

# Southern California Gas Phase 2 - Residential

Sector Profile and Market Problem / Solution Statements for the  
Rolling Portfolio Business Plans.

4/18/2016

SoCalGas

Residential Program and Policy Team

## Contents

Residential Sector Profile .....	3
Summary of Key Observations .....	7
SoCalGas Residential Sector Overview .....	8
Residential Account Distribution .....	8
Usage by Customer Segments .....	8
Summary of Key Observations .....	9
SoCalGas Energy Efficiency Residential Sector .....	10
Portfolio Spending and Savings.....	10
Energy Consumption by Climate Zone.....	12
Gas Usage by Measure.....	13
Summary of Key Observations .....	14
SoCalGas Residential Energy Efficiency Portfolio Profile .....	15
Residential Existing Buildings.....	15
Energy Upgrade California Home Upgrade (EUCA HU).....	16
Programmatic Strengths, Weaknesses, Opportunities and Threats.....	16
EUCA HU Programmatic Efforts to Date .....	17
Energy Upgrade California Home Upgrade Multifamily (EUCA HU MF) .....	18
Programmatic Strengths, Weaknesses, Opportunities and Threats.....	18
EUCA HU Multifamily Programmatic Efforts to Date.....	18
Multifamily Energy Efficiency Rebate Program (MFEER).....	19
Programmatic Strengths, Weaknesses, Opportunities and Threats.....	19
MFEER Programmatic Efforts to Date .....	20
Middle Income Direct Install Pilot (MIDI) .....	21
Programmatic Strengths, Weaknesses, Opportunities and Threats.....	21
Plug Load and Appliance (PLA).....	22
Programmatic Strengths, Weaknesses, Opportunities and Threats.....	23
PLA Programmatic Efforts to Date .....	24
Energy Advisor .....	25
Programmatic Strengths, Weaknesses, Opportunities and Threats.....	25
Energy Advisor Programmatic Efforts to Date .....	26
Residential New Construction.....	27
California Advanced Homes Program (CAHP) .....	27
Programmatic Strengths, Weaknesses, Opportunities and Threats.....	27
Problem Statements .....	28

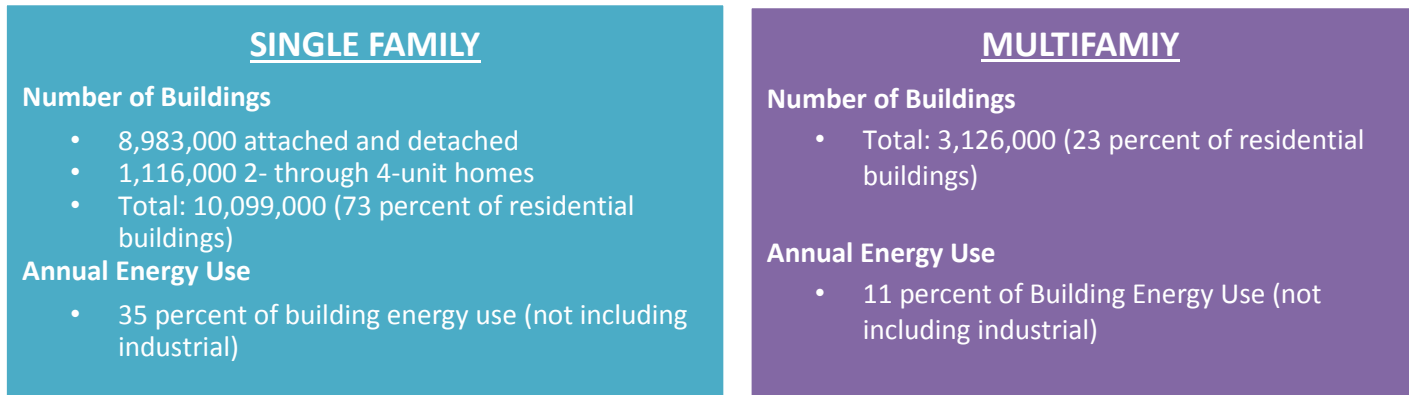
Problem Statement 1: High Costs for Executing Whole Building Upgrades is Limiting the Opportunity to Serve the Potential Market. ....	28
Observations .....	28
Data .....	28
Strategies .....	29
Key Partners .....	29
Problem Statement 2: Whole House Existing Building Programs Current Funding Does not Support Market Transformation Objectives .....	30
Observations .....	30
Data .....	30
Strategies .....	30
Key Partners .....	30
Problem Statement 3: Significant Decrease in Enrollment in Multifamily Programs.....	32
Observations .....	32
Data .....	32
Strategies .....	33
Key Partners .....	33
Problem Statement 4: Delivery Channels for Point of Sale Rebates are diminishing thus Reducing Future Potential PLA Savings .....	34
Observations .....	34
Data .....	34
Strategies .....	35
Key Partners .....	35
Problem Statement 5: Diminishing Returns and Increasing Costs is Causing Indifference to Above Code Energy Efficiency in the Residential New Construction Builder Community.....	37
Observation 1.....	37
Data .....	37
Observation 2.....	38
Data .....	38
Strategies .....	39
Key Partners .....	39

## Residential Sector Profile

The SoCalGas Residential Sector is entering a period of great change with new entrants, new innovative energy efficiency programs, and government regulations promising to reshape the market in the upcoming years. However, to fully understand where the residential sector is headed, we must first establish its current characteristics. In 2012, the residential sector accounted for 21% of total primary energy consumption and about 20% of carbon dioxide emissions in the United States.<sup>1</sup> In addition, it has been recently reported that California households use 62 million British thermal units (Btus) of energy per home per year, 31 percent lower than the U.S. average, due largely to California's dry mild climate.<sup>2</sup>

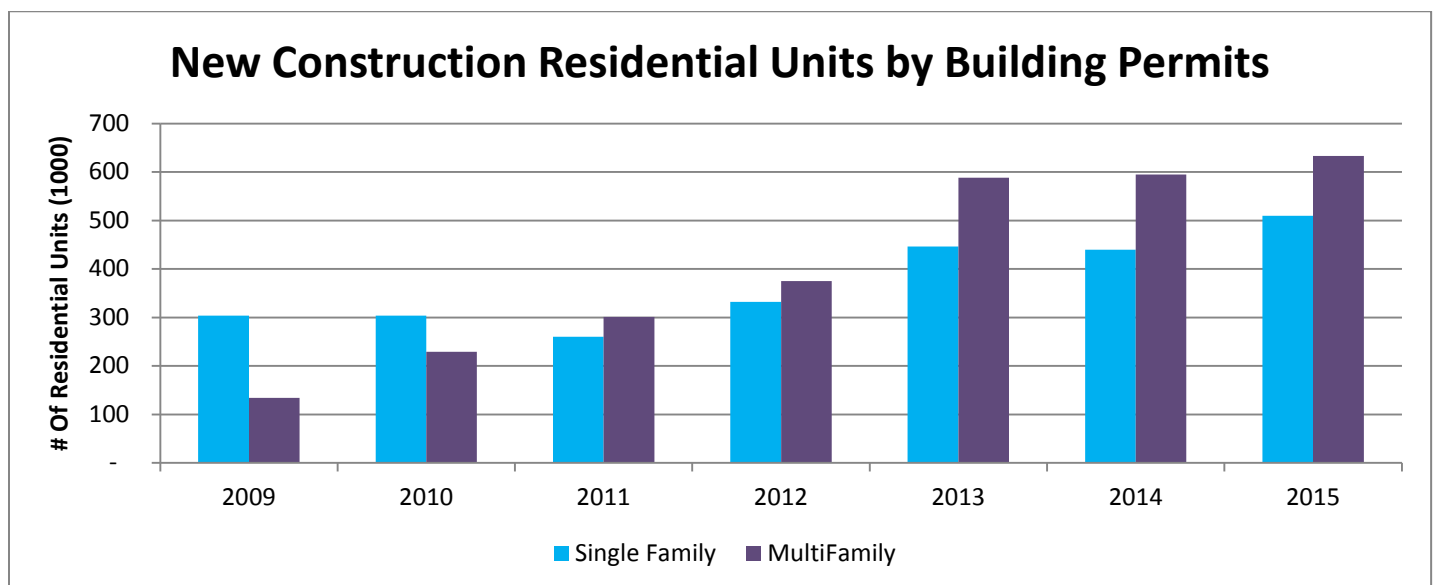
The California Residential Sector is segmented into two facets, single family and multifamily. There are total of 10 million existing single family homes and over 3 million existing multifamily units. These two residential segments constitute for 46% of the energy consumption within the state of California.

**Figure 1. Residential Existing Building Stock and Annual Energy Use by Segment**



Residential new construction starts have annually on average been increasing by 14% from 2009 to 2015. In 2015 alone, 510 single family and 633 multifamily building permits were issued for new residential units. New construction multifamily units have been on average increasing at 21% from 2009 to 2015, surpassing the growth of single family units.

**Figure 2. California Construction Authorized By Building Permits By Segment, 2009-2015<sup>3</sup>**



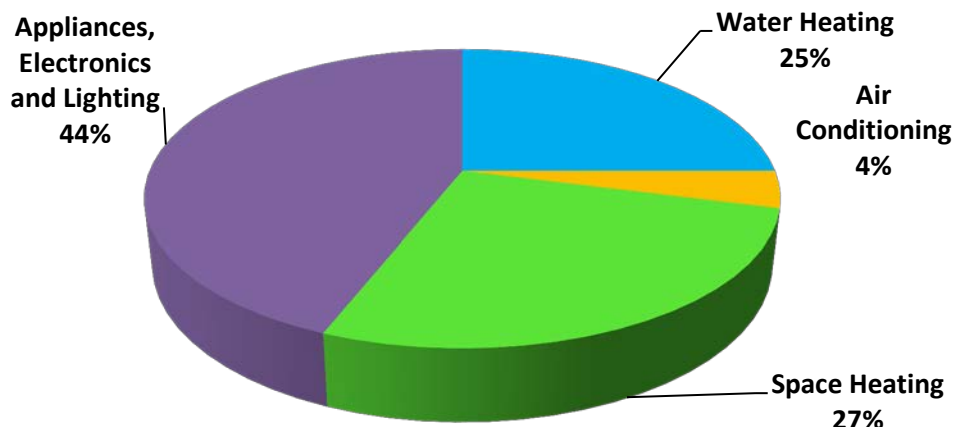
<sup>1</sup> EIA Website, Drivers of U.S. Household Energy Consumption, 1980-2009, EIA 2013.

<sup>2</sup> Existing Buildings Energy Efficiency Action Plan. September 2015.

<sup>3</sup> California Construction Data. California Department of Finance: Financial and Economic Data. Monthly Data, From 1995, Residential (Units and Valuation) worksheet. [http://www.dof.ca.gov/HTML/FS\\_DATA/LatestEconData/FS\\_Construction.htm](http://www.dof.ca.gov/HTML/FS_DATA/LatestEconData/FS_Construction.htm)

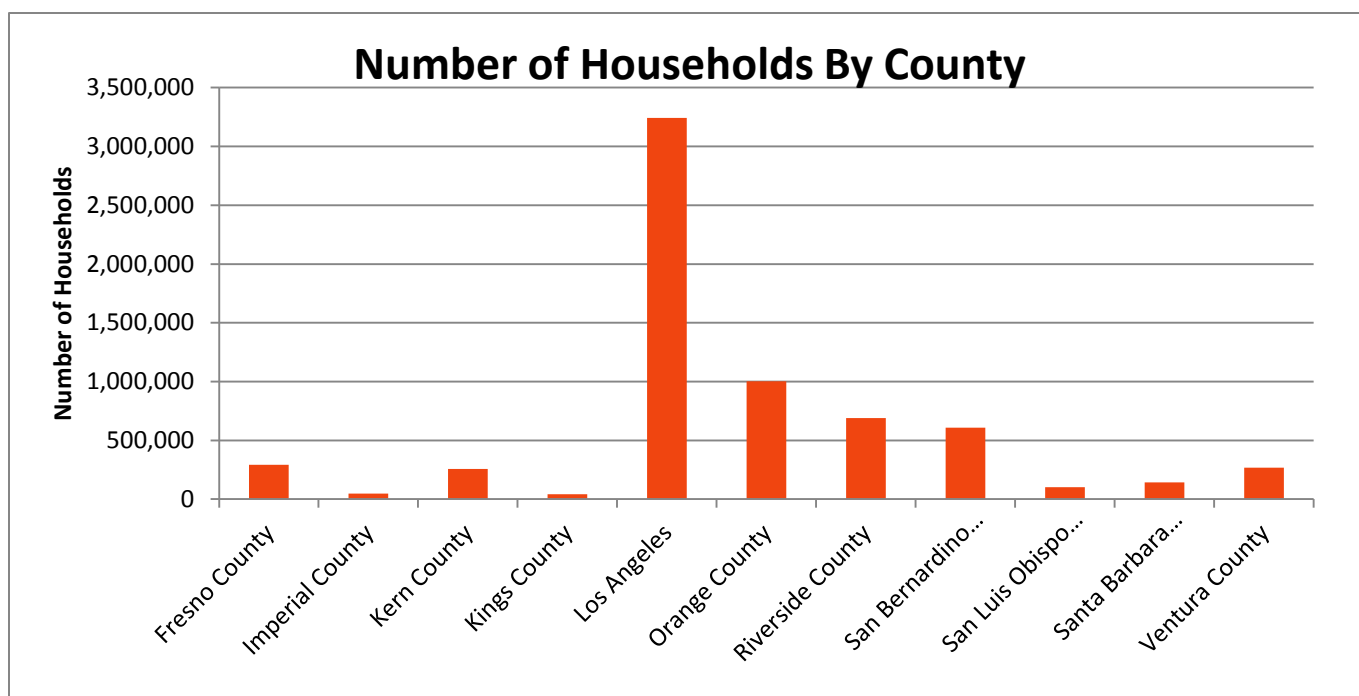
California residential energy consumption is primarily utilized for space and water heating as well as lighting, plug load and appliances.

**Figure 3. California Residential Energy Consumption by End Use<sup>4</sup>**



As we dive deeper into identifying characteristics of the California residential sector we find more information on the number households and also a glimpse of income levels within the state. These key statistics can play a large role in indicating how people spend, what level of incomes reside in our territories and at a high level the potential market. For instance in Figure 4 below we see that the largest number of households in our service territory reside in the Los Angeles County. Yet in the proceeding Figure 5, we find that the highest median incomes resides in counties with some of the lower household numbers, specifically Orange and Ventura County. There the average median income ranges from \$75,000 to \$77,000 whereas the median income in Los Angeles is only \$55,000.

