431,901	259	6,781,527	89,431,901		54,318	$2,411,612	$893,342	$3,304,954	$0.05
Other	Other													
SubTotal		62,256,447	39,033	296,379,450	4,807,602,659	39,033	296,379,450	4,807,602,659		2,754,080	$36,407,970	$42,163,768	$78,571,738	$0.02
T&D	T&D													
Total		62,256,447	39,033	296,379,450	4,807,602,659	39,033	296,379,450	4,807,602,659		2,754,080	$36,407,970	$42,163,768	$78,571,738	

EE Program Portfolio	TRC Test	**1.52**
	PAC Test	**6.50**

Excluding T&D

C.8 Pasadena

Pasadena		Resource Savings Summary									Cost Summary			
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Coincident Peak Savings (kW)	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost ($)	Utility Mktg, EM&V, and Admin Cost ($)	Total Utility Cost ($)	Utility ($/kWh)
Appliances	Res Clothes Washers	1		284	3,124		88	968		1	$100	$14	$114	$0.15
HVAC	Res Cooling	1,081	8	48,914	372,535	7	46,229	333,518		215	$50,509	$8,026	$58,535	$0.22
Appliances	Res Dishwashers	1		58	580		35	348			$75	$5	$80	$0.29
Consumer Electronics	Res Electronics													
HVAC	Res Heating													
Lighting	Res Lighting	36,835	77	709,317	11,369,188	77	709,317	11,369,188		6,449	$568,289	$98,209	$666,498	$0.08
Pool Pump	Res Pool Pump	61	2	41,114	411,140	1	24,668	246,684		147	$18,575	$3,788	$22,363	$0.11
Refrigeration	Res Refrigeration	764	39	256,694	1,855,128	33	211,287	1,456,594		822	$176,058	$31,617	$207,675	$0.18
HVAC	Res Shell	14,524	63	63,770	698,557	50	49,589	453,678		270	$22,990	$6,156	$29,146	$0.09
Water Heating	Res Water Heating													
Comprehensive	Res Comprehensive	244	13	5,728,571	5,728,571	13	5,728,571	5,728,571		3,410	$395,245	$68,857	$464,102	$0.08
Process	Non-Res Cooking													
HVAC	Non-Res Cooling	10	294	1,720,741	34,394,820	294	1,720,741	34,394,820		22,001	$284,581	$44,123	$328,704	$0.01
HVAC	Non-Res Heating													
Lighting	Non-Res Lighting	157	499	2,925,015	42,143,066	499	2,925,015	42,143,066		24,960	$598,485	$88,546	$687,031	$0.02
Process	Non-Res Motors	6	97	613,502	9,816,032	97	613,502	9,816,032		5,471	$54,221	$8,510	$62,731	$0.01
Process	Non-Res Pumps	1		971,562	15,544,992		971,562	15,544,992		8,664	$174,881	$13,477	$188,358	$0.02
Refrigeration	Non-Res Refrigeration	15	14	100,657	756,053	14	100,657	756,053		421	$21,773	$3,193	$24,966	$0.04
HVAC	Non-Res Shell	3	54	189,412	2,267,880	54	189,412	2,267,880		1,377	$30,620	$2,684	$33,304	$0.02
Process	Non-Res Process													
Comprehensive	Non-Res Comprehensive	3	47	65,949	527,592	47	65,949	527,592		320	$10,850	$646	$11,496	$0.03
Other	Other	1	650	4,085,060	4,085,060	650	4,085,060	4,085,060		2,481	$0		$0	
SubTotal		53,707	1,857	17,520,619	129,974,319	1,836	17,441,681	129,125,045		77,010	$2,407,251	$377,851	$2,785,102	$0.03
T&D	T&D	1	39	345,144	10,354,320	39	345,144	10,354,320		6,289	$0		$0	
Total		53,708	1,896	17,865,763	140,328,639	1,875	17,786,825	139,479,365		83,299	$2,407,251	$377,851	$2,785,102	