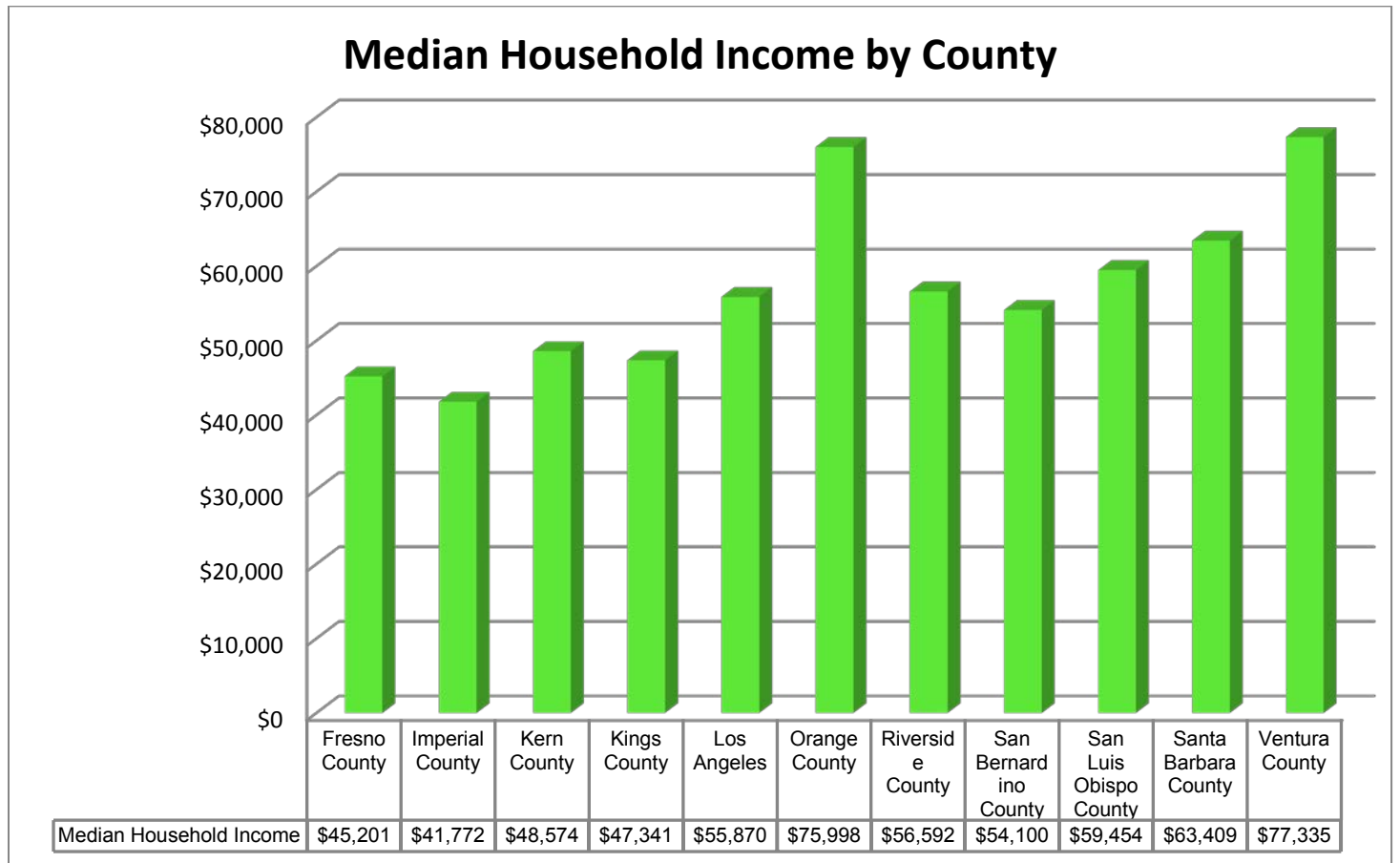
**Figure 4. Number of Households by County<sup>5</sup>**



<sup>4</sup> EIA Residential Fact Sheet, 2009

<sup>5</sup> 2010-2014 American Community Survey, U.S. Census Bureau, Dated:

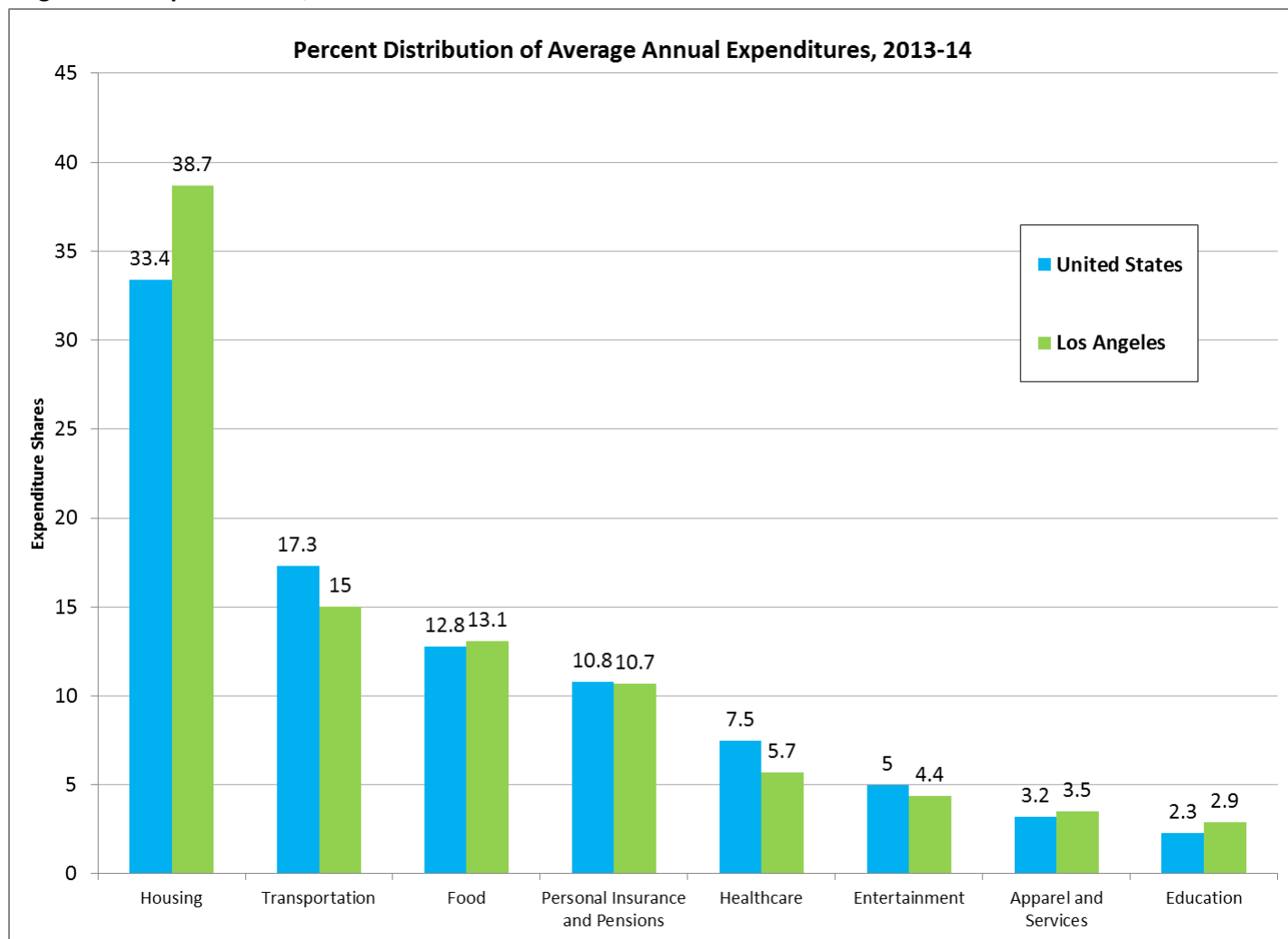
**Figure 5. Median Household Income By County<sup>6</sup>**



<sup>6</sup> 2010-2014 American Community Survey, U.S. Census Bureau, Estimates are for 2014 and dollar values are in 2014 Inflation Adjusted Dollars

In addition, as we examine even further the residential sector we find how households actually spend their income. The U.S. Bureau of Labor Statistics recently reported that households in the Los Angeles-Orange, metropolitan area spent on average \$55,546 per year in 2013–14.<sup>7</sup> The report noted that this figure was significantly higher than the \$52,284 average expenditure level for households in the United States.<sup>8</sup> Los Angeles-area households allocated their dollars significantly different from the U.S. average in 4 of the 8 major expenditure categories. For example, the share of expenditures for housing, which accounted for 38% of the average household’s budget in the Los Angeles area, was significantly higher than the national average of 33%.<sup>9</sup>

**Figure 6. Percent Distribution of Average Annual Expenditures of Eight Major Categories in the United States and Los Angeles Metropolitan area, 2013-14<sup>10</sup>**



<sup>7</sup> U.S. Bureau of Labor Statistics, *Consumer Expenditures for the Los Angeles Area: 2013-14*. New Release. November 10, 2015.

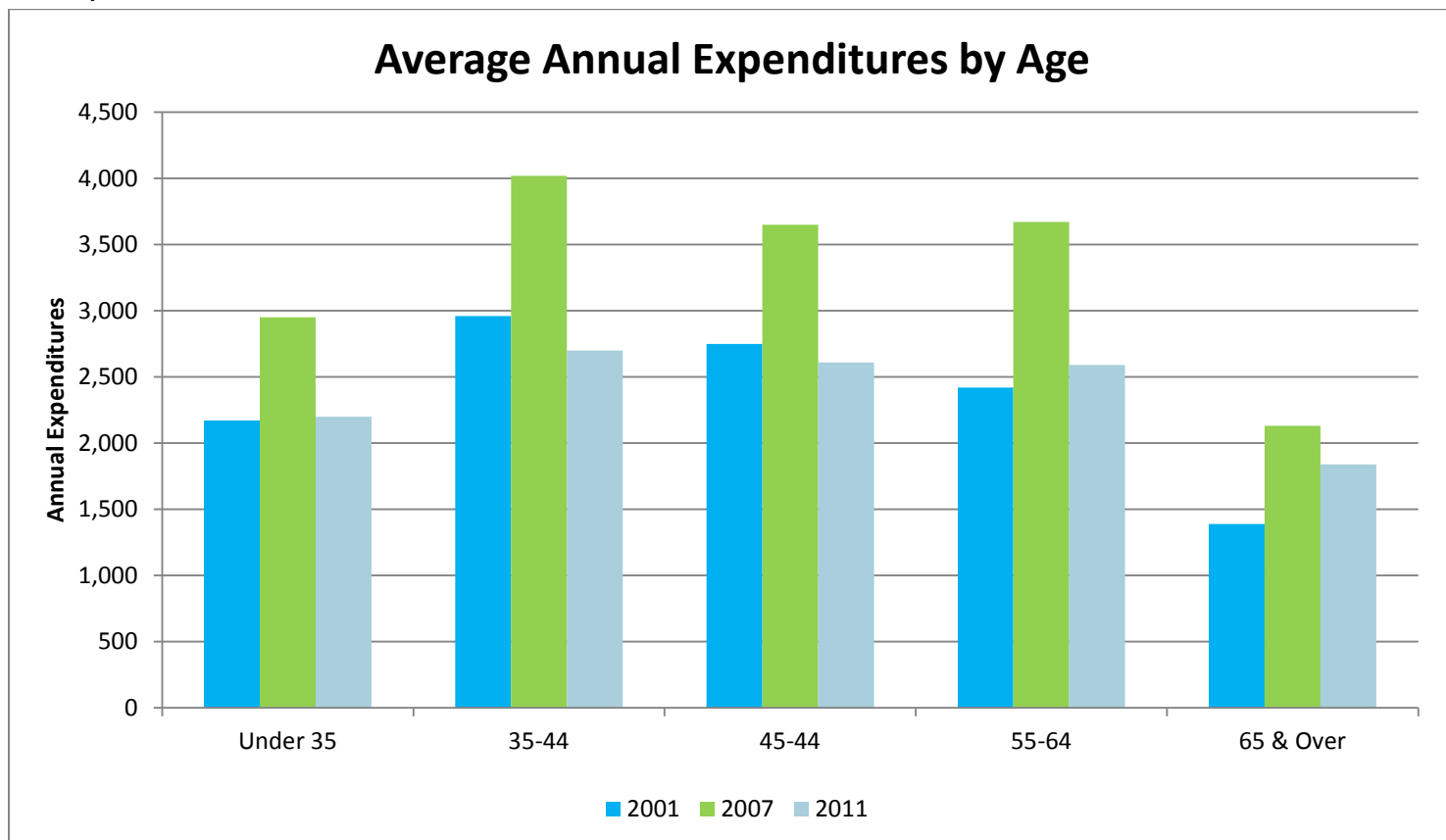
<sup>8</sup> *I.d.*

<sup>9</sup> *I.d.*

<sup>10</sup> *I.d.*

Figure 7 below provides the average annual home improvement spend in the US. First from the figure you can clearly see there was significant gains in average annual home improvement spend in 2007 but those numbers had significantly decreased by 2011 within all age ranges. This of course falls directly into the housing bubble timeframe and is a result of national economic factors. Second, we see that even over time the age group that spends the most significant amount of average annual home improvement lies between the ages of 35-44.

**Figure 7. Average annual home improvement expenditure in the United States from 2001 to 2011, by age (in U.S. dollars)<sup>11</sup>**



### Summary of Key Observations

- Single Family dwellings significantly dominate the existing building segment whereas multifamily new construction is exponentially growing faster than single family new construction units
- California residential energy consumption is primarily utilized for space and water heating as well as lighting, plug load and appliances
- In California, Los Angeles County contains the most number of households however those with the highest median income reside in Orange and Ventura counties
- Individuals between the ages of 35-44 spend the most significant amount of average annual home improvement

<sup>11</sup> *The US Housing Stock Ready for Renewal Improving America's Housing 2013 Report*. Joint Center for Housing Studies Harvard University. [http://www.jchs.harvard.edu/sites/jchs.harvard.edu/files/harvard\\_jchs\\_remodeling\\_report\\_2013.pdf](http://www.jchs.harvard.edu/sites/jchs.harvard.edu/files/harvard_jchs_remodeling_report_2013.pdf)

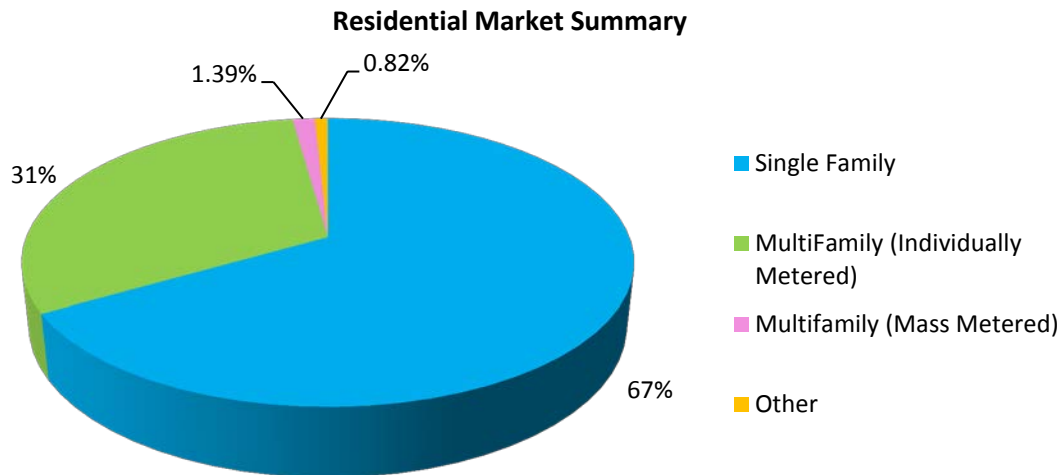


## SoCalGas Residential Sector Overview

### Residential Account Distribution

SoCalGas has 21.4 million gas customers through 5.9 million meters and use over 8.7 billion therms of gas annually. The residential sector makes up 5.4 million of the gas meters in SoCalGas's overall territory, this constitutes to nearly 90% of SoCalGas's meters and an annual usage of 2 billion therms. Within this market there are 4 metered segments: Single Family, Multifamily-individually metered, Multifamily – mass metered and Other (which includes mobile homes and central facility).

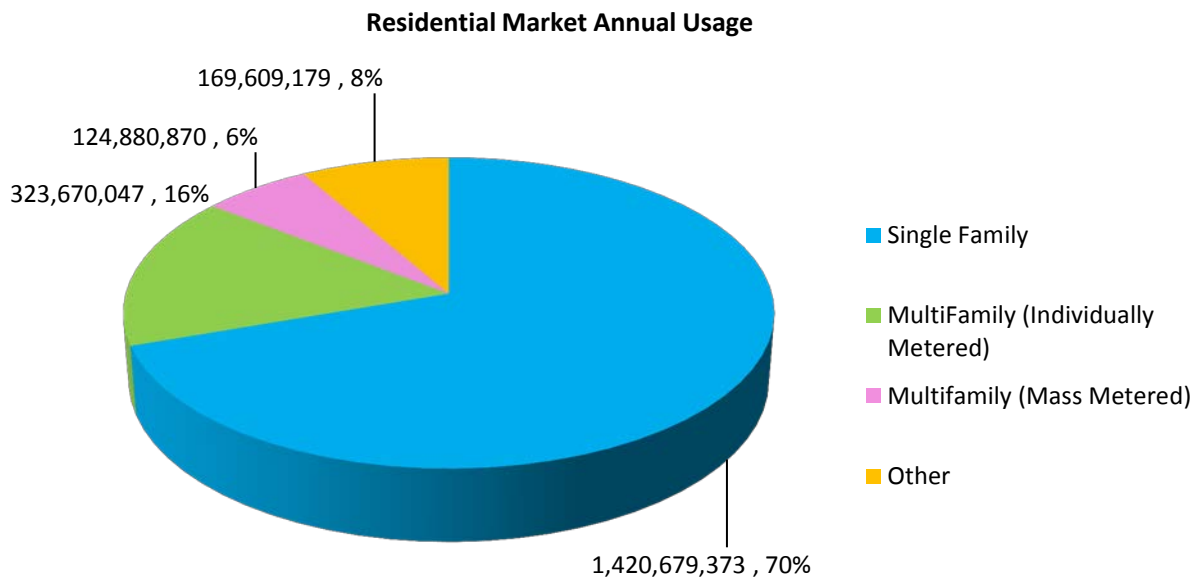
**Figure 8. SoCalGas Residential Market Summary of Active Meters by Segment, 2015**



### Usage by Customer Segments

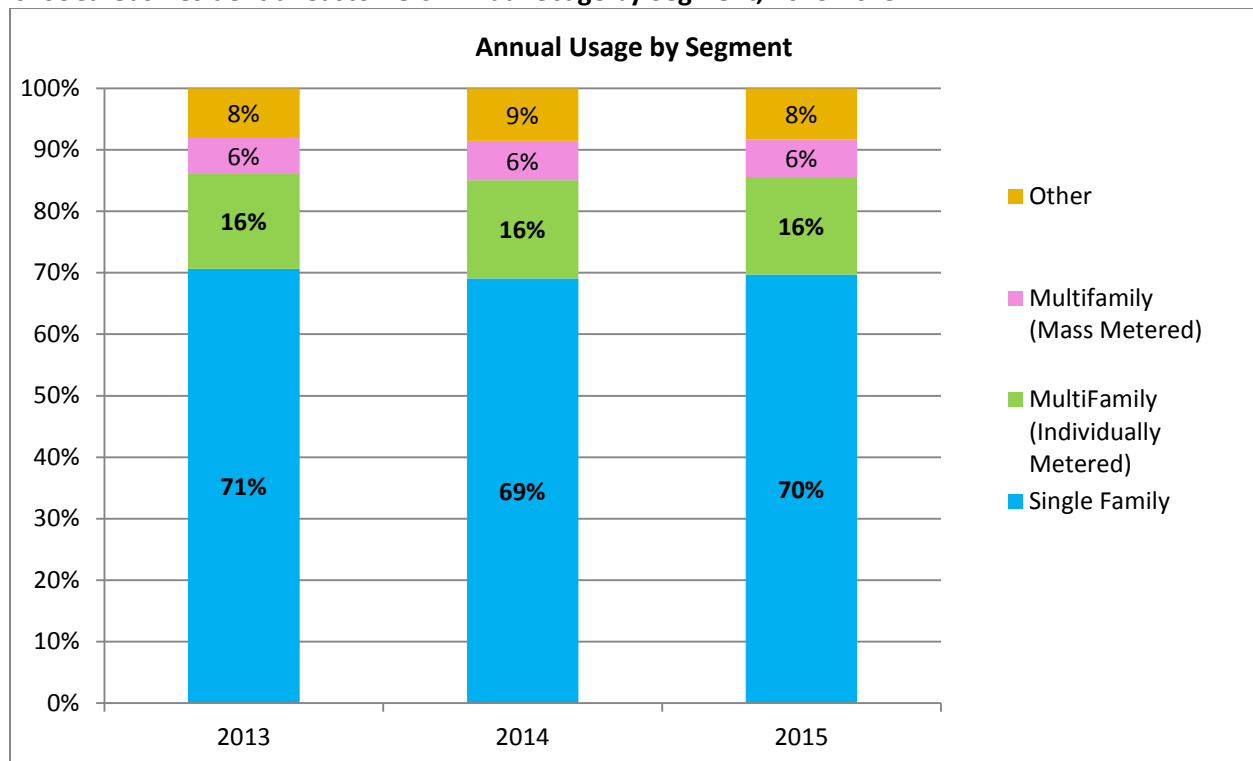
Of the metered segments Single Family customers constitute for approximately 70% of energy consumption for SoCalGas's Residential sector where as Multifamily is only 24% of the SoCalGas Residential sector.

**Figure 9. SoCalGas Residential Customers Annual Usage by Segment, 2015**



In addition, over time Single Family has remained dominate as the segment with most annual energy consumption, averaging 70% each year between 2013-2015.

**Figure 10. SoCalGas Residential Customers Annual Usage by Segment, 2013-2015**



### Summary of Key Observations

- SoCalGas's Residential Sector accounts for 90% of SoCalGas meters and a quarter of therms consumed (2 billion therms)
- Single Family is SoCalGas's largest consuming residential segment consuming on average 70% of therms in the SoCalGas's residential sector, multifamily consumes 24%
- Annual Consumption over time remains steady with each residential segment; no varying spikes in usage between segments

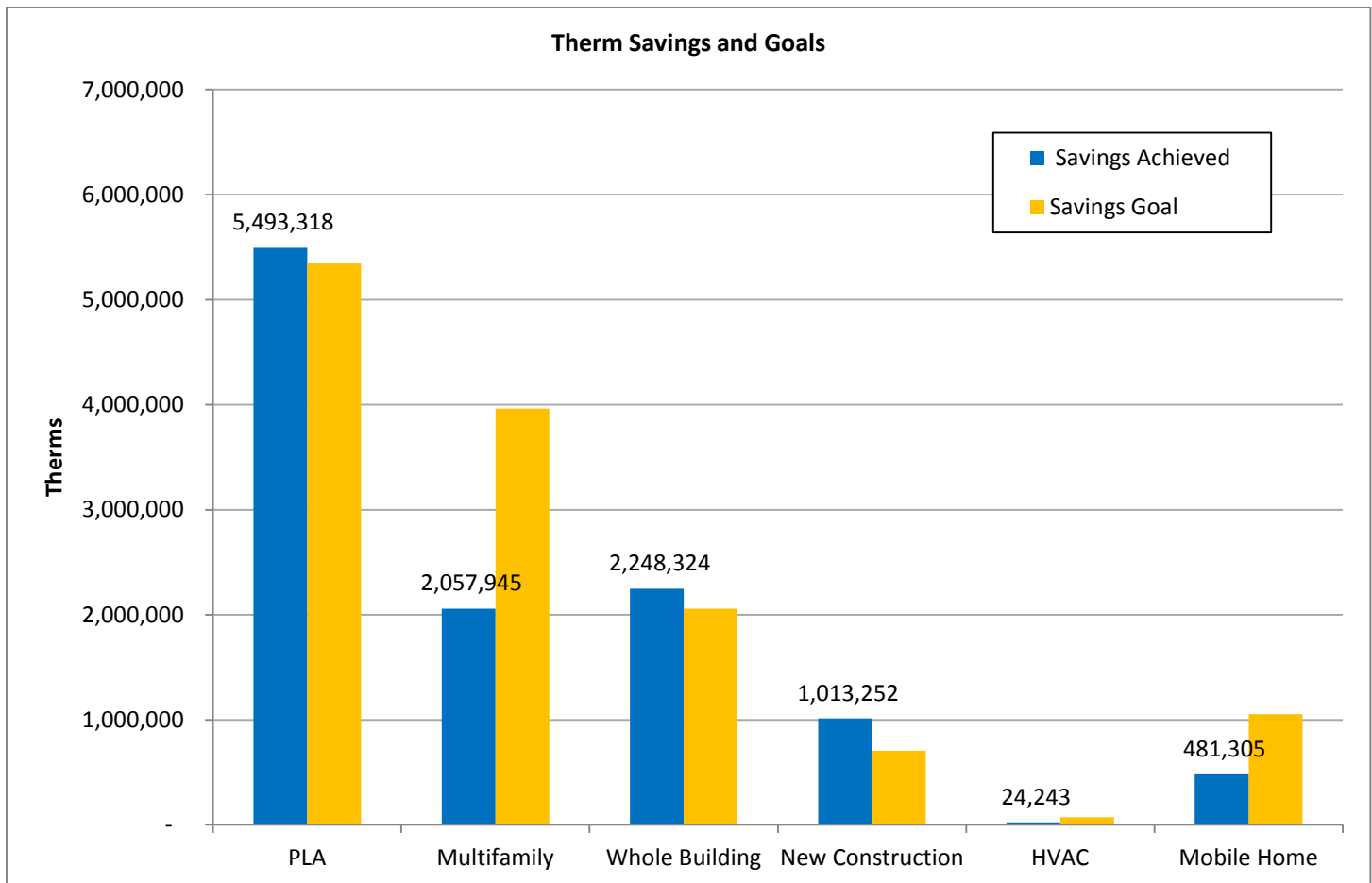
## SoCalGas Energy Efficiency Residential Sector

### Portfolio Spending and Savings

SoCalGas's Energy Efficiency Residential customers have the incremental market potential amount of savings between 21 and 28 million therms annually through 2024.<sup>12</sup> The potential amount of savings available in this market by 2024 for Single Family is 3.33 MMTherms and 1.44 MMTherms for Multifamily.<sup>13</sup>

For the 2013-2015 cycle, SoCalGas residential programs achieved 10.63 MM therms, 14.6% of overall portfolio goal attainment.<sup>14</sup> Over three segments within the SoCalGas Residential Portfolio met or exceeded their program goals, specifically new construction, whole building and PLA. Segments that revealed significant shortfalls against goal were multifamily and mobile home programs.

**Figure 11. SoCalGas Residential Portfolio Savings Achieved and Savings Goals by Segment, 2013-2015**



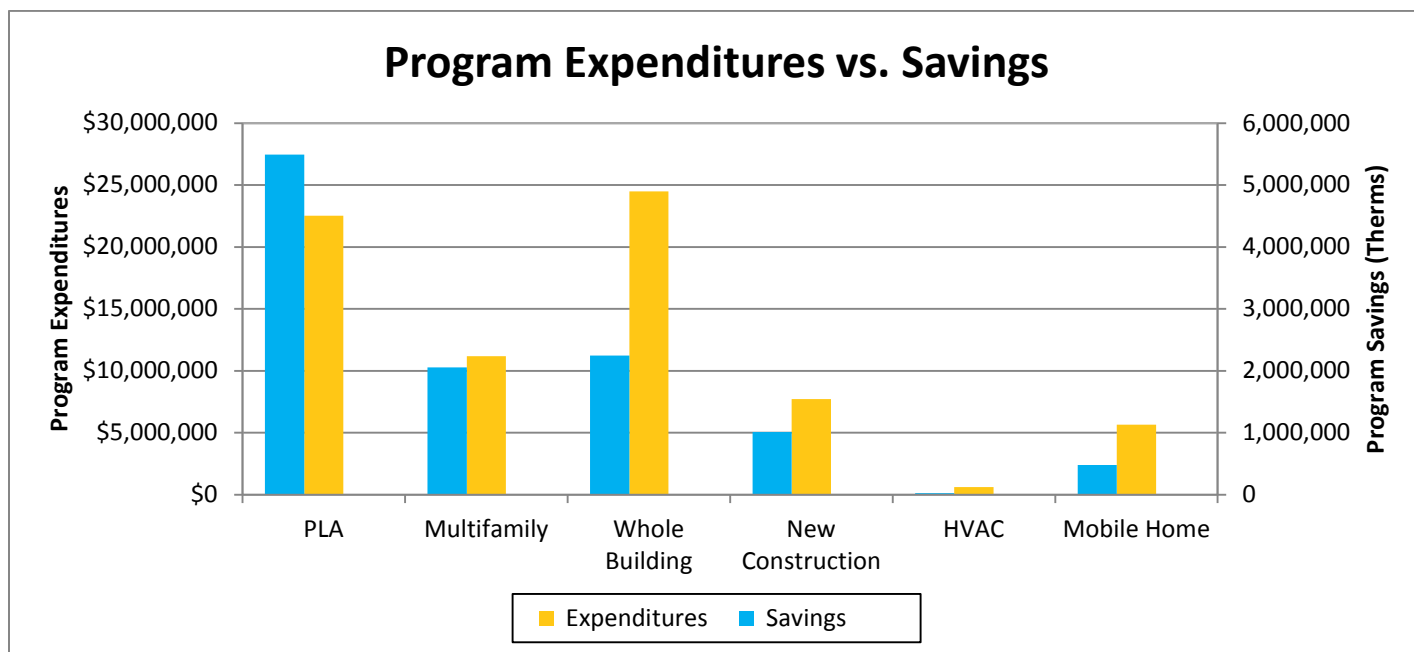
<sup>12</sup> Navigant's Potential Market Study, SoCalGas Territory

<sup>13</sup> *I.d.*

<sup>14</sup> SoCalGas 72.6 MMTherms (Portfolio) Energy savings goals for the 2013-2015 cycle.

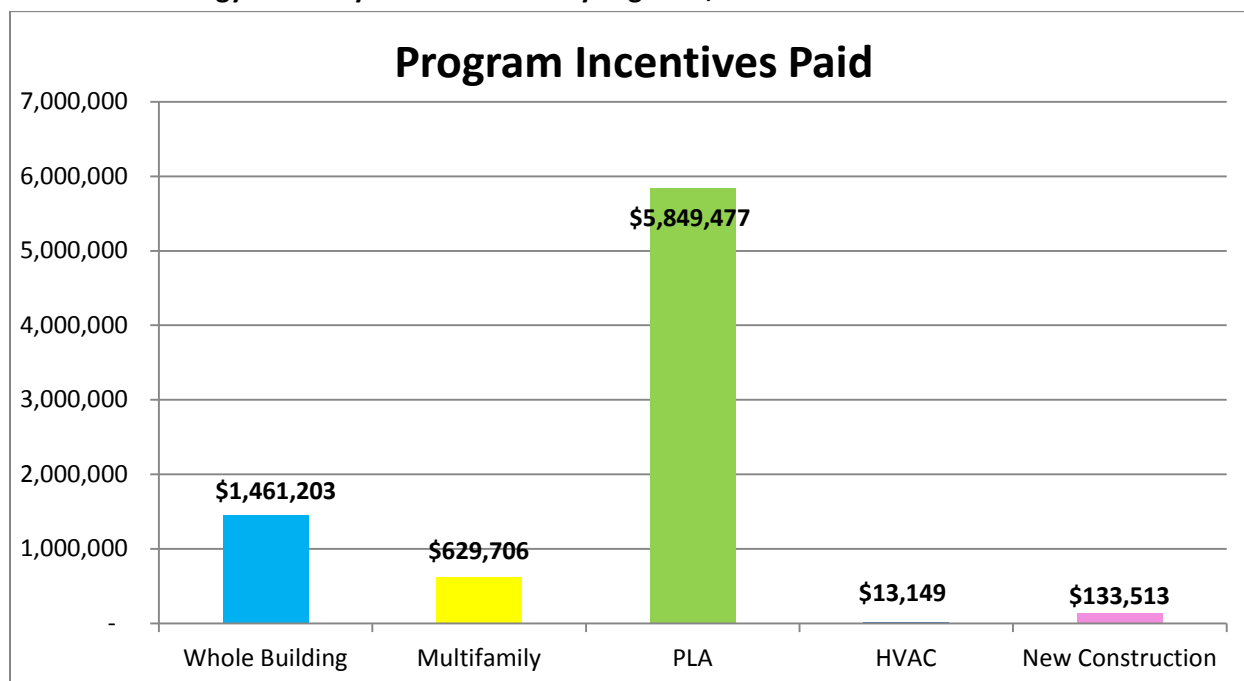
Illustrated in Figure 12 below, Plug Load and Appliance (PLA) programs constituted for the largest share of portfolio savings bringing in 5.4 MMtherms for the 2013-2015 cycle. Whole Building was the second highest program segment to achieve the most energy therms saved however this program segment also represents the largest amount of portfolio spend (PLA being the second highest in portfolio spend for SoCalGas’s residential sector).

**Figure 12. Annual Program Expenditures and Program Savings (Therms) by Segment, 2013-2015 Cycle**



Incentives paid in SoCalGas’s residential portfolio for 2015 amounted to a little over \$8 million. This amounts to little over 10% of SoCalGas’s total Energy Efficiency Budget for 2015. PLA and whole building programs constituted for largest share of incentives paid to customers.