EE Program Portfolio	TRC Test	**1.57**
	PAC Test	**5.86**

Excluding T&D

C.9 Riverside

Riverside		Resource Savings Summary									Cost Summary			
Program Sector (Used in CEC Report)	Category	Units Installed	Gross Coincident Peak Savings (kW)	Gross Annual Energy Savings (kWh)	Gross Lifecycle Energy Savings (kWh)	Net Coincident Peak Savings (kW)	Net Annual Energy Savings (kWh)	Net Lifecycle Energy Savings (kWh)	Net Lifecycle Gas Savings (MMBtu)	Net Lifecycle GHG Reductions (Tons)	Utility Incentives Cost ($)	Utility Mktg, EM&V, and Admin Cost ($)	Total Utility Cost ($)	Utility ($/kWh)
Appliances	Res Clothes Washers	1,073	171	66,526	798,312	145	56,547	678,565		404	$80,475		$80,475	$0.16
HVAC	Res Cooling	17,902	1,308	3,839,992	111,633,239	975	2,739,136	78,941,679		50,931	$611,072		$611,072	$0.01
Appliances	Res Dishwashers	596	63	18,476	203,236	53	15,705	172,751		102	$29,800		$29,800	$0.22
Consumer Electronics	Res Electronics	592	8	65,712	262,848	7	55,855	223,421		127	$82,750		$82,750	$0.41
HVAC	Res Heating													
Lighting	Res Lighting	5,401	219	209,701	3,060,965	208	197,525	2,891,007		1,640	$91,460		$91,460	$0.04
Pool Pump	Res Pool Pump	158	5	106,492	1,064,920	3	63,895	638,952		382	$31,600		$31,600	$0.06
Refrigeration	Res Refrigeration	3,036	297	1,395,352	8,491,746	266	1,247,921	7,533,494		4,252	$308,802		$308,802	$0.05
HVAC	Res Shell	522	96	158,731	3,057,738	79	117,393	2,272,045		1,353	$61,364		$61,364	$0.04
Water Heating	Res Water Heating	4		3,372	35,856		2,201	23,828		14	$500		$500	$0.03
Comprehensive	Res Comprehensive	32,563	1	1,270,531	15,267,561	1	1,179,033	14,256,810		8,487	$353,272		$353,272	$0.03
Process	Non-Res Cooking													
HVAC	Non-Res Cooling	445	66	277,954	4,914,755	60	259,156	4,578,052		2,899	$162,866		$162,866	$0.05
HVAC	Non-Res Heating													
Lighting	Non-Res Lighting	2,392	180	11,555,691	114,628,588	170	10,515,553	104,272,698		61,758	$1,323,228		$1,323,228	$0.02
Process	Non-Res Motors	1		1,143,601	14,866,811		1,143,601	14,866,811		8,286	$1		$1	
Process	Non-Res Pumps													
Refrigeration	Non-Res Refrigeration	27	15	615,415	3,700,602	14	584,525	3,514,046		1,958	$216,455		$216,455	$0.07
HVAC	Non-Res Shell	531	89	156,104	2,606,056	75	132,688	2,215,148		1,345	$78,238		$78,238	$0.05
Process	Non-Res Process													
Comprehensive	Non-Res Comprehensive	82	10	2,697,082	26,514,194	9	2,561,108	25,185,046		15,297	$257,279		$257,279	$0.01
Other	Other													
SubTotal		65,325	2,527	23,580,732	311,107,427	2,066	20,871,842	262,264,353		159,235	$3,689,162		$3,689,162	$0.02
T&D	T&D													
Total		65,325	2,527	23,580,732	311,107,427	2,066	20,871,842	262,264,353		159,235	$3,689,162		$3,689,162	

EE Program Portfolio	TRC Test	**2.42**
	PAC Test	**10.25**

Excluding T&D

Appendix D Municipal Utility Energy Efficiency Requirements for Select Equipment Rebates

Table 4-4 Municipal Utility HVAC System Efficiency Requirements for Rebate Approval[1]

Municipal Utility	Measure Description	Requirement
LADWP	Central A/C Replacement	≥ 15 SEER $100 per ton ≥ 16 SEER $120 per ton
Imperial	Central - Split (Tier 1)	15 SEER 12.5 EER
	Central - Package (Tier 1)	≥ 14 SEER ≥ 12 EER
	Central - Split (Tier 2)	≥ 16 SEER ≥ 13 EER
Riverside	Central A/C Replacement	≥ 15 SEER
Burbank	Central A/C Replacement	≥ 15 SEER
Pasadena	Central A/C Replacement	≥ 15 SEER
Glendale	Central A/C Replacement	≥ 15 SEER Must meet current ENERGY STAR guidelines effective Sep 15, 2015.
Colton	Central A/C Replacement	≥ 15 SEER Previous models must be ≤ 11 SEER
	A/C Tune-up	≤ 5 tons
Azusa	A/C Replacement	≥ 14 SEER, packaged and split systems

[1] Information accessed from municipal utility websites May, 2016

Table 4-5 Municipal Utility Water Heat Measure Efficiency Requirements for Rebate Approval[1]

Municipal Utility	Measure Description	Requirement
Anaheim	Clothes Washers	Clothes washers purchased on or after July 1, 2015 must meet or exceed the CEE Tier 1 standard
	Dish Washers	Energy Star Certified
Azusa	Water Heaters	Electric Storage Water Heaters - Energy Star Rated
	Clothes Washers	Energy Star Rated
	Dish Washers	Energy Star Rated
Burbank	Clothes Washers	Energy Star Certified
	Dish Washers	Energy Star Certified
Colton	Clothes Washers	Energy Star Approved
Colton	Dish Washers	Energy Star Approved
Glendale	Clothes Washers	Energy Star Certified
	Dish Washers	Energy Star Certified
Imperial	Clothes Washers	ENERGY STAR. The new clothes washer must be the primary one used in the home. Limit one clothes washer rebate per installation address.
LADWP	Clothes Washers	Clothes washers purchased on or after July 1, 2015 must meet or exceed the CEE Tier 1 standard
Pasadena	Dish Washers	Energy Star Certified
Riverside	Dish Washers	Energy Star Rated
	Clothes Washers	HECW must be Energy Star-rated and have a water factor of 4 or less per load.

[1] Information accessed from municipal utility websites May, 2016

Nexant, Inc.

Headquarters

101 2nd Street, Suite 1000

San Francisco CA 94105-3651

Tel: (415) 369-1000

Fax: (415) 369-9700

www.nexant.com