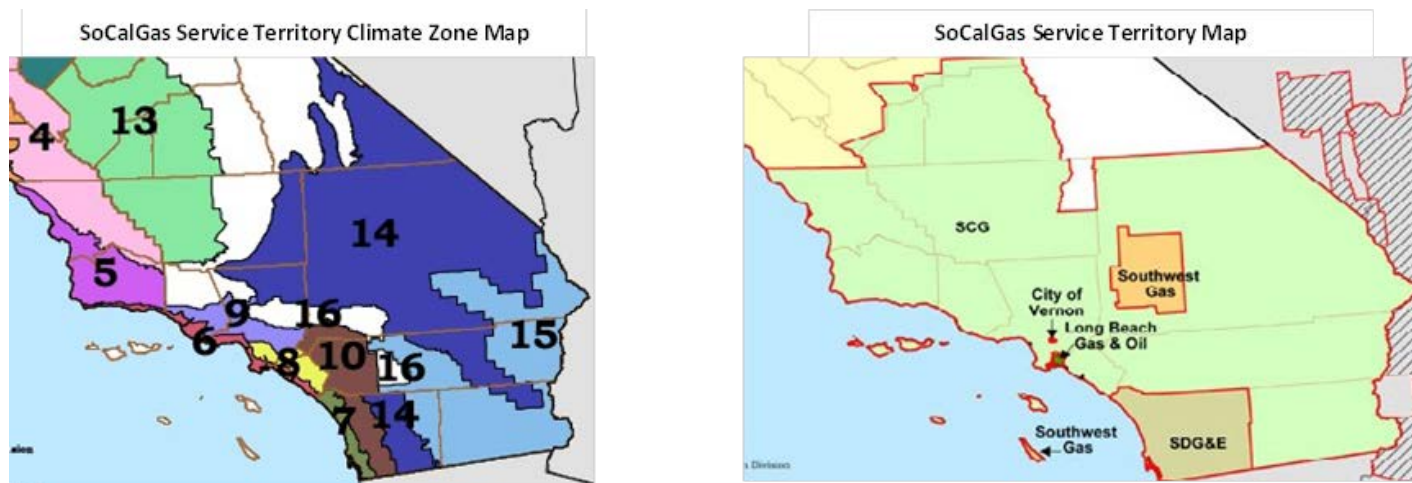
**Figure 13. SoCalGas Energy Efficiency Incentives Paid by Segment, 2015**



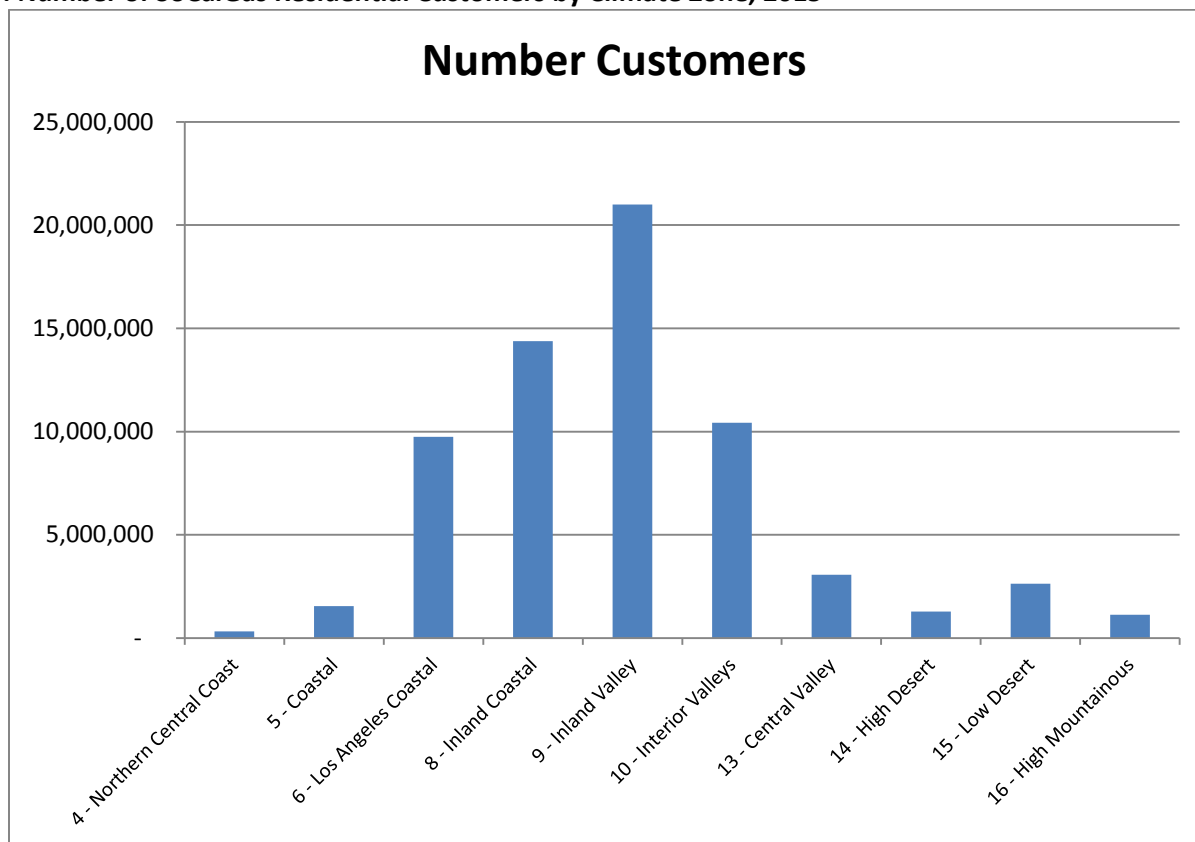
## Energy Consumption by Climate Zone

SoCalGas service territory reaches a multitude of climate zones within the state of California. Below is an illustrative representation of both SoCalGas Territory and the Climate Zones within its territory. Figure 15 reveals that the majority of SoCalGas customers reside in mild climate zones, specifically coastal and valley regions. In addition, Figure 16 illustrates the valley regions as the largest energy consumers. Compared to the coast, Valley summers are warmer and winters are cooler.

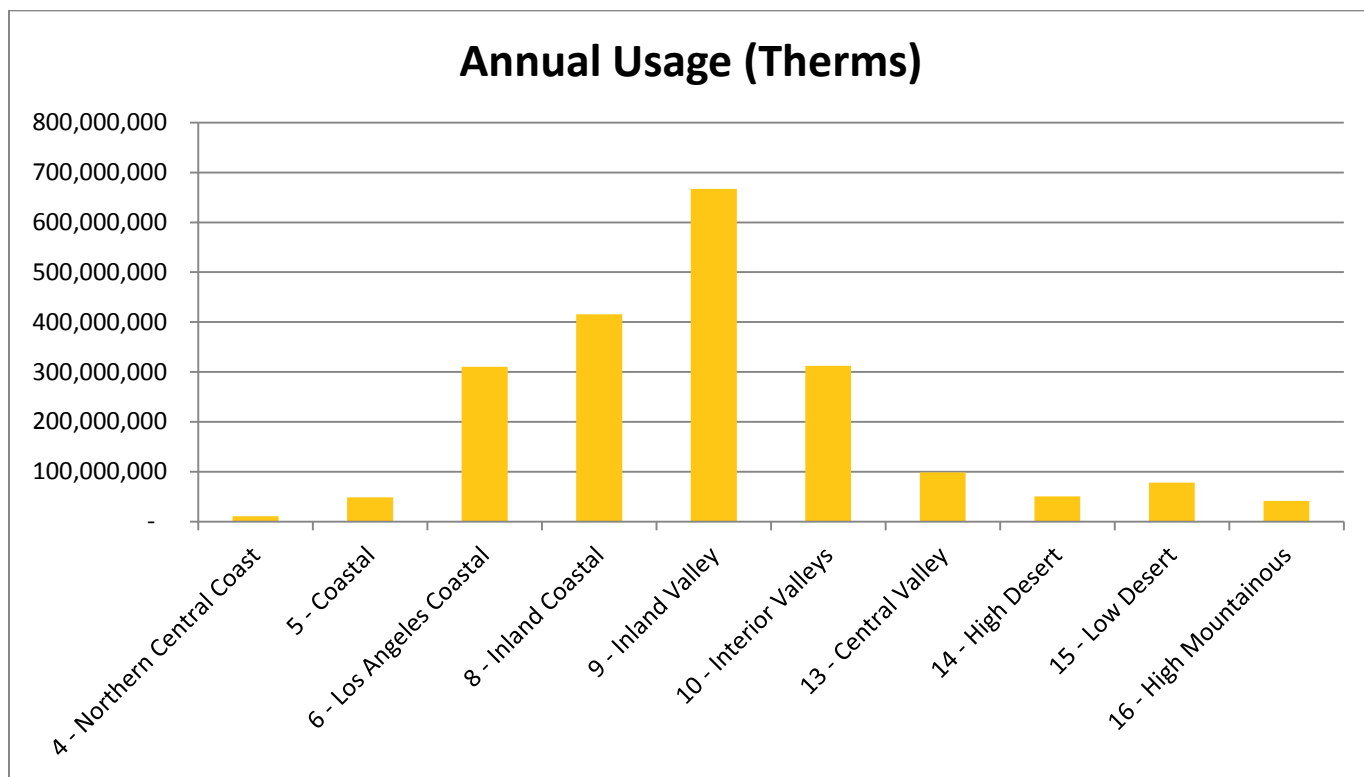
**Figure 14. SoCalGas Service Territory Climate Zone and Service Map**



**Figure 15. Number of SoCalGas Residential Customers by Climate Zone, 2015**



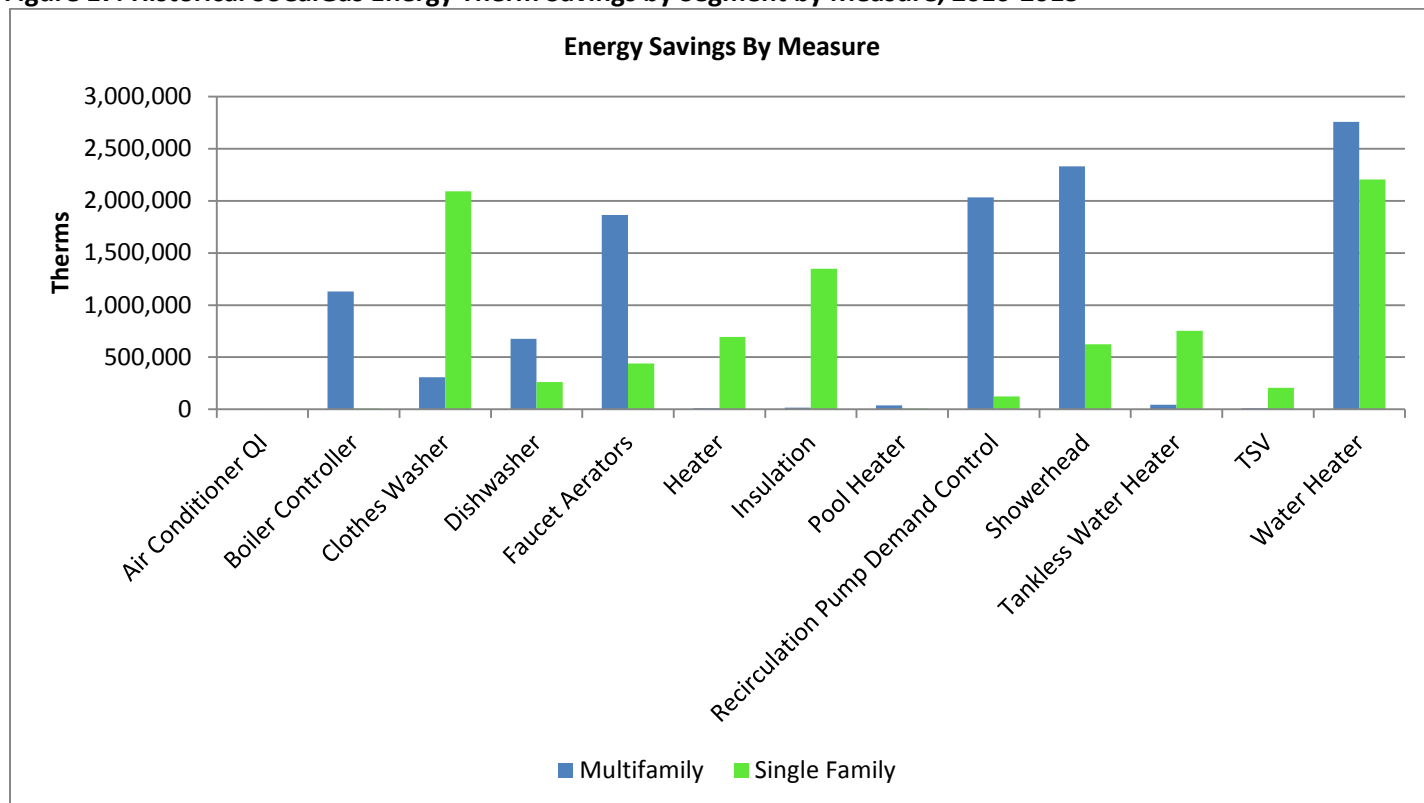
**Figure 16. SoCalGas Residential Customers Annual Usage (Therms) by Climate Zone, 2015**



### Gas Usage by Measure

Below Figure 17 illustrates gas usage by measure by segment (Single and Multifamily). Measures with the most significant savings that contributed to SoCalGas's EE portfolio for single family revolve around heating end uses and water measures for multifamily.

**Figure 17. Historical SoCalGas Energy Therm Savings by Segment by Measure, 2010-2013**



## Summary of Key Observations

- Over three segments within the SoCalGas Residential Portfolio met or exceeded their program goals, specifically new construction, whole building and PLA
- Plug Load and Appliance (PLA) programs constituted for the largest share of portfolio savings bringing in 5.4 MMtherms for the 2013-2015 cycle, whole building being the segment to achieve the highest share of savings
- The whole building program segment represents the largest amount of portfolio spend
- PLA and whole building programs constituted for largest share of incentives paid to customers
- Majority of SoCalGas customers reside in mild climate zones, specifically coastal and valley regions
- SoCalGas has gained substantial therm savings for space and water heating measures however there are still opportunities within the single family segment such as pool heaters and within the multifamily there represents a great opportunity for clothes washers upgrades

# SoCalGas Residential Energy Efficiency Portfolio Profile

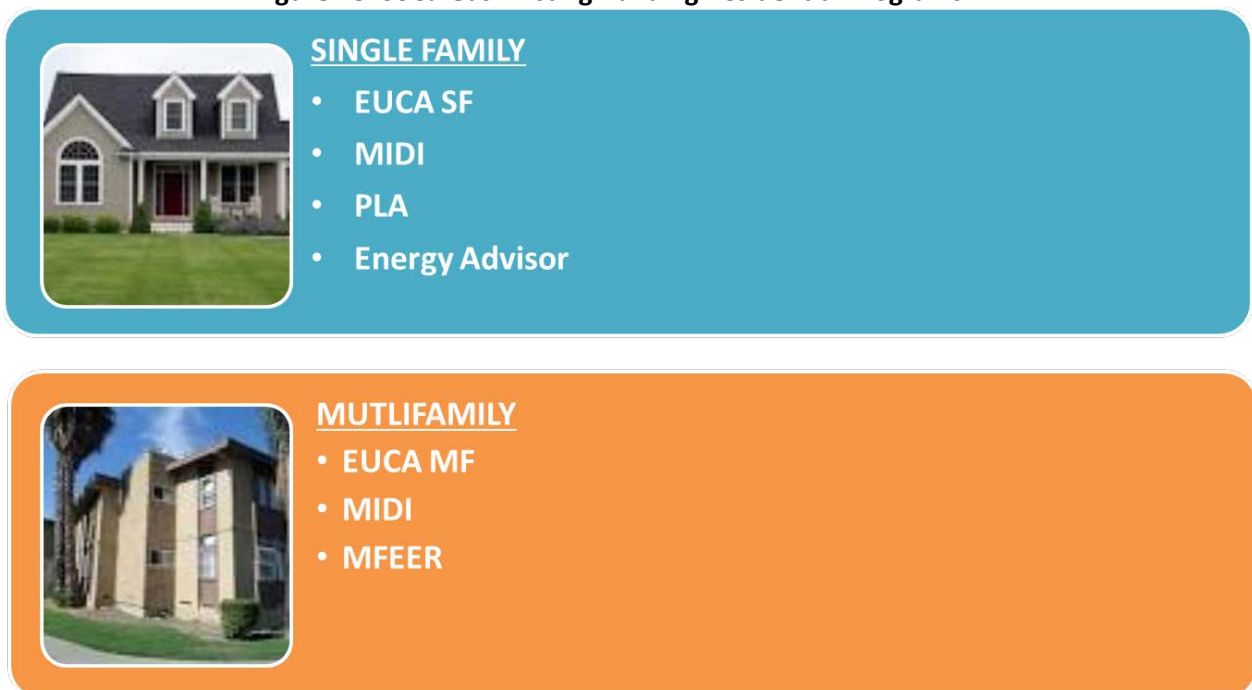
## Residential Existing Buildings

In addition, to the previous Long Term Strategic objective mentioned, there are also strategic objectives and recent legislative mandates to incorporate a more holistic approach to whole building upgrade in existing dwellings. Specifically the long term goal is to have Home buyers, owners and renovators implement a whole house approach to energy consumption that will guide their purchase and use of existing homes and home equipment. With the expected result that energy consumption in existing homes will be reduced through universal demand for highly efficient homes and products. In addition, recent state legislation such as AB 758 and AB 802 focus on incorporating additional innovative intervention strategies for targeting deeper energy savings within the existing buildings residential segment.

The U.S. buildings sector consists of over 85 million existing residential and commercial buildings, and accounts for approximately 40% of the U.S.' primary energy consumption and 39% of U.S. carbon dioxide emissions.<sup>15</sup> Existing buildings offer great potential for energy savings through the implementation of energy efficiency building retrofits. In 2010, 1.193 million new buildings were constructed in the U.S. compared to 82.7 million existing buildings. Similarly, in 2035, 1.114 million are projected to be built while the existing buildings count is expected to reach 104.85 million. This data clearly shows that the market, and therefore the energy savings opportunity for retrofitting existing buildings, is far greater than savings that can be realized in new construction.<sup>16</sup>

To support meeting this aggressive effort, SoCalGas's has employed a wide range of programs that span both existing building segments, single family and multifamily, into its residential portfolio. Figure 18 below provides the list of current single and multifamily programs.

**Figure 18. SoCalGas Existing Building Residential Programs**



<sup>15</sup> U.S. Department of Energy. Windows and Building Envelope Research and Development Roadmap for Emerging Technologies. 2014. [http://energy.gov/sites/prod/files/2014/02/f8/BTO\\_windows\\_and\\_envelope\\_report\\_3.pdf](http://energy.gov/sites/prod/files/2014/02/f8/BTO_windows_and_envelope_report_3.pdf)

<sup>16</sup> i.d



## Energy Upgrade California Home Upgrade (EUCA HU)

According to a report released by the Office of the Vice President, “homes in the United States generate more than 20 percent of our nation’s carbon dioxide emissions, making them a significant contributor to global climate change.”<sup>17</sup> The challenge of addressing residential emissions has been a significant topic for California stakeholders and was addressed when D.09-09-047 acknowledged, “Improving the energy efficiency of all households is necessary to achieve the target outcome for the 2020 existing residential Strategic Plan goals.”<sup>18</sup>

A shift in market perception, both for contractors and customers, towards a whole house approach must take place to drive customer action. Home Upgrade is designed to offer a one-stop approach to whole-house energy efficient improvements that recognize the need for customers to participate over varied timelines.

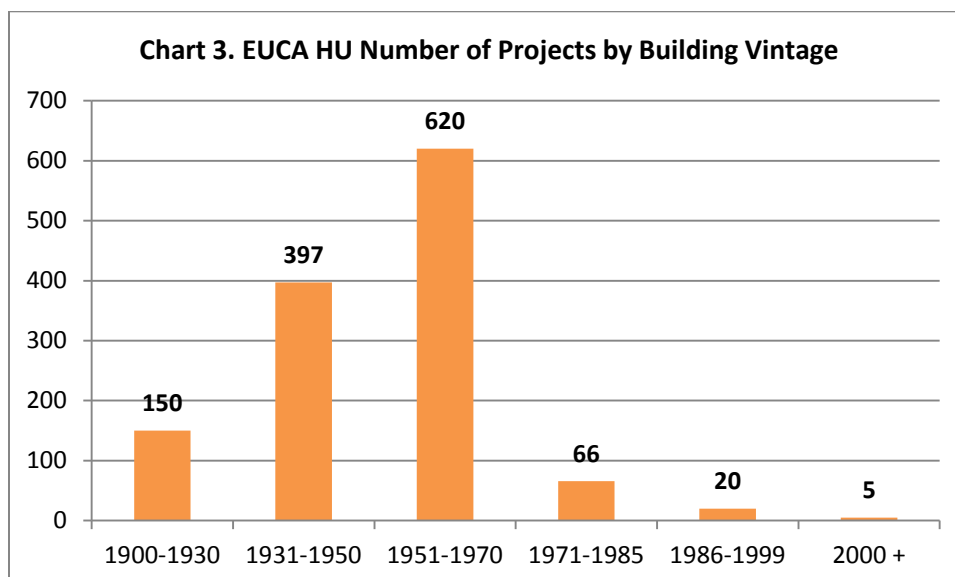
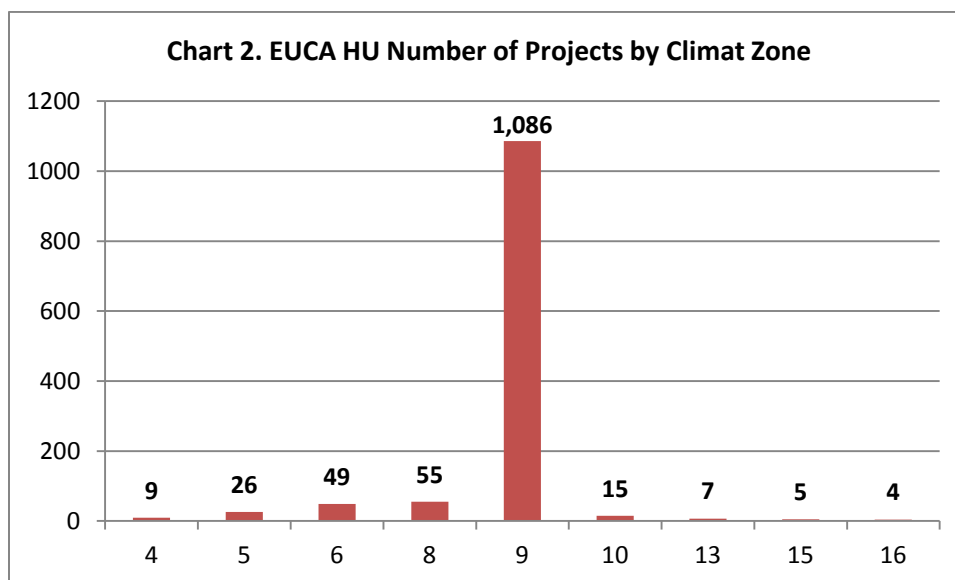
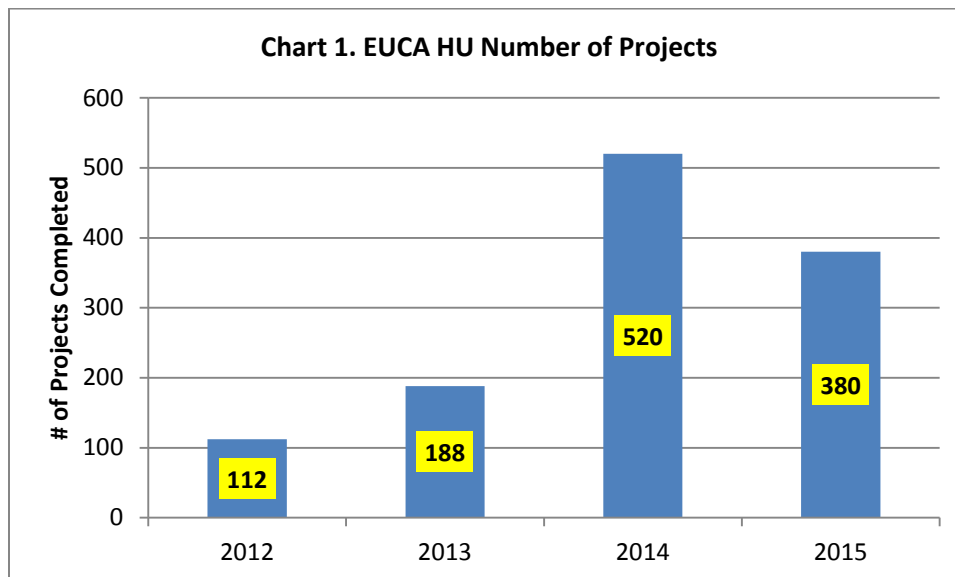
### Programmatic Strengths, Weaknesses, Opportunities and Threats



<sup>17</sup> Middle Class Task Force. Council on Environmental Quality. “Recovery Through Retrofit.” October, 2009. Page 1.

<sup>18</sup> D. 09-09-047. Page 110.

## EUCA HU Programmatic Efforts to Date



## Energy Upgrade California Home Upgrade Multifamily (EUCA HU MF)

Despite facing many challenges and barriers, the multifamily sector presents a significant opportunity for whole building energy efficiency programs with a deep energy reduction approach. A whole building offering has the potential to achieve deep energy savings, so EUCA HU also includes a program that specifically target a whole building approach for multi-family units.

### Programmatic Strengths, Weaknesses, Opportunities and Threats



### EUCA HU Multifamily Programmatic Efforts to Date

Table 1. EUCA MF Program Figures, 2015

Number of Projects for 2015	15
Total Therm Savings	95, 177 Btu
Total SoCalGas Incentives Paid	\$457,000
Total Square Footage	1,644,412
Average Amount of Incentive Paid Per Project	\$30,580
Average Square Footage for Each Project	89,824 sq ft
Average amount of Therms Saved Per Project	6,576 Btu

## Multifamily Energy Efficiency Rebate Program (MFEER)

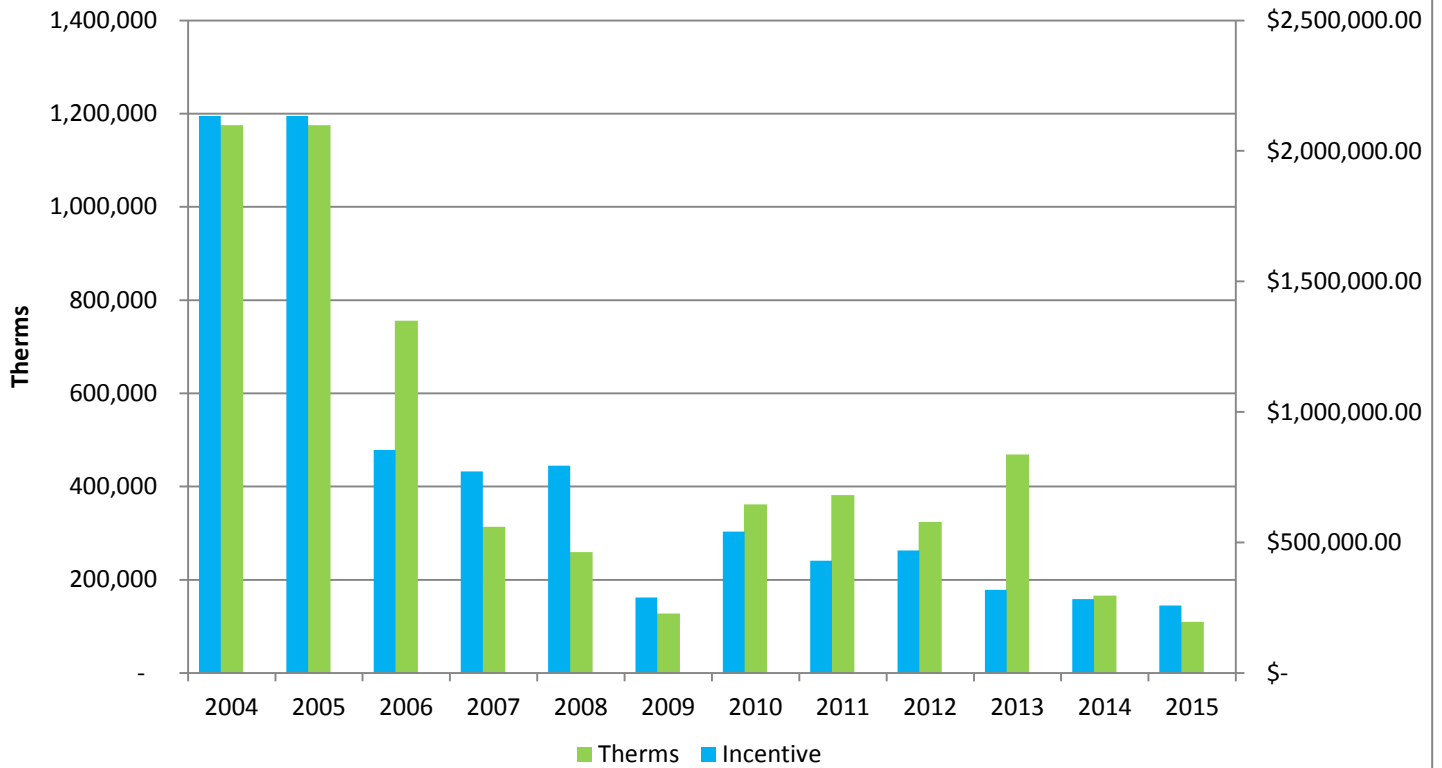
The Multifamily Energy Efficiency Rebate Program is a residential program that promotes rebates for qualified energy efficient improvements in apartment dwelling units, common areas of apartment and condominium complexes with two or more units, and common areas of mobile home parks.

### Programmatic Strengths, Weaknesses, Opportunities and Threats

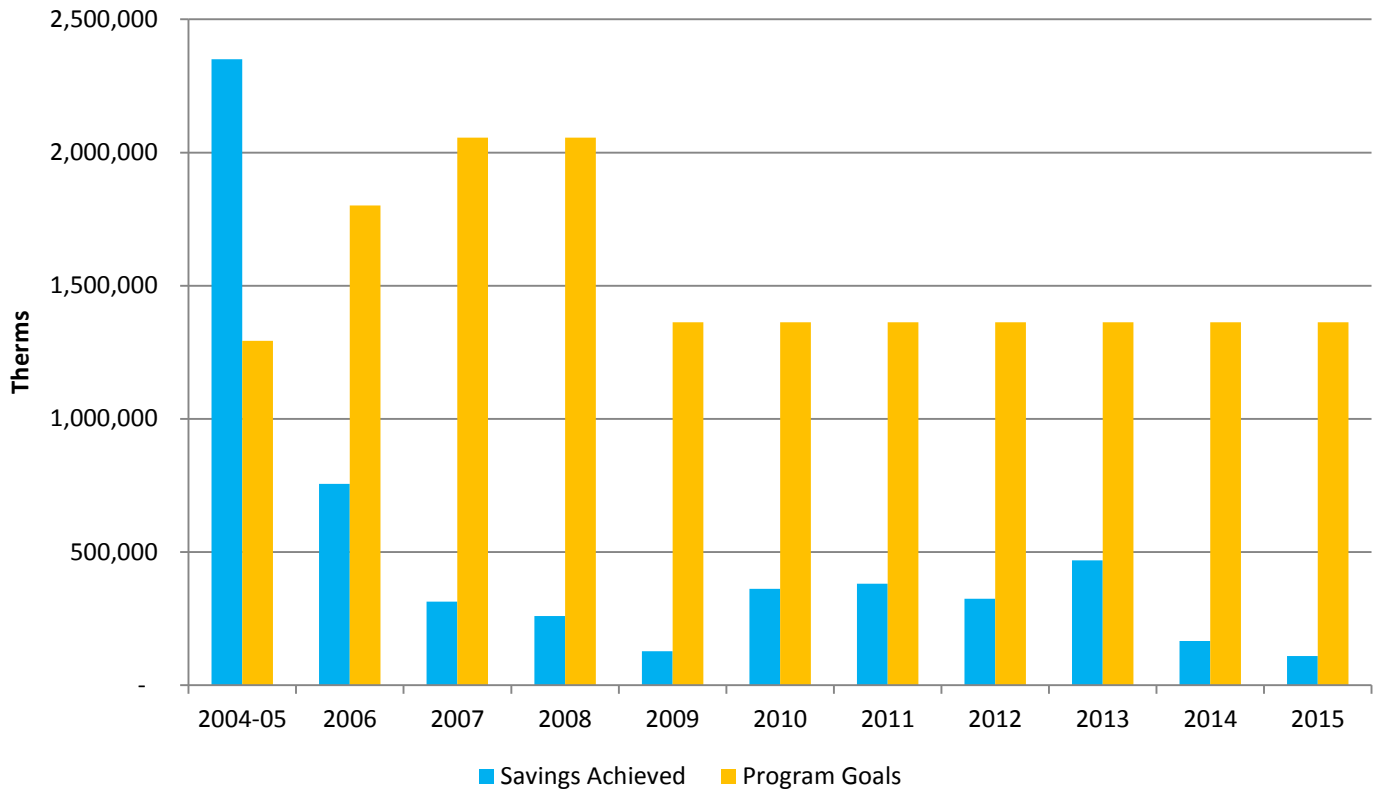


## MFEER Programmatic Efforts to Date

**Chart 4. MFEER Program Savings (Therms) and Incentives Paid By Year**



**Chart 5. MFEER Program Savings Achieved vs. Program Savings Goals**



## Middle Income Direct Install Pilot (MIDI)

The MIDI pilot is a sub program of EUCA offering that provides no-cost energy assistance on energy efficiency upgrades for customers whose income just exceeds the upper threshold for Energy Savings Assistance Program eligibility. The program is available to income-qualified renters and homeowners living in single-family and multifamily dwellings. Program services are provided by authorized vendors that are under contract to SoCalGas to deliver program services

### Programmatic Strengths, Weaknesses, Opportunities and Threats



## Plug Load and Appliance (PLA)

Home appliances, consumer electronics, and other miscellaneous plug loads, “Plug-Load & Appliance” or “PLA”, consume about 66% of current California home electricity usage, with plug loads (televisions, personal computers and office equipment) accounting for about 20% of home electricity usage alone.<sup>19</sup> These PLA products comprise one of the largest and fastest growing end-uses of the residential sectors, significantly contributing to the growth in greenhouse gas emission. Clearly, the PLA markets cannot be left alone. The Big Bold Energy Efficiency Strategy (BBEES) efforts to achieve Zero Net Energy (ZNE) in new residential construction and the State’s Integrated Demand Side Management’s (IDSM) goal of 40% energy purchase reduction from 2008 levels by 2020 will only be possible if the markets are influenced to increase the availability, awareness and adoption high efficient PLA products through strategic energy efficient program interventions.

The Plug Load and Appliances subprogram merges the previous Home Energy Efficiency Rebate (HEER), Business Consumer Electronics (BCE) and Appliance Recycling subprograms. This subprogram builds upon existing retailer relationships and previously included recycling strategies and whole house solutions, plug load efficiency, performance standards, and opportunities for integration with local government, water agencies, Publically Owned Utilities (POUs), and the Demand Side Management (DSM) subprogram. Due to recent change in cost factor certain sub program strategies have been terminated, such as the PLA recycling program.

The PLA sub-program aims to transform the market to achieve sustainable adoption of energy efficient PLA products where ongoing intervention would no longer be required. For the short to mid-term time frame where energy efficiency PLA products are still not the market’s default choices, the program uses incentive mechanisms, Marketing Education & Outreach (ME&O), Worker Education & Training (WE&T), and strategic industry collaboration to increase availability, awareness, and adoption of energy efficient products. For the longer-term time frame, the PLA sub-program leverages Integrated Demand Side Management (IDSM) programs to influence the development of codes and standards in order to ensure the minimum required energy efficiency levels, promote “Energy Efficiency” as the preferred choice in lifestyle and new product purchases. The program’s long-term strategy seeks to create ongoing demands for “Energy Efficiency” products and thus motivate the industry to produce and sell high efficient PLA products as the market standard offering.

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<sup>19</sup> Final Decision of the 2013-14 Transition Period, p. 202

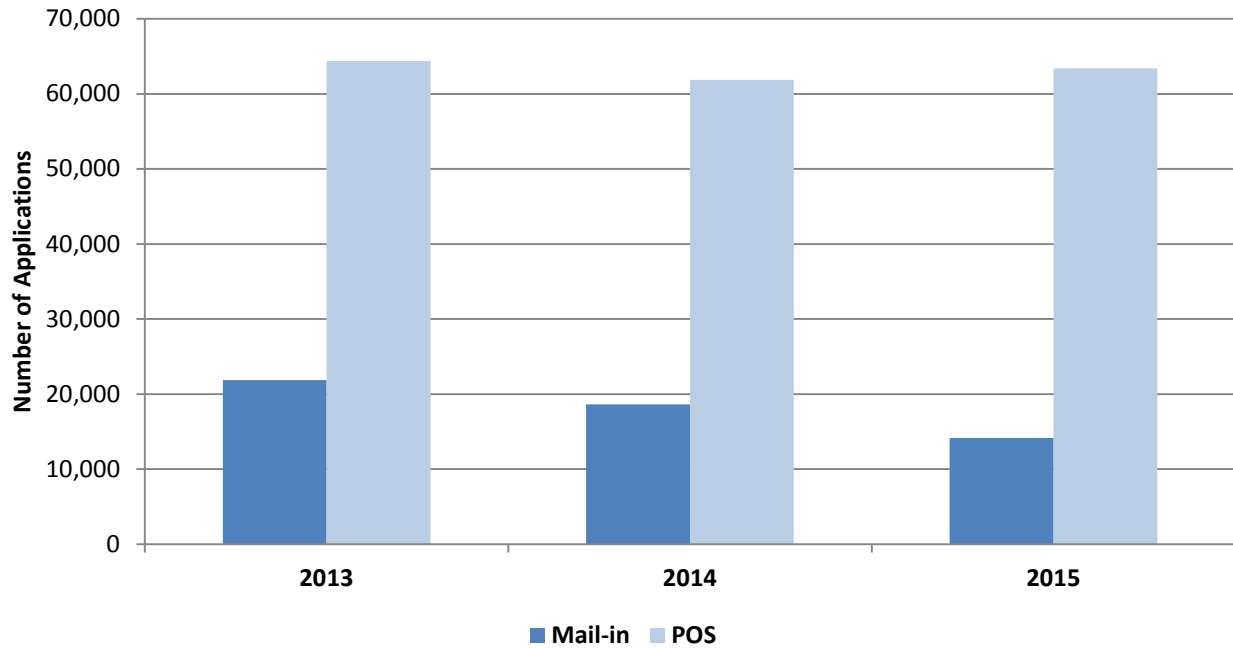
## Programmatic Strengths, Weaknesses, Opportunities and Threats



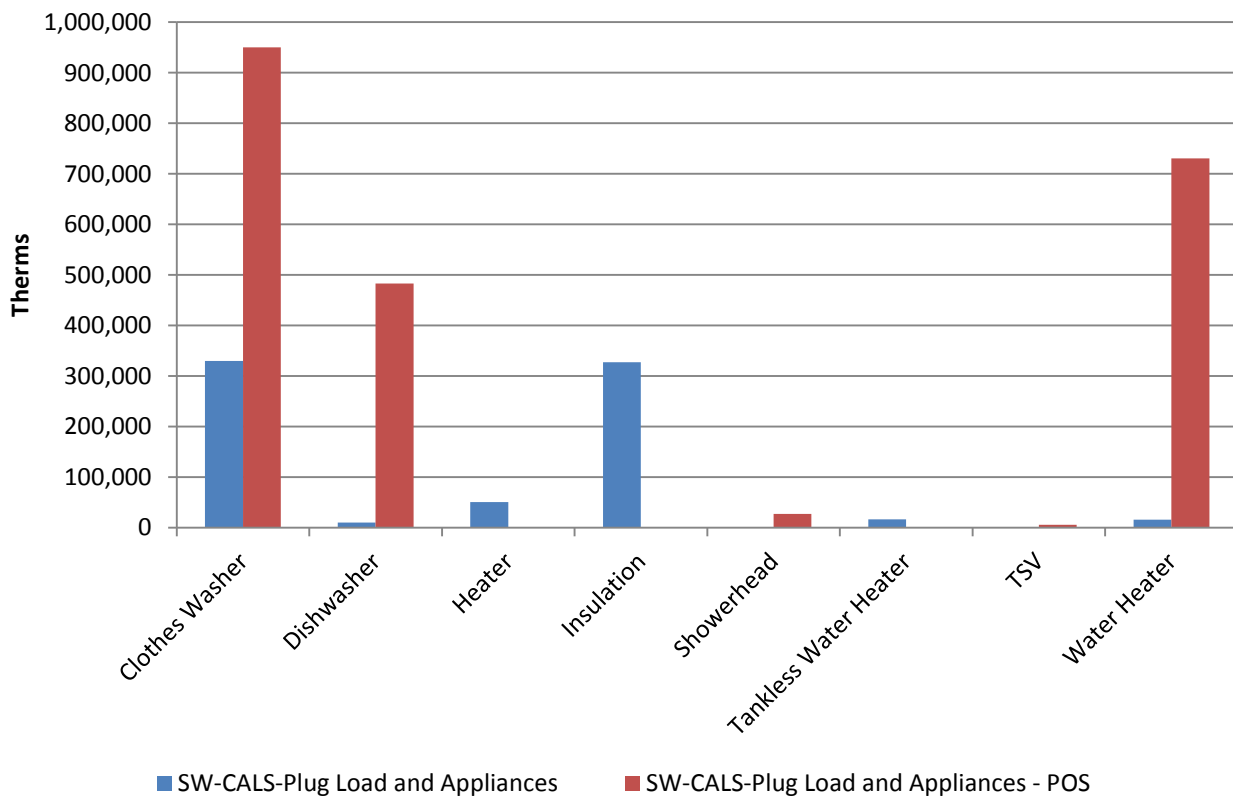


## PLA Programmatic Efforts to Date

**Chart 6. PLA Program Applications Completed by Year**



**Chart 7. PLA Program Savings By Measures, 2013-2015**

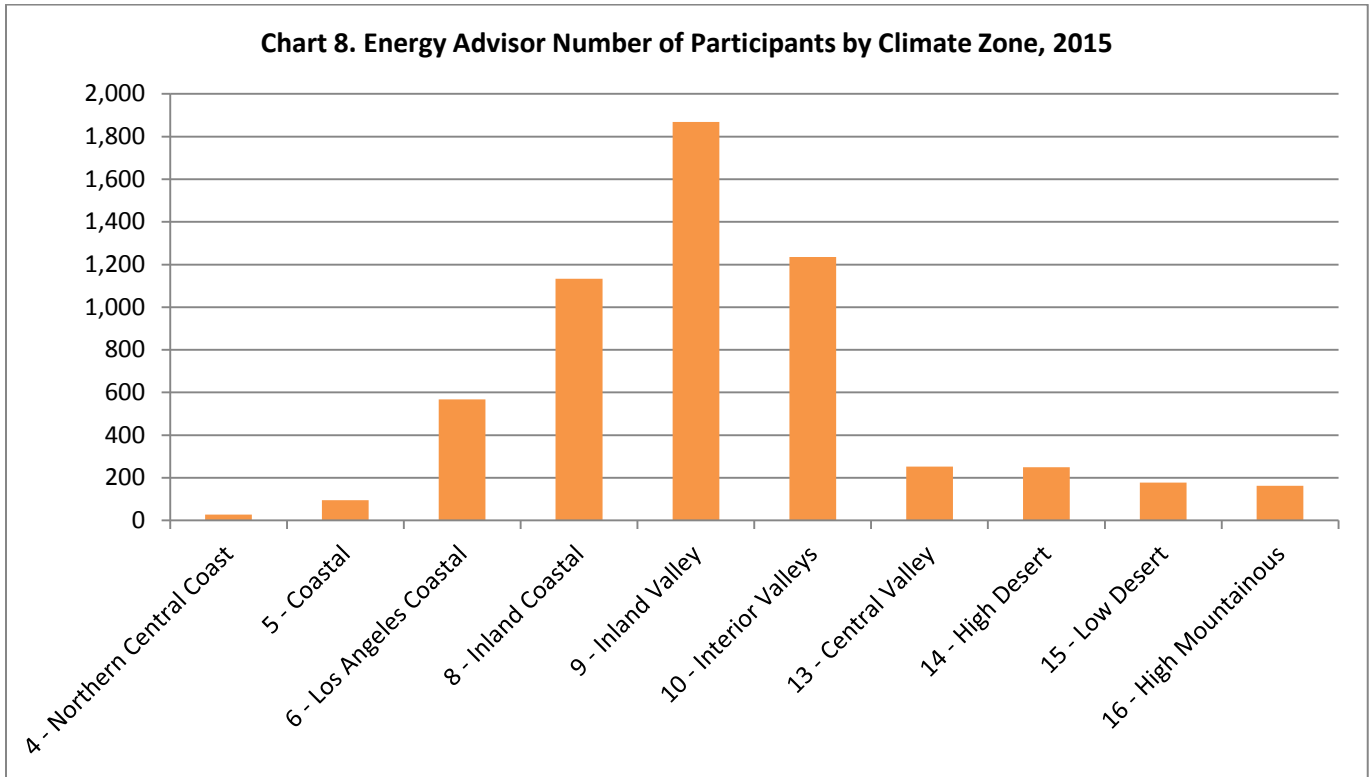


## Energy Advisor

The Energy Advisor program utilizes interactive tools designed to engage customers and encourage participation in innovative initiatives. These initiatives are designed to help customers understand and empower them to manage their energy use, and will guide them, where appropriate, towards advancing whole-house energy solutions. Although the IOUs share similar Energy Advisor subprogram theory, design, and goals, SoCalGas implements subprogram logistics differently because of our local service territory needs. The program utilizes behavioral outreach initiatives and interactive tools designed to engage customers and to encourage participation in innovative initiatives to reduce their energy consumption through behavioral solutions, program recommendations and, as warranted, IDSM opportunities.

### Programmatic Strengths, Weaknesses, Opportunities and Threats





## Residential New Construction

The Long Term Energy Efficiency Strategic Plan includes four “Big Bold strategies” as cornerstones for significant energy savings with widespread benefit for all Californian. One of those strategies seeks to have all new residential construction be zero net energy by 2020. To assist in meeting this effort, SoCalGas’s has employed a few RNC programs into its residential portfolio. These programs include California Advanced Homes Program (CAHP) - CAHP Single Family, CAHP Multifamily High-Rise and Multifamily low-rise.

### California Advanced Homes Program (CAHP)

As further described and illustrated below SoCalGas’s CAHP programs have endured great successes despite the fact that the programs face a multitude of obstacles.

#### Programmatic Strengths, Weaknesses, Opportunities and Threats



## Problem Statements

### Problem Statement 1: High Costs for Executing Whole Building Upgrades is Limiting the Opportunity to Serve the Potential Market.

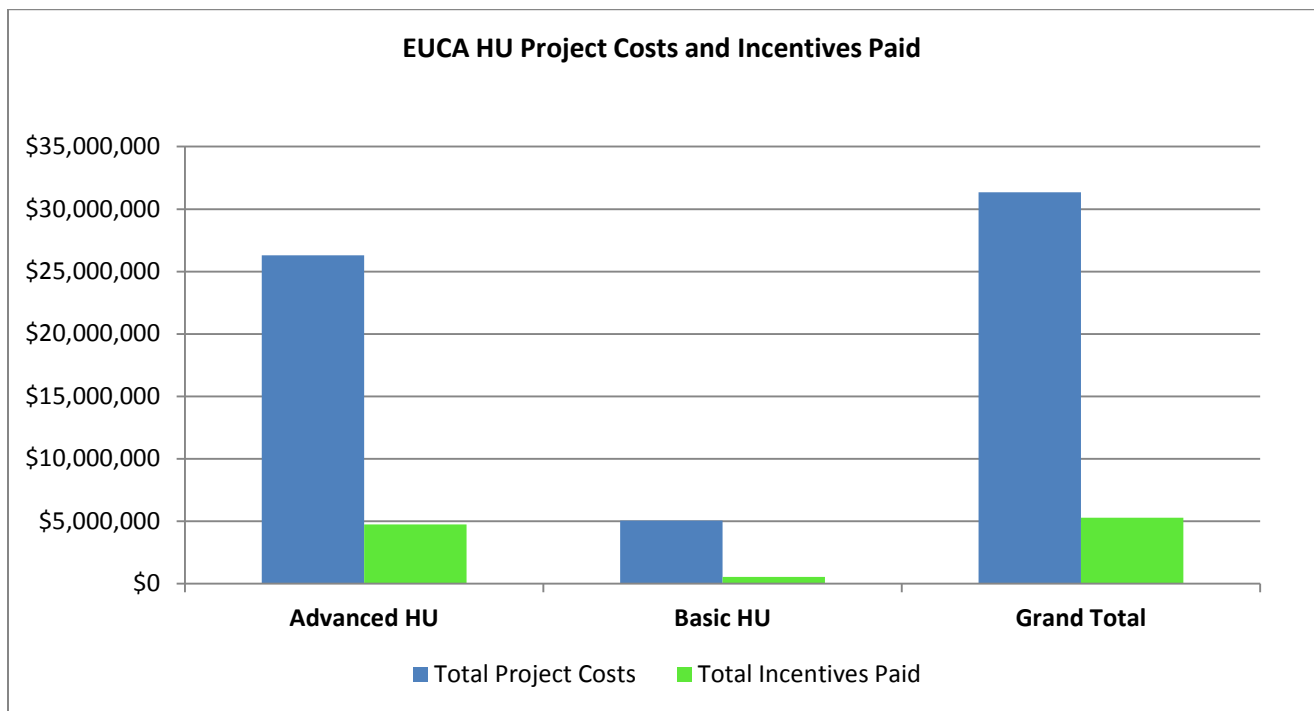
#### Observations

Within the 2013-2015 programs cycle, the SoCalGas Whole Building Programs constituted for over \$17 million in program expenditures but has consistently achieved its savings targets. In addition, the market potential as previously discussed in existing home upgrades is ever increasing however program funding is limited. SoCalGas does maintain a few partnerships with our electric service utility and 2 municipalities' utilities which allow for program costs such as implementation fees and incentives to be shared. However, in offering the program around our service territory solely, SoCalGas carries the cost burden and thus program funds are not available to spread to a larger market potential.

#### Data

SoCalGas EUCA Home Upgrade program amounts to 21% of SoCalGas Residential Sector energy efficiency expenditures. In addition, the EUCA Home Upgrade program constitutes for one of the lowest TRC programs in SoCalGas's Residential Portfolio, having an average TRC of .24 over the 2013-2015 program cycle. Figure 18 illustrates the proportion of total project costs as compared to actual incentives paid. In addition, in table 1 below reveals the average total project costs for each Home Upgrade program path between the period of 2012- 2015.

**Figure 19. EUCA HU Projects Costs and Incentives Paid, 2012-2015**



**Table 2. EUCA HU Average Program Costs and Rebates Paid, 2012-2015**

	Average of Final Cost Per Project	Average of Final Rebate \$ Paid Per Project
Advanced HU	\$17,929	\$3,234
Basic HU	\$14,294	\$2,057

## Strategies

### *Engage and Build Partnerships with Non-Participating Local MOUs*

In efforts to increase program cost effectiveness and to maintain the ability to reach additional market potential in the SoCalGas territory, we need to look at building additional partners with other electric providers, such as municipality utilities. In our service territory we have approximately 12 municipalities and currently only two are joint partners with SoCalGas on the EUCA Home Upgrade program. Expanding our partnerships would significantly reduce the burden for administering the program and assist in increasing the overall program cost effectiveness.

### Key Partners

As we seek to enhance our programs by incorporating new strategies into our residential portfolio and to transform them into more efficient successful programs, we are also committed to working with key partners to ensure that we incorporate the most effective programmatic framework. Our key partners will be leveraged to identify ways to reduce costs, incorporate new innovative intervention strategies and when appropriate will be sought out for program feedback. For the strategy discussed above and as applicable, SoCalGas will aim to work with the following list of key partners:

- Utility (IOU)
  - Marketing and Outreach
- Municipalities
  - Los Angeles Water and Power (LADWP)
  - Burbank, Water and Power (BWP)
  - All other municipalities
- Regional Energy Networks
  - The Energy Network (TEN)
  - BayREN
- Home Owners
- Regulators
  - CPUC
  - CEC
- EUC Working Group Committee
  - Various Stakeholders
- Implementers
  - ICF
  - RHA
- Local Government
- EmPower/SLO-Ventura-Santa Barbara Finance Task Force/Financial and Investment community
- Trade Professional Groups
  - Contractors
  - IHACI
  - Distributors

## Problem Statement 2: Whole House Existing Building Programs Current Funding Does not Support Market Transformation Objectives

### Observations

The EUCA Home Upgrade Program has been designated by the CPUC as a market transformation (MT) oriented program but is subject to resource acquisition program requirements.<sup>20</sup> Under current rules, the cost burden to the IOUs of being an MT program is not offset by commensurate benefits because specific definitional issues of what an MT program is and how it will be evaluated and treated distinctly from normal resource acquisition programs have not been addressed. For example, as an MT-oriented program, the IOUs are currently required to spend money on non-energy savings activities such as workforce development and training without the benefit of being able to claim future non-participant energy savings.

Recently, definitional issues of Home Upgrade as an MT program were put on hold by the CPUC in favor of the PAs addressing specific program best practices outlined in Appendix A of the Navigant report.<sup>21</sup> The IOUs believe that the recent dramatic increase in Home Upgrade job submittals clearly demonstrates that the priority program improvement issues/best practices have been addressed and solved and it is time to turn our focus toward solving the definitional issues of Home Upgrade as an MT program distinctly different than an RA program.

### Data

In 2014-2015, in an effort to better define and develop Home Upgrade fully as an MT program, the IOUs funded and published “A Comprehensive Strategic Market Transformation (SMT) Plan for a Home Upgrade Program SMT Initiative.”<sup>22</sup> The Plan states, “Determining cost-effectiveness for a market transformation program can utilize the same principles and general structure as cost-effectiveness approaches for RA programs, but they require different inputs in many cases. One clear example is timeframe: SMT programs will likely have low year-to-year benefit-cost ratios in the early years of implementation, but the goal is life-cycle cost-effectiveness rather than immediate benefit-cost ratios above 1.0. Thus, one tenet of a market transformation cost-effectiveness model must be assessing costs and benefits over the lifetime of the initiative.”<sup>23</sup> A recent CPUC-funded white paper has recommended that for programs designated as Market Transformation the CPUC should “Consider the Need for Market Transformation Performance Incentives.”<sup>24</sup>

### Strategies

#### *Incorporate Market Transformation Performance Incentives to Whole Building Programs*

Market transformation initiatives can be effective and cost efficient ways to increase energy efficiency. Program regulators should seek incentives that reward efforts that are effective at changing markets, reducing market barriers, and increasing market penetration. Seek out modifications to the Home Upgrade so that regulators can base utility performance incentives on indicators of market effects, with the observed market effects linked to reductions of market barriers. This will allow for regulators to balance the risks and rewards between customers so that a utility is encouraged to work effectively in the market, with customers receiving the majority of benefits from changes in the market—without facing substantial risks of providing large incentives to utilities.

### Key Partners

As we seek to enhance our programs by incorporating new strategies into our residential portfolio and to transform them into more efficient successful programs, we are also committed to working with key partners to ensure that we

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<sup>20</sup> Residential 2013-2015 PIP, pg. 96

<sup>21</sup> Appendix A Navigant Report, June 15, 2015.

<sup>22</sup> *I.d.*

<sup>23</sup> *I.d.*

<sup>24</sup> Building a Policy Framework to Support Energy Efficiency Market Transformation in California,” Keating and Prael. Pp.31-33.)

incorporate the most effective programmatic framework. Our key partners will be leveraged to identify ways to reduce costs, incorporate new innovative intervention strategies and when appropriate will be sought out for program feedback. For the strategy discussed above and as applicable, SoCalGas will aim to work with the following list of key partners:

- Utility (IOU)
  - Marketing and Outreach
- Municipalities
  - Los Angeles Water and Power (LADWP)
  - Burbank, Water and Power (BWP)
  - All other municipalities
- Regional Energy Networks
  - The Energy Network (TEN)
  - BayREN
- Regulators
  - CPUC
  - CEC
- EUC Working Group Committee
  - Various Stakeholders
- Implementers
  - ICF
  - RHA
- Local Government
  - EmPower/SLO-Ventura-Santa Barbara
- Finance Task Force/Financial and Investment community



### Problem Statement 3: Significant Decrease in Enrollment in Multifamily Programs

#### Observations

The Multifamily Segment presents a significant challenge within SoCalGas Residential EE portfolio. First, multifamily buildings vary widely in terms of heating, ventilation, and air-conditioning (HVAC) systems, building size, tenant incomes, finance structures and ownership structures which are all significant factors that affect energy efficiency related decision-making. These fragmented characteristics make the multifamily sector extremely diverse and thus require innovative energy efficiency strategies.

In addition, multifamily building ownership is not highly concentrated, which means more decision-makers must undertake the effort and be convinced before the building sector as a whole can reach its efficiency potential at scale.<sup>10</sup> In addition, building owners with fewer properties may have less incentive to undertake the effort to understand the incentives, measures, and other relevant factors, or less staff available to assist them in doing so.

Additionally, the low cost of gas and mild climate of California further complicate this sub sector because incentives for energy investments are no longer high valued due to the low cost of supply and need. Payback periods also become extended due to the low cost of natural gas prices and the fact that equipment tends to last longer in dry mild climates.

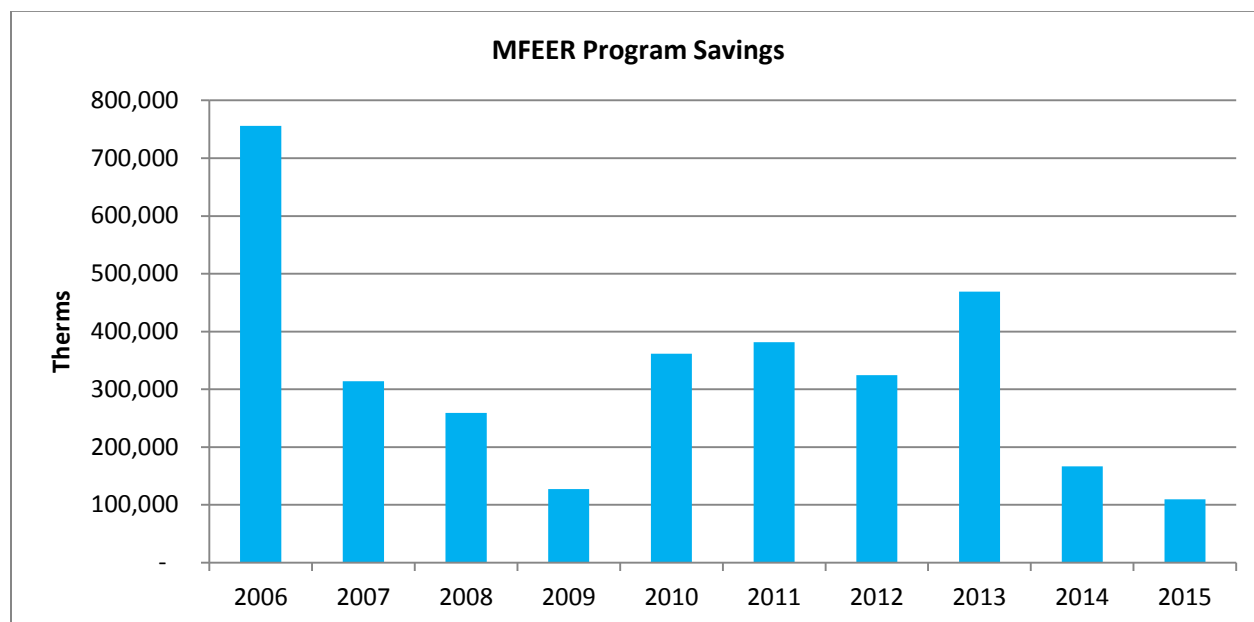
Furthermore, under most multifamily unit leases, energy costs are paid directly by tenants and building owners aren't driven to invest in efficient building systems. Conversely, in other forms of leases, building owners pay energy expenses and tenants have little incentive to save energy in their leased space. This dynamic is commonly referred to as the "split incentive" barrier to energy efficiency with in the multifamily sub sector.

Last, even when the barriers above are addressed their still exist the lack of capital which many multifamily owners face. Many owners find difficult convincing lenders the association of energy savings to building expenses. In addition, many owners may not have the credit or collateral to obtain secure financing options.

#### Data

The figure below show the decrease in MFEER participation since 2013.

**Figure 20. MFEER Program Savings (Therms), 2006-2015**



## Strategies

### *Create a Targeted Program with a Split Incentive Offering*

Create a targeted program that involves targeted metered sub segments of the multifamily sub sector and provide a split incentive structure. Providing a well-designed split incentive would encourage owners and tenants to invest in energy efficiency measures while achieving greater savings for the overall residential portfolio. In addition, the split incentive structure could be tested and expanded once proven successful to other metered sub segments.

### *Explore an AB 802 Offering*

Due to recent legislation, the CPUC has allowed High Opportunity Programs and Projects can be implemented by IOUs. These programs could assist in identifying stranded opportunities and capturing additional below code stranded savings. In addition, AB 802 programs could assist in retrieving performance data and thus overcoming some of the barriers for measuring savings within the multifamily sub sector due to its diverse buildings (i.e. heating, ventilation, and air-conditioning (HVAC), building size, tenant incomes, finance structures and ownership structures).

### *Perform Additional In Depth Marketing to Identify Effective Incentive Levels*

In addition, additional marketing could be done in this sub sector to identify the correct price point for encouraging participation in SoCalGas's existing and future programs. An in-depth marketing survey of our customers' needs and wants as it pertains to energy efficiency upgrades could highlight the necessary information for designing the most effective structure and program implementation.

## Key Partners

As we seek to enhance our programs by incorporating new strategies into our residential portfolio and to transform them into more efficient successful programs, we are also committed to working with key partners to ensure that we incorporate the most effective programmatic framework. Our key partners will be leveraged to identify ways to reduce costs, incorporate new innovative intervention strategies and when appropriate will be sought out for program feedback. For the strategy discussed above and as applicable, SoCalGas will aim to work with the following list of key partners:

- Utility (IOU)
  - Account Executives
  - Marketing and Outreach
- Landlord (Building owners)
- Trade Professional Groups
  - Plumbers
  - HVAC Contractors
  - Retailers

## Problem Statement 4: Delivery Channels for Point of Sale Rebates are diminishing thus Reducing Future Potential PLA Savings

### Observations

The SoCalGas PLA Point of Sale program (POS) has been very successful over the past several years. Early program participation from the retailers showed POS as 11% of the PLA portfolio. The POS program has grown to 78% of the PLA portfolio as of 2015. Recently, the POS program has seen a decline in participating retailers. The reasons for declining retailer participation are due to retailer's internal costs and costs for implementing the POS program. In the early stages of the POS program, the measures and retailers sku's related to eligible measures were small enough for the retailers to manage. As the measure mix grew, so did the number of transactions which has become costly, specifically, more costly to monitor and manage. Bar codes not matching eligible sku's, invoicing of non-qualifying measures and inability to track manual discounts resulted in financial losses which have become significant over time.

### Data

Since the recession, big-box retailers have struggled. Bloomberg.com recently reported that until its third fiscal quarter last year, Wal-Mart had posted eight consecutive quarters of declining sales at stores open more than 12 months. Best Buy posted five straight quarters of profit decline before reporting a \$2.6 billion loss on March 29, while analysts forecast declining same-store sales and profit for Target this year.<sup>25</sup>

Traffic to U.S. retailers was hurt during the financial crisis and recession, when job losses soared and shoppers kept a tight grip on their dollars. But nearly five years into the recovery, it appears many of those shoppers may never be coming back.

As reported in the Wall Street Journal, retailers got only about half the holiday traffic in 2013 as they did just three years earlier, according to ShopperTrak, which uses a network of 60,000 shopper-counting devices to track visits at malls and large retailers across the country. The data firm tracked declines of 28.2% in 2011, 16.3% in 2012 and 14.6% in 2013.<sup>26</sup>

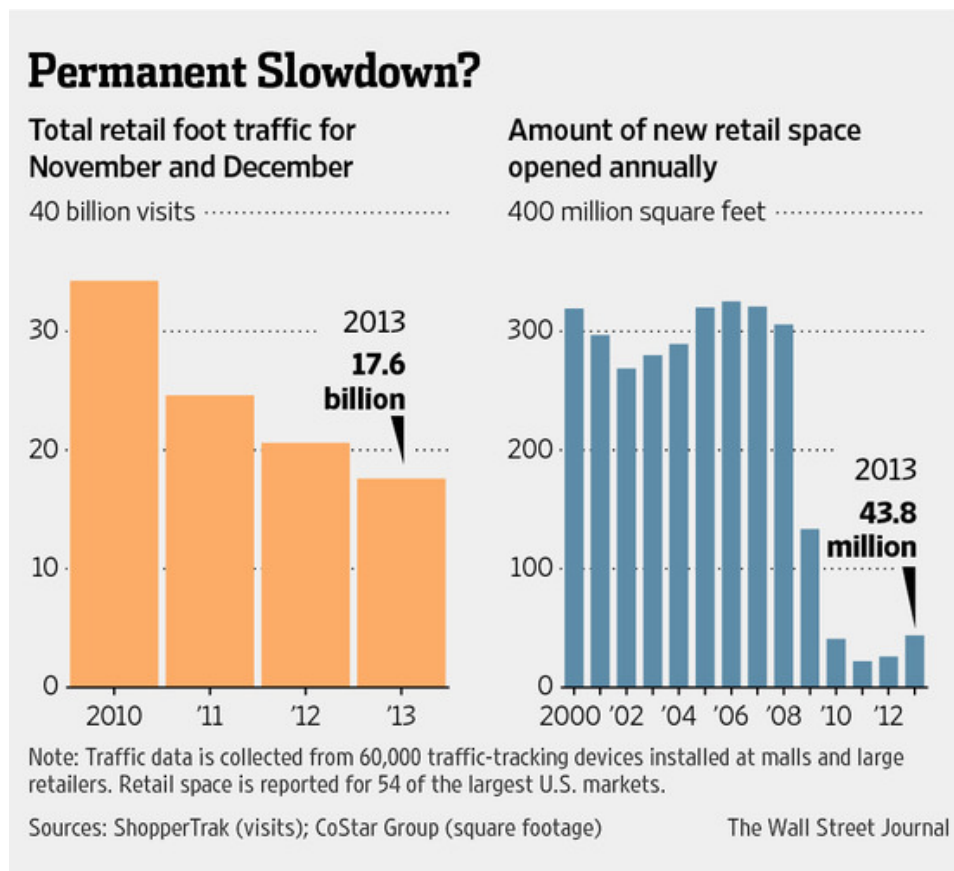
In general, the change in foot traffic at brick-and-mortar stores is among the reasons retailers such as Home Depot Inc. cut back on new store openings in favor of shifting that investment toward online operations. Meanwhile, Sears Holdings Corp., and others have closed hundreds of stores over the past couple of years. As illustrated, in Figure 21 retail space opened annually has declined to only 43.8 million square feet as of 2013 which is an 86% reduction as compared to the year 2000. In addition, total retail foot traffic has declined over 50 % since 2010.

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<sup>25</sup> Banjo, Shelly and Fitzgerald, Drew. *Stores Confront New World of Reduced Shopper Traffic*. WSJ.Com. January 16, 2014. <http://www.wsj.com/articles/SB10001424052702304419104579325100372435802>

<sup>26</sup> *i.d.*

Figure 21. Total Retail Foot Traffic for November and December and Amount of New Retail Space Opened Annually<sup>27</sup>



## Strategies

### Utilize Mail-In Rebate Option

To address the large gap of POS rebates, SoCalGas will boost its efforts and programmatic campaign to solicit customer to mail-in rebates on their PLA EE measures. This will also help provide the PLA program an additional touchpoint with its market and allow for more outreach on additional measures/programs that the market can participate.

### Streamline Current Rebates and Incorporate Mobile Technology

By shifting data collection and submission to a mobile platform, rebate applications can be submitted instantly after purchase. This step eliminates the normal one- to three-week delay and results in customers receiving their rebate checks sooner. In addition, if smart device functionality is leveraged, it can significantly reduce input errors and thus decrease application processing time. Currently there are a few companies who offer this technology specifically for energy efficiency rebates. ICF International has launched Power Rebate™ App—the energy efficiency industry's first mobile rebate app—designed to address some of the challenges common in typical energy efficiency programs which possibly could be leveraged.<sup>28</sup>

## Key Partners

As we seek to enhance our programs by incorporating new strategies into our residential portfolio and to transform them into more efficient successful programs, we are also committed to working with key partners to ensure that we incorporate the most effective programmatic framework. Our key partners will be leveraged to identify ways to reduce costs, incorporate new innovative intervention strategies and when appropriate will be sought out for program

<sup>27</sup> i.d.

<sup>28</sup> <http://www.icfi.com/insights/products-and-tools/power-rebate-app>

feedback. For the strategy discussed above and as applicable, SoCalGas will aim to work with the following list of key partners:

- Utility (IOU)
  - Account Executives
  - Marketing and Outreach
- Big Box Retailers
- Small Chain Retailers
- Distributors
- 3<sup>rd</sup> Party Implementers

## Problem Statement 5: Diminishing Returns and Increasing Costs is Causing Indifference to Above Code Energy Efficiency in the Residential New Construction Builder Community.

### Observation 1

With the U.S. economy in a steady recovery, the housing market, hit severely during the recession, is beginning to make a comeback. As the housing market recovers, new home construction demand is increasing, and so are costs. According to the Engineering News-Record, between March 2014 and February 2015, construction costs rose 2.9%, and for the previous 12 months rose 3.2%, far outpacing the meager U.S inflation rate of the past few years.<sup>29</sup> While costs in every industry tend to increase slightly from year to year, there are additional factors affecting the construction market, causing a steady average price increase. Three main causes for rising construction costs include:

- Rising Material and Transportation Costs
- Competition For Labor and Tradespeople
- Low Mortgage Rates – with rates

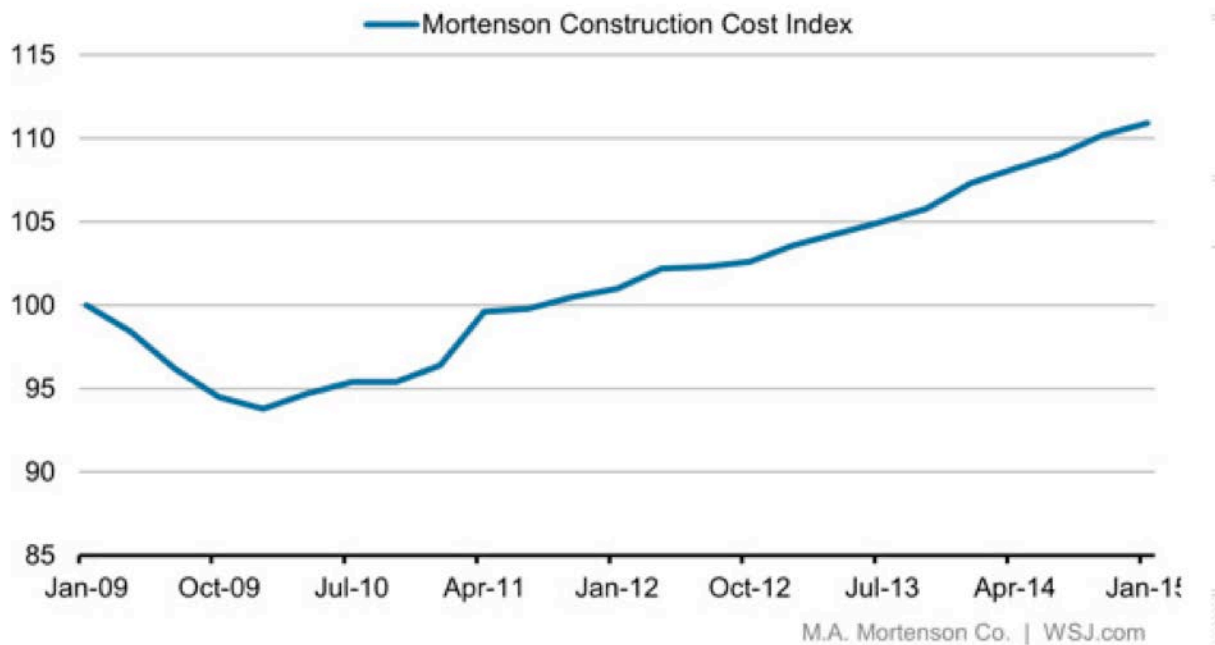
### Data

The cost of materials and transportation clearly impacts the price of a new home. Figure 22 from the Wall Street Journal illustrates how construction cost prices have been steadily climbing for the past 7 years:

**Figure 22. Mortenson Construction Cost Index<sup>30</sup> from January 2009 to January 2015<sup>31</sup>**

#### The Price of Recovery

Construction costs are rising



When the mortgage bubble burst in 2008, setting off the great recession, the U.S. housing market took a heavy hit thus causing many businesses to go out of business and leaving a shortage of demand for construction workers. These displaced workers now faced seeking new skill sets leaving a large gap in supply of construction new workers now that

<sup>29</sup> Engineering-News Record 2015 Q1 Cost Report, March 2015. P. 11. [http://www.enr.com/ext/resources/static\\_pages/Quarterly-Reports/2015\\_ENR\\_1Q\\_COST\\_REPORT.pdf](http://www.enr.com/ext/resources/static_pages/Quarterly-Reports/2015_ENR_1Q_COST_REPORT.pdf)

<sup>30</sup> The Mortenson Construction Cost Index is calculated quarterly by pricing a representative non-residential construction project in geographies throughout the country

<sup>31</sup> Grant, Peter. *Construction Costs Are Rising as Economy Improves*. WSJ.com. February 10, 2015.

<http://blogs.wsj.com/developments/2015/02/10/construction-costs-are-rising-as-economy-improves/>

the economy has recovered. According to the Associated Builders and Contractors, the construction industry will face a 2 million-person shortage, when it comes to skilled labor by the end of the decade. The result, fewer vendors and subcontractors (shortage of labor) results in rising costs for the builder and the homebuyer.<sup>32</sup>

In addition, with an economy in recovery and mortgage interest rates remaining near record lows, buyers may have a bit of money in their pocket again and want to take advantage of the current prices before they increase. There is an incentive for new home construction to take place now before the Federal Reserve raises its key short term interest rate, which could very possibly raise mortgage rates. This rush to build now while rates are low is increasing demand in an industry that is facing a worker shortage and influx of business.

## Observation 2

With the launch of 2013 Title 24 Building Energy Efficiency Standards, California Advanced Homes Program (CAHP) has witnessed a substantial and consistent decline in enrollment and participation. As Title 24 requirements become more rigorous, the builder community is moving away from attempting aspirational goals necessary to meet CAHP qualification thresholds and simply building to code due to the diminishing returns in available incentives. As code requirements increase the applicable benefit of the incentives for above code incentives decrease thus causing longer payback periods for energy efficiency measures.

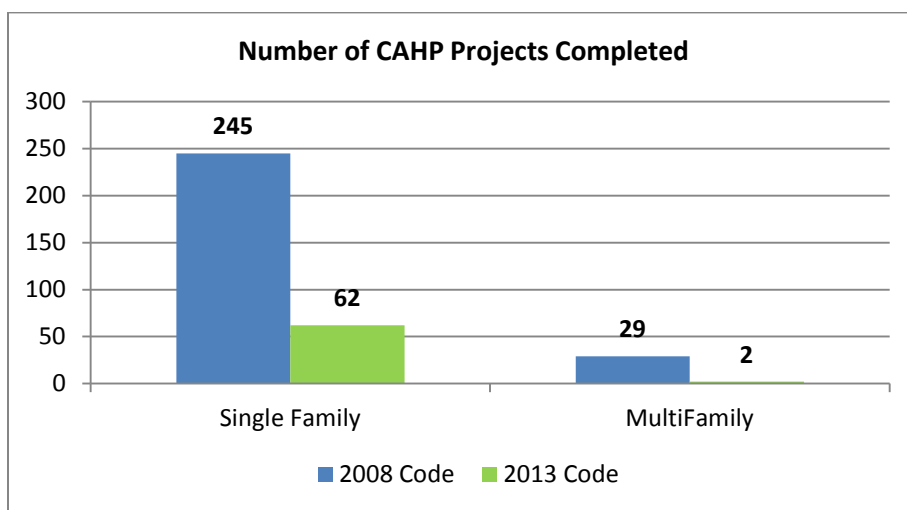
In addition, due to this rigorous ever changing upward code, the hard-won cooperative relationship between the IOUs and builders has begun to erode. Builders become indifferent to above code savings due to the decrease in financial benefits and thus become indifferent to building relationships with IOUs.

Furthermore, with curtailed CAHP enrollment, touchpoint (relationship based, less face-to-face) opportunities for IOUs to educate and influence energy efficiency decisions by builders are also diminishing.

## Data

Recent comparison analysis of the first 20 months of 2013 Title 24 as compared to CAHP enrollment of projects built under the first 20 months of 2008 Title 24 shows reveals that there has been a substantial decrease of 93% for multi-family and 75% for single-family CAHP enrolled projects.<sup>33,34</sup>

**Figure 23. CAHP Projects Completed Based on 2008 Title 24 Compared to 2013 Title 24**



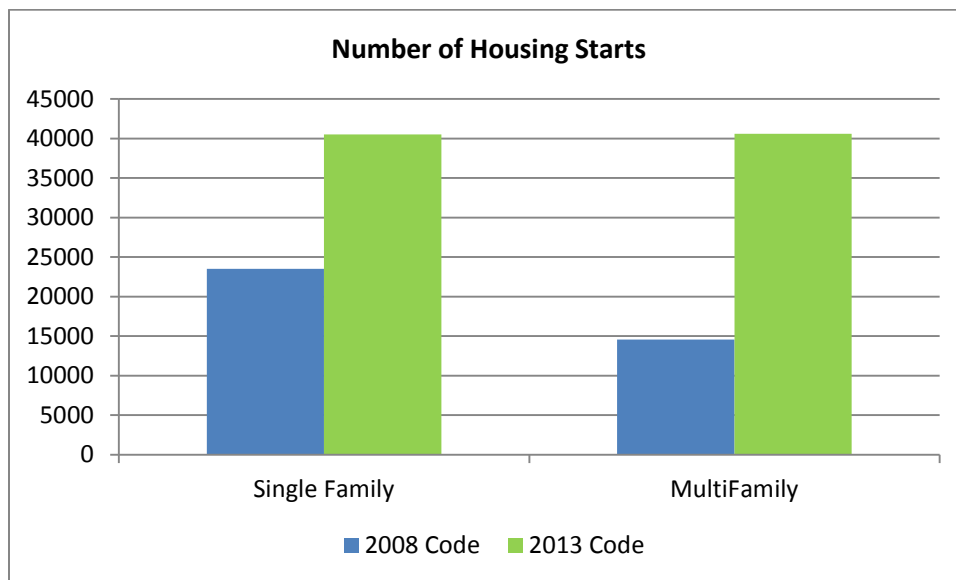
<sup>32</sup> Associated Builders and Construction, Inc. *Construction Employment Growth Slow but Steady*. March 4, 2016. <https://www.abc.org/NewsMedia/ConstructionEconomics/ConstructionEconomicUpdate/tabid/270/entryid/5035/construction-employment-growth-slow-but-steady.aspx>

<sup>33</sup> Based on latest SoCalGas CAHP Programmatic Efforts

<sup>34</sup> *i.d.*

Yet the potential market in residential new construction is still growing exponentially every year. The alarming decline in enrollment is only further intensified when considering housing starts are up 278% for multi-family and 172% for single-family which is illustrated in Figure 24 below.

**Figure 24. Total Average Number of Housing Starts Based on Title 24 Code<sup>35</sup>**



## Strategies

### *Relax CAHP 100% Project Compliance Rule*

Suggest CAHP begin accepting partial single-family and multi-family low-rise project enrollments. Current rules require that all plans, in all orientations meet minimum CAHP qualification threshold or the entire project is rejected.

With this program enhancement, any plans in a project that are 100% compliant in all orientations can be enrolled; while plans that are NOT compliant in any direction will not be included for enrollment in the project. CAHP participation will be bolstered and savings will be increased while maintaining a positive energy efficiency influence in the industry.

### *Perform Additional In Depth Marketing to Identify Effective Incentive Levels*

Additional marketing could be done in this sub sector to identify the correct price point for encouraging participation and above code upgrades. An in-depth marketing survey of our customers' needs and wants as it pertains to energy efficiency upgrades could highlight the necessary information for designing the most effective structure and program implementation.

## Key Partners

As we seek to enhance our programs by incorporating new strategies into our residential portfolio and to transform them into more efficient successful programs, we are also committed to working with key partners to ensure that we incorporate the most effective programmatic framework. Our key partners will be leveraged to identify ways to reduce costs, incorporate new innovative intervention strategies and when appropriate will be sought out for program feedback. For the strategy discussed above and as applicable, SoCalGas will aim to work with the following list of key partners:

- Utility (IOU)
  - Account Executives

<sup>35</sup>Based on latest CAHP data



- Marketing and Outreach
- Landlord (Building owners)
- Finance Task Force/Financial and Investment community
- Trade Professional Groups
  - Contractors